

Cultural-historical activity theory: founding insights and new challenges

A. Sannino*,
University of Tampere,
annalisa.sannino@uta.fi

Y. Engeström**,
CRADLE, University of Helsinki, Finland,
yrjo.engestrom@helsinki.fi

The article presents central ideas and future challenges of cultural-historical activity theory, focusing specifically on the work of the so-called Helsinki school of activity theory. We first introduce the revolutionary roots of the theory in the works of Marx and Vygotsky, and the evolution of the unit of analysis through different generations of activity theory. We then discuss the foundational role of historicity and dialectics in activity theory. We identify two central epistemological-methodological principles that guide activity-theoretical studies, namely the principle of double stimulation and the principle of ascending from the abstract to the concrete. These principles lead us to emphasize formative interventions as a powerful way to conduct societally impactful activity-theoretical research. We conclude by pointing out some major challenges facing activity theory in the 21st century.

Keywords: activity theory; unit of analysis; historicity; dialectics; double stimulation; formative interventions.

Культурно-историческая теория деятельности: фундаментальные открытия и новые вызовы

А. Саннино,
Университет Тампере, Тампере, Финляндия
annalisa.sannino@uta.fi

У. Энгестрём,
Центр исследования деятельности, развития и обучения (CRADLE), Хельсинкский университет,
Хельсинки, Финляндия
yrjo.engestrom@helsinki.fi

Статья посвящена основным идеям культурно-исторической теории деятельности и вызовам нового времени, встающим перед ней. Особое внимание уделяется работе так называемой Хельсинкской

For citation:

Sannino A., Engeström Y. Cultural-historical activity theory: founding insights and new challenges. *Kulturno-istoricheskaya psikhologiya = Cultural-historical psychology*, 2018. Vol. 14, no. 3, pp. 43–56. (In Russ., abstr. in Engl.). doi: 10.17759/chp.2018140304

Для цитаты:

Саннино А., Энгестрём У. Культурно-историческая теория деятельности: фундаментальные открытия и новые вызовы // Культурно-историческая психология. 2018. Т. 14. № 3. С. 43–56. doi: 10.17759/chp.2018140304

* Sannino Annalisa, Professor of Education at University of Tampere, Finland. E-mail: *annalisa.sannino@uta.fi*

** Engeström Yrjö, Professor Emeritus of Adult Education and Director of the Center for Research on Activity, Development and Learning CRADLE at University of Helsinki, Finland. E-mail: *yrjo.engestrom@helsinki.fi*

Саннино Аннализа, профессор, Университет Тампере, Тампере, Финляндия. E-mail: *annalisa.sannino@uta.fi*

Энгестрём Ирjö, почетный профессор, директор Центра исследования деятельности, развития и обучения (CRADLE), Хельсинкский университет, Хельсинки, Финляндия. E-mail: *yrjo.engestrom@helsinki.fi*

школы теории деятельности. В первой части статьи мы описываем революционные идеи, лежащие в основе теории и уходящие корнями в работы Маркса и Выготского, а также рассматриваем, как менялись представления о единице анализа на разных этапах становления теории деятельности. Затем мы переходим к обсуждению основополагающей роли историчности и диалектичности в развитии теории деятельности, описываем два ключевых методологических и эпистемологических принципа деятельностных исследований — принцип двойной стимуляции и принцип восхождения от общего к частному. Опора на эти принципы дает нам возможность утверждать, что формирующие интервенции — мощный инструмент в реализации социально значимых, эффективных деятельностных исследований. В заключительной части статьи мы рассматриваем основные вызовы, с которыми придется столкнуться теории деятельности в XXI веке.

Ключевые слова: теория деятельности, единица анализа, историчность, диалектика, двойная стимуляция, формирующие интервенции.

INTRODUCTION

The foundations of cultural-historical activity theory (or activity theory, for short) are in the work of the Soviet-Russian psychologists Lev Vygotsky, Alexander Luria and Aleksei Leont'ev, developed further by scholars such as the educational psychologist Vassily Davydov and the philosopher Evald Il'enkov. Vitaly Rubtsov is a central figure in the current generation of Russian scholars who keep alive and develop further this legacy, to meet grand challenges of the 21st century.

Common to the founders of activity theory is the insight that human mind is not located within the brain, not even bounded by the skin of the individual. The mind is in actions and activities in which humans engage with the world, by means of cultural artifacts such as signs and tools. This insight may be summarized with the words of Gilbert Ryle.

“The statement ‘the mind is its own place,’ as theorists might construe it, is not true, for the mind is not even a metaphorical ‘place.’ On the contrary, the chessboard, the platform, the scholar’s desk, the judge’s bench, the lorry-driver’s seat, the studio and the football field are among its places. These are where people work and play stupidly or intelligently.” [51, p. 38].

In other words, activity theory redirects our gaze from what is going on inside the individual to what happens between human beings, their objects, and their instruments when they pursue and change their purposeful collective activities. In this theoretical tradition, Vitaly Rubtsov was one of the first to focus the analysis on mediated cooperative actions [50].

After the second world war, activity theory has been discovered and, to various extents and in various ways, adopted by scholars outside Russia. First this spreading took place slowly, through the efforts of a small number of American scholars such as Urie Bronfenbrenner, Jerome Bruner, Michael Cole, Sylvia Scribner ja James Wertsch, as well as some European, Asian and Latin-American academics. Since the 1980s, this uptake has accelerated and continues to do so. In 1986, the first international conference on activity theory, the ISCRAT congress, was organized in West-Berlin, and these conferences have been held since then with regular intervals (now under the name ISCAR).

However, activity theory is not an easy approach to adopt and apply. It is built on the philosophical and methodological foundation of Marxist dialectics, a way of thinking alien to academics socialized into the standards of positivism (see [4] and [64], for previous reminders of the central role of dialectics in activity theory). Perhaps this is the reason why W.M. Roth and Y.J. Lee [49] only ten years ago could still characterize activity theory as one of the best kept secrets in the academia.

Today activity theory is pursued in multiple variations. In Germany, B. Fichtner [29], H. Giest and G. Rückriem [31] and J. Lompscher [43] have generated a line of research and theorizing that focuses largely on learning and tackles also the challenge of digital media in the development of human activities. In the United States, I.M. Arieviditch [3] and A. Stetsenko [62], drawing on the legacy of Gal’perin and other Soviet activity theorists, have formulated an approach that emphasizes activism in the face of critical societal issues and contradictions. In Australia, A. Blunden [5] has built an interdisciplinary theory of activity that is heavily embedded in philosophical debates. In the Netherlands, B. van Oers and his colleagues [46] have developed a broad activity-theoretical approach to learning. These are merely a few prominent examples of the diversity of approaches within current activity theory (for further variations, see [8; 22; 55; 60]).

Activity theory is also related to, and sometimes confused with, the much broader family of sociocultural approaches in psychology and education. While most sociocultural approaches acknowledge Vygotsky as their key inspiration, they typically take distance from historicity and Marxist dialectics which are foundational to activity theory, and the concept of the object of activity seldom plays a central role in sociocultural studies.

Our own work has evolved into what is sometimes called *the Helsinki school of activity theory* (e.g., [63; 13]). This school was initiated in the early 1980s in an informal group and since 1994 organized in the Center for Research on Activity, Development and Learning (CRADLE) at University of Helsinki. This approach is known for its modeling of activity systems as prime units of analysis, for its emphasis on the object-oriented and contradiction-driven character of activity, for the theory of expansive learning, as well as for the more recent

methodology of formative interventions and studies of transformative agency. Much of the empirical work in CRADLE has focused on work activities under the rubric of developmental work research (DWR; see [15]). More recent topics include transformations in communities and social movements.

We will build this article on central ideas and findings generated in the Helsinki school. Obviously other approaches within activity theory may find our arguments limited in various ways. However, trying to present an unbiased overview of the different variations of activity theory would probably lead to a rather bland and soulless article. We prefer to focus on our own lineage and theoretical perspective, as a contribution to further dialogue and collaborative discourse with different variations of activity theory and related approaches.

REVOLUTIONARY ROOTS

The founders of what was to become activity theory were deeply involved in practical interventions aimed both at improving the lives of the research participants and at pushing forward the cultural-historical understanding of human functioning [52]. They were revolutionaries in the very sense explicated by K. Marx in *Theses on Feuerbach*: “The coincidence of the changing of circumstances and of human activity or self-changing can be conceived and rationally understood only as revolutionary practice.” [45, p. 570].

Vygotsky was keenly aware of the fact that he was living in a revolutionary period.

“To the naïve mind, revolution and history seem incompatible. It believes that historical development continues as long as it follows a straight line. When a change comes, a break in the historical fabric, a leap – then this naïve mind sees only catastrophe, a fall, a rupture; for the naïve mind history ends until back again straight and narrow. The scientific mind, on the contrary, views revolution as the locomotive of history forging ahead at full speed; it regards the revolutionary epoch as a tangible, living embodiment of history. A revolution solves only those tasks which have been raised by history; this proposition holds true equally for revolution in general and for aspects of social and cultural life during a revolution.

Accordingly, the destinies of psychology in a country undergoing a revolution can only be understood historically, in light of the past and future, only in perspective, taking into account the dynamics of development and upheavals. Science is by no means merely a sum of discovered absolute truths: it is a vital process above all.” (Vygotsky, quoted in [41, p. 5]).

Revolutionary practice is not reducible to acute political struggle for power. It consists of practically generating possibilities for better life, emancipatory alternatives to the existing restrictive order, using its inner contradictions and embryonic potentials as leverage and source of energy. This was the agenda and methodological stance of activity theory from its inception.

UNITS OF ANALYSIS

The development of activity theory may be understood as a succession of three generations of theorizing and research. Each of the three generations developed its own prime unit of analysis. The first generation was embodied in L.S. Vygotsky’s work. Even though Vygotsky occasionally wrote about “systems of activity” [69, p. 20–21], he never proposed or conceptualized activity as a basic unit of analysis. We agree with V.P. Zinchenko [71] that for Vygotsky the prime unit of analysis was that of culturally mediated action.

It was A.N. Leont’ev [38; 39] who worked out the second generation unit of analysis, namely the concept of activity. Activity is a relatively durable system in which the division of labor separates different goal-oriented actions and combines them to serve a collective object. The generic structure of an activity system was modeled by Y. Engeström [14; 18] as shown in Figure 1. In the diagram, the subject refers to the individual or subgroup whose position and point of view are chosen as the perspective of the analysis. Object refers to the raw material or problem space at which the activity is directed. The object is turned into outcomes with the help of instruments, that is, tools and signs. Community comprises the individuals and subgroups who share the same general object. Division of labor refers to horizontal division of tasks and vertical division of power and status. Finally rules refer to the explicit and implicit regulations, norms, conventions and standards that constrain actions within the activity system.

The circle around the object in Figure 1 indicates at the same time the focal role and inherent ambiguity of the object of activity. The object is an invitation to interpretation, personal sense making and societal transformation. One needs to distinguish between the generalized object of the historically evolving activity system and the specific object as it appears to a particular subject, at a given moment, in a given action. The generalized object is connected to societal meaning, the specific object is connected to personal sense. For example, in medical work, the generalized object may be health and illness as societal challenges, whereas the specific object may be a particular condition or complaint of a particular patient.

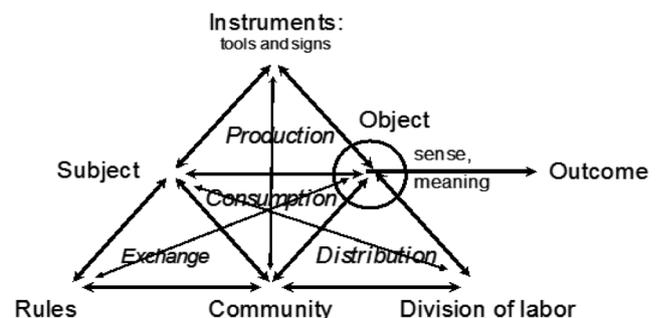


Fig. 1. The structure of an activity system [14, p. 78; 18, p. 63]

Object is what the activity is oriented towards. As the true motive of the collective activity [38], the object gives activity its identity and direction. The object is du-

rable and constantly under construction; it generates a perspective for possible actions within the activity. As such, the object is not reducible to conscious goals; those are connected to discrete and relatively short-lived actions. The object of an activity is typically difficult to define for the participants. Medical practitioners may agree that the object of their work activity is health and illness, but if asked to specify the object further, each practitioner tends to give a somewhat different characterization, depending on the personal history of the individual and his or her position in the division of labor within the activity system.

An activity system is more than a mechanical sum of its components. An activity weaves together its own dynamic context.

“In activity theory [...] contexts are activity systems. The subsystem associated with the subject-mediator-object relationship exists as such only in relationship to the other elements of the system. This is a thoroughly relational view of context.” [11, p. 141].

As activity systems are increasingly interconnected and interdependent, many recent studies take as their unit of analysis a constellation of two or more activity systems that have a partially shared object. Such interconnected activity systems may form a producer–client relationship, a partnership, a network, a heterogeneous coalition, or some other pattern of multi-activity collaboration. The formation of minimally two activity systems connected by a partially shared object may be regarded as the prime unit of analysis for 3rd generation activity theory.

Following the object and its transformations is the key to the analysis of history at the level of activity. Increasingly complex “runaway objects” [17] with broad societal ramifications, such as climate change or pandemics, connect large numbers of activity systems across national borders. Such objects tend to transcend the boundaries between the history of a specific activity, the history of a singular society, and the history of humankind.

HISTORICITY

Activity theory is built on the general tenets of historical materialism and materialist dialectics. In other words, it is a Marxist approach. By the same token, it has always aimed at being a decidedly open-ended and non-dogmatic approach. A good example of this stance is Vygotsky’s famous treatise *The Historical Meaning of the Crisis in Psychology* [69]. It is a rich debate with different theoretical schools in the psychology of the time, including a critique of mechanical attempts at building a Marxist psychology.

“The *direct* application of the theory of *dialectical materialism* to the problems of natural sciences and in particular top the group of biological sciences or psychology is *impossible*, just as *it is impossible to apply it directly* to history and sociology. [...] Like history, sociology is in need of the intermediate *special theory* of historical materialism which explains the *concrete* meaning, for the given group of phenomena, of the abstract laws of

dialectical materialism. In exactly the same way we are in need of an as yet undeveloped but inevitable theory of biological materialism and psychological materialism as an intermediate science which explains the concrete application of the abstract theses of dialectical materialism to the given field of phenomena. [...] In order to create such intermediate theories – methodologies, general sciences – we must reveal the *essence* of the given area of phenomena, the laws of their change, their qualitative and quantitative characteristics, their causality, we must create categories and concepts appropriate to it, in short, we must create our *own Das Kapital*.” [69, p. 330].

The entire evolution of cultural-historical activity theory may be seen as an ongoing attempt to create such a *Das Kapital* for our disciplines. Like the work of Marx, activity theory is an unfinished project. Moreover, it is not confined to the discipline of psychology but speaks to the human sciences across disciplinary boundaries.

An early study of the Helsinki school focused on the work and thinking of janitorial cleaners employed by a large commercial cleaning company [19]. Their task was to clean offices and other facilities, following carefully measured time schedules and work instructions. The researchers videotaped a number of cleaners working on standard office rooms. Some of their ways of working struck the researchers as peculiar. For example, when the subjects were asked to vacuum the floor of an office room, many of them first dragged the vacuum cleaner to the rear end of the room, then started vacuuming from there, moving clumsily backwards toward the door. When they were asked to mop the floor, many of them would move the mop on the floor as they were if washing the floor rather than moving loose dirt toward a pile with the help of the mop. When these actions were shown to the subjects on the video, some of them were embarrassed and laughed at their own performance. When asked why they were conducting the actions in these ways, several subjects referred to the ways they had learned at home.

“I always start from the farthest corner. At home, too. The same with mopping. So that I don’t leave my own footprints there. Well, in vacuum cleaning you actually don’t leave footprints, but I am used to that. At home I have a floor where even a single drop of water shows. I guess I’ve learned from that.” [Subject 11] [19, p. 12].

The researchers interpreted these findings as evidence of layers of history actively influencing the present-day actions of the subjects.

“In the European scale, the strengthening of cleaning was obviously connected with the rise of the bourgeoisie and the protestant ethics, placing high premium on discipline, purity and order. In Finland, the first decades of [the 20th] century were a period of intensive propaganda for modern home-making and regular weekly cleaning, against the spread of diseases (especially tuberculosis) and parasites. This resulted in the breakthrough of the model of home cleaning which has persisted till today. The central idea is to clean all furniture and surfaces, especially the floors, once a week (on Saturday, nowadays on Friday) very thoroughly, with plenty of water when possible.

Now the objective basis for this model has vanished as general conditions of hygiene and medical care as

well as the quality of housing have improved. Thus, we are left with the persistent *form* of the model of home cleaning, turned more or less into a ritual. The original struggle against diseases and parasites has been replaced with the objective of absolute visible cleanness and orderliness — an elusive objective that can be reached only momentarily. [...] The rules of home cleaning are those of regularity and status quo. Cleaning takes place regularly and is composed of regular components; its unspoken norm is to restore the order and appearance which have been disturbed during the week after the previous cleaning. All this has predominantly tacit, implicit character.” [19, p. 6].

In commercial cleaning, a radically different model has emerged. Wage laborers with minimal specific training perform this work. Effective floor cleaning machinery and powerful chemicals are used, and standardized written work instructions have replaced the tacit traditions of home cleaning. The object of work is now a carefully measured and normed “cleaning area,” and the outcome is an agreed-upon “appropriate level of cleanness.” The worker is a member of a centralized cleaning service. The rules are those of evening-shift wage labor. This mass-production model of cleaning has led to impressive increases in efficiency, but also to increasingly aggravated contradictions of its own.

The historical model of craft-like home cleaning influenced, sometimes dominated, the everyday actions of the cleaners working in an environment of mass production. This created a tension which the research team at the time called “the cleaner’s bad conscience.” Workers repeatedly expressed their dissatisfaction with the kind of cleanness they were able to achieve in their work. They saw their work as degenerated home cleaning. This led them to try more than was prescribed in the work instructions: more repetitions, more efforts at reaching visible ‘absolute cleanness’ in the image of weekly home cleaning. This often meant excessive stress and time pressure at work.

So should cleaners be taught to reject home cleaning and adapt to the norms of mass production? That would merely reproduce capitalist modernization in its patronizing and oppressive sense. The researchers found it more meaningful to invite the cleaners to analyze the inner contradictions in the mass production model and to identify emerging new possibilities to move beyond mass production.

The example of the cleaners contains a general lesson. History is always present in human activity. Layers of historically earlier forms of the activity can be both constraints and resources. They persist in practical routines, in ways of thinking, in material artifacts and rules. If one tries to understand activity without historicity, consequential phenomena such as the cleaners’ bad conscience are easily dismissed as arbitrary irrational features, even pathologies, of certain individuals or classes of people, to be eliminated or, at best, ignored.

The founders of activity theory — Vygotsky, Leont’ev and Luria — called their approach cultural-historical. History was important for them as a foundation of a new kind of human science.

“To study something historically means to study it in motion. Precisely this is the basic requirement of the dialectical method. To encompass in research the process of development of some thing in all its phases and changes — from the moment of its appearance to its death — means to reveal its nature, to know its essence, for only in movement does the body exhibit that it is. Thus, historical study of behavior is not supplementary or auxiliary to theoretical study, but is the basis of the latter.” [69, p. 43].

Sylvia Scribner [61, p. 122] summarized Vygotsky’s approach to history with the help of two foundational propositions.

“(1) Because socially organized activities change in history, the human nature they produce is not a fixed category that can be described once and for all; it is a changing category. [...] (2) Changes in social activities that occur in history have a directionality: hand-powered tools precede machines, number systems come into use before algebra. This movement is expressed in the concept of historic *development* in contrast to the generic concept of historic *change*, and its reflection in human mental life is expressed as mental *development*.”

S. Scribner [61] distinguished three levels of history in Vygotsky’s work, namely the level of general history, the level of ontogeny or individual development, and the level of formation of higher psychological functions. Scribner herself comments that for Vygotsky general history “appears as a single unidirectional course of sociocultural change” (p. 138). To take account of the plurality of different paths of societal development, she suggested an additional second level of history, namely the history of individual societies.

Both Vygotsky and Scribner adhered to the materialist view of history developed by Karl Marx and Friedrich Engels, commonly called historical materialism. A number of researchers who take inspiration from Vygotsky’s work have, however, distanced themselves from this view of history.

This distancing was most clearly articulated by J. Wertsch, P. del Rio and A. Alvarez [70]. They pointed out that Vygotsky made rather categorical distinctions between “primitive man” and “cultural man,” or between rudimentary and higher mental functions. These reflect Vygotsky’s adherence to the Enlightenment idea of universal human progress and evolutionism which interpret differences in terms of levels on a single linear dimension of progress. These notions easily lead to derogatory and discriminatory assessments of people and behaviors that differ from our western ideal of progress. Therefore, Wertsch and his co-authors abandoned the name “cultural-historical approach” and chose to call their approach “sociocultural” instead.

Wertsch and his co-authors did not explicate what happens to historicity once one drops history from the name of the approach. History just seemed to fade away. It is easy to agree with Wertsch and his co-authors on the untenability of evolutionism. Scribner suggested her second level of history — the development of diverse individual societies — precisely to overcome the idea of a single line of progress. But does the rejection of evo-

lutionism mean that historical materialism is useless, or that historicity is not needed as a foundational principle in analyses of human activity?

Historical materialism sees the productive forces, that is, the means of production and labor-power, as the prime mover of historical change. Marx [44, p. 21] wrote:

“At certain stage of development, the material productive forces of society come into conflict with the existing relations of production. [...] From forms of development of the productive forces these relations turn into their fetters. Then begins an epoch of social revolution. The changes in the economic foundation lead sooner or later to the transformation of the whole immense superstructure.”

This statement has often been interpreted in a deterministic way, implying that a certain fixed course of historical development is universally inevitable. When such mechanical interpretations are rejected, will there be anything left of historical materialism? Scholars such as A. Levine [40] and A. Callinicos [7] argue that this is indeed the case.

“Reduced to its rational kernel, historical materialism is a theory of possible production relations, an account of what can be placed on the historical agenda, in view of the level of development of productive forces. [...] It will not by itself explain historical change; nor will it predict the outcomes of class struggles. But it does give an account of the conditions for the possibility of change and of the options available to classes in struggle.” [40, p. 194–195].

Callinicos [7] specifies this further by pointing out that “the productive forces indeed tend to develop throughout history, but there are powerful counter-tendencies which may override this tendency” (p. 104). He summarizes the valid core of historical materialism as follows.

“These three elements — the existence of a weak tendency for the productive forces to develop, the consequent likelihood of organic crises and the primacy of structural capacities and class interests in explaining social action — make of classical historical materialism a theory of history, a theory, that is, which claims to account for the dynamic processes through which social systems are transformed. It is also one in which human agency plays a pivotal role [...]” [7, p. 106].

In current research on the history of technology, the works of C. Perez [47] and Freeman and Louca [30] stand out as powerful examples of the value of historicity focused on the development of productive forces. Perez [31, p. 8–21] identifies five technological revolutions and, correspondingly, five successive techno-economic paradigms that have emerged and dominated in the last 200 years. The five techno-economic paradigms reveal very general contours of the productive forces [2]. The actual modes of organizing work are not very clearly described. There are other useful accounts of history, such as those of B. Victor and A.C. Boynton [66], which focus on the organization of work activities.

These excursions into the history of productive forces demonstrate the viability of analyzing human activities in historical and materialist perspective. Any real activity, just like any real society, is bound to be a mix of

elements that represent different co-existing and competing historical periods, paradigms or types. But there is tremendous potential power in analysis and identification of *exactly what kind of a mix a given activity is*. Phenomena and practices that otherwise look irrational or bizarre become understandable. Change efforts can be put in a historical perspective that reveals genuine possibilities, futile sidetracks, and outright regressions.

Of course the periodizations and categorizations of Perez or Victor and Boynton are not universal molds that can be imposed as such on any kind of activity. Their concepts derive from the worlds of technology, economy and work. When the analysis moves to the domains of, say, politics and ideology, or more specifically to school learning, play, or family life, the historical paradigms and types have to be rediscovered and renamed accordingly. They will surely have connections to the schemas discussed above, but they will also be substantively different.

Limitations of these periodizations can be readily seen when we turn to the most urgent and fatal challenge of our time, climate change and environmental destruction. As P.S. Adler [1] points out, “the best evidence suggests that we have only years, not decades, to restore the balance before we tip the planet’s natural systems into irreversible cycles that will wreak havoc on vast swathes of nature and on the lives of billions of people around the world.” The periodizations of Perez and others say next to nothing about this. They focus so exclusively on the development of productive forces that the relations of production, above all the consequences of capitalist markets, profit motive and commoditization, are obscured or left out. Adler’s reading of Karl Polanyi’s [48] classic analysis of the disembedding of the market from the civil society, together with P. Linebaugh’s [42] analysis of the history of commons, offer important opportunities to begin to overcome these limitations.

Returning to Vygotsky’s and Scribner’s levels of history, despite their limitations, the frameworks of Perez and Victor and Boynton are generalizations that help us make sense of broad and deep transformations in societies, institutions and organizations. They also reveal a gap in Scribner’s four levels. Concrete collective activity systems, such as organizations and communities, have also histories. The history of a specific activity system — be it your family, my school, her workplace, or our local community — needs to be recognized as a level of its own, between the history of specific societies and the history of an individual. It is this activity-genetic level of history that is most relevant and productive in change-oriented empirical research based on activity theory.

DIALECTICS

The notion of unity of opposites is a key tenet of dialectics. It means that the opposing forces in a system require one another and, through their interplay, form the basis of the development of the system.

“[...] contradiction is the root of all movement and vitality; it is only so far as something has a contradiction within it that it moves, has an urge and activity.” [34, p. 439].

This statement of G.W.F. Hegel captures key characteristics of the dialectical stance of activity theory. It is a theory in search of movement and development, and it looks for inner contradictions in activity systems as the source of such movement and change.

Being a historical and materialist approach, activity theory is not satisfied with a depiction of contradictions as abstract relations and interactions, a stance that C. Tolman [65] in his critique of Klaus Riegel's dialectical psychology aptly characterized as "metaphysic of relations."

"In short, from a dialectical point of view, the dialogue or any other interaction cannot explain anything; it remains itself to be explained [...]" [65, p. 46].

Developmentally significant contradictions cannot be effectively dealt with merely by combining and balancing competing priorities. Seeing contradiction as an inconsistency or competition between separate forces or priorities corresponds to the general mechanistic tendency to replace inner systemic contradiction with outer, external oppositions. Inner contradictions need to be creatively and often painfully resolved by working out a new "thirdness," something qualitatively different from a mere combination or compromise between two competing forces.

As contradictions are historically emergent and systemic phenomena, in empirical studies we have no direct access to them. Contradictions must therefore be approached through their manifestations. We may also treat manifestations as constructions or articulations of contradictions. In other words, contradictions do not speak for themselves, they become recognized when practitioners articulate and construct them in words and actions. However, contradictions cannot be constructed arbitrarily. Their material and historical power is not reducible to situational articulations and subjective experiences [25].

Contradiction is a foundational philosophical concept that should not be equated with paradox, tension, inconsistency, conflict or dilemma. Many of the terms misused as equivalents of contradiction may better be understood as manifestations of contradictions. Contradictions are historical and must be traced in their real historical development.

The primary contradiction of capitalism resides in every commodity, between its use value and exchange value. Secondary contradictions emerge between constitutive components of an activity system, e.g., between the changing object and stagnant instruments or rules. Tertiary contradictions appear when the activity system is reshaped and the new pattern collides with vestiges of the old one, generating resistance and forcing the new model to be modified. Finally quaternary contradictions take shape when the transformed activity system interacts with its partner activities, generating tensions, disturbances and innovations in the network relations of involved activity systems [18].

A study from the Helsinki school illustrates this evolution of contradictions. Our research group was asked to conduct a Change Laboratory intervention [56] in the City Center Library of University of Helsinki, to help

the library practitioners redesign their services for researchers to meet the challenges of the digital age.

The primary contradiction in the work activity of these academic librarians was that between providing of useful services to researchers primarily free of charge on the one hand and showing that the services provided are actually worth the resources spent. Secondary contradictions emerged when internet-based services such as Google appeared and made it possible for researchers to conduct searches and obtain literature by sitting at their personal computer screens, not having to visit the library anymore. This meant that researchers visited increasingly seldom the library. The traditional object of academic library work — researchers and their needs for books and journal articles — seemed to disappear. The ensuing secondary contradictions in the activity system of the library are schematically depicted in Figure 2 with the help of the two lightning-shaped arrows and the associated speech bubbles.

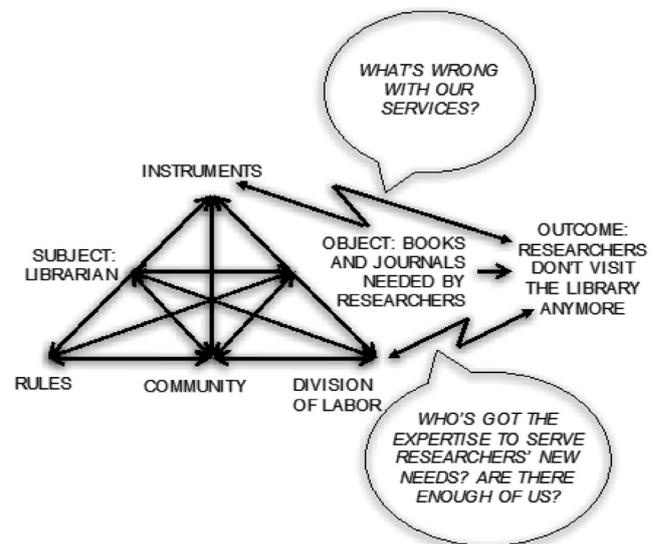


Fig. 2. Secondary contradictions in the work activity of academic librarians

These secondary contradictions are closely connected to the primary contradiction, as evidenced by the arguments made public in 2010 by Daniel Greenstein, Vice Provost for academic planning and programs in the University of California System.

"University libraries are principally reliant for their operating revenues on the same funds that meet the costs of a university's academic departments (including, crucially, the faculties' salaries). Bluntly, those funds are diminished by the global recession, and it is not clear that they are likely to rebound, let alone resume their growth, any time soon. [...] Why invest much at all in the university library when journals, reference works, and soon tens of millions of books and monographs, both in and out of print, will be available effortlessly and online? We're already starting to see a move on the part of university libraries... to outsource virtually all the services [they have] developed and maintained over the years. Now, with universities everywhere still ailing from last year's economic meltdown, administrators are

more likely than ever to explore the dramatic restructuring of library operations. [...] As archives and services at individual libraries shrink, so would their staffs – and so would their operating costs.” [32, p. 121–122].

In collaboration with their researcher clients, the library practitioners designed a new model for researcher services and for the internal organization of the library [23; 24]. The new model was still based on the clusters of disciplines, in that the City Center campus library itself was created to serve humanities and social sciences. However, the model was also strongly future-oriented, in that it aimed at generating novel digital services for research groups to be co-designed and implemented in *knotworking* collaboration between library practitioners and research groups. In other words, the core object of the activity was radically re-envisioned in the model, but the larger organizational frame given to the practitioners at that point in time limited the expansive potential of the model [57].

The tertiary and quaternary contradictions were intertwined in this case. The new city center library started to implement their new model, with some expected local resistance, not only from librarians but also from the clients.

“Library director: We have difficulties to uncover researchers’ needs. We have seen this with researchers but also with the research administration; people often do not realize what they might get from the library.” [57, p. 254].

Only a short while after the implementation began, the entire university library system was radically reorganized. The idea of this reorganization was to move beyond disciplines as basis for division of labor and services. The dialectical tension between the local and global models became a source of movement driven by the emerging expansive object. This quaternary contradiction led to a new cycle of expansive learning, focused on creating and implementing digital services produced in collaboration with various outside agencies. In response to this challenge, the practitioners are modeling their own collective future competences by expanding them in both socio-spatial scope and interactive depth [57].

TWO EPISTEMOLOGICAL-METHODOLOGICAL PRINCIPLES

There are two foundational principles of activity-theoretical research, namely, the principle of double stimulation and the principle of ascending from the abstract to the concrete [52]. These principles are not abstract. They must be connected to and made alive with a real object-oriented activity system or a constellation of activity systems.

A line of ongoing research focuses on double stimulation as the generative principle behind transformative agency [53; 59; 54]. A. Sannino [52] characterizes the principle of double stimulation as “the mechanism with which human beings can intentionally break out of a conflicting situation and change their circumstances or solve difficult problems” (p. 584). Vygotsky’s simple example of waking up by means of counting to three con-

denses well the dynamics of double stimulation we have been seeking to emphasize.

“Upon waking, a person knows, on the one hand, that he must get up and, on the other hand, that he would like to sleep a little longer. A conflict of motives develops. The two motives alternate, appear in consciousness, and replace each other. (...) A typical, developed voluntary act in the same situation exhibits the following three instants: (1) I must get up (motive), (2) I don’t want to get up (motive), (3) counting to oneself: one, two, three (auxiliary motive) and (4) at the count of three, rising. This is the introduction of an auxiliary motive, creating a situation from within that makes me get up. (...) I got up at the signal “three” (...) but I, myself, through a signal and a connection with it, got up, that is, I controlled my behavior through an auxiliary stimulus.” [69, p. 211].

In double stimulation, the first stimulus is the problem itself. Human beings employ external artifacts, which they turn into signs by filling them with significant meaning. Such signs are used as second stimuli with the help of which the subject gains control of his or her action and constructs a new understanding of the initial problem. Through this process, according to Vygotsky [68, p. 356], the subject transforms a meaningless situation into one that has a clear meaning.

This view of double stimulation is based on explicit elements available in a text by Vygotsky [69] on self-control. These elements have been worked into a model of the mechanism of double stimulation [53]. The model depicts how volitional actions emerge through several phases in which *conflicts of motives* and *second stimuli* stand out as crucial factors. A close examination of Vygotsky’s work makes it clear that double stimulation is the foundational mechanism by which agentive action and will emerge. Thus, double stimulation is the gateway to all higher mental functions. Its starting point is a conflict of motives. If the conflict of motives and the volitional aspect are disregarded, double stimulation is easily reduced to just another term for the general notion of mediation.

In connection to his principle of double stimulation Vygotsky [69] refers to a waiting experiment, also called the experiment of the meaningless situation, as an example of human beings’ ability to agentively transform their circumstances. Double stimulation emerges as a process involving two apparatuses. Apparatus 1 consists in forming the decision to act in a certain way with the help of an auxiliary motive (e.g., the clock striking at a certain time). Apparatus 2 consists in implementing this decision.

Apparatus 1 is rather complex and involves four different phases. In Phase 1 one is confronted with conflicting stimuli. For instance, a participant in the waiting experiment is asked to take part in an experiment but the experimenter leaves. In Phase 2 conflicting stimuli activate motives which themselves are in conflict with one another. In the waiting experiment the two conflicting motives may be (1) having committed to stay in the room, and (2) wanting to leave. Phase 3 is strictly dependent on Phase 2 as the conflict of motives gives the impulse to select a stimulus and to convert it into an auxiliary motive aimed

at overcoming the conflict. The participant in the waiting experiment may select the clock, which acquires the significance of an auxiliary stimulus, forming the decision to leave when the clock strikes a certain time. Phase 4 consists in establishing a connection between the decided reaction and the direct appearance of the auxiliary stimulus, when for instance the clock marks the determined time. Phase 4 starts with what Vygotsky refers to as “the real or actual conflict” of stimuli (Phase 4a). In the waiting experiment, the colliding stimuli in this phase can be the striking of the clock at the determined time and the person’s fear or reluctance to actually act in a way that breaks the initial commitment. Phase 4b is the “closure of the connection between the given stimulus and the reaction” which consolidates the decision to be subsequently followed in Apparatus 2. In Apparatus 2 the decision may be implemented as if one would be following instruction, with the difference, however, that here the instruction has been purposefully created by the person herself.

Two series of waiting experiments were conducted at CRADLE in Helsinki to test this model. The first series was conducted with 25 individual participants [59]. The second set was conducted with seven collectives of 3 to 4 arbitrarily selected participants each [54]. The experiment with individuals validated the model but also suggested two extensions to it. First, volitional actions in the waiting experiment emerge through a process involving a broader array of possibilities that one might think only by reading Vygotsky’s descriptions. Contents stemming from the participants’ life activity overlap and interact with contents stemming from the experimental setting. Whereas Vygotsky was dealing only with actions limited to the experimental setting, contents from the life activity bring in the broader context in which emerging volitional actions are embedded. Second, fluid and iterative movements may occur between and within the phases of the model, due to the interference of the life activity in the experiment or to conformity to the experimental setup. The fluid evolution of the phases indicates both fragility and strength of the emergence of volitional action. On the one hand, this process is exposed to the burden of conflictual clashes. On the other hand, it is filled with a wide array of possibilities to change and influence one’s circumstances.

The principle of ascending from the abstract to the concrete as the general method of dialectical thought was explicated and developed by E.V. Il’enkov [36] and V.V. Davydov [12]. Ascending from the abstract to the concrete is a method of grasping the essence of an object by tracing and reproducing theoretically the logic of its development, of its historical formation through the emergence and resolution of its inner contradictions. A theoretical concept is initially produced in the form of an abstract, simple explanatory relationship, a *germ cell*. This initial abstraction is step-by-step enriched and transformed into a concrete system of multiple, constantly developing and expanding manifestations. In other words, the initial simple idea is transformed into a complex new form of practice.

In this framework, abstract refers to partial, separated from the concrete whole. In empirical thinking based on

comparisons and classifications, abstractions capture arbitrary, only formally interconnected properties. In dialectical-theoretical thinking, based on ascending from the abstract to the concrete, a germ cell abstraction captures the smallest and simplest, genetically primary unit of the whole functionally interconnected system [12; 28; 35]. Ascending from the abstract to the concrete is achieved through specific epistemic or learning actions. Together these actions form an expansive cycle or spiral [18].

A series of recent studies on home care encounters conducted by researchers of the Helsinki school exemplify the importance of the two principles in empirical and interventionist research based on activity theory. In one study [21], 26 home care visits to elderly clients of the municipal home care services of the city of Helsinki were videotaped. The home care workers and clients faced the task of implementing regular physical mobility exercises with the help of a Mobility Agreement and a supporting booklet depicting key exercises. The encounters were analyzed in order to identify occurrences of double stimulation. Home care workers and clients used six kinds of artifacts in the visits, namely (1) furniture and domestic objects, (2) food and/or the microwave oven, (3) medications and medicine dispensers, (4) blood pressure meters, (5) movement-supporting devices, and (6) the mobility agreement and the associated mobility exercise booklet. These artifacts were used both restrictively, to avoid engaging in the implementation of the Mobility Agreement, and expansively, to initiate and support actions of implementing the Mobility Agreement.

A case from the analysis illustrates the potential and the complexity of double stimulation in everyday work activities facing conflicts of motives. In this case, the client was a woman born in 1922. The client felt that her mobility had deteriorated and due to dizziness she did not dare to walk alone outside her home. The client had a Mobility Agreement according to which her mobility is systematically supported by means of taking the trash out together with the visiting home care worker. The conflict of motives was manifested by both actors as an internal tension between the desire to move independently and the concern for safety.

“In terms of double stimulation, this case seems to represent Phase 4a – the “real” conflict of stimuli – in Sannino’s [53] model. In the negotiation of the client’s Mobility Agreement, the trash bag [was] constructed as a second stimulus for prompting the volitional action on going out regularly. However, when a home care worker actually visits the client and the “real” conflict of stimuli occurs (i.e., a conflict between the stimulus of the home care worker offering to take out the trash alone and the auxiliary stimulus of the trash bag as a sign for initiating a volitional action of mobility), the closure is often not reached and the actors resort to the standard script of doing for rather than doing together with the client. The events in this encounter demonstrate that the construction and functioning of double stimulation can be a lengthy iterative process in which the initially created second stimulus has to be revitalized by means of reflection and reformulation. The trash bag was initially used in an expansive way when the Mobility Agreement was

created, but it needed to be rediscovered and refilled with meaning to ensure its functioning in real conflicts of stimuli.” [21, p. 57–58].

Focusing on the principle of ascending from the abstract to the concrete, we analyzed the formation of the theoretical concept of sustainable physical mobility among the home care clients and workers [23]. Importantly, this concept was not acquired with the help of instruction — the concept was not yet there, so there were no instructors who could have taught it. The concept emerged as the practitioners and their elderly patients worked with practical mobility exercises and obstacles to their accomplishment.

In the rich variety of encounters in which the participants were trying to implement steps toward physical mobility in home care, we noticed a recurring item that seemed to function as a key that opened up pathways to increasingly independent forms of mobility for the elderly. This item was the simple action of standing up from a chair. To take any other action of physical mobility, the patient would usually have to stand up — and this action itself was often the source of both great tension and great elation. We identified it as the germ cell of the emerging concept of sustainable mobility. This germ cell is a contradictory unity of opposites: the quest for safety on the one hand, and the quest for autonomy on the other hand.

This study demonstrates that the new germ cell model is typically not just verbal. In home care, the germ cell is a physical, bodily movement. Modeling and representing these germ cell in different modalities, including language, is necessary — but the starting point is in lived reality rather than in the world of verbal definitions.

The study also demonstrates that ascending to the concrete — despite the vertical term *ascending* — is also horizontal and relational expanding. In our analysis, we identified six *trails* from the abstract germ cell to the concrete practice of mobility, including improving one’s posture, taking regular walks, monitoring one’s own health, even teaching mobility exercises to one’s relatives. These trails were identified in the life of just one patient. Among the elderly population implementing the concept, the variety of such trails is enormous. The analysis of the trails to the concrete demonstrates that the germ cell expands to all directions and connects the old person to other actors. This does not mean that the vertical dimension of concept formation and learning should be ignored: a theoretical concept based on a germ cell abstraction opens up a very wide horizon of possibilities [16]. This does not mean that theoretical concepts are always more useful or “better” than other kinds of concepts and representations. To the contrary, what matters is movement, complementarity and interplay between different types or “levels” of conceptualization and representation.

FORMATIVE INTERVENTIONS

In its developed form, research based on activity theory develops and applies a methodology of its own. From the very beginning, activity theory has prioritized

“transforming experiments” [6] or “genetic-modeling experiments” [72] as methods of research that goes beyond the given and generates new, emancipatory forms of activity. We call these efforts formative interventions and we see them as the core of the emerging methodology of activity-theoretical research [27].

Here methodology is understood as the bridge between theory and data. In other words, methodology is more than a collection of specific methods or techniques. It puts forward and implements a theory-driven set of principles, or “an argumentative grammar” [37], upon which the choice of specific methods is based, starting from data collection and reaching all the way to conceptual interpretation of the findings. The argumentative grammar of activity-theoretical methodology is condensed in the principles of double stimulation and ascending from the abstract to concrete, discussed above.

There are several current attempts based on or inspired by cultural-historical activity theory aimed at developing formative intervention methods. These include the French Clinic of Activity [9; 10], the social design experiments of K.D. Gutiérrez and A. S. Jurow [33], and the Finnish Change Laboratory [58; 56] [67].

Change Laboratory interventions are designed so that the participants are faced with tasks that call for expansive learning actions and eventually for a more or less complete expansive cycle. In other words, the process of a formative intervention follows specific methodological steps, which are flexible, but not situationally improvised. The process follows and nurtures the logic of ascending from the abstract to the concrete. In expansive learning the very subject of learning is transformed from an individual to a collective activity system or a network of activity systems. Initially, individuals begin to question the existing order and logic of their activity. As more actors join in, a collaborative analysis and modeling of the zone of proximal development are initiated and carried out. Expansive learning leads to the formation of a new, expanded object and pattern of activity oriented at the object.

Aimed at expansive learning, Change Laboratory interventions put into use the principles of double stimulation and of ascending from the abstract to the concrete, typically with a carefully planned sequence of tasks and learning actions. This does not mean that the interventionist’s plan is smoothly implemented. To the contrary, participants in formative interventions commonly take over the process at some point and generate deviations from the interventionist’s intentions. These deviations reveal gaps between the interventionist’s object and the participants’ objects — gaps that need to be negotiated. The deviations, gaps and negotiations are important instances of emerging transformative agency among the participants [26].

NEW CHALLENGES

Activity theory was born from revolutionary roots. Today activity theory is facing new challenges that are directly related to the fate of life on our planet. The rap-

idly advancing global environmental crisis requires transformations that go beyond the confines of specific well-bounded activities. The current challenges boil down to building alternatives to capitalism. Adler [1, p. 13] points out that such alternatives are actually emerging quietly, below the surface of public awareness “where city governments team up with local credit unions, pension funds, and unions to support the emergence of local cooperatives, where these cooperatives join together in planning processes that involve the local community, where these cooperatives’ products respond to real economic, social, and environmental needs as determined by the people involved.” Alternatives to capitalism are not limited to the creation of the novel organizations and institutions Adler enumerates. They also emerge within established institutions such as education and health care, as innovative alternatives to privatization and commoditization.

Литература

1. Adler P.S. The environmental crisis and its capitalist roots: Reading Naomi Klein with Karl Polanyi // *Administrative Science Quarterly*. 2015. Vol. 60(2). P. 13–25.
2. Adler P.S., Heckscher C.C. (eds.). The firm as a collaborative community. New York: Oxford University Press., 2006. 608 p.
3. Arievitich I.M. Beyond the brain: An agentive activity perspective on mind, development, and learning. New York: Springer, 2017. 288 p.
4. Bang J. Building a new house out of old materials – and with sharpened tools // *Culture & Psychology*. 2008. Vol. 14(1). P. 45–55.
5. Blunden A. An interdisciplinary theory of activity. Chicago: Haymarket Books, 2010. 348 p.
6. Bronfenbrenner U. Toward an experimental ecology of human development // *American psychologist*. 1977. Vol. 32(7). P. 513–532.
7. Callinicos A. Making history: Agency, structure, and change in social theory. Chicago: Haymarket Books, 2009. 290 p.
8. Chaiklin S.E., Hedegaard M.E., Jensen U.J.E. (eds.). Activity theory and social practice. Aarhus: Aarhus University Press, 1999. 381 p.
9. Clot Y. Clinic of activity: The dialogue as instrument // *Learning and expanding with activity theory* / A. Sannino (eds.). Cambridge: Cambridge University Press, 2009. P. 286–302.
10. Clot Y., Kostulski K. Intervening for transforming: The horizon of action in the Clinic of Activity / *Theory and Psychology*. Vol. 21(2–11). P. 681–696.
11. Cole M. Cultural psychology: A once and future discipline. Cambridge: Harvard University Press, 1996. 416 p.
12. Davydov V.V. Types of generalization in instruction: Logical and psychological problems in the structuring of school curricula. Reston: National Council of Teachers of Mathematics, 1990. 438 p.
13. Dillard E.A. Lesson study in higher education: Mediating language teacher conceptual development through shared inquiry: Unpublished doctoral dissertation, University of Minnesota, Minneapolis, 2016. 152 p.
14. Engeström Y. Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit, 1987. 338 p.
15. Engeström Y. Developmental work research: Expanding activity theory in practice. Berlin: Lehmanns Media, 2005. 453 p.

There is a global push toward formative interventions in multi-activity constellations and coalitions which may include local communities, social movements, educational institutions, private companies, public service agencies, non-governmental associations, and policy-making administrative and political bodies. Not accidentally, initiatives for such bold formative interventions are increasingly coming from the global south. The need for these interventions typically stems for contradictions connected to the quest for social and economic equity and ecological sustainability. The revolutionary challenge for activity theory is to develop and put to use conceptual foundations and methodological solutions in the service of such interventions. This is also the way to deepen our understanding of human potentials in the cultural-historical conditions of the 21st century.

References

1. Adler P.S. The environmental crisis and its capitalist roots: Reading Naomi Klein with Karl Polanyi. *Administrative Science Quarterly*, 2015. Vol. 60(2), p. 13–25.
2. Adler P.S., Heckscher C.C. (eds.), The firm as a collaborative community. New York: Oxford University Press., 2006. 608 p.
3. Arievitich I.M. Beyond the brain: An agentive activity perspective on mind, development, and learning. New York: Springer, 2017. 288 p.
4. Bang J. Building a new house out of old materials – and with sharpened tools. *Culture & Psychology*, 2008. Vol. 14(1), pp. 45–55.
5. Blunden A. An interdisciplinary theory of activity. Chicago: Haymarket Books, 2010. 348 p.
6. Bronfenbrenner U. Toward an experimental ecology of human development. *American psychologist*, 1977. Vol. 32(7), pp. 513–532.
7. Callinicos A. Making history: Agency, structure, and change in social theory. Chicago: Haymarket Books, 2009. 290 p.
8. Chaiklin S.E., Hedegaard M.E., Jensen U.J.E. (eds.), Activity theory and social practice. Aarhus: Aarhus University Press, 1999. 381 p.
9. Clot Y. Clinic of activity: The dialogue as instrument. In Sannino A. (eds.), *Learning and expanding with activity theory*. Cambridge: Cambridge University Press, 2009, pp. 286–302.
10. Clot Y., Kostulski K. Intervening for transforming: The horizon of action in the Clinic of Activity. *Theory and Psychology*, 2–11. Vol. 21, pp. 681–696.
11. Cole M. *Cultural psychology: A once and future discipline*. Cambridge: Harvard University Press, 1996. 416 p.
12. Davydov V.V. Types of generalization in instruction: Logical and psychological problems in the structuring of school curricula. Reston: National Council of Teachers of Mathematics, 1990. 438 p.
13. Dillard E.A. *Lesson study in higher education: Mediating language teacher conceptual development through shared inquiry*. Unpublished doctoral dissertation, University of Minnesota, Minneapolis, 2016. 152 p.
14. Engeström Y. Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit, 1987. 338 p.
15. Engeström Y. Developmental work research: Expanding activity theory in practice. Berlin: Lehmanns Media, 2005. 453 p.

16. Engeström Y. Enriching the theory of expansive learning: Lessons from journeys toward coconfiguration // *Mind, Culture, and Activity*. 2007a. Vol. 14(1–2). P. 23–39.
17. Engeström Y. From communities of practice to mycorrhizae // *Communities of Practice: Critical perspectives* / J. Hughes (eds.). London: Routledge, 2007b. P. 41–54.
18. Engeström Y. Learning by expanding: An activity-theoretical approach to developmental research. 2nd edition. Cambridge: Cambridge University Press, 2015. 338 p.
19. Engeström Y., Engeström R. Developmental work research: The approach and an application in cleaning work // *Nordisk Pedagogik*. 1986. Vol. 6(1). P. 2–15.
20. Engeström Y., Kaatrakoski H., Kaiponen P., Lahikainen J., Laitinen A., Myllys H., Rantavuori J., Sinikara K. Knotworking in academic libraries: Two case studies from the University of Helsinki // *Liber Quarterly*. 2012. Vol. 21(3/4). P. 387–405.
21. Engeström Y., Kajamaa A., Nummijoki J. Double stimulation in everyday work: Critical encounters between home care workers and their elderly clients // *Learning, Culture and Social Interaction*. 2015. Vol. 4. P. 48–61.
22. Engeström Y., Miettinen R., Punamäki R.L. (eds.). Perspectives on activity theory. Cambridge: Cambridge University Press, 1999. 480 p.
23. Engeström Y., Nummijoki J., Sannino A. Embodied germ cell at work: Building an expansive concept of physical mobility in home care // *Mind, Culture, and Activity*. 2012. Vol. 19(3). P. 287–309.
24. Engeström Y., Rantavuori J., Kerosuo H. Expansive learning in a library: Actions, cycles and deviations from instructional intentions // *Vocations and Learning*. 2013. Vol. 6(1). P. 81–106.
25. Engeström Y., Sannino A. Discursive manifestations of contradictions in organizational change efforts: A methodological framework // *Journal of Organizational Change Management*. 2011. Vol. 24(3). P. 368–387.
26. Engeström Y., Sannino A. Whatever happened to process theories of learning? *Learning, Culture and Social Interaction*. 2012. Vol. 1(1). P. 45–56.
27. Engeström Y., Sannino A., Virkkunen J. On the methodological demands of formative interventions // *Mind, Culture, and Activity*. 2014. Vol. 21(2). P. 118–128.
28. Falmagne R.J. The abstract and the concrete // *Sociocultural psychology: Theory and practice of doing and knowing* / L.M. Martin, K. Nelson & E. Tobach (Eds.). Cambridge: Cambridge University Press, 1995. P. 205–228.
29. Fichtner B. Lernen und Lerntätigkeit: Ontogenetische, phylogenetische und epistemologische Studien. Berlin: Lehmanns Media, 2008. 372 p.
30. Freeman C., Louçã F. As time goes by: From the industrial revolutions to the information revolution. Oxford: Oxford University Press, 2001.
31. Giest H., Rückriem G. Tätigkeitstheorie und (Wissens-) Gesellschaft: Fragen und Antworten aus tätigkeitstheoretischer Forschung und Praxis. Berlin: Lehmanns Media, 2010.
32. Greenstein D. Strategies for sustaining the university library // *Portal: Libraries and the Academy*. 2010. Vol. 10(2). P. 121–125.
33. Gutiérrez K.D., Jurow A.S. Social design experiments: Toward equity by design // *Journal of the Learning Sciences*. 2016. Vol. 25(4). P. 565–598.
34. Hegel G.W.F. Hegel's science of logic. New York: Humanities Press, 1969.
35. Il'enkov E.V. Dialectical logic: Essays on its history and theory. M.: Progress Publishers, 1977.
36. Il'enkov E.V. The dialectics of the abstract and the concrete in Marx's Capital. M.: Progress, 1982.
16. Engeström Y. Enriching the theory of expansive learning: Lessons from journeys toward coconfiguration. *Mind, Culture, and Activity*, 2007a. Vol. 14(1–2), pp. 23–39.
17. Engeström Y. From communities of practice to mycorrhizae. In Hughes J. (eds.), *Communities of Practice: Critical perspectives*. London: Routledge, 2007b, pp. 41–54.
18. Engeström Y. Learning by expanding: An activity-theoretical approach to developmental research. 2nd edition. Cambridge: Cambridge University Press, 2015. 338 p.
19. Engeström Y., Engeström R. Developmental work research: The approach and an application in cleaning work. *Nordisk Pedagogik*, 1986. Vol. 6(1), pp. 2–15.
20. Engeström Y., Kaatrakoski H., Kaiponen P., Lahikainen J., Laitinen A., Myllys H., Rantavuori J., Sinikara K. Knotworking in academic libraries: Two case studies from the University of Helsinki. *Liber Quarterly*, 2012. Vol. 21(3/4), pp. 387–405.
21. Engeström Y., Kajamaa A., Nummijoki J. Double stimulation in everyday work: Critical encounters between home care workers and their elderly clients. *Learning, Culture and Social Interaction*, 2015. Vol. 4, pp. 48–61.
22. Engeström Y., Miettinen R., Punamäki R.L. (eds.), Perspectives on activity theory. Cambridge: Cambridge University Press, 1999. 480 p.
23. Engeström Y., Nummijoki J., Sannino A. Embodied germ cell at work: Building an expansive concept of physical mobility in home care. *Mind, Culture, and Activity*, 2012. Vol. 19(3), pp. 287–309.
24. Engeström Y., Rantavuori J., Kerosuo H. Expansive learning in a library: Actions, cycles and deviations from instructional intentions. *Vocations and Learning*, 2013. Vol. 6(1), pp. 81–106.
25. Engeström Y., Sannino A. Discursive manifestations of contradictions in organizational change efforts: A methodological framework. *Journal of Organizational Change Management*, 2011. Vol. 24(3), pp. 368–387.
26. Engeström Y., Sannino A. Whatever happened to process theories of learning? *Learning, Culture and Social Interaction*, 2012. Vol. 1(1), pp. 45–56.
27. Engeström Y., Sannino A., Virkkunen J. On the methodological demands of formative interventions. *Mind, Culture, and Activity*, 2014. Vol. 21(2), pp. 118–128.
28. Falmagne R.J. The abstract and the concrete. In L.M. Martin, K. Nelson & E. Tobach (Eds.), *Sociocultural psychology: Theory and practice of doing and knowing*. Cambridge: Cambridge University Press, 1995, pp. 205–228.
29. Fichtner B. Lernen und Lerntätigkeit: Ontogenetische, phylogenetische und epistemologische Studien. Berlin: Lehmanns Media, 2008. 372 p.
30. Freeman C., Louçã F. As time goes by: From the industrial revolutions to the information revolution. Oxford: Oxford University Press, 2001.
31. Giest H., Rückriem G. Tätigkeitstheorie und (Wissens-) Gesellschaft: Fragen und Antworten aus tätigkeitstheoretischer Forschung und Praxis. Berlin: Lehmanns Media, 2010.
32. Greenstein D. Strategies for sustaining the university library. *Portal: Libraries and the Academy*, 2010. Vol. 10(2), pp. 121–125.
33. Gutiérrez K.D., Jurow A.S. Social design experiments: Toward equity by design. *Journal of the Learning Sciences*, 2016. Vol. 25(4), pp. 565–598.
34. Hegel G.W.F. Hegel's science of logic. New York: Humanities Press, 1969.
35. Il'enkov E.V. Dialectical logic: Essays on its history and theory. Moscow: Progress Publishers, 1977.
36. Il'enkov E.V. The dialectics of the abstract and the concrete in Marx's Capital. Progress: Moscow, 1982.

37. Kelly A. Design research in education: Yes, but is it methodological? // *The Journal of the Learning Sciences*. 2004. Vol. 13(1). P. 115–128.
38. Leont'ev A.N. Activity, consciousness, and personality. Englewood Cliffs, NJ: Prentice-Hall, 1978.
39. Leont'ev A.N. Problems of the development of mind. M.: Progress, 1981.
40. Levine A. Arguing for socialism: Theoretical considerations. London: Verso, 1984.
41. Levitin K. One is not born a personality: Profiles of Soviet education psychologists. M.: Progress, 1982.
42. Linebaugh P. Stop, thief!: The commons, enclosures, and resistance. Oakland: PM Press, 2014.
43. Lompscher J. Lernkultur Kompetenzentwicklung aus kulturhistorischer Sicht: Lernen Erwachsener im Arbeitsprozess. Berlin: Lehmanns Media, 2004.
44. Marx K. A contribution to the critique of political economy. London: Lawrence and Wishart, 1971.
45. Marx K., Engels F. The German ideology, including Theses on Feuerbach and Introduction to the critique of political economy. New York: Prometheus Books, 1998.
46. van Oers B., Wardekker W., Elbers E., Van der Veer R. (eds.). The transformation of learning: Advances in cultural–historical activity theory. Cambridge: Cambridge University Press, 2008. 416 p.
47. Perez C. Technological revolutions and financial capital: The dynamics of bubbles and golden ages. Cheltenham: Edward Elgar, 2002.
48. Polanyi K. The great transformation: The political and economic origins of our time. Boston: Beacon Press, 1971.
49. Roth W.M., Lee Y.J. “Vygotsky’s neglected legacy”: Cultural-historical activity theory // *Review of Educational Research*. 2007. Vol. 77(2). P. 186–232.
50. Rubtsov V.V. Learning in children: Organization and development of cooperative actions. Commack: Nova Science Publishers, 1991.
51. Ryle G. The concept of mind. 60th anniversary edition. New York: Routledge, 2009.
52. Sannino A. Activity theory as an activist and interventionist theory // *Theory and Psychology*. 2011. Vol. 21(5). P. 571–597.
53. Sannino A. The principle of double stimulation: A path to volitional action // *Learning, Culture and Social Interaction*. 2015. Vol. 6. P. 1–15.
54. Sannino A. Double stimulation in the waiting experiment with collectives: Testing a Vygotskian model of the emergence of volitional action // *Integrative Psychological and Behavioral Science*. 2016. Vol. 50(1). P. 142–173.
55. Sannino A., Daniels H., Gutiérrez K.D. (eds.). Learning and expanding with activity theory. Cambridge: Cambridge University Press, 2009.
56. Sannino A., Engeström Y. Co-generation of societally impactful knowledge in Change Laboratories // *Management Learning*. 2017. Vol. 48(1). P. 80–96.
57. Sannino A., Engeström Y., Lahikainen J. The dialectics of authoring expansive learning: Tracing the long tail of a Change Laboratory // *Journal of Workplace Learning*. Vol. 28(4). P. 245–262.
58. Sannino A., Engeström Y., Lemos M. Formative interventions for expansive learning and transformative agency // *Journal of the Learning Sciences*. 2016. Vol. 25(4). P. 599–633.
59. Sannino A., Laitinen A. Double stimulation in the waiting experiment: Testing a Vygotskian model of the emergence of volitional action // *Learning, Culture and Social Interaction*. 2015. Vol. 4. P. 4–18.
60. Sawchuk P., Duarte N., Elhammoumi M. (eds.). Critical perspectives on activity: Explorations across education, work,
37. Kelly A. Design research in education: Yes, but is it methodological?. *The Journal of the Learning Sciences*, 2004. Vol. 13(1), pp. 115–128.
38. Leont'ev A.N. Activity, consciousness, and personality. Englewood Cliffs, NJ: Prentice-Hall, 1978.
39. Leont'ev A.N. Problems of the development of mind. Moscow: Progress, 1981.
40. Levine A. Arguing for socialism: Theoretical considerations. London: Verso, 1984.
41. Levitin K. One is not born a personality: Profiles of Soviet education psychologists. Moscow: Progress, 1982.
42. Linebaugh P. Stop, thief!: The commons, enclosures, and resistance. Oakland: PM Press, 2014.
43. Lompscher J. Lernkultur Kompetenzentwicklung aus kulturhistorischer Sicht: Lernen Erwachsener im Arbeitsprozess. Berlin: Lehmanns Media, 2004.
44. Marx K. A contribution to the critique of political economy. London: Lawrence and Wishart, 1971.
45. Marx K., Engels F. The German ideology, including Theses on Feuerbach and Introduction to the critique of political economy. New York: Prometheus Books, 1998.
46. van Oers B., Wardekker W., Elbers E., Van der Veer R. (eds.). The transformation of learning: Advances in cultural–historical activity theory. Cambridge: Cambridge University Press, 2008. 416 p.
47. Perez C. Technological revolutions and financial capital: The dynamics of bubbles and golden ages. Cheltenham: Edward Elgar, 2002.
48. Polanyi K. The great transformation: The political and economic origins of our time. Boston: Beacon Press, 1971.
49. Roth W.M., Lee Y.J. “Vygotsky’s neglected legacy”: Cultural-historical activity theory. *Review of Educational Research*, 2007. Vol. 77(2), pp. 186–232.
50. Rubtsov V.V. Learning in children: Organization and development of cooperative actions. Commack: Nova Science Publishers, 1991.
51. Ryle G. The concept of mind. 60th anniversary edition. New York: Routledge, 2009.
52. Sannino A. Activity theory as an activist and interventionist theory. *Theory and Psychology*, 2011. Vol. 21(5), pp. 571–597.
53. Sannino A. The principle of double stimulation: A path to volitional action. *Learning, Culture and Social Interaction*, 2015. Vol. 6, pp. 1–15.
54. Sannino A. Double stimulation in the waiting experiment with collectives: Testing a Vygotskian model of the emergence of volitional action. *Integrative Psychological and Behavioral Science*, 2016. Vol. 50(1), pp. 142–173.
55. Sannino A., Daniels H., Gutiérrez K.D. (eds.) *Learning and expanding with activity theory*. Cambridge: Cambridge University Press, 2009.
56. Sannino A., Engeström Y. Co-generation of societally impactful knowledge in Change Laboratories. *Management Learning*, 2017. Vol. 48(1), pp. 80–96.
57. Sannino A., Engeström Y., Lahikainen J. The dialectics of authoring expansive learning: Tracing the long tail of a Change Laboratory. *Journal of Workplace Learning*, 28(4), 245–262.
58. Sannino A., Engeström Y., Lemos M. Formative interventions for expansive learning and transformative agency. *Journal of the Learning Sciences*, 2016. Vol. 25(4), pp. 599–633.
59. Sannino A., Laitinen A. Double stimulation in the waiting experiment: Testing a Vygotskian model of the emergence of volitional action. *Learning, Culture and Social Interaction*, 2015. Vol. 4, pp. 4–18.
60. Sawchuk P., Duarte N., Elhammoumi M. (eds.). Critical perspectives on activity: Explorations across education, work,

and everyday life. Cambridge: Cambridge University Press, 2006.

61. Scribner S. Vygotsky's uses of history // Culture, communication and cognition: Vygotskian perspectives / J. Wertsch (ed.). Cambridge: Cambridge University Press, 1985. P. 119–145.

62. Stetsenko A. The transformative mind: Expanding Vygotsky's approach to development and education. Cambridge: Cambridge University Press, 2016. 434 p.

63. Thuraisingam T., Hukam Parvinder K., David M.K., Nair V. Research culture of private universities in Malaysia: Using contradictions in activity theory // *Pertanika Journal of Social Sciences & Humanities*. 2014. Vol. 22(2). P. 521–537.

64. Timmis S. The dialectical potential of cultural historical activity theory for researching sustainable CSCL practices // *International Journal of Computer-Supported Collaborative Learning*. 2014. Vol. 9(1). P. 7–32.

65. Tolman C. The metaphysic of relations in Klaus Riegel's 'dialectics' of human development // *Human Development*. 1981. Vol. 24(1). P. 33–51.

66. Victor B., Boynton A.C. *Invented here: Maximizing your organization's internal growth and profitability*. Boston: Harvard Business Press, 1998. 272 p.

67. Virkkunen J., Newnham D.S. *The Change Laboratory: A tool for collaborative development of work and education*. Rotterdam: Sense Publishers, 2013. 294 p.

68. Vygotsky L.S. Thinking and speech. In Rieber R.W. (eds.). *The collected works of L.S. Vygotsky*. Vol. 1. Problems of general psychology. New York: Plenum, 1987, pp. 39–285.

69. Vygotsky L.S. *The collected works of L.S. Vygotsky*. Volume 3. Problems of the theory and history of psychology. New York: Plenum, 1997. 372 p.

70. Wertsch J.V., del Río P., Alvarez A. Sociocultural studies: History, action, and mediation // *Sociocultural studies of mind / J.V. Wertsch (eds.)*. Cambridge: Cambridge University Press, 1995. P. 1–36.

71. Zinchenko V.P. Vygotsky's ideas about units for the analysis of mind // Culture, communication and cognition: Vygotskian perspectives / J.V. Wertsch (ed.). Cambridge: Cambridge University Press, 1985. P. 94–118.

72. Zuckerman G.A. Developmental education: A genetic modeling experiment // *Journal of Russian and East European Psychology*. 2012. Vol. 49(6). P. 45–63.

and everyday life. Cambridge: Cambridge University Press, 2006.

61. Scribner S. Vygotsky's uses of history. In Wertsch J. (ed.), *Culture, communication and cognition: Vygotskian perspectives*. Cambridge: Cambridge University Press, 1985, pp. 119–145.

62. Stetsenko A. The transformative mind: Expanding Vygotsky's approach to development and education. Cambridge: Cambridge University Press, 2016. 434 p.

63. Thuraisingam T., Hukam Parvinder K., David M.K., Nair V. Research culture of private universities in Malaysia: Using contradictions in activity theory. *Pertanika Journal of Social Sciences & Humanities*, 2014. Vol. 22(2), pp. 521–537.

64. Timmis S. The dialectical potential of cultural historical activity theory for researching sustainable CSCL practices. *International Journal of Computer-Supported Collaborative Learning*, 2014. Vol. 9(1), pp. 7–32.

65. Tolman C. The metaphysic of relations in Klaus Riegel's 'dialectics' of human development. *Human Development*, 1981. Vol. 24(1), pp. 33–51.

66. Victor B., Boynton A.C. *Invented here: Maximizing your organization's internal growth and profitability*. Boston: Harvard Business Press, 1998. 272 p.

67. Virkkunen J., Newnham D.S. *The Change Laboratory: A tool for collaborative development of work and education*. Rotterdam: Sense Publishers, 2013. 294 p.

68. Vygotsky L.S. Thinking and speech. In Rieber R.W. (eds.), *The collected works of L.S. Vygotsky*. Vol. 1. Problems of general psychology. New York: Plenum, 1987, pp. 39–285.

69. Vygotsky L.S. *The collected works of L.S. Vygotsky*. Volume 3. Problems of the theory and history of psychology. New York: Plenum, 1997. 372 p.

70. Wertsch J.V., del Río P., Alvarez A. Sociocultural studies: History, action, and mediation. In Wertsch J.V. (eds.), *Sociocultural studies of mind*. Cambridge: Cambridge University Press, 1995, pp. 1–36.

71. Zinchenko V.P. Vygotsky's ideas about units for the analysis of mind. In Wertsch J.V. (ed.), *Culture, communication and cognition: Vygotskian perspectives*. Cambridge: Cambridge University Press, 1985, pp. 94–118.

72. Zuckerman G.A. Developmental education: A genetic modeling experiment. *Journal of Russian and East European Psychology*, 2012. Vol. 49(6), pp. 45–63.