

# Ascending from the Abstract to the Concrete as a Principle of Expansive Learning

**Yrjö Engeström**

CRADLE, University of Helsinki, Helsinki, Finland  
e-mail: [yrjo.engestrom@helsinki.fi](mailto:yrjo.engestrom@helsinki.fi)

The article examines the potential of the dialectical principle of ascending from the abstract to the concrete for transforming practices of learning. It is shown that V.V. Davydov's work has created a foundation for such transformation. The theory of expansive learning builds on Davydov's legacy and brings the principle of ascending from the abstract to the concrete into learning and concept formation outside schools, "in the wild." Three studies investigating different scales of expansive learning are discussed, focusing on the internally contradictory germ cells discovered and used in those studies. The article concludes by emphasizing the need to integrate Davydov's revolutionary pedagogy and the broader agenda of school transformation as part of societal transformation.

**Keywords:** dialectics, ascending from the abstract to the concrete, expansive learning, germ cell, learning cycles.

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**For citation:** Engeström Y. Ascending from the Abstract to the Concrete as a Principle of Expansive Learning. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2020. Vol. 25, no. 5, pp. 31—43. DOI: <https://doi.org/10.17759/pse.2020250503> (In Russ.)

# Восхождение от абстрактного к конкретному как принцип экспансивного обучения

**Урио Энгестрём**

Центр исследования деятельности, развития и обучения (CRADLE),  
Хельсинки, Финляндия  
e-mail: [yrjo.engestrom@helsinki.fi](mailto:yrjo.engestrom@helsinki.fi)

В статье рассматривается потенциал диалектического принципа восхождения от абстрактного к конкретному для трансформирующих практик обучения. Показано, что работы В.В. Давыдова создали основу для подобной трансформации. Теория экспансивного обучения опирается на наследие Давыдова и привносит принцип восхождения от абстрактного к конкретному

в процесс обучения и формирования понятий за пределами школы, в «естественной среде». В статье также обсуждаются три исследования, посвященные разным шкалам экспансивного обучения, с акцентом на внутренне противоречивые «клеточки», обнаруженные и использованные в этих исследованиях. В заключение подчеркивается необходимость интеграции революционной педагогики Давыдова, а также затрагивается назревшая проблема трансформации школы в свете общественных изменений.

**Ключевые слова:** диалектика, восхождение от абстрактного к конкретному, экспансивное обучение, клеточка, циклы обучения.

**Для цитаты:** Энгстрём У. Восхождение от абстрактного к конкретному как принцип экспансивного обучения // Психологическая наука и образование. 2020. Том 25. № 5. С. 31—43. DOI: <https://doi.org/10.17759/pse.2020250503>

## Introduction

This article is devoted to work of Vassily Vassil'evich Davydov. Reading Davydov and interacting with him in person had a decisive impact on my thinking and research since the early 1980s up to his untimely death, and his ideas have remained a central influence for me. I have often wondered why his work has not had similar influence on many researchers in the west. Digging into the work of Ilyenkov, Davydov's important mentor, helped me to understand that the dialectical approach employed by Davydov is simply so different from and alien to the dominant formal-logical approach that embracing and appropriating Davydov's legacy is demanding and takes time. On the other hand, Davydov's *oeuvre* is durable. Still, nearly 50 years after the publication of *Types of Generalization in Instruction* in Russian in 1972, it remains a landmark and vision for a long time to come.

Ascending from the abstract to the concrete is the principle and method of dialectics. As such, it is also a core epistemological and methodological principle of cultural-historical activity theory. This article is an attempt to elucidate the significance of this principle for contemporary studies of learning. My key message is that forming theoretical concepts is more important than ever in our age of chaotic complexity and crises. People need instruments that allow them to grasp and redirect societal processes that are increasingly out of control and threaten the very existence of humanity. The formation of theoretical concepts cannot be delegated to the schools only. We

need to build coalitions between various societal actors, including schools, to generate learning activity that is sustained across the boundaries between different spheres of activity.

In what follows, I will first discuss two approaches to learning that have important affinities to ascending from the abstract to the concrete, namely the *exemplary learning* approach of Wagenschein and the *threshold concepts* approach of Meyer and Land. After that, I present the foundational work of Il'enkov and Davydov on generalization and concept formation. I then introduce the theory of expansive learning as a way to go beyond the classroom, into concept formation in the wild. I will discuss three scales of expansive learning and three empirical studies that correspond to the different scales. I will examine the three empirical cases through the lenses of two key ideas, namely contradiction and conflict of motives and the germ cell. I will conclude by pointing out the need to bring together classroom learning and learning in the wild, by means of the principle of ascending from the abstract to the concrete

## The generative power of core ideas

The German science educator Martin Wagenschein (1896—1988) showed that even highly educated people, including students of physics, could not provide a realistic or simple explanation for the most basic physical phenomena, such as the phases of the moon and lunar eclipses. He championed the pedagogical principle of ex-

*emplary learning*, also characterized as genetic learning (Wagenschein, 1968).

“We need to confine ourselves to the essential. (...) We recommend the courage to leave gaps, which means the courage to be thorough and to dwell intensively on selected topics. So instead of evenly and superficially walking through the catalog of knowledge, step-by-step, we exert the right — or fulfill the duty — to really settle in somewhere, to dig in, to grow roots and take root. (...) The particular aspect we delve into is not a stage in a process, but a mirror of the whole. Why? The relation the particular has to the whole, however, is not that of a part, step, or preamble; it is a center of gravity. It may be only one, but it carries the whole in it. This single aspect is not an element in a process of accumulation, rather, it carries and illuminates. It is not a stage in a progression, but it works like a spotlight. It affects things that are distant yet related through resonance. This is what the concept of the exemplary means.” (Wagenschein, 1968, p. XX).

“The concept of the exemplary is the opposite of specialization. It doesn’t want to get stuck in particulars, it looks for the whole in the particular. ‘Impossible!’ will be the response of the person who only knows addition” (Wagenschein, 1968, p. XX).

Wagenschein’s concept of ‘the exemplary’ expresses a quest for learning that is based on powerful generative ideas rather than on encyclopedic coverage of large catalogs of facts. The same basic idea is at the core of the *threshold concepts* put forward by Meyer and Land.

“A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress” (Meyer & Land, 2003, p. 412).

Meyer and Land (2005, p. 373—374) point out that threshold concepts “may be transformative (occasioning a significant shift in the perception of a subject), irreversible (unlikely to be forgotten, or unlearned only through considerable effort), and integrative (exposing the previously hidden interrelatedness of something). In addition they may also be troublesome and/or they may lead to troublesome knowledge for a variety of reasons.” As prime examples, the authors mention the concepts

of “precedent in Law, depreciation in Accounting, the central limit theorem in Statistics, entropy in Physics, and so on” (Meyer & Land, 2005, p. 374).

Wagenschein’s exemplary learning and Meyer and Land’s threshold concepts share certain characteristics. First of all, both approaches are focused on learning in the disciplines represented in curricula at schools and universities. Thus, these two approaches have relatively little to say about learning to cope with critical problems and challenges in the world, such as poverty and climate change.

Secondly, while they provide large varieties of examples, neither Wagenschein nor Meyer and Land give clear criteria for what would qualify as generative exemplars or as threshold concepts. The choice of exemplars and threshold concepts is left to the disciplinary competence and pedagogical intuition of the instructors.

Thirdly, both approaches see the mastery of a concept in *understanding*. Understanding is demonstrated in new ways of perceiving and interpreting phenomena. But both approaches pay scant attention to practical application and enactment of the concepts acquired.

Finally, the actual processes of learning generative exemplars and threshold concepts are left vague. Both approaches make it clear that the generative exemplar or threshold concept is the starting point of insightful learning. But the steps of the process are not spelled out.

### Ilyenkov and Davydov on concepts

Evald Ilyenkov was the most important philosopher for the founders of activity theory. His analysis of the dialectics of the abstract and the concrete (Ilyenkov, 1982) is of crucial importance for an activity-theoretical understanding of concept formation. Ilyenkov pointed out that in the prevalent formal-logical understanding of concepts

“the term ‘concept’ is taken to mean any verbally expressed ‘general’, any terminologically recorded abstraction from the sensually given multiformity, any notion of what is common to many objects of direct contemplation” (Ilyenkov, 1982, p. 40).

Ilyenkov described the corresponding view of concept formation, characterizing it as ‘Robinson Crusoe epistemology’.

“(...) it is assumed that the individual first experiences isolated sensual impressions, then inductively abstracts something general from them, designates it by a word, then assumes an attitude of ‘reflection’ towards this general, regarding his own mental actions and their products — ‘general ideas’ (that is, general notions recorded in speech) — as a specific object of study” (Ilyenkov, 1982, p. 41).

In a dialectical view, concept formation begins from the sensually experienced concrete, understood not as isolated things but as the complex relations in which the subject is acting, as “a definite system of interacting phenomena, (...) a system forming a certain coherent whole” (Ilyenkov, 1982, p. 96). This concreteness initially appears to the subject “in some particular, fragmentary manifestation, that is, abstractly” (Ilyenkov, 1982, p. 57). If our thinking merely reduces the sensually concrete into an abstract one-sided definition, it produces what Ilyenkov called ‘a general notion’, not a concept. To form a concept, we need to construct an abstraction that captures the origin of the phenomenon under scrutiny. A prime example of such an abstraction is the idea of commodity as the germ cell of capitalism, developed by Marx.

“(...) commodity is the kind of particular which simultaneously is a universal condition of the existence of the other particulars recorded in other categories. That is a particular entity whose whole specificity lies in being the universal and the abstract, that is, undeveloped, elementary, ‘cellular’ formation, developing through contradictions immanently inherent in it into other, more complex and well-developed formations” (Ilyenkov, 1982, p. 59).

The germ cell abstraction is the starting point from which one ascends to the conceptually mastered concrete. The germ cell is “the genetic basis from the development of which all other, just as particular, phenomena of the given concrete system may be understood in their necessity” (Ilyenkov, 1982, p. 76). But the germ cell is in itself also a real phenomenon that does not disappear with the emergence of its more complex manifestations. Simple commodities continue to exist even in our current era of extremely complex financial derivatives.

“[...] the universal, which manifests itself precisely in the particularities, in the individual characteristics of all the components of the whole

without exception, also exists in itself as a particular alongside other isolated individuals derived from it” (Ilyenkov, 1977, p. 355).

For Ilyenkov and Davydov, a concept is a stepwise process of moving from the initial germ cell abstraction to its concrete manifestations. In other words, a concept is expressed in movement, not in fixed definitions: “every concept conceals a particular action with objects (or a system of such actions)” (Davydov, 1990, p. 299).

“Every concept (if it is really a well-developed concept and not merely a verbally fixed general notion) is therefore a concrete abstraction, however contradictory that may sound from the standpoint of old logic” (Ilyenkov, 1982, p. 60).

The origin of concepts is to be found in productive labor, in the practical molding of materials into artifacts. In other words, concepts are pervasively present in all walks of life.

“The concept (in its strict and precise sense) is not therefore a monopoly of scientific theoretical thought. Every man has a concept, rather than a general notion expressed in a term, about such things as table or chair, knife or matches. Everybody understands quite well both the role of these things in our lives [...]. In this case, the concept is present in the fullness of its definition, and every man consciously handles things in accordance with their concept, proving thereby that he has this concept” (Ilyenkov, 1982, p. 99).

However, for Ilyenkov “everyday thinking is a very inconvenient object of logical analysis” (Ilyenkov, 1982, p. 99).

“It stands to reason that the universal laws of thought are the same both in the scientific and the so-called everyday thinking. But they are easier to discern in scientific thought for the same reason for which the universal laws of the development of the capitalist formation could be easier established, in mid-19<sup>th</sup> century, by the analysis of English capitalism rather than Russian or Italian” (Ilyenkov, 1982, p. 100).

Ilyenkov’s argument may be valid from the logical standpoint. But a crucial issue for humanity today is how common people may conceptually grasp and practically act upon complex phenomena with potentially fateful implications and consequences. Practical work activities such as designing buildings or treating patients are

dependent on forming shared, future-oriented concepts. The separation of scientific thinking and practical everyday thinking is increasingly problematic. That is why there is growing interest in understanding 'concept formation in the wild' (Engeström & Sannino, 2012; Engeström, 2020). Ilyenkov's work on concepts needs to be rediscovered and expanded on in this context.

We can trace an early awareness of the problematic nature of the separation between everyday and scientific concepts in Davydov's gently critical discussion of Vygotsky's (1987) treatment of concepts.

"(...) the determining difference between everyday concepts and scientific ones was found [by Vygotsky], not in their objective content, but in the method and ways of mastery ('personal experience,' 'the process of instruction'). Some are without a system, others are given in a system. 'Scientific concepts' are concepts *specified* in school.

But, as is known, *empirical* concepts also possess a certain system (for example, in the realm of genus-type relationships). In school, particularly in the primary grades, it is exactly such concepts that are taught, on the whole. Of course, scientific concepts are given in a system — but in a *particular* system. It is this point, decisive on a logical level, that Vygotsky and his associates have overlooked. Therefore the genuine criterion for 'scientific concepts' was not given in their works.

As a result, [Vygotsky's] considerations to the effect that thought moves in a 'pyramid of concepts' both from general to particular and from particular to general lose definiteness and unambiguousness. The point is that, in principle, this is allowable in a more or less systematized 'pyramid' of empirical concepts. Mastery that starts from the 'general,' from a verbal definition in itself, in no way characterizes the scientific nature of a concept — any everyday, empirical general conceptions can be specified in a similar way in instruction" (Davydov, 1990, p. 189—190).

These critical observations of Vygotsky's understanding of scientific concepts were grounded in Davydov's carefully researched and rather devastating critique of predominant forms of school instruction. He concluded that schools typically nourish empirical classificatory thinking and the formation of empirical concepts, or abstract general no-

tions to use Ilyenkov's expression, at the expense of dialectical thinking and theoretical concepts.

To overcome the dualistic separation of everyday and scientific concepts, one needs to build the study of concepts on careful examination of their origination and implementation in practical productive activity. In *Types of Generalization in Instruction*, Davydov wrote extensively on the practical origins of human thought, including theoretical thought (Davydov, 1990, pp. 232—258).

"Theoretical thought also has an ancient origin. Its potential is included in the process of productive labor itself. It is a derivative of this object-oriented, practical activity and is always internally related to sensorially given reality. (...) Theoretical thought 'snatches up' and idealizes the *experimental* aspect of production, first attaching to it the form of an object-sensory cognitive experiment, and then that of a mental experiment done in concept form and through a concept" (Davydov, 1990, p. 257).

This means that empirical and theoretical thinking and conceptualization are dialectically intertwined in all productive activity. Davydov challenged the overwhelming predominance of empirical, classificatory concepts in school instruction and designed entire curricula to promote the formation of theoretical, dialectical concepts by means of ascending from the abstract to the concrete.

In Davydov's theory of the formation of theoretical concepts, the initial problem situation or task represents a diffuse sensory concreteness. It is manipulated and transformed — experimented with — to find its basic explanatory relationship or germ cell, which will be represented with the help of a model. These actions of transformation and modeling involve tracing the origin and genesis of the problem. The model itself is examined and used to generate and solve further problems. This enrichment and diversification of the abstract model leads to the ascending to the concrete, that is, to a conceptually mastered systemic concreteness that opens up possibilities for development and innovation.

Some scholars have interpreted this stance of radical pedagogical reform as yet another form of enlightenment thinking that privileges science as superior form of human cognition.

"We cannot fail to see that Davydov's concept of the concept is imbued with a general outlook of

the world that favors a certain form of knowability — the one that predominated throughout the twentieth century and considered scientific theoretical thought as the summit of human cognition” (Radford, 2020, p. 12).

“Within this scientific outlook, law, measure, and calculation became the key concepts to understand the world” (Radford, 2020, p. 13).

I have to disagree with Radford. As I see it, Davydov was pursuing nothing less than a revolutionary transformation in school curricula and pedagogy. He did not emphasize the “scientific” as Vygotsky did — he emphasized the “theoretical,” which for him meant the “dialectical.” In my reading of and interactions with Davydov, I certainly never saw him emphasizing “calculation.” Instead, he repeatedly pointed out that you find powerful traces of dialectical-theoretical thinking in religions and in art, often more so than in the sciences. Although Davydov himself was focused on transforming school instruction, he actively followed and supported the work of Gromyko on ‘organizational activity games’ (Gromyko, 1997) as well as my own work on expansive learning in workplaces and communities.

Still, Radford has a point when he wants to go beyond a narrowly intellectualist understanding of concepts.

“I prefer not to conceive of a concept as a mental rule, but as something more *poetic*, something that brings together the cultural rationality and worldview of the contexts where the object has emerged and evolved with all its historical and political tensions. In this view, a concept would be what we *enact* with *others* in joint activity — a cultural-historical enactive experience that is not merely conceptual and theoretical, but also esthetic, ethical, political, and emotional: something that *questions us*” (Radford, 2020, p. 15).

I believe Davydov would have agreed.

### What is a germ cell

In ascending from the abstract to the concrete, the germ cell plays a crucial role. The following characteristics are essential qualities of a germ cell that may lead to an expansive theoretical concept (compare Engeström, Nummijoki & Sannino, 2012, p. 289):

— The germ cell is the smallest and simplest initial unit of a complex totality.

— It carries in itself the foundational contradiction of the complex whole, as well as the seeds for transcending and overcoming the contradiction.

— The germ cell is ubiquitous, so commonplace that it is often taken for granted and goes unnoticed.

— The germ cell opens up a perspective for multiple applications, extensions, and future developments.

— The germ cell is actionable; it typically exists and is enacted in practice before it is discovered, verbally articulated and modeled.

The germ cell in itself is not the concept. It is the starting point and core of the concept. It embodies the driving tension that makes the concept develop. Commodity is the germ cell of capitalism. As a contradictory unity of use value and exchange value, each commodity carries in itself the driving tension that makes capitalism develop.

As I pointed out earlier, Wagenschein proposed that “carries the whole in it.” Similarly, Meyer and Land characterized threshold concepts as “portals.” These observations are in line with the idea of a germ cell. However, neither Wagenschein nor Meyer and Land considered internally contradictory and tension-laden character as a hallmark of exemplars and threshold concepts. This is of critical importance in a dialectical perspective on concept formation.

Also the actionable nature of the germ cell is to be emphasized. In discussions of threshold concepts within different academic disciplines (e.g., Land, Meyer & Smith, 2008), these concepts are often described in strictly intellectual and verbal terms, without questioning their actionable character and potentials of material enactment.

### From classroom into the wild

Ascending from the abstract to the concrete is accomplished by means of epistemic and practical actions. In learning processes, we may call these learning actions. According to Davydov (1988, p. 30), an ideal-typical sequence of learning activity consists of the following six learning actions: (1) transforming the conditions of the task in order to reveal the universal relationship of the object under study, (2) modeling the identified relationship in a material, graphic or literal form, (3) transform-

ing the model of the relationship in order to study its properties in their 'pure guise', (4) constructing a system of particular tasks that are resolved by a general mode, (5) monitoring the performance of the preceding actions, (6) evaluating the assimilation of the general mode that results from resolving the given learning task. These learning actions are accomplished in different school subjects with the help of appropriate tasks.

In the 1980s, I started to work on the challenge of implementing ascending from the abstract to the concrete outside the school, in workplaces and organizations facing transformations that required the practitioners to reconceptualize and reorganize their activity. This resulted in 1987 in the theory of expansive learning (Engeström, 2015; Engeström & Sannino, 2010). Many of the ensuing intervention studies were conducted with medical practitioners and patients in health care organizations (Engeström, 2018).

The theory of expansive learning may be seen as an expansion of Davydov's foundational work. An ideal-typical sequence of epistemic actions in an expansive learning process can be condensed as follows.

— The first action is that of questioning, criticizing or rejecting some aspects of the accepted practice and existing wisdom. For the sake of simplicity, this action is called questioning.

— The second action is that of analyzing the situation. Analysis involves mental, discursive or practical transformation of the situation in order to find out causes or explanatory mechanisms. Analysis evokes "why?" questions and explanatory principles. One type of analysis is historical-genetic; it seeks to explain the situation by tracing its origins and evolution. Another type of analysis is actual-empirical; it seeks to explain the situation by constructing a picture of its inner systemic relations.

— The third action is that of modeling the newly found explanatory relationship in some publicly observable and transmittable medium. This means constructing an explicit, simplified model of the new idea that explains and offers a solution to the problematic situation.

— The fourth action is that of examining the model, running, operating and experimenting on it in order to fully grasp its dynamics, potentials and limitations.

— The fifth action is that of implementing the model by means of practical applications, enrichments, and conceptual extensions.

— The sixth and seventh actions are those of reflecting on and evaluating the process and consolidating its outcomes into a new stable form of practice.

Together these actions form an open-ended expansive cycle. In practice, the learning actions do not follow one another in a neat order. There are loops of returning and repeating some actions, as well as gaps of omitting or stepping over some action. However, the basic shape and logic of the expansive cycle has been observed in many detailed studies of interventions (e.g., Engeström, Rantavuori & Kerosuo, 2013; Bal, Afacan & Cakir, 2018; Englund, 2018).

The actions of an expansive cycle bear a close resemblance to the six learning actions put forward by Davydov (1988). Davydov's theory is, however, oriented at learning activity within the confines of a classroom where the curricular contents are determined ahead of time by more knowledgeable adults. This probably explains why it does not contain the first action of critical questioning and rejection, and why the fifth and seventh actions, implementing and consolidating, are replaced by 'constructing a system of particular tasks' and 'evaluating'—actions that do not imply the construction of actual culturally novel practices.

Particularly the first learning action of questioning is of great importance. An expansive learning cycle begins with the learners facing troublesome indications that something is not going well in their activity and questioning what the problem is and where it comes from. In other words, the cycle begins with a conflict of motives that stems from contradictions in the activity system. Recent work of Sannino (2020a; 2020b) on the transformative agency by double stimulation illuminates the critical role of conflicts of motives as the energizing starting point of expansive learning actions. Without facing a conflict of motives, learners can hardly engage in an expansive learning process. This of course means that ascending from the abstract to the concrete in the wild is a risky and often emotionally charged process that involves confronting and renegotiating power relations.

### Three scales of expansive learning

Expansive learning cycles have been observed, fostered and analyzed in three scales. First of all, there is the macro scale of expansive transformations that typically take months and years. These are usually analyzed *ex post facto*, historically and retrospectively. These are also typically learning processes that have not been induced by deliberate interventions aimed at supporting expansive learning (see for example Foot, 2001; Mäkitalo, 2005; Caldwell & al., 2019). These studies may also cover networks of multiple activity systems or entire multi-activity fields.

The intermediate or meso-scale of expansive learning cycles is typically associated with formative Change Laboratory interventions aimed at accomplishing an expansive learning cycle in a relatively compressed time period, typically by means of six to ten sessions within a few months. Change Laboratories have been implemented in more than 30 countries and there is a fairly large literature on these interventions (e.g., Sannino, Engeström & Lemos, 2016; Sannino & Engeström, 2017; Lotz-Sisitka & al., 2017; Morselli, 2019; Vilela & al., 2020; Virkkunen & Newnham, 2013).

Micro-scale expansive learning cycles refer to processes that typically take place within a single learning encounter, in other words within a time span of minutes and hours. Expansive micro-cycles may emerge when a group of learners are engaged in an intensive problem-solving effort focused on a relatively well-bounded but challenging issue. Studies by Rantavuori, Engeström & Lipponen (2016) and Nummijoki, Engeström & Sannino (2018) are examples of this scale.

We may assume that macro-, meso- and micro-cycles of expansive learning may emerge and interact in nested formations. Sannino's (2020a; 2020b) recent work on interacting expansive cycles in heterogenous activity coalitions dealing with fateful societal problems is an important opening in this direction (see also Engeström & Sannino, 2020). However, detailed analyses on the interplay of the different scales of learning cycles are not yet available.

### Three studies, three germ cells

I will briefly describe three recent studies of expansive learning that correspond to the three

scales discussed above. The first, macro-level case is a study of a food cooperative in Helsinki, Finland (Rantavuori & Engeström, forthcoming). The cooperative was founded 2011 and is located in the metropolitan area of Helsinki, Finland. The cooperative rents a field 30 kilometers from the center of Helsinki where a hired farmer produces vegetables for the cooperative. During the harvest season, vegetables are transported weekly from the field into the city to distribution points where members can come and pick up their share. In spite of its growing popularity, the continuity of the food cooperative is constantly at risk. Small-scale ecological farming is very labor-intensive and has to compete with the heavily subsidized industrial farm products of large food store chains.

The board of the food cooperative faced a reoccurring crisis with the financial sustainability of the cooperative. The standard solution thus far had been to organize annual drives to recruit new members whose membership fees would rescue the cooperative. When the research was started, the board members were becoming increasingly uncomfortable with these repeated pressurized efforts to grow. A collective search for a new way out was emerging. In 2015-2016, the researchers followed and recorded 27 successive board meetings in which the challenge and potential solutions were discussed. The data covers a learning process that lasted more than a year. Unlike previous macro-scales studies of expansive learning, this study was not conducted *ex post facto* but by observing and recording the events in real time as they happened.

Over the 27 board meetings, the board generated a robust set of solutions to their pressing contradiction. Without going into the details, the main solution was to limit the number of members in the cooperative to 200 — a seemingly regressive decision that would stop the continuous and stressful quest for more members and more income. However, while putting a cap to its own growth, the board also decided to actively spread the idea of the food cooperative, aiming at the initiation and multiplication of similar cooperatives elsewhere. Thus, we may call the emerging concept of the cooperative “expansive degrowth.” It was degrowth in that it decisively withdrew from the self-perpetuating effort to increase the num-

ber of members and the amount of income. It was expansive in that it adopted the explicit aim of spreading and multiplying the model.

Figure 1 schematically depicts the internally contradictory germ cell that emerged in this case.

The contradiction, typical to many enterprises in capitalist markets, was between the financial imperative “more members, more income” and the original idea of the cooperative as simply a way to get healthy food. The board members experienced this as a conflict between the motive to grow to cover the expenses and the motive to quite the rat race. The germ cell idea that transcended and resolved the conflict was basically a negative action: “recruit no more than 200 members.” When this cap was set, a number of other, complementary solutions were developed, including reducing the workforce and better organization of the work in the field, reducing the number of vegetable species and the field area, and bringing forward the annual rhythm of operations to reach a more anticipatory and proactive approach. The implementation of these and other solutions together represents the ascending to the concrete in this case.

Sannino’s Change Laboratory intervention in a supported housing unit for formerly homeless

youth in Helsinki represents the meso-level cycle of expansive learning (Sannino, 2020a, 2020b). Homelessness is rising in most major cities of the world. The challenge is not just the scale; it is above all the dynamics that make the eradication of homelessness look like an impossible task. Finland is the only European nation that has been able to significantly and consistently reduce homelessness over the past decade. In the fall of 2018, Sannino’s research group RESET embarked on a major project aimed at supporting the design of the next phase of the Finnish Housing First strategy to eradicate homelessness.

The housing unit in which the Change Laboratory intervention was conducted had operated under the Housing First principle since its inception in 2012. However, the staff had worked for many years acting as a guards and controllers toward the residents, which led to tensions with and complaints from the residents. The consolidated mode of activity kept the staff locked up in an office space with a plexiglass window through which they could control those who entered or exited the unit. In the spring of 2018, the staff, led by a newly recruited unit manager, started a transformation process aimed at generating a new way of working with the residents. In the fall, the

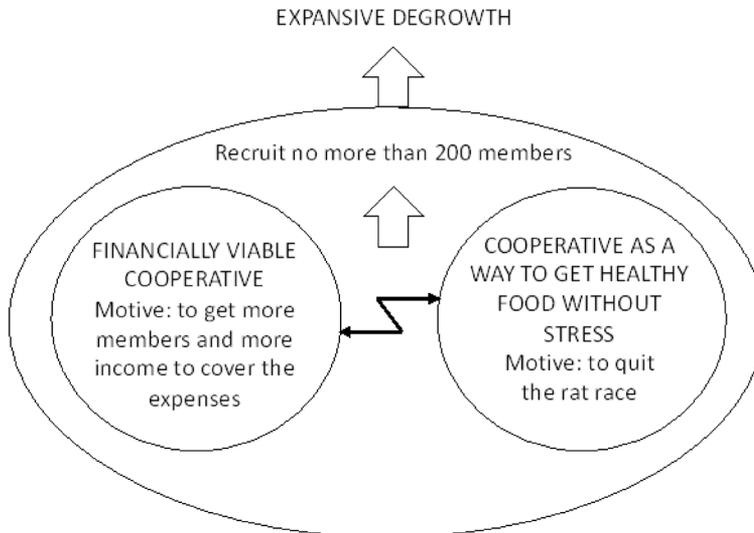


Fig. 1. The germ cell in the case of the food cooperative

staff expressed an acute need for conceptual and practical support from our research team in the transformation process. In other words, the way of implementing the principle of Housing First in practice needed to be radically reconceptualized.

The physical elimination of the “wall” between the workers and the residents of the unit led to great turmoil among the staff. Some of the workers were afraid of the residents, and the idea of being in an open space with them without a protective wall in between was very difficult for them to accept. At the same time, it opened up new possibilities of meaningful interaction with the residents, generating a conflict of motives. When the unit manager sat with the workers in the open space casually interacting with the residents or having oatmeal with them, a set of very practical new second stimuli, such as a bowl of oatmeal or a cup of coffee, became available to the workers.

“A staff member in this unit might have been torn between the conflicting motives of self-protection by sticking to the old guard-like way of approaching the residents on the one hand, and stepping into the potentially more meaningful new way of working in an open space with the residents on the other hand (first stimulus). One day this staff member might have decided that next time he would meet this resident of whom he is so

much afraid, he will ask him if he wants to have a cup of coffee (second stimulus) as the manager had done while sitting in the open space. When the staff member meets this resident the volitional action might be implemented or might not. If the volitional action is accomplished by implementing the second stimulus, the problematic situation acquires a new meaning, becoming less paralyzing. Then by repeating over and over again the process with situated variations, transformative agency develops to the point that the staff member discovers new capabilities he had ignored before and qualities in the resident that he had equally ignored” (Sannino, 2020a, p. 170).

The germ cell that allowed the practitioners to break out of the paralyzing conflict of motives was the simple action of engaging in encounters with the residents on the basis of equality in a shared space. As one of the workers kept saying: “Encounters, encounters, encounters!” During the intervention, this germ cell led the participants to formulate a concept for their emerging new way of working. This concept is two-dimensional: on the one hand, it depicts the worker as a coach and a fellow traveler, on the other hand, it depicts the housing unit as an open catalyst that is actively engaged in bringing the residents into the society and the society into the unit.

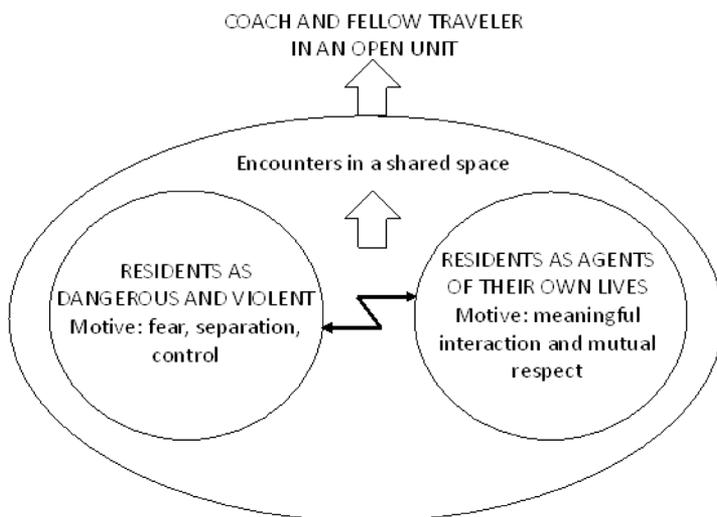


Fig. 2. The germ cell in the case of the supported housing unit

The study of Nummijoki, Engeström and Sannino (2018) on home care encounters between elderly, frail patients and their caregivers represents the micro-cycles of expansive learning. The study examines home care workers' visits to the homes of their elderly clients as sites of learning. The loss of physical mobility is a major factor undermining the quality of life and agency among elderly home care clients. Among home care clients, a common traditional expectation is to be a passive recipient of services. Thus, active involvement in and initiation of mobility exercises represent a difficult threshold. Among home care workers, the standard script of a home care encounter has not included physical exercises. Thus, this new demand threatens to increase the workload and destabilize timetables as well as requires novel competences. It initially means more work for the home care practitioner and more effort for the client, so regarding it only as an add on to existing practice will not work. Its potentials and benefits will only be disclosed and experienced when the dominant script of home care encounters is qualitatively transformed so as to incorporate mobility exercises as built-in components of necessary daily chores.

To facilitate development in this direction, practitioners and collaboration partners of Hel-

sinki home care services in Finland designed and are implementing a new practice called the Mobility Agreement (Engeström, Nummijoki, & Sannino, 2012). The Mobility Agreement is a plan prepared and implemented jointly by the client and a home care worker with the objective of promoting daily exercises in practice. It is aimed and tailored at contributing to the home care client's functional capacity and physical mobility through physical actions planned and executed with the support of the home care worker. This study examined the implementation of the Care Agreement in video-recorded home care visits. This was a learning challenge for both the home care client and the home care worker. The data of this study is consisted of 30 videotaped home care visits to the homes of 17 clients conducted over a period of 3 years (2007—2009) before, during, and after the implementation of the Mobility Agreement. The length of the visits ranged from 20 to 117 minutes.

Figure 3 depicts the germ cell in this case. The contradiction of mobility for the elderly is that between safety and autonomy. This is experienced as a conflict between the fear of falling and the motive to move independently. The germ cell that opens up a way out of this conflict is the decep-

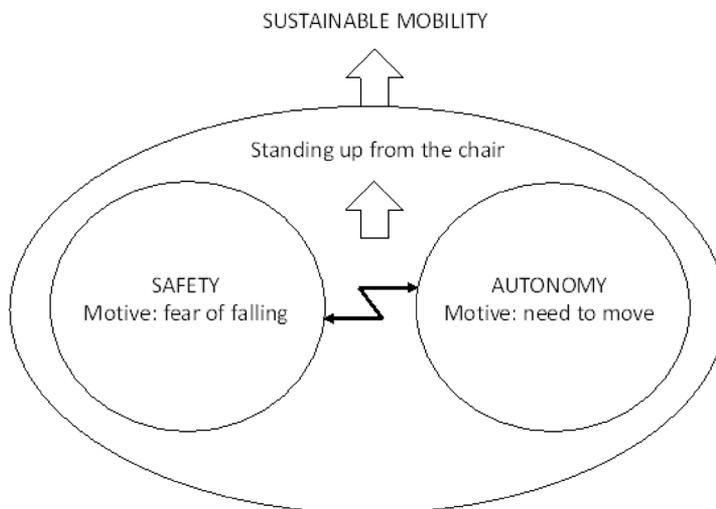


Fig. 3. The germ cell in the home care case

tively simple action of standing up from the chair (Engeström, Nummijoki & Sannino, 2012). This action is literally a gateway or portal that allows ascending to other exercises and forms of movement. At the same time, the action of standing up from the chair embodies in itself the contradiction. Safety demands that you to seek support in the handles of the chair — autonomy demands that you use your own thigh muscles and not external supports. The concrete concept of sustainable mobility is achieved when the person adjusts his or her movements according to the circumstances — using primarily one's own muscles to gain strength and coordination, but using also external support for example when the chair is too deep or one is too fatigued.

This case demonstrates that ascending from the abstract to the concrete and forming a theoretical concept do not have to be primarily verbal and intellectual processes. The formation of sustainable mobility was foundationally an embodied and material process in which physical artifacts and bodies played key roles. Verbal articulation and modeling came after the practical enactment (Engeström, 2013).

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## Conclusion

Schools cannot remain isolated from contradictions and challenges in the society. Thus, interventionist and developmental studies of school instruction need to be embedded in broader transformations, such as the design of “schools of the future” (Gromyko, Margolis & Rubtsov, 2020). At the same time, schools need to search partnerships and coalitions with progressive social movements (Tarlau, 2019). Davydov's revolutionary pedagogy needs to be integrated with this broader agenda of school transformation as part of societal transformation. Schools represent a tremendous and underutilized potential of societal renewal.

On the other hand, educational researchers need to step out of the classrooms, into the wild. The principle and method of ascending from the abstract to the concrete is above all a guideline and framework for concept formation understood as design and practical implementation of “enacted utopias” (Sannino, 2020a) — alternatives to the unsustainable and oppressive patterns of economy and governance that threaten our collective survival.

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### Information about the authors

Yrjö Engeström, Professor Emeritus of Education at University of Helsinki, Professor Emeritus of Communication at University of California, San Diego, visiting professor at University West in Sweden and at Rhodes University in South Africa, CRADLE, University of Helsinki, e-mail: yrjo.engestrom@helsinki.fi

### Информация об авторах

Урио Энгестрём, PhD, эмерит-профессор Хельсинского университета; эмерит-профессор Университета Калифорнии, Сан-Диего; приглашенный профессор Университета Уэст в Швеции и Университета Родса в Южной Африке; Центр исследования деятельности, развития и обучения (CRADLE), Хельсинский университет, Хельсинки, Финляндия, e-mail: yrjo.engestrom@helsinki.fi

Получена 10.09.2020

Принята в печать 12.09.2020

Received 10.09.2020

Accepted 12.09.2020