

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical  
Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

## 1

### Introduction

#### PROBLEM ONE: THE FUTILITY OF LEARNING

In his standard textbook *The Conditions of Learning*, Robert Gagné (1970) identifies eight hierarchically organized types of learning. The highest, cognitively most advanced type is called problem solving. In problem solving, “two or more previously acquired rules are somehow combined to produce a new capability that can be shown to depend on a ‘higher-order’ rule” (Gagné, 1970, p. 64). Problem solving is dependent “on the *store of rules* the individual has available” (Gagné, 1970, p. 223).

Although Gagné’s position was first presented quite a while ago, it has not really been surpassed or superseded by more recent theorizing within cognitive psychology. For example, Donald Norman in his textbook *Learning and Memory* (1982) identifies three basic types of learning: accretion, structuring, and tuning. His structuring is a fairly close counterpart of Gagné’s problem solving. It implies the formation of a new conceptual structure or schema on the basis of previously acquired knowledge and experience. As a typical example, Norman reports his own learning of the Morse code. Having trained himself a long time to receive individual letters in the Morse code, not improving noticeably in speed, he was advised to focus on words and phrases instead of letters. A dramatic improvement occurred.

I already had a solid base of performance on the individual letters, and so I was able to benefit from the advice to enlarge the unit size – to restructure my knowledge. (Norman, 1982, p. 83.)

The similarity between Norman’s structuring and Gagné’s problem solving is obvious. The jargon has changed, but the substance remains the same.

At the first sight, problem solving or structuring seems to be a satisfactory characterization of the uppermost reaches of human learning. What

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

more can one expect than insightful solutions to problems through a novel structuring of the subject's mental model or cognitive schema?

The problem is that problem solving and structuring are essentially *reactive forms of learning*. Both presuppose a given context that presents the individual with a preset learning task. Learning is defined so as to exclude the possibility of finding or creating new contexts. However, it is *this* very aspect of human performance – or rather the lack of it – that is becoming the central source of uneasiness and trouble in various fields of societal practice. In general terms, troubles of this type may be named the *difficulty of anticipating, mastering, and steering qualitative changes* in individual lives, in families and organizations, and in the society as a whole.

Symptomatically enough, Norman ends his book with a tirade on how badly modern technology matches human capabilities. According to him, system designers misuse and ignore the users: “They start with the machine, and the human is not thought of until the end, when it's too late: witness the control panels in the nuclear power plants” (Norman, 1982, p. 115). Norman's solution is that technological systems should be designed so as to make learning easier.

Pleas like this follow the traditional patronizing approach: The poor learners must be helped to cope with the tasks *given* to them. The approach is self-defeating. Norman himself points out that it takes a long time to learn the mastery of a complex skill. At the same time, the contexts of the tasks and skills are going through profound qualitative changes, which often render previous tasks and skills obsolete. Norman himself says, “when it's too late.” This lag can never be overcome by patronizing, by asking designers to plan more “user-friendly” systems. It can only be overcome by enabling the users themselves to plan and bring about the qualitative changes (including the design and implementation of technologies) in their life contexts.

If learning has nothing to offer in this respect, we have good reason to talk about the futility of learning. Both in theory and in practice, human learning actually seems to be doomed to the role of running after those qualitative changes in people's life contexts. While the learners are engaged in diligent problem solving and structuring in order to cope with changes that have shaken their lives, there are already new qualitative changes quickly ripening to fall on them. This stance is documented by Gagné as follows:

A great scientific discovery or a great work of art is surely the result of problem-solving activity.... Nothing ... supports the idea that there is anything very different about the problem solving that leads to discoveries of great social import.... But the major discovery, in contrast to the common garden variety, involves a feat of generalizing that goes far

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical  
Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)*Introduction*

3

beyond what may be expected in the usual learning situation. There is an “inductive leap,” a combining of ideas that come from widely separated knowledge systems, a bold use of analogy that transcends what is usually meant by generalizing within a class of problem situations. (Gagné, 1970, p. 227–228)

Here we have two assertions. First, great creative achievements are based on the same kind of inductive, combinatorial problem solving as any common act of learning by problem solving. Second, usual acts of learning by problem solving have practically nothing in common with truly creative discoveries because in the latter the “inductive leap” is so much greater. In other words, Gagné first denies that creation has anything qualitatively special in it. Immediately thereafter he points out that creation is indeed qualitatively special because it transcends the context given.

The outcome is rather gloomy for learning.

Because it is a method rich in reinforcement value, the solving of problems within structures of intellectual skills to be learned may create a love of learning, a “thirst for knowledge” in the individual learner. But it is a vastly different thing to suppose that this kind of learning will necessarily predispose the individual to become a “creative” thinker, capable of making great contributions to science or art. To be sure, the variables that produce genius are surely not entirely innate and must prominently include factors in the individual’s experience, arising from his environment. But except as a method for acquiring prerequisite intellectual skills, “practicing discovery” seems an unlikely choice of antecedent variable to be involved in the production of genius. (Gagné, 1970, p. 229)

This is a specimen of self-defeating circular reasoning. First, the author tacitly assumes that the highest form of learning is practicing inductive combinatorial problem solving, which by definition does not transcend the context given. Then the author triumphantly concludes that learning by problem solving does not lead to true creativity, that is, to transcending given contexts.

In this book, I shall examine whether learning really is doomed to futility or whether this is a historical artifact of only limited and temporary validity, both in theories of learning and in the societal practices involving learning.

More specifically, I shall argue (a) that the conception of creation as inductive combinatorial generalization (albeit in magnified scale) is fundamentally false and (b) that the conception of the highest form of learning as inductive combinatorial problem solving or structuring is also fundamentally false.

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

## PROBLEM TWO: THE ELUSIVENESS OF EXPANSION

The alternative to reactive forms of learning is expansion, which transcends the context given. Because of its elusiveness, expansion is traditionally not considered a proper object of scientific investigation. It has very much remained a domain of mysticism.

C. G. Jung made one of the important early attempts to incorporate expansion into psychological theory. For him, the key concept was the *collective unconscious*.

From this point of view the conscious personality is a more or less arbitrary segment of the collective psyche. It consists in a sum of psychic facts that are felt to be personal. The attribute “personal” means: pertaining exclusively to this particular person. A consciousness that is purely personal stresses its proprietary and original right to its contents with certain anxiety, and in this way seeks to create a whole. But all those contents that refuse to fit into this whole are either overlooked and forgotten or repressed and denied. This is one way of educating oneself, but it is too arbitrary and too much of a violation. . . . Hence these purely “personal” people are always very sensitive, for something may easily happen that will bring into consciousness an unwelcome portion of their real (“individual”) character. (Jung, 1966, p. 157)

According to Jung, psychoanalysis may lead to annexing deeper layers of the collective unconscious, a process that produces an enlargement of the personality leading to the pathological state of “inflation.”

It occurs whenever people are overpowered by knowledge or by some new realization. “Knowledge puffeth up,” Paul writes to the Corinthians, for the new knowledge has turned the heads of many, as indeed constantly happens. The inflation has nothing to do with the *kind* of knowledge, but simply and solely with the fact that any new knowledge can so seize hold of a weak head that he no longer sees and hears anything else. He is hypnotized by it, and instantly believes he has solved the riddle of the universe. But that is equivalent to almighty self-conceit. This process is such a general reaction that, in Genesis 2:17, eating of the tree of knowledge is represented as a deadly sin. (Jung, 1966, p. 156)

On the other hand, expansion may lead to self-knowledge and truly widened consciousness.

The more we become conscious of ourselves through self-knowledge, and act accordingly, the more the layer of the personal unconscious that is superimposed on the collective unconscious will be diminished.

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical  
Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)*Introduction*

5

In this way there arises a consciousness which is no longer imprisoned in the petty, oversensitive, personal world of the ego, but participates freely in the wider world of objective interests. This widened consciousness is no longer that touchy, egotistical bundle of personal wishes, fears, hopes, and ambitions which always has to be compensated or corrected by unconscious counter-tendencies; instead, it is a function of relationship to the world of objects, bringing the individual into absolute, binding, and indissoluble communion with the world at large. The complications arising at this stage are no longer egotistic wish-conflicts, but difficulties that concern others as much as oneself. (Jung 1966, p. 178)

For Jung, expansion is achieved through the collective unconscious, which in turn is reached with the help of psychoanalytic therapy. The conception is somehow very static: The collective unconscious *resides* somewhere deep beneath more superficial layers. The task is to get into touch with it, to seize some of its immense power. But how did the collective unconscious emerge in the first place? How does it develop? Can the individual participate in creating new forms of the collective unconscious? And above all: Is the collective unconscious only a mental, spiritual layer, or does it have some kind of material basis and embodiments in people's societal and productive practice?

As long as these questions remain unasked and unanswered, the Jungian theory remains mystical.

In recent psychological theorizing, some attempts have been made to reintroduce expansion as a scientific concept. In his "transgressive model of man," Jozef Koziellecki (1986) distinguishes between protective and transgressive behavior. The latter "allows for moving forward: the person is capable of exceeding the boundaries of his or her material or symbolic achievement, that is, capable of creating or assimilating new values" (Koziellecki, 1986, p. 90). Transgressive behavior is further divided into two types, expansion and creation. The former consists in the acquisition and assimilation of existing material or symbolic values (commodities, business, power, influence, knowledge). The latter entails the solution of new, unconventional problems.

Koziellecki gets into trouble when he tries to apply these distinctions in concrete cases.

There should be no difficulty in classifying Columbus's voyage or Einstein's discoveries as typical instances of transgressive behavior. We are apt to hesitate, however, when asked to decide if the solving of the Missionaries and Cannibals puzzle is a case of transgression or not. Similar problems in classification crop up in every other domain of psychology, of course. (Koziellecki, 1986, p. 92)

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

To preclude such difficulties, Koziellecki puts forward a definition as broad as possible.

Any intentional action whose outcome transgresses the subject's past achievements is seen as a case of transgressive behavior. (Koziellecki, 1986, p. 92)

In other words, if the subject could not previously solve the Missionaries and Cannibals problem – and then finally solves it – this should obviously be accepted as a case of transgression. In effect, there is no clear difference between any kind of problem solving or structuring and transgression. The difference between a problem and the context producing the problem is blurred – or rather, contexts are not considered. Notice that Koziellecki speaks of transgression only in terms of an intentional and individual-psychological process, as “exceeding the boundaries of *his* or *her* achievement.” Jung's powerful though opaque idea of the *collective* and often not very intentional character of expansion is given up without discussion. Notice also the circularity of Koziellecki's definition: What transgresses is transgression. Very little explanatory power is left in our hands.

Another recent attempt is provided by Karsten Hundeide (1985). His key concept is *perspective*. Using a spatial metaphor, Hundeide introduces a general theoretical idea of two developmental principles, expansion and contraction. When one is located in a definite position, there are certain things one can see directly. They occupy a central position in the field of vision. Other things are in the periphery, and still others are outside one's field of vision or perspective.

Correspondingly, when one is in a definite interpretive position, there are certain conclusions, judgments, and insights that can be immediately seen as plausible and evident. Others are impossible, irrelevant, or implausible. Thus, in order to arrive at a definite conclusion or insight, one must be in the right position. If one is in a “false position” in relation to a certain conclusion or insight, there is little point in elaborating alternatives from that position. Instead, one must redefine the situation or “restructure the field,” as Gestalt psychologists put it. Such a redefinition of one's position may be of an expansive character.

This expansion may result from a *confrontation* between positions, between *the recurrent alternative one takes for granted* and *a contrasting alternative*. In order to solve this conflict, the person may have to “move back” to the more detached and abstract position... From this position both conflicting perspectives may be integrated and united....

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

There is also the opposite movement... I call this the *contraction of perspective*. This term was chosen because it is a movement from a wider more inclusive position to a narrower one with fewer options. Contraction of perspective may take place under conditions of monotony, reduced variation, or the absence of contrasting alternatives. (Hundeide, 1985, p. 314–315)

Hundeide is very conscious of the difference between problem and context. He also recognizes a specific type of problems, namely, conflicts or contradictions, as the source of expansive recontextualization. However, his expansive recontextualization suffers from the same weakness as Koziellecki's whole conception. It is reduced to an individual and mental process. Thus, it is one-sidedly attributed the flavor of abstraction and detachment. Jung's insight into the collective nature of expansion effectively counteracts this type of cognitivist impoverishment of human development.

The collective dream has a feeling of importance about it that impels communication. It springs from a conflict of relationship and must therefore be built into our conscious relations, because it compensates these and not just some inner personal quirk.

The processes of the collective unconscious are concerned not only with the more or less personal relations of an individual to his family or to a wider social group, but with his relations to society and to the human community in general. The more general and impersonal the condition that releases the unconscious reaction, the more significant, bizarre, and overwhelming will be the compensatory manifestation. It impels not just private communication, but drives people to revelations and confessions, and even to a dramatic representation of their fantasies. (Jung, 1966, p. 178–179)

So Jung sees new kinds of communication as necessarily involved in expansion. But are only cognition and communication reorganized? Does the material practice remain intact?

In this book, I shall argue that it does not. To the contrary, true expansion is always both internal and external, both mental and material. More specifically, I shall argue (a) that expansive processes can indeed be analyzed and modeled; (b) that the gateway to understanding expansion is neither the concept of collective unconscious nor that of perspective but the concept of *activity*; (c) that expansive processes are becoming integrated into processes of learning, that is, that a historically new advanced type of learning – learning by expanding – is currently emerging in various fields of societal practice.

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)THEORETICAL RESEARCH AS EMPIRICAL  
RESEARCH

This book is a report of extended theoretical research. For many people, theory construction is *either* inductive generalization from so-called empirical facts *or* purely speculative reasoning. In my view, theoretical research in its mature form is neither one nor a combination of these two.

I agree with Klaus Holzkamp's (1983) characterization of theoretical research. He differentiates between what he calls the level of categories and the level of specific theories. Categories are basic concepts with which the scientific paradigm or school defines its object, its inner structure and boundaries. Such categories "always include certain *methodological* conceptions about how one shall proceed scientifically in order to grasp the object adequately" (Holzkamp, 1983, p. 27–28). The research reported in this book belongs to the level of category construction.

Whereas the construction of categories as basic theoretical concepts may be regarded from a bourgeois point of view mainly as a question of arbitrary definitions and conceptual fixations, the "*historical category analysis* we are proposing is a procedure based on *empirical material* ... in which *scientific rationality* is extended to a problem field which used to be closed to it: the *formation of basic psychological concepts*. The methodological difference between research on the level of specific theories and research on the level of analysis of categories is thus not that the former is "empirical" but the latter "speculative", merely "deductive", or the like. To the contrary, *both research types are empirical*, but the material collected and used is in the first case of an "*actual-empirical*" and in the second case of an "*historical-empirical*" nature. (Holzkamp, 1983, p. 50)

So the research reported in this book is theoretical research aimed at the construction of categories, using a specific type of empirical data. This specific type of data typically consists of *propositions and findings of previous analyses*, or, more generally, of previous representations of the object of research.

Such data may be predominantly either object-historical or theory-historical. Object-historical data consist of propositions and findings describing the development of the object of the research – in this book, the historical development of human learning and expansion. Theory-historical data consists of theories or theoretical propositions concerning the object, considered in their historical origination and succession – in this book, theories related to human learning and expansion.



Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

In the construction of categories, actual-empirical data are also often useful and necessary. But here Holzkamp's distinction between the level of category construction and the level of constructing specific theories is essential. In research aimed at a specific theory, actual-empirical data are an indispensable and integral element of the research project. In research aimed at category formation for an entire paradigmatic orientation, actual-empirical data may play a suspended and more mediated role, as if gradually growing into (and simultaneously altering) the suggested categories from various concrete projects.

In any theoretical investigation moving on the level of categories, three methodological questions must be implicitly or explicitly answered. These three questions are (1) how to *select* the data, (2) how to *process* the data into categories, (3) how to place the categories developed in fruitful *contact with practice*.

In the following sections, I shall address these three questions, using two very different examples of theoretical research as points of comparison. The first example is the short but pathbreaking paper "Toward a Theory of Schizophrenia" (Bateson, 1972, p. 201–227), written by Gregory Bateson, Don Jackson, Jay Haley, and John Weakland in 1956. The second example is the much discussed two-volume work *The Theory of Communicative Action* by Jürgen Habermas (1981; in English 1984 [vol. 1]).

Incidentally, both examples are concerned with the theme of communication. However, the paper by Bateson and associates is aimed at a reconceptualization of the theory of schizophrenia, while Habermas's book aims at formulating a comprehensive theory of communicative action in general. It may appear that the paper by Bateson et al. would be quite specific and not belong to the level of category construction at all. However, its theoretical kernel, the single central category generated by the authors in that paper, has had an impact that far exceeds the limits of a specific subtheory. It has been instrumental in the reorientation of the entire field of family therapy (see Hoffman, 1981), and it has inspired a variety of novel theoretical openings in other fields.

#### HOW TO SELECT THE DATA

In theoretical research, as in all empirical research, the selection of data is crucial for the credibility of the outcome. Two dangers are constantly present. The first danger is data selection through blind chance or intuition without articulated justification. The second danger is the subordination of data selection to predetermined outcomes, that is, use of data as

Cambridge University Press

978-1-107-07442-2 - Learning by Expanding: An Activity-Theoretical Approach to Developmental Research: Second Edition

Yrjö Engeström

Excerpt

[More information](#)

mere illustration of conclusions fixed by the researcher in advance. In both cases, the typical critique focuses on the questionable representativeness or comprehensiveness of data.

At the beginning of their paper, Bateson and his collaborators explicate their database as follows.

The theory of schizophrenia presented here is based on communications analysis, and specifically on the Theory of Logical Types. From this theory and from observations of schizophrenic patients is derived a description of, and the necessary conditions for, a situation called the “double bind” – a situation in which no matter what a person does, he “can’t win.” ...

Our research in this field has proceeded by discussion of a varied body of data and ideas, with all of us contributing according to our varied experience in anthropology, communications analysis, psychotherapy, psychiatry, and psychoanalysis. We have now reached common agreement on the broad outlines of a communicational theory of the origin and nature of schizophrenia; this paper is a preliminary report of our continuing research. (Bateson, 1972, p. 201–202)

The data demonstrated in the paper itself consist mainly of (1) the philosophical Theory of Logical Types (adapted from Whitehead & Russell’s *Principia Mathematica*), as applied to communication, and (2) observations of schizophrenogenic family situations and schizophrenic patients. However, the data are presented in a rather brief and condensed manner. The whole paper consists of twenty-seven pages in the 1972 book version. It contains sixteen footnotes (of which two refer to personal communications). No attempt is made at representativeness of data. The choice of data seems to stem from the authors’ personal inspirations rather than from any systematic analysis of previous theories or of the history of schizophrenia. The whole paper bears the characteristics of a lucky hybrid: a good idea that emerged in a group versatile, sophisticated, and unconventional enough to embark on a challenging intellectual adventure. The credibility of the category generated (double bind) lies less in its database than in its immediately fascinating heuristic power and in the visions it opens.

Habermas’s voluminous work is completely different in its relation to data. Thomas McCarthy, the translator of Habermas, gives the following characterization.

He develops these themes [of communicative action; *Y. E.*] through a somewhat unusual combination of theoretical constructions with historical reconstructions of the ideas of “classical” social theorists.