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## The Fallacy of Decontextualization

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In this article, I argue against views of the development of abstract thinking that employ the notion of decontextualization. Starting from an assumption that conceives of context as constitutive of meaning, it becomes clear that the notion of “decontextualization” is a poor concept that provides little explanation for the developmental process toward meaningful abstract thinking. I propose a conceptualization of the notion of context from an activity point of view and contend that the conscious process of (re)contextualizing—that is, the continuous process of embedding contexts in contexts—can lead to an explanation of the development of meaningful abstract thinking. The process of continuous progressive recontextualizing is described in the article on the basis of how young children expand their play activity toward embedded, more abstract activities.

### VYGOTSKY ON THE GENESIS OF SCIENTIFIC CONCEPTS

In *Thinking and Speech*, Vygotsky (1987) explained his view on the development of human thinking as a culture-driven process that eventually results in mastery and appropriation of more highly developed—so-called scientific—concepts under control of both cultural constraints and personal creativity. The hallmark of these concepts is conscious awareness, and Vygotsky went on to write, “Only *within a system* [italics added] can the concept acquire conscious awareness and a voluntary nature. Conscious awareness and the presence of a system are synonyms when we are speaking of concepts” (p. 191). One interpretation of Vygotsky’s position is that he sees the embeddedness of concepts in an overarching environment as an essential condition for the academic quality of concepts. In modern educational terminology, this “embeddedness” can be interpreted in terms of “contextualization” (see Forman, Minick, & Stone, 1993). However, Wertsch (1996) argued that “the nature of everyday and scientific concepts was envisioned by Vygotsky in terms of one of the semiotic potentials of human language, namely ‘decontextualisation’” (p. 28).

This controversy asks for a more detailed analysis of the notion of context. In this article, I start out from a notion of context as constitutive of meaning (see also John-Steiner, Panofsky, & Smith, 1994) and as embodied in sociocultural activities. From this perspective, it is consistent to argue for the importance of context for all forms of meaningful concept formation (including abstract concepts).

## DECONTEXTUALIZATION AND THE DEVELOPMENT OF THINKING

In various studies on the development of thinking, it is suggested that a process of decontextualization takes place. Decontextualization is said to be especially important for the development of abstract thinking.

In his explanation of Vygotsky's theory, Wertsch (1985) referred to the principle of decontextualization of mediational means as an overarching principle of development. He defined this principle as "the process whereby the meaning of signs becomes less and less dependent on the unique spatiotemporal context in which they are used" (Wertsch, 1985, p. 33). For Wertsch, decontextualization is inherently related to the construction of abstract mental objects, as in the development of the number system. Hence, Wertsch (1985) wrote:

... quantity can be represented independently of any concrete perceptual context. Indeed quantity can become an abstract object itself instead of a meaning tied to a set of concrete objects. With decontextualisation it becomes possible to talk about two or three without specifying two or three *what*. (p. 33)

Using somewhat different terminology, Donaldson (1978) explained that during the course of its development thinking becomes "disembedded"; that is, it becomes relatively independent from one's own personal desires and from the concretely given situational meanings.

Generally speaking, in most cases *decontextualization* refers to a process of detachment from conditions that constrain the generality of meanings and actions. In the course of development, the actions and meanings of a person become less and less determined by the empirical aspects of a situation. They become independent from the situation in which the action was originally learned. Abstract thinking is generally seen as maximally decontextualized.

## THE PROBLEM OF DECONTEXTUALIZATION

Despite the general plausibility of this notion of decontextualization, it is problematic for several reasons:

1. There is this semantic problem: decontextualization is a negative qualification, indicating that something does *not* occur. As such, the term *decontextualization* is not informative, as it does not explain very much at all about what is actually going on during the developmental process of thought.
2. If we suppose that decontextualization is the opposite of context-dependence, we also run into a serious problem. Beside the fact that there exists no clear, generally accepted definition of context, there is yet another reason for being cautious with the use of the term *decontextualization*. Because context is a personal construct, it cannot be defined in an absolute, detached way. *Context* is always strongly related to a personal (explicit or implicit) definition of a situation of action. But if that is true, *decontextualization* seems to suggest an occurrence of actions in a setting that is not interpreted by the agent. However, that would mean no situation, no action, no meaning at all.
3. The most plausible interpretation of Wertsch's notion of decontextualization of mediational means would be to take it as an assertion of the applicability of mediational means in different situations, including situations that are at variance with the original learning situation. This would

lead us directly to the highly controversial issue of transfer (see, e.g., Lave, 1988, and Anderson, Reder, & Simon, 1996, for two opposite points of view on the matter). The notion of decontextualization does not satisfyingly provide an explanation for the phenomenon of transfer, as it focuses on the conditions of actions, whereas transfer is a feature of the activities themselves. Moreover, there is no valid theoretical argument showing why an action must be detached from a situation first to be applicable in another situation, and there is no empirical evidence for the necessity of decontextualization for transfer.

In this article, I analyze the notion of context from an activity point of view. I argue that in situations where decontextualization is said to occur, actually a process of *recontextualization* is going on. Donaldson (1992) already pointed out that the process of development of disembedded thought does not completely rule out the need for context building. Even in the higher developed stages of constructive thought, a process of context building is needed to give meaning to the mental actions. The process of recontextualization is mentioned by different authors in the description of higher thinking processes (e.g., Mercer, 1992). However, the theoretical treatment of the phenomenon remains rather weak. In this article, I try to give a brief impression of what an approach toward decontextualization from an activity point of view will look like. From a theoretical analysis, I argue for an activity of continuous progressive (re)contextualizing. A brief example based on a school practice observation is described. In sum, all arguments seem to suggest that the notion of decontextualization is fallacious.

### WHAT IS CONTEXT FROM AN ACTIVITY POINT OF VIEW?

Vygotsky's analysis of human behavior is predominantly formulated in terms of activities, or rather "shared activities" (*sovmestnaja dejatel'nost'*). When, for example, he characterized the zone of proximal development in terms of "imitation," he was most certainly referring to meaningful reconstructions of cultural *activities* and not to some process of copying individual *actions*.

Leont'ev (1978) developed this theory of human behavior further by describing three different but related levels of description and analysis. Leont'ev pointed out that activities can never be observed directly. *Activities* as sociocultural phenomena are always embodied in *actions*, which he called the moments of activities. One can only know the activity of a person by interpretation, based on that person's actions. *Tool-mediated actions* are the analytical units for describing human activity (see also Davydov & Radzikhovskii, 1985). Such actions are tied to both actual situations and metapersonal cultural spheres by the objects to which they are directed, by the instruments they use, by the goals at which they are aimed, and by the operations by which they are constituted. Hence, actions are always (by definition) situated in place and time (cultural history).

According to Leont'ev, actions are always contextualized by cultural, personal, and situational factors. Thus, *context* can be defined as the interconnected collection of factors that codetermine the structure and meaning of human actions. The most important of these are the individuals' motives and intentions, their interpretations of the value of goals and objects, the availability of cultural instruments and their ability to use them, autonomously working operations, and neurological and mental events. Context is a result of a personal (mental) or social act of interpretation of an activity setting (contextualizing), trying to bring the determining factors under conscious control.

On deeper reflection, this notion of contextualized actions comes very close to Heidegger's notion of *Dasein* as "being-in-the world" (Heidegger, 1953). Heidegger also denied the possibility of separating subject and object. In his view, any analysis of a situation is a life situation in which the knowing person is essentially included. And the other way around: It is impossible to say anything meaningful about a person without talking about his or her "way of being in the world." The situation (context) constitutes the person as much as the person constitutes the world. For Heidegger, then, the person is not first and foremost a "purely cognitive being" merely thinking rationally about how to cope with the objects surrounding him or her, but the person is first and foremost a situated interpreter, accomplishing his or her everyday coping as a being in the social and cultural world. From this perspective, decontextualizing actions actually would mean destroying the person and the human actions and degrading them into arbitrary, accidental events—that is, catastrophically discontinuing *Dasein*.

But getting rid of the notion of decontextualization is not enough to solve the problems that the notion tried to solve. Without doubt, within the development of activities, there is some emancipation from the original situated actions toward new forms of acting not supported by the factors available in the original learning situations. The eye-catching example of this is indeed the development of abstract thinking. To deal with this problem, a further reflection on the notion of (re)contextualizing is necessary.

### FORMS OF CONTEXTUALIZING

Two important implications of my interpretation of activity theory must be emphasized here. First, any activity can be realized in different forms of action patterns. You can write with a pen (evoking a particular category of goal-directed actions) or you can write with a computer (evoking a partially different pattern of actions). Both patterns are basically an embodiment of the activity of writing. This phenomenon can be referred to as the principle of multiple realization of an activity.

Another implication of Leont'ev's activity can be called the principle of activity development. As an elaboration of his theory, Leont'ev (1978) pointed out that in principle, every action's object can become a motivating force for a new complex of related actions and thus stimulate the invention of new strategies and tools. Such an action then evolves into a new activity. Activities thus generate new activities and consequently yield a division of labor at the social level.

These two principles are very important for our understanding of contextualizing as an interpretative activity. When a new situation is recognized as an opportunity for an alternative realization of a well-known activity, then this activity is actually recontextualized. This activity could be called a *horizontal recontextualization*. This horizontal recontextualization is basically a consequence of the previously mentioned principle of multiple realization of an activity. When, for example, children discover that they can draw a story (just as they drew a situation or an object before), they actually carry out a known activity in a new situation. The children recontextualize the drawing activity in applying it to a new situation. In the same sense, when children discover that they can apply the mathematical notion of area to irregular geometrical forms, they actually recontextualize their activity of "area measuring" for a new situation by carrying out new actions that are still valid under their previous notion of the activity of area measuring. These are examples of horizontal recontextualizing.

As a consequence of the principle of activity development, new problems in an activity may arise and become new pivots of action patterns. These action patterns often lead to the invention

of new goals, new means for action, and new strategies. These new action patterns develop into new activities and new contexts for acting that, although emerging from a well-known activity, are not directly a new, alternative realization of that activity. This process of progressive continuous contextualizing is a form of *vertical recontextualization*.

An example might illustrate this process. In one of our studies, I observed children playing shoe store in the classroom (van Oers, 1994). Within the context of the shoe-store play activity, attention was drawn to actions of measuring. During the play activity, measuring became a separate activity for the children, including forms of measuring and conversations about measuring that the children never could have heard in a real shoe store. Measuring as a new activity gradually emerged out of the shoe-store play activity, leading to a new, even more “abstract” activity and context of acting.

Theoretically, on the basis of the principle of activity development, we can now assume that the development of abstract thinking requires the development of a new activity—that is, a symbolic activity—that produces (theory-based) contexts that have acquired the quality of *Dasein* for the actor involved. Abstract thinking is a state of being highly involved in-a-theoretically-constructed-world, based on explicitly used relations, logical rules, and strict norms of negotiation. This new state of being is not a detached way of acting but a new cultural activity driven by both cultural contents and human desires (the desire of appropriation, of being consistent, of finding acceptable solutions, of gaining status in the academic world, etc.). So this is not disembodied thought in the sense of Donaldson, and it is not context-free, as suggested by many other authors.

It is important to note here that the different recontextualizations are not incommensurable. Different contextualizations can exist at the same time, enriching the action possibilities of the children; more significantly, they provide a resource of meaning for new actions (new contextualizations) by also relating these to old (well-known) contexts. A classroom example of this phenomenon of *multiple contextualization* is presented in the next section.

### A FEW ILLUSTRATIVE EXAMPLES

Our observations of young children’s play (5–7 years old), and more particularly the developments that took place within that play, gave us a clue of how abstract thinking could evolve as a new contextualized activity. The teachers and I videotaped small groups of children playing shoe store in a corner of their school building and analyzed the material several times for different purposes. During the play, the teacher was always there, participating in the children’s play. Sometimes she asked the children questions about what happened, drew attention to problems, or just played the role of a customer.

One of the remarkable aspects of the children’s play was the continuous evolution into new types of activity resulting from the continuous stream of problems that the children encountered. When children recognize the relevance of the problem for their play, they get involved in a new activity of solving the new problem. This is a new activity because it is motivated by a new object, it evokes new actions, and often it requires new instruments.

In the context of their play in a shoe store, constructed by the children in a corner of a classroom, the children encountered the problem of measuring the size of shoes. How could you know which size you have? Some children knew that sometimes you could read it from the bottom of a shoe, but this was not always possible. In one situation, the teacher introduced

a new measuring device, a measuring mat with drawings of soles, and indications of the different sizes. The children immediately started measuring their own feet on the mat and reading their sizes. They started guessing and predicting which size babies or the teacher would have. This was a new activity for the children. It kept them involved for several minutes. "Measuring activities" emerged several times in different forms during the shoe-store play. Actually, the measuring activity was highly relevant, as it was emerging from the shoe-store playing activity. The shoe-store playing activity seemed to be the context for the measuring activity.

It is possible to map the development of the shoe-store play activity as a chain of newly emerging activities. One map was as shown in Figure 1.

The last mentioned activity turned out to be a sort of semiotic activity (see van Oers, 1994, 1996) in which children reflected on the structures of signs and their meanings: How could they indicate on a label what kind of shoe is in a box? The event took place in the shoe-store room, but it was also an activity in its own right, following new rules (readability, unequivocal) and using new tools (paper and pencil, stamping materials) that were not directly suggested by the shoe-store play but by the kind of problem that arose in the context of that play. The semiotic activity thus was abstract (it constructed its own relational system) and contextualized at the same time. The mediational means (signs) were often constructed for the sake of the particular problem at hand. The activity of the children was highly motivated by the children's desire to solve the problem of reference.

After several play sessions in the shoe store, the teacher decided to transform the role play in a form of schematized symbolic play, based on the notions of purchase and sell. For the older children (6-7 years), the teacher put together an arithmetic game abstracted from the shoe store. With the

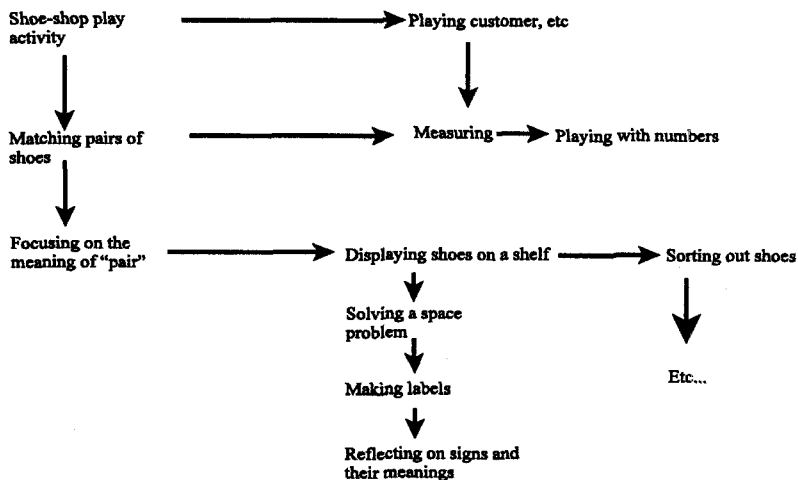


FIGURE 1 Expansion of play activity.

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context of the shoe store in their minds, these pupils had to take turns selecting cards from one of two decks. In one deck, the cards indicated how many shoes were purchased; in the other deck, cards indicated how many shoes were sold. The winner was the one who never had to sell more than he or she had in stock and who ended up with the least amount of shoes.

To play this game, the children had to keep count by adding and subtracting quantities. The children were allowed to check their calculations with a calculator, if necessary. The children and the teacher talked about their activities in shopping terms (buying, selling, etc.). The children were doing a whole series of additions and subtractions (with small numbers, below 20) that were registered on a special piece of paper. The game functioned both as a shoe-store playing activity at a symbolic level and as a practice for automatization of elementary arithmetical operations. This is a clear example of multiple contextualization, wherein the meaning of the new, abstract activity is supported from the well-known shoe-store play activity.

The children obviously played this game seriously and with pleasure. According to our observations, the children experienced this game still as an outgrowth of the shoe-store play. They still used the same language (selling, buying, stock). The contextualization of the arithmetical activities by the shoe store caused the children to know what they were doing while performing the arithmetical operations.

## CONCLUSIONS

From an activity-theoretical perspective, it must be assumed that activities develop into new activities. Later activities are contextualized by previous ones. Consistent with this theoretical assumption, I observed new activities emerging on the basis of new problems or goals during children's play activities. The new activities depended on the creation of a new context, or rather recontextualization. This process is called an activity of *continuous progressive recontextualizing*. The development toward more abstract forms of activities is one of the results of continuous progressive recontextualizing. On the basis of our observations, we have reason to assume that it is certainly not typically characterized by decontextualization or disembeddedness. Rather, the important thing was the possibility for the actors to create a new sign-based context related to their previous activities that made their new activity meaningful. I suppose this is consistent with Saxe's (1990) theory on the development of mathematical activity by the emergence of new goals.

Although other, and more strongly controlled, research is needed to explore this process further, several additional hypotheses can be formulated now. The process of transfer might be related to the possibility of creating an alternative context in the new situation and embodying a well-known activity in another action pattern. For example, a child who has learned addition from a textbook as a mechanical operation separated from the activity of mathematizing cannot automatically develop the ability to contextualize these operations and make them understandable and meaningful, let alone develop the ability to recontextualize the operations in a new situation.

As things stand now, it seems reasonable to investigate the process of continuous progressive contextualizing (both horizontal and vertical) more thoroughly, rather than investigating decontextualization, to understand the emergence of human (abstract) thinking.

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