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**The curse of the Hegelian heritage:
“Dialectic,” “contradiction,” and “dialectical logic” in Activity Theory**

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The curse of the Hegelian heritage: “Dialectic,” “contradiction,”
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Abstract

Referring to the concept of “dialectic” has been a promising approach for Activity Theorists to explain development and learning both in societies and in individuals. “Contradictions,” for example, are understood as the “driving force” of development. Often “dialectic” is supposed to work as the theory’s most basic foundation. Open questions of this approach, however, are mostly answered simply by hinting at the authorities of Hegel and Marx. This paper’s objective is to show that these “philosophical roots” of Activity Theory themselves need a critical, philosophical examination before they can be used as a theoretical basis.

Keywords: Philosophical roots of Activity Theory; development; dialectic; contradiction; logic; Hegel

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“The first question, then, which I have to ask is: Supposing such a thing to be true, what is the kind of proof which I ought to demand to satisfy me of its truth?”

C.S. Peirce, CP 2.112

Introduction

Activity Theory has become a recognized approach in many disciplines, since it promises a more adequate understanding of learning and development than other approaches. Its most important advantage is that it focuses from the very beginning at “activity systems” as unit of analysis. In this way, Activity Theory can overcome certain reductionist tendencies as given in approaches that put either human subjects, or social circumstances, or means of communication and interaction in the center of attention. Focusing, in particular, on the creative dimension of concrete actions, Activity Theory is a most promising candidate for an encompassing description and explanation of learning, and of processes which drive the world as well as the personality of acting persons (Davydov, 1999, 39).

Although strong in its general approach, there are some weak points in the theoretical foundations of Activity Theory. The goal of this paper is, first, to reveal some philosophical problems that are implied in Activity Theorists’ use of Hegel’s concepts of “dialectic,” “contradiction,” and “dialectical logic” and, second, to hint at alternative forms of “dialectic” that can open up new horizons for further research. The paper’s main purpose, however, is critique. Only when we recognize a theory’s weak points, can we improve this theory.

Within Activity Theory, the role of the Hegelian concepts mentioned above has been most extensively emphasized by Yrjö Engeström in his now classical book *Learning by Expanding. An Activity-Theoretical Approach to Developmental Research* (1987, chap. 4). In his 1999 introduction to this book he mentions as two of its five “central ideas”:

(2) historically evolving inner contradictions are the chief sources of movement and change in activity systems; ... (4) the dialectical method of ascending from the abstract to the concrete is a central tool for mastering cycles of expansive learning.¹

Following Hegel, Engeström formulates a sharp opposition between “traditional,” “formal,” or “abstract logic” on the one hand, and “developmental” or “dialectical logic” on the other (cf. also Davydov, 1990 <1972>). In contrast to “formal dialectics,” he emphasizes a

need for a “substantive, content-bound dialectics” as the basis of an Activity theoretical understanding of development. “Dialectics of substance” is the catchphrase he uses to anchor his theory of learning in the Hegelian tradition. “Hegel’s essential superiority to the modern proponents of formal dialectics” is based, according to Engeström, on the fact that “Hegel pointed out and defended the objectivity of logical forms of thought, their origination in the universal forms and laws of development of human culture – science, technique, and morality” (chap. 4).

Besides Engeström, others have stressed the Hegelian heritage as well (e.g. Davydov, 1999, 42 f.; Fichtner, 1999). Wolff-Michael Roth, in his *Being and Becoming in the Classroom*, found in Hegel’s dialectic “the ‘engine’ that drives (lifelong) teacher development”:

Georg Friedrich Hegel (1969) developed dialectics as method of reasoning in its modern form. Dialectics aims to understand phenomena concretely, in all their movement, change and interconnection, with opposite and contradictory sides as constitutive parts of the same unit. In the idea of the unity of opposites, dialectical logic recognizes that all processes and phenomena of the social and natural world embody contradictory, mutually exclusive and opposite tendencies. In dialectical logic, contradictions are not evils but the engine of development. That is, development arises from the resolution of contradictions and conflict.” (Roth, 2002, 165).

While Engeström emphasized the “objectivity” of dialectical development, Roth’s point is that a “dialectical approach to the praxis of teaching has the advantage that development (of praxis and practitioner) automatically becomes an inherent feature” (166). He distinguishes the dialectics of “Praxis – Theory,” “World – Language,” “Understanding – Explaining,” “Praxis – Praxiology,” and “Coteaching – Cogenerative dialoguing.” Their status as “dialectical units” apparently depends on three conditions: (a) both sides of these pairs are “mutually contradictory,” (b) they are “mutually constitutive,” and (c) their relationship guarantees development “automatically.”

Besides the conceptual and theoretical similarities between Engeström’s and Roth’s notions of dialectic, there is one fundamental methodological difference. While Engeström develops his theory mainly by quoting authorities – Hegel, Marx, and Il’ enkov in particular – Roth tries to clarify his concepts first of all by concrete examples. Both approaches come with some problems. Quoting authorities cannot substitute for clear definitions, in particular if

there is no discussion at all whether the mentioned authors use central concepts in the same way. (Cf. Bakhurst, 1991, for differences between Marx's and Il'enkov's concept of dialectic for example). Similarly, definitions cannot be replaced by examples, as we know since Plato, especially if there is no discussion whether the concepts used are adequate for describing certain concrete situations or not. Roth, for example, makes no difference between "contradictions" within the pairs mentioned above, "tensions" between them, and plain non-identity (166 f.). Dilemmas, disturbances, paradoxes, and antinomies – all these quite different things are "contradictions" for him (Roth & Tobin, 2002, 249).

The same vagueness about "contradictions" can already be found in Klaus Riegel's *Foundations of dialectical psychology*. He reconstructs the core idea of "Hegel's Dialectical Theory" as follows.

Each thing is itself and, at the same time, many other things. For example, any concrete object, such as a chair, is itself but, at the same time, is of many different properties. By selecting some and disregarding others we might develop one or another abstract notion (theory) about the chair. But only when we see all of these properties in their complementary dependencies do we reach appropriate, concrete comprehension. But what is the thing in itself? It is the totality of all the different, contradictory notions about it to which the thing in itself stands in contradictory relation. *Dialectical thinking* (Vernunft) comprehends itself, the world, and each concrete object in its multitude of contradictory relations. (Riegel, 1979, 39)

However, different properties are simply different properties. There is no reason – Riegel, at least, does not provide one – to suppose that the different properties of a chair, let's say that it is dark brown and made from oak, are either "complementary" or "contradictory." A few lines later, Riegel again emphasizes that concepts "like being and becoming, cause and effect, passivity and activity, structure and information can not be thought of in isolation but only in their mutual dependence." Even if we agree that there is a "mutual dependency" between these concepts – despite the fact that I feel quite free to think about these concepts without any limitation –, the question remains what exactly the relation between "mutual dependency" and dialectic might be.

More problematic, however, are those theories that are based on the notion of "dialectic" without discussing its meaning in any way (e.g. Lektorskij, 1977; Van Vlaenderen, 2001). Davydov, for example, wrote a whole chapter about "Basic Propositions in the Dialectical

Materialist Theory of Thought” in his *Types of generalization in instruction* without explaining at any place why all these considerations about the “development of thought” should be called “dialectical” (Davydov, 1990 <1972>). There are scattered remarks that dialectic “studies the laws of the historical formation of scientific thought” (70), that it has something to do with “contradictoriness” (99), with “identity as a ‘unity of differentiated definitions’” (167), with “reflective ... thought” (265), with reality “as a unity of being and nonbeing” (269), whose “essence ... can be revealed only by considering the process of its *development*” (288), and so on, but no idea how to bind all these vague ideas together. He promises to “present the basic theses of the dialectical theory of cognition” (231) without even saying what these “theses” are.

One of many problems is that the most comprehensive overview on “dialectic” I know of lists more than hundred classical authors using this concept in quite different ways (cf. the series of articles in *Historisches Wörterbuch der Philosophie*, ed. by J. Ritter, Vol. 2, Basel 1972, pp. 164-226). Philosophical concepts are never self explaining. They require a thorough discussion before readers can understand what an author wants to say by using them.

Thanks to Engeström, Roth, and Riegel we have at least some more extensive discussions of “dialectic” as used in Activity Theory. However, their attempts to base the possibility of learning and development on Hegel’s dialectic raise some fundamental questions:

- What does “dialectical logic” mean?
- What does “contradiction” mean in this context?
- How can contradictions explain development?
- How can dialectical development be “objective,” “substantive,” or “automatic,” and how could those strong claims be justified?

By now, as far as I can see, Activity Theorists have not even addressed these questions. Referring to authorities like Hegel and Marx as the “philosophical roots” of Activity Theory can only be convincing if these “roots” themselves are already convincing. The main objective of this paper is to question this assumption. In the first section, I start with some remarks about Plato’s and Kant’s concepts of dialectic in order to show the variety of possible interpretations. The biggest part, then, is on Hegel’s understanding of “dialectic.” In the third section, I will discuss the concept of dialectic in Marx and Il’enkoy, and the “conclusion,” fi-

nally, hints at some alternative conceptions of “dialectic” that sound more convincing to me.

Some older concepts of dialectic

The notion of “dialectic” is formed from the Greek verb *dialegesthai* whose first philosophical use has been ascribed to Zeno, a student of Parmenides. *Legein* means “to speak, to say,” and the prefix *dia-* can be translated as “through.” Accordingly, the everyday use of *dialegesthai* in Greek was “holding converse with,” “discussing a question with another,” or “arguing with one against something.” Our word “dialog” has exactly the same root as “dialectic,” but the ending in *dialektikê* – like those in “arithmetic,” “music,” etc. – stems from *technê* so that “dialectic” literally means the “art,” the “technique of *dialegesthai*.”

The nowadays famous philosophical use of “dialectic” has firstly been elaborated by Plato, and it might be interesting that Plato starts by distinguishing his use of *dialegesthai* from Zeno’s whom he accused not being a *dialektikos*, but only an *antilektikos*, that is someone whose goal is to confuse people by opposing to all opinions whatever they are (Plato, Phdr. 261d). For Plato, the term dialectic signifies a well defined scientific method of acquiring knowledge by combining two ways of looking at things: “That of perceiving and bringing together in one idea the scattered particulars,” that is, so to speak, the way from the particular to the general by “synthesis,” and as the opposite way “that of dividing things again by classes, where the natural joints are,” what he calls the “analytical” way (Plato, Phdr. 265d,e). Thus according to Plato, the process of “dialectical understanding” is a process of mutual determination of the general and the particular (cf. Plato, Soph. 253b-e; Hoffmann, 1996, chap. 2.3).

About 2000 years later, Immanuel Kant used the concept of “dialectic” to warn of what he called “dialectical illusion,” that is the illusion resulting from applying the principles of cognition developed in his *Critique of Pure Reason* “beyond the limits of experience” (Kant, CPR, B 87). The point is that there are only two main sources of knowledge and cognition for Kant, “intuition” (perception) and “understanding.” While all objects of knowledge, cognition, and experience are “given” by intuition, the faculty “which enables us to *think* the object of sensible intuition is the understanding” (B 75). The faculty of understanding uses a priori given concepts to think and to recognize the sensually given objects. The dialectical illusion

now comes out when we try to reason with these pure concepts about those ideas that cannot be sensually experienced: the immortal soul, freedom of will, and the existence of God (B 29 f.). The *critique* of this illusion, called “Transcendental Dialectic,” shows that, although it is necessary to “think” about these ideas, we cannot “know” (*erkennen*) them (B xxvi), because “knowledge” is restricted to what is sensually given in intuition.

Hegel’s dialectic

For Plato, to make a long story short, dialectic is a method to organize, based on experience, our knowledge by structuring hierarchies within a world of “forms,” while Kant criticizes as “dialectical” all approaches that forget to ground “knowledge” in concrete experience. Both, however, would agree that dialectic belongs to what we as human beings are doing when *reflecting* on the world around us, be it a world of experience or a world of pure forms. That is, for them “dialectic” is considered from the standpoint of *epistemology*; the context for both is a general theory of *knowledge* (*epistêmê* in Greek).

Hegel’s concept of “dialectic” is different in two essential aspects. First, Hegel denies the possibility of making a distinction between epistemology and ontology, that is between a theory discussing how we can gain knowledge *about* something and a theory of “being” (*to on* in Greek). “Scientific cognition,” according to Hegel, “demands surrender to the life of the object, or, what amounts to the same thing, confronting and expressing its inner necessity” (Phän. 52, Miller 32).

The relationship between epistemology and ontology has been a problem in philosophy since Plato. Immanuel Kant, however, was the one who performed the essential step in this discussion, formulating a principle that guides epistemology and philosophy of science to date: *there is no way of speaking about “being” without reflecting on the conditions of recognizing this being*. Any ontology depends on an epistemology. “The conditions of the *possibility of experience* in general are at the same time conditions of the *possibility of the objects of experience*” (KrV A 158, Guyer / Wood), as Kant stated 26 years before Hegel published his *Phänomenologie des Geistes*. In this most influential work, however, Hegel’s focus was not primarily on Kant but on Schelling, his former classmate in the *Tübinger Stift*, a theological seminary affiliated with the University. Together with Hölderlin, the three friends formulated

in Tübingen the foundations of what has become famous later on as the “system program of German idealism,” a program that did not emphasize epistemology in the Kantian sense but the question of how to consider “the Absolute,” or what Schelling called the “Urgrund” (“original ground,” the first, foundational, and undivided identity before any difference) and Hölderlin the *hen kai pan* (the “one-and-all”). The common objective was to overcome the Kantian priority of epistemology over ontology, and to reconstruct again a unity of both as developed originally in Greek philosophy.

As part of a long process of emancipating himself from Schelling who was much more famous at the time, Hegel begins his *Phänomenologie* by mocking his earlier friend’s “identity philosophy.” Contrasting his own approach with those who consider the Absolute as something in which “everything is one” and “equal” – like the night in which “all cows are black” (Phän. 22) – he tries to elaborate the idea that the Absolute has to be conceived from the very beginning as a *process* and as *developing*. Instead of keeping thinking and substance in a status of “idle simplicity,” as Hegel says with regard to Schelling’s *Urgrund*, his main goal is to conceive “the truth” as “living Substance,” that is as “the movement of positing itself, or [as] the mediation of its self-othering with itself” (Phän 23, Miller 10). And this movement now, in which – by contrast to Kant’s clear separation – thinking and being are “mediated,” is called “dialectic.” It is a “reflection” *within* being that motivates the Absolute as a process. Knowing is not an activity that treats its content as something different from itself, but this activity “is the immanent self of this content” (Phän. 53). Thus, his central point is the *identity* of thought and its content,² the “correspondence of the concept and its reality.”³

The second radically new idea in Hegel’s concept of dialectic is that a development driven by dialectic is driven by “necessity” (cf. Phän. 52; Enz. § 81; Logik I 42, Miller 50). Both ideas – the identity of thought and content and the necessity of dialectical development – are combined. Thus, looking for “what alone can be the true method of philosophical science,” Hegel hints at “dialectic” as something which belongs inherently to the respective *contents* of logic. Dialectic is not restricted to what we are doing in thinking and speaking, but it is “the inner self-movement of the content of logic” (Logik I 49, Miller 53); an “inner self-movement” that pushes forward the *Science of Logic* from “The logic of being (*Sein*),” to “The logic of essence (*Wesen*),” and finally to “The logic of Notion (*Begriff*).” Hegel claims

that this development realizes itself with “logical necessity” insofar as its only cause is something ‘within’ “Being” (cf. *Enz.* § 112), or whatever the “content” may be. The way “the systems of Notions as such has to be formed, ... has to complete itself in a purely continuous course in which nothing extraneous is introduced” (*Logik* I 49, Miller 54). It “is the inwardness of the content, *the dialectic which it possesses within itself*, which is the mainspring of its advance” (*ibid.* I 50, 54; emphasis according to the German text).

Hegel’s essential idea, which he tries to realize in different ways in his major works from the *Phenomenology* to the *Logic* and the *Encyclopaedia*, is to describe a development in which philosophy and its content – circumscribed by the concepts “Truth,” “God,” “Nature,” “human Mind,” “the thinking Spirit,” and “Being” (*Enz.* § 1) – unfold with “logical” necessity, based on dialectic as its engine. He names two conditions for such a dialectical development. On the one hand, there must be a “first” and, on the other, *within* this existing “first” there must be a “negativity,” or “contradiction.” *Being*, for example, could be such a “first,” and since there is a “negativity” which, “instead of being external to Being, is its own dialectic,” we can grasp the “truth” of this Being as its “Essence.” In this way, the dialectical development from “Being” to “Essence” can be described as a change of perspective: Reflecting on Being as Being which comes “into mediation with itself through the negativity of itself” reveals this Being as Essence (§ 112). The “dialectical moment” is a process in which “the universal of the beginning determines itself within itself as the *other of itself*” (*Logik* II 557; his italics, my translation). Thus, “something is alive” for Hegel “only in so far as it contains contradiction within it;” “the positive, being in its own self a negativity, goes outside itself and undergoes alteration.” It is an essential precondition for this movement that “this contradiction exists not merely in an external reflection but in [the contradictory things, the contradictory arrangements] themselves” (*Logik* II 76, Miller 440).

A critical assessment of Hegel’s idea of dialectic should focus on at least three crucial points: (1) the presupposed identity of “content” and “thought”; (2) the claimed “necessity” of dialectical development; and (3) “contradiction” as the moving principle of dialectical development.

1. Identifying cognition and its content

In the introduction to his *Phänomenologie des Geistes*, Hegel develops a sort of argument for unifying the Absolute and the cognition of the Absolute within this Absolute itself that seems to be directed against Kant. If cognition is conceived as a “tool to take possession of the Absolute,” any cognition of this Absolute is formed and changed by this tool. Therefore, we never can get access to the Absolute “as it is for itself” (Phän 68). While Kant would indeed agree at this point, saying that there is no cognition beyond our cognitive means, Hegel criticizes this Kantian critique of the possibilities of cognition by claiming that it is based on a set of assumptions he is not willing to accept: first, the assumption that cognition is a tool; second that there is a “*difference between ourselves and this cognition*”; third that in this relation of cognition “the Absolute stands *on the one side and the cognition on the other side*,” and fourth that cognition could be “real” and “true” in spite of its separation from the Absolute (Phän. 70, Miller 47).

By contrast to a Kantian approach that would indeed imply these four points – if we assume for a moment that Kant had any interest in “the Absolute” – Hegel stresses “that the Absolute alone is true, or the truth alone is absolute” (ibid.). Criticizing Kant’s dualistic approach with its clear separation of cognition and its objects, Hegel argues for the identity of both; an identity which evolves within itself. This way, it is not us who recognize something outside of ourselves, but it is “the appearing knowledge” itself whose development Hegel tries to represent; a representation that can “be regarded only as the path of the natural consciousness which presses forward to true knowledge; or as the way of the Soul which journeys through the series of its own configurations as though they were the stations appointed for it by its own nature, so that it may purify itself for the life of the Spirit, and achieve finally, through a completed experience of itself, the awareness of what it really is in itself” (Phän. 72, Miller 49, modified). As Charles Taylor said, Hegel overcomes the Kantian “epistemological gap between man and nature” by assuming “that our knowledge of the world turns ultimately into Geist’s self-knowledge. ... the thought which was supposedly over against the world, that is, our thinking as finite subjects, turns out to be that of the cosmos itself, or the cosmic subject, God, whose vehicles we are” (Taylor, 1979, 47).

While it is clear that a Kantian epistemology would be limited in just the way Hegel describes it here, the fundamental question is whether we can hope for more. Hegel tries to formulate an alternative to Kant (and Schelling), but before we accept his new approach we should ask ourselves whether it is feasible. There are at least three implications of Hegel's 'dialectically self-developing identity of cognition and its content' that are hard to accept from my point of view: (1) If "saying and thinking is being" (Parmenides, as quoted by Hegel, Vorl. I 228; my transl. from the German), there cannot be a distinction between wrong and adequate thinking or between true and false propositions. For the possibilities of lying and error presuppose that there is a *difference* between claiming something and what has been claimed. If there is no such difference, all saying is saying the truth. (2) Even if we assume the possibility of living a life beyond being God's "vehicle" – a life called by Parmenides the always failing path of "human opinion" – there is no way to *justify* any claim we might formulate when following the path of "truly convincing truth." Justification would only be possible with regard to the internal coherence of what we are saying within the whole conceptual system (even if the concept of "contradiction" is part of the system, the conceptual system itself has to be coherent in order to explain the possibility of getting to "absolute knowledge"); coherence, of course, is not a bad thing, but the point is that if there is *nothing* outside of such a conceptual system – no experience that might be independent from the self-developing "Absolute," no independently existing reality – how could we decide and justify that just Hegel's system is the right one in a situation where thousands of alternative systems are conceivable as well? (Cf. Haack, 1993, for a recent discussion of these problems). At the end, Hegel's "system" is entirely arbitrary, "just another vision based on faith," to use a phrase of Taylor's against his intention (1979, 56).

(3) The third implication of Hegel's identity philosophy I do not want to accept concerns the problem of language. Even if we follow Hegel's considerations of a self-driven development of "the Absolute," "Being," "God," or "Nature," it remains the question how to *understand* this dialectical development if there is no difference between thinking and what is thought of. Understanding presupposes obviously a language, a language in which Hegel wrote and which we can read. According to Hegel, however, this language cannot be independent of the content that is described by this language. That means, if the content is devel-

oping, so is the language (cf. e.g. Logik I 35, Miller 43). In this way, however, it becomes virtually impossible to define any concept Hegel uses in his texts. The proper meaning of “defining” is to determine the “limits” (*finis*) of a word’s meaning, but if a notion cannot be separated from the facts or events it is supposed to describe, and if its meaning is always developing, there are no limits. Hegel, I guess, would say with regard to this point that those “limits” are the limits of the whole process of being and thinking, so that all definitions are “integrated” (*aufgehoben*) in the final “realm of truth as it is without veil in its own absolute nature” (Logik, Miller 50). Therefore, everybody who wants to understand Hegel’s philosophy must perform the whole process as described in his works. What that means has been described pretty well by Carl Mickelsen in his (desperate) attempt to formulate a “Hegel Glossary”:

For Hegel, reality is a totalizing circle which presupposes its end as its purpose, and thus has its end for its beginning. Hegel's language, too, is such a circle in that each concept implicates the rest and may itself be viewed from the standpoint of any of the other concepts or the totality at varying stages of their respective developments. Thus, a single concept may encompass several meanings and a single meaning may be expressed by several concepts. Moreover, from a dialectical perspective, concepts in isolation from the process of which they are a part are abstractions and are, accordingly, inherently limited and one-sided, i.e., false.

What all this means is that Hegel’s philosophy is a hermetically closed system of concepts. Understanding is possible only from within the whole system. It is hard to see how communication with people using a different conceptual framework might be possible.

Based on these three objections I cannot see any possibility of overcoming the principal limits Kant has claimed for cognition and understanding. One might criticize Kant with regard to metaphysical assumptions that we can find in his philosophy as well – for instance his idea of “a priori” concepts and forms of intuition – but these limitations can be overcome in more convincing ways; for example by the idea formulated by Charles S. Peirce that an “evolutionary” development of knowledge can be understood as based on a development of *knowledge conditions* which again is achievable by hypotheses generation and by reflecting on representations (cf. Hoffmann, 2005a). The main point for all those approaches is, however, a clear distinction between *means* of cognition on the one side and *objects* of cognition on the other.

In this way we would get an idea of learning that – as Philip P. Wiener said delimiting Peirce from Hegel – “disclaims ultimate knowledge of the final purpose of civilization; ... denies absolute certainty to any metaphysics of history; ... prefers the tentative self-corrective method of science to the absolute pretensions of dialectics” (Wiener, 1958, xxii).

2. The necessity of dialectical development

The second point that should be questioned is Hegel’s claim that what he calls the “dialectical moment” is a sufficient condition to explain the “necessity” of development. It is hard to see why Hegel’s assumption that a “general First, if *observed in and for itself*, shows itself as the Other of itself” – to quote a pointed description of dialectic’s procedure (Logik II 561, Miller 834) – should lead to anything. What is a “general First”? What means observing it “in and for itself”? What is “the Other of itself”?

To answer those questions, Taylor distinguishes two sorts of dialectic we can find in Hegel. He calls the first one “historical dialectics” since it describes historical development based on contradictions that Hegel found between the “purpose” of epochs like the Greek *polis* and their reality, and the second one “ontological” dialectics; ontological dialectics are realized mainly in the development of consciousness as described in the *Phenomenology*, and in the *Logic*’s development of “being” (Taylor, 1979, 57ff.). Taylor is right in criticizing that Hegel’s idea of historical dialectics depends entirely on the way we interpret the “purpose” of a certain era so that his claim of “necessity” in history is hardly convincing. “Ontological dialectics,” on the other hand, is supposed to have a starting point that is “undeniable” according to Taylor and Hegel since here a “purpose” or “standard” is already given in the definition of a “First”:

We can start with any definition, and by showing how it conflicts with its own fulfilment, move to more adequate conceptions until we reach the fully adequate one. Or to put the point another way, from the nature of the object under study we know certain of its criterial properties. We have only to learn what more exact specification of the purpose will in fact exhibit these properties. (Taylor, 1979, 64)

The most famous example of ontological dialectics is realized in the first paragraphs of Hegel’s *Logic* where “being” is defined as “indeterminate immediacy” without any “diversity

within itself nor any with a reference outwards” so that it is “pure indeterminateness and emptiness.” “There is *nothing* to be intuited in it, if one can speak here of intuiting” (Logik I 82f., Miller). Since “*Nothing, pure nothing*” is in the same way defined by “absence of all determination and content — undifferentiatedness in itself,” Hegel concludes: “Nothing is, therefore, the same determination, or rather absence of determination, and thus altogether the same as, pure *being*. ... *Pure Being* and *pure nothing* are, therefore, the same.” Taylor himself mentions that this “key argument fails to carry conviction to most contemporary philosophers” and: these arguments “cannot be seen as irrefutable demonstrations, designed to convince the sceptic, but more as expressions of what the believer believes” (67). There is indeed nothing to add.

It might be convincing to say that changing the perspective on something is a precondition to discover something new in it.⁴ But why should that happen if we are only staring at it, without any movement? And even if something happens, why should it happen by “necessity”? All these are claims so overwhelming and huge that everybody seems way too impressed to be asking for any justification; or even any explanation. And if we do ask, there is no answer.

Let us assume for a moment Hegel would have succeeded in convincing us with regard to a necessity caused by dialectic. What would that mean? It would mean, first of all, that there are some inherent characteristics within a “general First” that cause an automatically performing, self-developing process without any influence from outside (cf. Logik II 560 f., Miller 833 f.). Hegel can observe and describe in his works what happens, but the process itself – based on its “necessity” – has to be conceived as independent from whatever human beings are doing or thinking. This again means that the role of the thinking individual is restricted to subordination and obedience. In his *Phenomenology of Spirit*, Hegel says the “individual must all the more forget himself, as the nature of Science implies and requires” (Hegel, Phän. 67, Miller 45; cf. Rosen, 1992, 4.). And in a letter to his friend Niethammer he writes with regard to the *Phenomenology*’s self-developing “Spirit of the World” (*Weltgeist*):

I adhere to the view that the world spirit has given the age the command to march ahead. This command is being obeyed. The world spirit, this essential [power], proceeds irresistibly like a closely drawn armored phalanx advancing with imperceptible movement, much as the sun

through thick and thin. Innumerable light troops flank it on all sides, throwing themselves into the balance for or against its progress, though most of them are entirely ignorant of what is at stake and merely take head blows as from an invisible hand. (Quoted from Butler & Seiler, 1984, 325, slightly modified)

Hegel's philosophy does not only form a hermetic system, but a totalitarian one. If an individual's independence is questioned from the very beginning, there is no way to criticize anything. Nothing else remains than the "Weltgeist's" order: 'Belief and trust in me, and give up any freedom of thought.'

3. Contradiction as moving principle

But what about "contradiction" (*Widerspruch*), the concept introduced to explain the possibility of dialectic development? For Hegel, "contradiction is the very moving principle of the world,"⁵ "contradiction is the root of all movement and vitality" (Logik II 75, Miller 439). These ideas have been of greatest importance for the Marxist tradition, and for Activity Theory as well. What kind of "contradiction," however, did Hegel have in mind?

Understanding this central concept is hindered by the fact that Hegel's use is quite different from today's use in philosophy – which again goes back to Aristotle. In logic as a philosophic discipline, a "contradiction" is a statement in which the same proposition *p* is asserted and negated, that is a sentence claiming "*p* and non-*p*" (at the same time, from the same perspective, etc.). In Hegel, we find two important deviations from this common understanding of contradiction: First, a "contradiction" is not restricted to "statements," that is to language – as implied by the word's etymology (*dictum* = "what is said"). For Hegel, "all the things in themselves are inherently contradictory" (Logik II 74, Miller 439). He criticizes that in earlier logic "contradiction is usually kept aloof from things, from the sphere of being and of truth generally," and that it is "shifted into subjective reflection by which it is first posited in the process of relating and comparing" (ibid. Miller 439). By contrast, for Hegel contradictions are *objectively* given, we can find them "in every experience, in everything actual, as in every notion" (ibid. II 75, 440). To demonstrate this, he hints at "light" and "darkness" as examples. By contrasting his approach to the common opinion that light "is the pure positive and darkness ... the pure negative," he argues that "light essentially possesses in its infinite

expansion and its power to promote growth and to animate, the nature of absolute negativity,” while darkness, “on the other hand, as a non-manifold or as the non-self-differentiating womb of generation, is the simply self-identical, the positive.” In a similar way, “virtue” is “evil” for Hegel, and evil “is positive negativity,” and while “truth” is “positive,” it is only so “in so far as the knower has put himself into a negative relation with the other,” etc., etc. (ibid. II 71, 437).

To me, these interpretations of what is supposed to represent our common “experiences” regarding contradictions as given “in the things themselves” sound a bit too fanciful. The main problem is implied by what I criticized above. By shifting the focus away from epistemology to ontology, that is by claiming an identity of thinking and being, Hegel forgets what has been the basic idea of epistemology since Kant: Before you can speak “On What There Is” (Quine 1971 <1951>), you have to reflect on the knowledge conditions that must be fulfilled to know anything about it. We do not have immediate access to the world around us, our access is mediated by “forms of understanding” (Kant), by “signs” and representational means (Peirce), or by our theories.⁶ And that means that the central focus of all epistemology is on justification. We have to justify what we claim to know.

There is no such a justification in Hegel. The only “justification” Hegel offers besides not very convincing appeals to our everyday experience is the repeated consideration that “it is only in so far as something has a contradiction within it that it moves, has an urge and activity.”⁷ Thus, the inherent contradictoriness of everything is “justified” only by its purpose to enable dialectical movement. But this is a circular argument; he “explains” the possibility of dialectical movement by what he presupposes in order to explain it.

The second important point where Hegel deviates from the usual understanding of “contradiction” concerns the question what exactly contradicts to what. In classical logic, the situation is simple: the assertion of a statement contradicts its negation. In Hegel, however, we find a mass of quite different “things,” or “concepts,” which are supposed to be in a contradictory relation: identity and difference (Enz. §§ 115-116); identity and opposition (Enz. § 119); the positive and the negative (ibid.); being and nothing (Logik I 82 ff., Miller 82 ff.); finite and infinite; individual and universal (ibid. II 560, 833); and as some more “trivial” examples “above and below, right and left, father and son” (Logik II 77, Miller 441).

But why should there be any “contradiction” between those things? We can speak about “identity” and “difference” without contradicting ourselves. It might be the case that all these concepts *oppose* one another if – and only if – our language is structured in a way that there are only those alternatives (that is: no third possibility between “positive” and “negative,” etc. – but what about zero?). But if that is the case, let us talk about “opposition,” or about “tensions,” not about “contradiction.” Why should there be any “contradiction” between the finite and the infinite, or between father and son? If understanding depends on clarity of expression, I would prefer to limit the use of “contradiction” to sentences like “ p and non- p ,” “A and non-A.”

It is important to note that both contradictions and what would be better called tensions and conflicts between opposing views are indeed most relevant for explaining learning. But we should be aware of the following two points: First, whenever there are reasons to assume that development, or learning, can be explained by reference to a “dialectic movement” resulting from contradictions, or tensions, we have to *argue* for this assumption. And “arguing” means more than only referring to something which is supposed – without any further evidence – to be given “within the things themselves,” and which works quasi ‘automatically.’

Second, we should be very careful when people handle “logical contradictions” and “conflicts between opposing views” as alternatives between which we have to choose. We need both, and we have to realize that Hegel’s belief that he could replace the logical “principle of contradiction” by a “movement” which “integrates” contradictions on a ‘higher’ level (*Aufhebung*) leads to disastrous consequences. The principle of contradiction, or better: of non-contradiction, in its classical form is indispensable for any science. As Karl Popper showed in his critique of Hegel’s dialectic, “*if contradictory statements are admitted, any statement whatever must be admitted; for from a couple of contradictory statements any statement whatever can be validly inferred.*” That means, “if one were to accept contradictions then one would have to give up any kind of scientific activity: it would mean a complete breakdown of science” (Popper, 1969 <1940>, 317, his emphasis; cf. Bakhurst, 1991, 167 ff.).

If we accept, based on those arguments, the need for a clearly defined concept of “contradiction,” then we shouldn’t confuse this clarity by using the very same term in discussions which focus on quite different things. This is simply a question of what Peirce called the “eth-

ics of terminology.”

Dialectic in Marx and Il'enkov

Marx criticized the “mystifying side of Hegelian dialectic,” that is its speculative idea that the dialectical “process of thinking” creates “the real world.” Hegel, according to Marx, “must be turned right side up again,” and in this sense his own “dialectic method” is, he claims, “not only different from the Hegelian, but is its direct opposite” (Marx, *Kapital* I, 27).

These strong words, however, formulated in the “Afterword to the second German Edition” of the *Capital*, do not reflect an unchanging standpoint in Marx’s thinking on Hegel. Marx wrote them as a reaction to a critical review of the first edition in which his “method of presentation” was criticized as “German-dialectical” – meaning that Marx treated “social movement as a process of natural history,” governed by laws that act independently of human will. This indeed is a crucial point and, actually, it is not for sure whether we should not better take Marx’s indignant reaction as an implicit admission that the man was simply right.

More important is, however, that Marx is not interested in the dialectical ‘liberation’ of abstract concepts like the Absolute, God, Nature, and Being but of concrete human beings in concrete societies. Already 30 years earlier, Marx complained that according to Hegel the “*human character* of nature and of the nature created by history – man’s products – appears in the form that they are products of abstract mind and as such, therefore, phases of *mind – thought-entities*,” while it is clear to him that all those processes “must have a bearer, a subject” which cannot only be a “result” of these processes. With Hegel, Marx says, the “rich, living, sensuous, concrete activity of self-objectification is therefore reduced to its mere abstraction, absolute negativity” (Marx, *Critique*).

Although criticizing Hegel’s understanding of dialectic in many passages, Marx highlights Hegel’s primacy in elaborating “its general form of working in a comprehensive and conscious manner” both in the 1873 “Afterword” (*Kapital* I, 27) and in his 1844 “*Critique of Hegel’s Philosophy in General*.” In this early text the very nucleus of Marx’s new understanding of dialectic becomes visible for the first time, although he ascribes the main idea (not really convincingly) already to Hegel:

The outstanding achievement of Hegel’s *Phänomenologie* and of its final outcome, the dialectic

of negativity as the moving and generating principle, is thus first that Hegel conceives the self-creation of man as a process, conceives objectification as loss of the object, as alienation and as transcendence of this alienation; that he thus grasps the essence of *labour* and comprehends objective man – true, because real man – as the outcome of man’s own labour. The *real, active* orientation of man to himself as a species-being, or his manifestation as a real species-being (i.e., as a human being), is only possible if he really brings out all his *species-powers* – something which in turn is only possible through the cooperative action of all of mankind, only as the result of history – and treats these powers as objects: and this, to begin with, is again only possible in the form of estrangement. (Marx, Critique; cf. Taylor, 1979, 50)

For Marx, “dialectic” describes humans’ “self-creation” by a process that – realized through labor, – *uses* alienation and estrangement to *change* their being in the world. This seems to me the centerpiece of his approach. Within this context, Marx uses Hegel’s famous concept of “Aufhebung,” but whereas Hegel’s fascination for this concept results from its vagueness and multivalence – in German it means either (a) “lifting, picking up” something, or (b) “merging, integrating” oppositions, or (c) “nullifying, canceling, superseding” something – Marx’s focus seems to be first of all on the last meaning, that is – in other words – on “destruction” and “annihilation.” To highlight again some “*positive* aspects of the Hegelian dialectic within the realm of estrangement,” Marx hints in his *Critique* firstly at:

Supersession (Das Aufheben) as an objective movement of *retracting* the alienation *into self*. This is the insight, expressed within the estrangement, concerning the *appropriation* of the objective essence through the supersession (Aufhebung) of its estrangement; it is the estranged insight into the *real objectification* of man, into the real appropriation of his objective essence through the annihilation of the *estranged* character of the objective world, through the supersession of the objective world in its estranged mode of being. In the same way atheism being the supersession of God, is the advent of theoretical humanism, and communism, as the supersession of private property, is the vindication of real human life as man’s possession and thus the advent of practical humanism, or atheism is humanism mediated with itself through the supersession of religion, whilst communism is humanism mediated with itself through the supersession of private property. Only through the supersession of this mediation – which is itself, however, a necessary premise – does positively self-deriving humanism, *positive* humanism, come into being. (Marx, Critique)

Marx’s new point is that “dialectic” describes the “self-creation” of human beings

through a process of “superseding” estrangement, a process that is performed by his own labor, as we heard in the first quote above. This process is “dialectical” because estrangement, the “negative” side of labor so to speak, is the very condition of its supersession. “Aneignung durch Entäußerung,” that is “appropriation through giving up,” or “becoming yourself through going out of yourself,”⁸ could be the shortest form to describe Marxian dialectic. “Marx stressed,” as Lektorskij (1999) wrote, “that a human being, in creating a world of artifacts, doubles himself and so creates the possibility for looking at himself from outside” (108). In contrast to Hegel’s automatism of generating development merely out of contradictions which are simply supposed to be given “objectively within” something – generating thus a dynamic out of nothing – Marx highlights in his *Capital* that “contradictions” like that between “use-value” and “exchange value” cannot be “integrated” (“aufgehoben”) in the development of commodities, but can only be resolved by generating a “form in which they can move. This is generally the method by which real contradictions are reconciled” (Kapital I, 118; my translation). In this way, tensions and inconsistencies – to use again a better term than “contradiction” – open up a ‘room’ for movement.⁹ However, the dynamic of this movement is not explained by this ‘room’ but only by the very concrete human needs, or emotions, and the respective political and social situations in which people have to live. Explaining movement and development demands therefore an empirical analysis, and this analysis cannot be replaced by hinting at something “objectively given” (cf. Bakhurst, 1991, 165 f.). The essential difference from Hegel is indeed that Marx *argues* for his position. He tries to *justify* through an analysis of real processes in economy, politics, and historical developments what he represents afterwards as “dialectical movement.”

While Marx rejects in this way an automatism of dialectical development, Evald Il’enkov again performs a rollback to Hegel. In his book *Dialectics of the abstract and the concrete in Marx's Capital* – a further “philosophical root” of Activity Theory’s –, Il’enkov bases his understanding of dialectic on “inner contradictions of things ‘in themselves’.” While “the metaphysician of our times” will face contradictions only as “an inevitable subjective evil,”

Dialectics proceeds from a diametrically opposite view. Its solution of the problem is based first of all on the assumption that the objective world itself, the objective reality is a living system

unfolding through emergence and resolutions of its internal contradictions. The dialectical method, dialectical logic demand that, far from fearing contradictions in the theoretical definition of the object, one must search for these contradictions in a goal-directed manner and record them precisely — to find their rational resolution, of course, not to pile up mountains of antinomies and paradoxes in theoretical definitions of things.

The only way of attaining a rational resolution of contradictions in theoretical definition is through tracing the mode in which they are resolved in the movement of the *objective reality, the movement and development of the world* of things ‘in themselves.’ (Il’enkov, 1982 <1960>, chap. 5; his emphasis)

Il’enkov uses here the distinction between “internal” and “external contradictions.”

While the latter exist only “between different internally non-contradictory things,” “inner contradictions” are those which arise “within a certain common substance ... as modifications of this substance” (ibid.). But what is a “substance”? Is there a substance “in” my chair, or is this “substance” located somewhere else? What kind of contradiction could be “in” the substance of my chair? It is again the same uncritical ontological talk we criticized already with Hegel. Talking about “inner contradictions” makes sense only if it is absolutely clear what the “unit of analysis” is in each case. Claiming in the manner of a naïve realist that “there are” contradictions anywhere can never be sufficient, unless there is an epistemological *justification* of these ontological claims. Such a justification might be possible, but evidence has to be provided for each particular case (cf. also Bakhurst, 1991, 165 ff.). Only referring to an “objective reality” is certainly not enough.

Conclusion

The concepts “dialectic,” “contradiction,” and “dialectical logic” are used in Activity Theory to describe and to explain movement, change, and development in activity systems, in organizations, and in individuals. While “inner contradictions” are taken as the “motor” of development, “dialectic” – or a “logic of development” which is called “dialectic” – describes this development. My argument with regard to that can be summarized as follows:

1. We saw that many different concepts of “dialectic” have been developed in history so that it is necessary to define clearly which one we want to use.

2. Using the Hegelian concept of “dialectic” may have the advantage that development can be explained without any further assumptions, but it has the huge disadvantage that it works only based on strong ontological assumptions which have to be questioned from an epistemological point of view. Any claim that there “is” something has to be justified in each case.
3. Justification and argumentation as open processes presuppose that we are allowed to question any assumption. Questioning, however, presupposes that there is no identity between thinking and reality, because if it were, independent thinking would simply be excluded – based on the assumption that this “identity” means that we can only think of what really “is.”
4. In order to prevent confusion, and to enable communication and understanding also beyond the boundaries of scientific communities, I would strongly recommend a clarification of terminology. That means first of all that we should use terms only in that way as established most widely, or defined most precisely. If dialectical “logic” is something different to traditional “logic,” then a different term should be used for it. It should be noted particularly that since the 20th century “logic” usually does not mean the “science of thought” but a science analyzing *forms of relations* in and between statements. This means first of all that “logic” has nothing to do with any knowledge about the world, or the meanings of words. “All that counts, when a statement is logically true, is its structure in terms of logical words” (Quine, 1982 <1950>, 4). These “logical words” are well defined connectors between parts of statements like conjunction, disjunction, negation, material implication, etc., and the set of these words is limited.
5. Even if the question of how to define “logic” is still contentious, there are no serious attempts to rescue Hegel’s “dialectical” or “developmental logic,” because something like this depends always on ontological assumptions that cannot be justified without epistemological reflections.
6. In order to clarify terminology, I would restrict the use of “contradiction” to *propositions* which are asserted and negated at the same time (p and non- p). Also contradictions in this limited sense are essential for the development of knowledge. But in most cases of using “contradiction” in Activity Theory it would be more precise – and sufficient – to speak

about “tensions” and “conflicts between opposing views” or “oppositions” rather than about “contradictions.”

7. “Inner contradiction” is a *relative* term, its meaning depends on what has to be defined priorly as the “unit” of analysis, respectively. Such a definition has to clarify the boundary between “inside” and “outside.”
8. Based on an epistemological approach, neither contradictions nor tensions alone can be sufficient to explain any development of knowledge, or any change within activity systems. If we do not believe in an automatism of self-generating processes, we should say very clearly that contradictions and tensions must be *felt* by someone. There is only a motivation if *somebody feels motivated*.

According to our discussion above, the Hegelian concept of dialectic actually is the worst basis for any theory of development. Much more convincing seems to be, on the one hand, the old Platonic idea that the dialectical method contains two complementary processes of defining the particular by dividing general concepts and defining general concepts by “seeing together” properties of particulars and, on the other hand, the Marxian idea that dialectical development means changing a situation, or changing the interpretation of a situation, by reflecting on it from an opposing, or “alienated” point of view.

Plato’s approach resonates, for example, with a definition suggested by Peng & Ames (2001, 3634): “Dialectical thinking refers to the mental processes of compromising or synthesizing facts, view, and goals of opposing perspectives.” Or with Clancey (1997) to whom “dialectical relations” are those based on “codependence,” that is “a mutually sustained relation that makes the parts what they are,” relations in which “each aspect is the developmental context for the other” (226). Marxian again sounds McNeill (2002): “A dialectic implies a) a conflict or opposition of some kind, and b) resolution of the conflict through change.”

A new approach to define “dialectical mediation” could be based on a certain combination of Plato’s and Marx’s ideas. *Mediation* means that a *relation* between different elements is constituted by a third one. A sign, for example, “mediates” between a sign-interpreting individual and an object signified by this sign (according to this individual’s interpretation). A *dialectical* mediation again would be a mediation of those elements which are *opposing* to one another on the ‘same level,’ so to speak. Plato’s two methods of dividing and synthesiz-

ing, for instance, are opposing with regard to their direction – from particulars to generals, or from generals to particulars –, but as methods they are on the same level. The mediating “third” would be here the *activity* performed by somebody who combines both the methods of dividing and synthesizing.

Actually, activity seems to be most important as a mediating element: It is through people’s concrete activity that the experience of estrangement, the movement of leaving one’s own point of view, and of looking at oneself from a different point of view, can be used to create a ‘room’ for movement, a room necessary to change things (cf. Holzkamp, 1983, 398 ff.).

In this way, “dialectic” would neither have anything to do with “the world itself,” nor with “logic;” it would merely be a specific way of *acting*: mediating what our own analysis has revealed as opposing points of view. Elsewhere, these considerations on “dialectic mediation” have been used to define more precisely the concept of a “dialectic system” as a tool to describe learning as the development of “knowledge networks” (Hoffmann & Roth, 2004).

Notes

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- 1 Engeström, 1987, quoted from the 1999 online version; cf. also his “Three principles” formulated – with reference to Hegel – in Engeström, 1993, 65, 71 ff.
- 2 Hegel, *Enz.*, 20; cf. *ibid.* 18 f.; *Logik I* 16, Miller 27.
- 3 Hegel, *Logik II* 551, Miller 825. Cf. *Phän.* 61, Miller 40.
- 4 As Charles S. Peirce emphasized again and again; cf. Hoffmann 2005b.
- 5 Hegel, *Enz.* 174; cf. *System* 280 (§ 119, Zusatz).
- 6 The latter is one of the core ideas of 20th century’s philosophy of science, discussed,

e.g., under the heading of “theoryladenness of observation.”

- 7 Hegel, *Logik II* 75 (Miller 439); cf. *ibid.* II 73 (438), and II 76 (440).
- 8 The phrase is quoted from *Grundrisse* 763. “Entäußerung” is quite multivalent, it can also mean “to give something away,” “to waive something,” or “to sell” it. Mulligan translates “Entäußerung” in the *Critique* by “alienation.” Anyway, what is meant is more the process than the result.
- 9 Cf. Holzkamp’s (1983) concept of “subjective Möglichkeitsräume” that define a range of possibilities for thinking and acting. This idea has been used in Hoffmann & Roth 2004 as one element to define a “dialectic system.”

References

- Bakhurst, D. (1991). *Consciousness and revolution in Soviet philosophy. From the Bolsheviks to Evald Ilyenkov*. Cambridge; New York: Cambridge University Press.
- Butler, C., & Seiler, C. (Eds.). (1984). *Hegel, the letters*. Bloomington: Indiana University Press.
- Clancey, W. J. (1997). *Situated cognition. On human knowledge and computer representations*. Cambridge: Cambridge Univ. Press.
- Davydov, V. V. (1990 <1972>). *Types of generalization in instruction: Logical and psychological problems in the structuring of school curricula* (J. Teller, Trans.). Reston, VA: National Council of Teachers of Mathematics.
- Davydov, V. V. (1999). The content and unsolved problems of activity theory. In Y. Engeström, R. Miettinen & R.-L. Punamäki (Eds.), *Perspectives on Activity Theory* (pp. 39-52). New York: Cambridge University Press.
- Engeström, Y. (1987). *Learning by Expanding. An Activity-Theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit Oy.
- Engeström, Y. (1993). Developmental studies of work as a testbench of activity theory: The case of primary care medical practice. In S. Chaiklin & J. Lave (Eds.), *Understanding practice: Perspectives on activity and context* (pp. 64–103). Cambridge, England: Cambridge University Press.
- Fichtner, B. (1999). Activity revisited as an explanatory principle and as an object of study - Old limits and new perspectives. In S. Chaiklin, M. Hedegaard & U. J. Jensen (Eds.), *Activity Theory and Social Practice* (pp. 50-65). Aarhus: Aarhus University Press.
- Haack, S. (1993). *Evidence and Inquiry. Towards Reconstruction in Epistemology*. Oxford / Cambridge: Blackwell.
- Hegel, G. W. F. (Enz.). *Enzyklopädie der philosophischen Wissenschaften im Grundrisse* (1817, 1830). Hamburg 1975: Meiner; *Hegel's Logic. Being part one of the Encyclopaedia of the Philosophical Sciences* (W. Wallace, Trans.). Oxford 1975: Clarendon Press.
- Hegel, G. W. F. (Logik). *Wissenschaft der Logik I, II* (1812). Frankfurt am Main 1969: Suhrkamp; *Hegel's Science of Logic* (A. V. Miller, Trans.). London / New York 1969: Allen & Unwin / Humanities Press.
- Hegel, G. W. F. (Phän.). *Phänomenologie des Geistes* (1807). Frankfurt am Main 1970: Suhrkamp;

- Phenomenology of Spirit* (A. V. Miller, Trans.). Oxford 1977: Clarendon Press.
- Hegel, G. W. F. (System). *System der Philosophie. Teil 1, Die Logik* (1830). Stuttgart 1955: Frommann.
- Hegel, Georg Wilhelm Friedrich (Vorl.). *Vorlesungen über die Geschichte der Philosophie*. Vol. I-III (Hegel, Werke Bd. 18-20). E. Moldenhauer and K. M. Michel. Frankfurt am Main 1971 <1833-36>: Suhrkamp.
- Hoffmann, M. H. G. (1996). *Die Entstehung von Ordnung. Zur Bestimmung von Sein, Erkennen und Handeln in der späteren Philosophie Platons*. Stuttgart und Leipzig: B.G. Teubner.
- Hoffmann, M. H. G. (2005a). Erkenntnisentwicklung. Ein semiotisch-pragmatischer Ansatz (Knowledge development. A semiotic and pragmatic approach). Frankfurt am Main: Klostermann.
- Hoffmann, M. H. G. (2005b). Signs as means for discoveries. Peirce and his concepts of "Diagrammatic Reasoning," "Theorematic Deduction," "Hypostatic Abstraction," and "Theoric Transformation". In M. H. G. Hoffmann, J. Lenhard & F. Seeger (Eds.), *Activity and Sign - Grounding Mathematics Education* (pp. 45-56). New York: Springer.
- Hoffmann, M. H. G., & Roth, W.-M. (2004). Learning by Developing Knowledge Networks. A semiotic approach within a dialectical framework. *ZDM. Zentralblatt für Didaktik der Mathematik*, 36(6), 196 - 205. Online only: <http://www.fiz-karlsruhe.de/fiz/publications/zdm/zdm046i.html>.
- Holzkamp, K. (1983). *Grundlegung der Psychologie Foundations of psychology*. Frankfurt: Campus.
- Il'enkov, E. (1982 <1960>). *Dialectics of the abstract and the concrete in Marx's Capital* (S. Kuzyakov, Trans.). Moscow: Progress Publishers.
- Kant, I. (KrV). *Kritik der reinen Vernunft*. Hamburg 1998: Meiner. *Critique of pure reason*. Translated by P. Guyer and A. W. Wood. Cambridge 1998: Cambridge Univ. Pr. ("A" refers to the first edition 1781, "B" to the second 1787).
- Lektorskij, V. A. (1977). The dialectic of subject and object and some problems of the methodology of science (R. Daglish, Trans.). In *Philosophy in the USSR: Problems of dialectical materialism*. Moscow: Progress Publ.
- Lektorskij, V. A. (1999). Historical Change of the Notion of Activity: Philosophical Presuppositions. In S. Chaiklin, M. Hedegaard & U. J. Jensen (Eds.), *Activity Theory and Social Practice* (pp. 100-113). Aarhus: Aarhus University Press.
- Marx, K. (Critique). Critique of Hegel's Philosophy in General (M. Mulligan, Trans.). In *Economic and Philosophical Manuscripts of 1844. Third Manuscript*. Moscow 1959: Progress Publishers.
- Marx, K. (Grundrisse). *Grundrisse der Kritik der politischen Ökonomie* (1857-1858). Berlin 1953: Dietz; *Outlines of the Critique of Political Economy* (M. Liclus, Trans.). Harmondsworth, Eng. 2002: Penguin Books.
- Marx, K. (Kapital I). *Das Kapital. Kritik der politischen Ökonomie. Erster Band* (1867, 1873). Berlin 1983: Dietz (MEW 23).
- McNeill, D. (2002). Gesture and Language Dialectic. *Acta Linguistica Hafniensia*.
- Mickelsen, C. (online). Hegel Glossary. <http://www.class.uidaho.edu/mickelsen/texts/Hegel%20Glossary.htm>.
- Peng, K., & Ames, D. (2001). Dialectical Thinking, Psychology of. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 3634-3637).
- Plato. (Phdr.). Phaedrus. In I. Burnet (Ed.), *Platonis Opera* (Vol. II, pp. 227-279). Oxford 1900 ff.: E Typographeo Clarendoniano.
- Plato. (Soph.). Sophista. In I. Burnet (Ed.), *Platonis Opera* (Vol. I, pp. 216-268). Oxford 1900 ff.: E Typographeo Clarendoniano.
- Popper, K. R. (1969 <1940>). What is dialectic? In *Conjectures and refutations. The growth of scientific knowledge* (pp. 312-335). London: Routledge and Kegan Paul.
- Quine, W. V. O. (1971 <1951>). On What There is. In *From a Logical Point of View: 9 Logico-Philosophical Essays*. Cambridge, Mass.: Harvard Univ. Press.
- Quine, W. V. O. (1982 <1950>). *Methods of Logic* (4. ed.). Cambridge, Massachusetts: Harvard University Press.

- Riegel, K. F. (1979). *Foundations of dialectical psychology*. New York: Academic Press.
- Rosen, M. (1992). *Problems of the Hegelian dialectic. Dialectic reconstructed as a logic of human reality*. Dordrecht, Boston: Kluwer Academic.
- Roth, W.-M. (2002). *Being and Becoming in the Classroom*. Westport, CT: Ablex Publishing.
- Roth, W.-M., & Tobin, K. (2002). *At the elbow of another. Learning to teach by coteaching*. New York: Peter Lang.
- Taylor, C. (1979). *Hegel and modern society*. Cambridge; New York: Cambridge University Press.
- Van Vlaenderen, H. (2001). Group problem solving among grassroots development activists in south africa: A process of horizontal mediated action. *Mind, Culture, and Activity*, 8(2), 148-173.
- Wiener, P. P. (1958). Introduction. In P. P. Wiener (Ed.), *Values in a Universe of Chance. Selected Writings of Charles S. Peirce (1839-1914)* (pp. ix-xxiv). New York: Doubleday Anchor Books Doubleday & Company, Inc. Garden City.