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Pragmatism and activity theory: Is Dewey's philosophy a philosophy of cultural retooling?

Summary

A philosopher of education, Jim Garrison, has suggested that John Dewey's philosophy is a philosophy of cultural retooling and that Dewey adopted both his conception of work and the idea of tool as "a middle term between subject and object" from Hegel. This interpretation raises the question of what the relationship of the idea of cultural retooling in Dewey's work is to his naturalism and to his allegiance to Darwinian biological functionalism. To deal with this problem, this paper analyzes how the idea of cultural retooling is elaborated in Dewey's logic and in his theory of reflective thinking and compares it to the concept of retooling in Vygotsky and activity theory. Dewey does recognize the significance of tools in human practice and the role of language in the formation of meaning. However, in his theory of thinking and problem solving, he primarily resorts to the biological or ecological language of the organism–environment, in which the concepts of habit and situation play a central role. It is argued that this language does not deal with the functions and relationships of different kinds of tools and artifacts in changes of activity nor supply satisfactory means of analyzing the historical, institutionalized and cultural dimensions of human activity.

Introduction

In his paper *Dewey's Philosophy and the Experience of Working: Labour, Tool and Language*, Jim Garrison (1995, 99) suggests that Dewey's philosophy of reconstruction is a

philosophy of cultural development or cultural retooling. He thinks that Dewey's philosophy owes much to the everyday experience of working, where labor and tools are as important as language. According to him, Dewey's epistemology or logic of experience "bears a remarkable resemblance to Hegel's dialectics of labour, tools and language" and Dewey's concept of ends-means dialectics parallels Hegel's concept of tool as "a middle term between subject and object" (1995, 88).

Garrison's reconstruction is interesting in at least two senses. First, it differs from most of the interpretations of Dewey's naturalism and from the accounts of how Hegel influenced Dewey's philosophy. Garrison argues in the paper against the interpretation made by Richard Rorty (1982, 1998), who suggests that Dewey was not consequent enough in his uses of Hegel. According to Rorty, Dewey remained in his naturalism stuck with the idea of continuation between lower and higher organisms, and had not managed to appreciate the specifically human experience based on the use of language. In Rorty's mind, Dewey should have been Hegelian all along instead of combining his legacy with Darwinian evolutionary thought. Garrison rejects this critique and interprets Dewey's philosophy as a philosophy of cultural development or cultural retooling.

In this paper, I will deal with these two interpretations to discuss the problem of the relationship between biological functionalism and culture in Dewey's theory and in the study of human conduct more generally. The debate is a good introduction to the question of what kind of concepts and languages are needed to make sense of both the embodied and situated (or ecological), and on the other hand, the distributed, cultural-historical, semiotic and institutional nature of human activity and knowledge.

The second issue raised by Garrison's paper is the relationship between Deweyan pragmatism and cultural-historical activity theory. Similarities and differences between the two traditions have recently been discussed by several authors (Garrison 2001, Glassman 2001, Miettinen 2001, Prawatt 1999). In his paper published in *Mind, Culture and Activity* (2001), Garrison suggests that activity theory is, in making a distinction between internal and external, a dualist approach, and suggests that Dewey's concept of transactional functional coordination constitutes an alternative foundation for a theory of human activity.¹ In my comment I (Miettinen 2001) disagreed. In my understanding, the concept of mediation activity implies the idea of a transaction or reciprocal causal interaction: subjects, means and object are interactively constituted or co-

evolved in activity.² It is, therefore, fruitful to analyze the two traditions as different but in many respects complementary, rather than mutually excluding alternative theories of human activity (Miettinen 2006).

The exclusive focus on the differences between social ontologies does not stimulate useful comparisons of nor dialogue between theoretical traditions. It may lead to what Patricia Baert (2005, 154) recently called an ontological fallacy, an idea that methodological questions can be reduced to ontology. Baert rightly, in my mind, suggests that methodology also depends on the aims and objects of research. It is important for researchers to be aware of their ontological commitments, but in addition, problem-specific intermediary concepts and reflection on the unit of analysis as well as on the methods and data of empirical research are needed. They cannot be derived from the ontological commitments alone.³

Several theoretical communalities between pragmatism and activity theory (and the Marxist theory of practice behind it) have been suggested. Both appreciate context over foundation (Gavin 1988). Both recognize the primacy of the idea of practical activity and the changing nature of reality instead of trying to study fixed permanent essences in the world. And both are committed to the practical transformation of the world. As to the last point, William James characterized the pragmatist method "as an indication of the ways of which existing realities can be changed" (1907, 45), and Dewey underlined the importance of clarifying the meaning of philosophical concepts

1 In the book collaborated on with Arthur Bentley (1946), Dewey made a distinction between self-action, interaction and transaction redefined within the concept of organic interaction (organism-environment interaction) as transaction. They defined interaction as something that happens between entities that have a fixed and independent existence, whereas only transaction is a truly relational understanding of reality; entities emerge as a result of their transactions or are functional units that gain their character from the role they play in the transaction (Dewey & Bentley 1949/1989, 96-130), for a short account see Bernstein 1967, 80-86, Garrison 2001, 285-289. The relational materialism of actor network theory with its principle of generalized symmetry resembles this conception (see Miettinen 1999).

2 For activity theory a human subject is emerging and relational (an ensemble of social relationships, as defined by Marx), and an object of activity is always a transitional object.

3 This problem can also be formulated by asking how a transactionist ontology contributes to an experimental social method (Dewey 1927/1988, 360) or to the question of practical reformation of social conditions (ibid, 367).

as “programs of behavior for modifying the existent world” (1916/1985, 312). This gave Russell (1951) reason to compare Dewey’s concept of action to Marx’s concept of praxis as defined in the 11th Thesis on Feuerbach in which Marx states that the task of philosophy is to change the world. In the Vygotskian and the activity theoretical traditions, the idea of advancing individual and social development by instruction or by developmental interventions has been central.

Besides such general communalities, there are also differences between these two theories. Stimulated by Garrison’s paper on Dewey’s theory of cultural retooling, I will discuss in this paper two of those differences. The first is the role of tool and retooling in Dewey’s theory compared to the concept of retooling in Vygotsky and activity theory. The second difference concerns how context is understood in studying and inducing change in human activities.

In what follows, I will first outline an account of Garrison’s debate with Rorty and his interpretation of Dewey’s philosophy as a philosophy of cultural retooling. Second, to discuss the significance of retooling and the nature of context in Dewey, I will examine two basic concepts in Dewey’s theory of inquiry or reflective thought, namely *habit* and *situation*. Dewey’s theory of inquiry is a theory of problem solving and a theory of the reconstruction of the environment. It therefore serves as a case of how tools and environment are included in Dewey’s concept of inquiry and action. It will be argued that since these terms are primarily defined in biological and ecological terms, neither the historical nature of context nor the idea of cultural retooling are very visible in this theory. It will be suggested that other units of analysis, instead of and in addition to situation, are needed to make sense of human thought and activity.

Rorty’s critique of Dewey and Garrison’s counterargument suggesting that Dewey’s philosophy is a philosophy of cultural retooling

Garrison starts his paper by reconstructing the critique given in Richard Rorty’s essay on Dewey’s metaphysics (1982). Rorty resorts in his essay to the well-known announcement that Dewey made in 1949. In the new introduction to his major metaphysical work *Experience and Nature* (1925), Dewey said that had he an opportunity “to write or rewrite the book today” he would have selected the concept of culture instead of nature (Dewey 1988, 361). Rorty (1982) thinks this is what Dewey should have done but did not do in his philosophy of experience. Rorty agrees with George Santana’s critique of Dewey’s ‘empirical naturalistic metaphysics’ in which Dewey suggests that an empirical method is needed to transcend subject-object dualism (Dewey 1925/1988, 19): “The empirical method is the only method which can do justice to this inclusive integrity of “experience.” It alone takes this integrated unity as the starting point for philosophic thought.” Rorty comments (1982, 81):

... no man can serve both Locke and Hegel. Nobody can claim to offer an empirical account of something called “the inclusive integrity of experience”, nor take this “integrated unity as a starting point for philosophic thought,” if he also agrees with Hegel that the point of philosophic thought is bound to be the dialectical situation which one finds oneself caught in in one’s own historical period – the problems of men of one’s time.

In a more recent essay *Dewey between Hegel and Darwin* (1998), Rorty says that Dewey should have been consequent in following the Hegelian legacy instead of trying to “marry Hegel with Darwin.” This idea persisted throughout Dewey’s whole intellectual career and is visible in his late work *Logic*,

The Theory of Inquiry (1938). Rorty refers to the Dewey scholars who suggest that for Dewey the Hegelian legacy meant the unity or integration of subject and object, and this unity was redefined in biological or ecological terms as 'organic unity' referring to the integration between an organism and its environment (Hollinger 1986, Bredo 2003)⁴. The idea of organic unity also implied the principle of continuity of experience, an attempt to formulate a concept of experience that transcends the boundaries of living species⁵. According to Rorty (1998, 297-298):

Dewey should have dropped the term "experience", not redefined it. He should have looked elsewhere for the continuity between us and brutes. He should have agreed with Peirce with the great gulf between sensation and cognition, decided that cognition was possible only for language users, and then said that the only relevant break in continuity was between non-language users (amoebas, squirrels, babies) and language users. (...) So, my alternative Dewey would have said, we can construe "thinking" as simply use of sentences—both for purposes of arranging co-operative enterprises and for attributing inner states (beliefs, desires) to our fellow humans.

Garrison does not accept Rorty's critique at all. He contends that Dewey's concept of experience is not the kind of concept used by Locke,

Descartes or Kant. Instead it refers to the transformative practical relationship of an organism to its environment, the prototype of which in humans is craftwork. According to Garrison, Dewey is a philosopher of culture, but does not restrict culture – as Rorty does – to the linguistic practices of intellectuals. Instead (Garrison 1995, 90) "Dewey's philosophy of culture is made as much of labour and tools as it is by what, for Dewey, was tools of the tools, the language." He further suggests (ibid.) that "Dewey's naturalistic reconstruction of Hegel restricts itself entirely to the confines of human purposes, the confines of culture."

To make the foundations of this concept of culture understandable, Garrison presents Hegel's philosophy of work. He elects to concentrate on two early manuscripts of Hegel, *Systems of Ethical Life* and *First Philosophy of Spirit*, for two reasons. First, these early papers have more to say about work than Hegel's later works. Secondly, these manuscripts refer to "the free labour of Greek artisans" and not to the servile labor distorted by the master-slave relationship that Hegel analyzed in the *Phenomenology of Spirit*. According to Garrison, it is this Greek understanding of the experience of labor that contributed to the construction of epistemology and metaphysics in Dewey. In the *System of Ethical Life*, Hegel suggests three 'moments' or levels in the development of an ethical life:

- 1) *Desire*, imaginative awareness of what is needed,
- 2) *Satisfaction*, the possession of an object of desire, which proceeds to supercede the separation between subject and object, and
- 3) *Tool*, the permanent possession of the means of satisfying the need and desire, a rational synthesis. "On account of this rationality of the tool it stands as a middle term, higher than labour, higher than the object (fashioned for enjoyment), and

4 In his early essay *Kant and Philosophic Method* (1884/1969) Dewey dealt with the unity of subject and object. He stated that "the only conception adequate to experience as a whole is organism" and said that this idea can be found in Hegel's *Logic* (p. 42-43).

5 Rorty refers particularly to Hollinger's analysis (1986, 44), according to which an important 'point of transition' from idealism to naturalism took place in 1891 when William James's *Principles of Psychology* appeared. Dewey contended in 1911 that James's "biological conception of experience" was "perhaps a fundamental thing" prompting his reorientation. Hollinger adds (ibid.), "James's empirism as Dewey understood it (...) was compatible with the opposition to atomism and hedonism, and the commitment to the ideal of organic unity, which Dewey derived from Morris, Green, and Hegel, and never relinquished throughout his long career."

higher than the enjoyment at the end aimed at" (Harris & Knox 1979, 122).

Garrison cites also *First Philosophy of Spirit* where Hegel further elaborates on the concept of tool (Harris & Knox, 230-231): "The tool is the existing rational middle, the existing universality, of the practical process. It is wherein laboring has its permanence, that which alone remains over from the laboring and the product of work, wherein their contingency is eternalized immortalized; it is propagated in traditions." Hegel also says that the rational middle term is speech, "the tool of reason."

Garrison then develops the argument that this concept of tool and language presented by Hegel is parallel to what Dewey developed in *Experience and Nature*. Garrison argues that in this book Dewey, like Hegel, "believed that experience arose out of labour and the use of tools" (p. 100) and that Dewey's methodological behaviorism can be called "a labour theory of meaning, or more fully, a labour, tools and language theory of meaning" (p. 102). According to Garrison, Dewey's concept of experience concerns how ideal or imaginary objects come into existence. Dewey's metaphysics "will turn out to be no more than what would be found in any concrete historical situation in which workers strive to realize their ideas and values" (Garrison 1995, 95). Craftwork is a model of such transformative accomplishment.

As Garrison points out, in Chapter 4 of *Experience and Nature*, Dewey deals with the concept of tool. Tools play at least four essential functions in craftwork. 1) They express the causal relationships in nature (1925/1988, 101): "Tool is a particular thing, but it is more than a particular thing, since it is a thing in which a connection, a sequential bond of nature is embodied. (...) A tool denotes a perception and acknowledgment of sequential bonds in nature." 2) It provides the intelligent controlling principle that regulates the connection of things in activity and as a means to an end,

"a thing used as an agency for some concluding event" (ibid., 105). Dewey elaborates his idea of the epistemological significance of tool use in craftwork as follows (ibid., 73-74):

Labor manifests things in their connections of things with one another, in efficiency, productivity, furthering, hindering, generating, destroying. From the standpoint of enjoyment a thing is what it directly does for us. From that of labor a thing is what it will do to other things—the only way in which a tool or an obstacle can be defined. (...). Regularity, orderly sequence, in productive labor presents itself to thought as a controlling principle. Industrial arts are the type-forms of experience that bring to light the sequential connections of things with one another.

Language is a special kind of tool that makes shared meaning making possible in a human community. Meaning is "the acquisition of significance by things in their status in making possible and fulfilling shared cooperation" (ibid., 142). This is achieved using language (ibid., 145): "As to be a tool, or to be used as means for consequences, is to have and to endow with meaning, language, being the tool of tools, is the cherishing mother of all significance. ... Other instrumentalities and agencies can originate and develop only in social groups made possible by language." Meaning concerns humans and things in their relationship in shared life-activity (1925/1988, 145):

The meaning of signs moreover always includes something common as between persons and an object. When we attribute meaning to the speaker as his intent, we take for granted another person who is to share in the execution of the intent, and also something, independent of the persons concerned, through which the intent is to be realized. Persons and thing must alike serve as means in a common, shared consequence. This community of partaking is meaning.

The meaning also implies generalization from the particular situation of use. Thus every meaning is also generic or universal (ibid., 147). It is something common between

speaker, hearer and the thing to which speech refers. A meaning is universal as a means of generalization. "For a meaning is a method of action, a way of using things as means to a shared consummation, and method is general, though the things to which it is applied are particular" (ibid., 147).

With meaning made possible by language, tools achieve two other functions in addition to revealing causal relationships between things and functioning as a means of controlling them for human purposes, i.e., functioning as means to ends. Tools 3) consolidate meanings, that is, the means-ends connections objectified in tools can be used repeatedly. "The invention and use of tools have played a large part in consolidating meanings, because a tool is a thing used as means to consequences, instead of being taken directly and physically" (Dewey 1925/1988, 146). In addition, 4) they can be used to transcend the limits of present and local conditions (ibid.): "It (a tool) is intrinsically relational, anticipatory, predictive. Without reference to the absent, or "transcendence," nothing is a tool."

All these statements by Dewey show that the core content of *Experience and Nature* does not support Rorty's critique, according to which Dewey did not fully appreciate the meaning of language in recognizing the specificity of human activity. This recognition becomes already evident in the introduction – and in several other passages – in the book, where Dewey draws a distinction between humans and animals (1925/1988, 7 and 146):

Ability to respond to meanings and to employ them, instead of reacting merely to physical contacts, makes the difference between man and other animals; it is the agency for elevating man into the realm of what is usually called the ideal and spiritual. In other words, the social participation affected by communication, through language and other tools, is the naturalistic link which does away with the often alleged necessity of dividing the objects of experience into two worlds, one physical

and one ideal. (...) The most convincing evidence that animals do not "think" is found in the fact that they have no tools, but depend upon their own relatively-fixed bodily structures to effect results.

In this statement Dewey also resumes his metaphysics, according to which reality has a practical character, objects gain meaning in the context of human practices, and the distinction between ideal and physical objects is artificial.

Does the theorizing in *Experience and Nature* suffice to support Garrison's thesis that Dewey's philosophy is a philosophy of cultural retooling, that it is "Hegelian all the way" (p. 88), and that Hegel's early philosophy of labor contributed in an important way to Dewey's theory of experience? Does it suffice to show that Rorty's critique of Dewey's concept of 'naturalized' experience inspired by Darwin is without foundation? My provisional answer to these questions is negative.

As to the first question, Garrison does not present evidence of the impact of Hegel's early theory of labor on *Experience and Nature*. Neither does he refer to the extensive literature that analyzes Hegel's significance to Dewey nor does he compare his own position to other, alternative interpretations presented in this literature (e.g., Bernstein 1971, 167-172, Burke 1994, 18-22 Sleeper 2001, 23-28). His position differs from the interpretation mostly shared by this literature, according to which the contribution of Hegel to Dewey was the idea of organic unity (the integration of subject and object), the ontology of change and becoming, and the idea that thought transforms culture and simultaneously is based on it. It is also contrary to the mainstream interpretation that Dewey turned away from Hegelian idealism to a naturalism inspired by Darwin and William James. *Studies of Logical Theory* (1903) is mentioned often as a turning point in this respect. As Dewey himself recollected, it was the "the objective biological approach of Jamesian psychology" and "the idea of organism",

“thinking of life in terms of life in action” that gave a new direction and quality to his thinking (Dewey 1930/1988, 157-159). Richard Bernstein’s early suggestion (1967, 46) that Dewey critically adopted the Greek understanding of craftsmanship and skills based on custom and habit in the construction of his theory of experience seems credible.⁶ Dewey found the model for the reconstruction of experience, missing from the Greek conception, in experimentation in modern natural science.

It is true that the reading of *Experience and Nature* does not support Rorty’s polemical suggestion that Dewey did not acknowledge the qualitative difference between humans (language users) and animals (non-language users). However, the concern over whether the naturalistically interpreted concept of experience limited Dewey’s attempts to develop a theory of human thought and action is, in my mind, justified. In trying to make sense of how the naturalist conception of experience works in Dewey’s theory of inquiry, I will compare it with ideas presented by Vygotsky’s theory and to cultural-historical activity theory, which more strongly than Dewey underlines the qualitative difference between the biological and cultural and therefore has developed another kind of language to make sense of human action. This comparison also makes it possible to remark on the differences in the interpretations of Hegel’s legacy and his theory of work.

Habit and situation in Dewey’s logic of experience

The two main technical concepts used by Dewey in the definition of the logic of inquiry are *habit* and *situation*. These terms, in turn, are connected to two more metatheoretical con-

cepts, *unity* or *integration* and *continuation*. In *Logic*, the interrelationship between these concepts and Dewey’s phase model of inquiry (or reflective thought) is well articulated. Dewey defines the concepts of habit and situation in *Logic* primarily in biological and ‘ecological’ terms, that is, in terms of the equilibrium of the organism-environment interaction. Before presenting the pattern or structure of inquiry in the second part of the book, Dewey first deals with the two matrixes of inquiry, biological (chapter 2) and cultural (chapter 3). In the analysis of the cultural matrix, Dewey, like in *Experience and Nature*, very clearly articulates the social origins of specifically human conduct and its foundations in the use of language. The evolutionary continuity did not mean similarity to Dewey (1938/1991, 26):

Continuity (...) means that rational operations *grow out of* organic activities, without being identical with that from which they emerge. There is an adjustment of means to consequences in the activities of living creatures, even though not directed by deliberate purpose.

Instead Dewey says that what the postulate of continuity does exclude (ibid., 31) “is the appearance upon the scheme of a totally new outside force as a cause of changes that occur.” Accordingly, Dewey thinks that the origins of reflection are in biological adaptive behavior and “the ultimate function of its cognitive aspects is the prospective control of the conditions of the environment.” He contends that the function of intelligence is that of “taking into account in which more effective and more profitable relations with the objects may be established in the future” (1931, 3).

Vygotsky postulated more strongly than Dewey the idea of discontinuity; a qualitative transition from biological to cultural development played a more important role for him than for Dewey (Vygotsky 1978, 57):

⁶ Dewey’s strong interest in manual training pedagogy, which was popular in the late 19th century and central in his pedagogical thought might have contributed to his idea of craftwork as a model of experience.

The internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology, the basis of the qualitative leap from animal to human psychology. (...) The internalization of cultural forms of behavior involves the reconstruction of psychological activity on the basis of sign operations.⁷

Even if there were no fundamental theoretical difference between these two interpretations, the difference in emphasis seems to have led to different vocabularies in the two attempts to explain human activity and thought. The principle of continuity did lead Dewey to develop a theory of inquiry – as suggested by Rorty – that covers all types of organism-environment relationships in terms of situations using the language of biology. As a result, as I will try to show in the following, the means of analyzing the historicity and specifically cultural contents of human activity were not particularly well developed in Dewey's theory of inquiry.

Situation is the unit of analysis in the study of inquiry. The leading European pragmatist in sociology, Hans Joas, suggests in his *Creativity of Action* (1996) that situation should be the unit of the analysis of actions instead of the traditional means-ends connection or the trajectory of action as a realization of a plan. The analysis of Dewey's concept of situation may also be relevant to understanding the thesis of the situatedness of knowledge that is currently widely defended in sociology of organizations and organizational learning. Dewey defines his basic concept of habit in *Logic* in terms of a double modification of the organism-environment equilibrium (1938/1991, 38):

In the behavior of higher organisms, the close of the circuit is not identical with the state out of which disequilibrium and tension emerged. A certain modification of environment has also occurred, though it may be only a change in the conditions which future behavior must meet. On the other hand, there is change in the organic structures that conditions further behavior. This modification constitutes what is termed habit. (...) Habits are the basis of organic learning. According to the theory of independent successive units of excitation-reaction, habit-formation can mean only the increasing fixation of certain ways of behavior through repetition, and an attendant weakening of other behavioral activities. (...) In habit and learning the linkage is tightened up not by sheer repetition but by the institution of effective integrated interaction of organic-environmental energies – the consummatory close of activities of exploration and search.

To understand Dewey's concept of situation, it is useful to trace from which scientific debates and traditions it emerged. The different elements or dimensions of the concept were drawn from at least four sources, and at least four elements or ideas are intermingled in the concept. They are 1) the doubt or crisis of a habit as a starting point for reflection, 2) the idea of the contextual whole (unity, integration) as a unit of analysis between atomism and universalism, 3) situation as immediately sensed experienced world and 4) the idea that a problematic situation is objective, non-cognitive and existential by its nature being derived from the crisis of ongoing activity.

Ad 1). Dewey adopted the idea from Peirce that Cartesian doubt is not the starting point of knowledge formation. Instead, it is a crisis of prevailing beliefs that causes an inquiry. Dewey adapted this and redefined it in naturalistic terms, stating that the crisis of a habit presumes reflection and inquiry. Therefore, as Tom Burke (1994) suggests, situation in Dewey's logic must be understood as an instance of the disequilibrium of the organism-environment interaction or a break down of a habit (Burke 1994, 22-23):

⁷ In *Experience and Nature* Dewey reflects on the consequences of communication for human experience (1925/1988, 213): "Human learning and habit-forming present thereby an integration of organic-environmental connections so vastly superior to those of animals without language that its experience appears to be super-organic."

Situations, occurring in the ongoing activities of some given organism/environment system, are instances or episodes (or "fields") of disequilibrium, instability, imbalance, disintegration, disturbance, dysfunction, breakdown, etc. (...) Such ongoing activities just *are* interactions which constitute in some manner of organism/environment integration. *Situations*, then, occur as instances or episodes of breakdown or imbalance in this dynamic integration.

Ad 2). The idea of the unity of integration as well as a strong anti-atomism is a recurrent theme in Dewey's work. As mentioned before, this was based on the Hegelianism of Dewey's early career. The critique of the atomist conceptions of British empirism (the association of separate ideas) and of psychology (the S-R connection and reflex arc) was a key intellectual enterprise in Dewey's theoretical work. Consequently, in *Logic*, Dewey starts from what situation is not and ends up formulating the idea of the contextual whole (1938/1991, 72):

I begin the discussion by introducing and explaining the denotative force of the word situation. Its import may perhaps be most readily indicated by means of a preliminary negative statement. What is designated by the word "situation" is not a single object or event or set of objects and events. For we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a "situation."

Ad 3). One of the critiques that Bertrand Russell presented of Dewey's logic concerned the limits of the concept of situation. Since Dewey defined the concept as something where things interact and influence each other, Russell wondered whether the whole universe should be included in a situation (1951). This witty remark raises a question of the criteria of defining the context and the limits of situation (holistic transactional unity, contextual whole) as a unit of analysis of human activity. Dewey's solution was to draw the limits of situation (organism-environment interactive

unity) at the immediately experienced world, which includes those objects and aspects of environment that are relevant or vital for an organism (1938/1991, 73):

In actual experience, there is never any such isolated singular object or event; an object or event is always a special part, phase, or aspect, of an environing experienced world – a situation. (...) Recurring to the main topic, it is to be remarked that a situation is *a whole in virtue of its immediately pervasive quality*. When we describe it from the psychological side, we have to say that the situation as a qualitative whole is sensed or felt.

These formulations have an affinity with the phenomenological conception of experience. In his answer to Russell, Dewey repeats that the nature of situation as a unit of analysis between atomism and universalism is based on taking the 'empirically' definable interaction between an organism and its environment as a starting point (Dewey 1939, 29):

In other words, the theory of experiential situations which follows directly from the biological-anthropological approach is by its very nature a *via media* between extreme atomistic pluralism and block universe monisms. Which is but to say that it is genuinely empirical in a naturalistic sense.

Ad 4). Finally, Dewey underlines the 'natural,' practical and vital needs that are behind the organism-environment disequilibrium (1938/1991, 111):

The indeterminate situation comes into existence from existential causes, just as does, say, the organic imbalance of hunger. There is nothing intellectual or cognitive in the existence of such situations, although they are the necessary condition of cognitive operations or inquiry. In themselves they are precognitive. The first result of evocation of inquiry is that the situation is taken, adjudged, to be problematic. To see that a situation requires inquiry is the initial step in inquiry.

Although each of the four elements of situation have partly different origins in scientific debates, they are complementary and are de-

fined by each other's terms. Doubt or crisis arises because the equilibrium of the organism-environment relationship (or functional coordination) is threatened. The contextual whole elaborated against atomism is defined using the concept of immediate experience, which again is interpreted in terms of the organism-environment relationship. The 'naturalistic' or ecological organism-environment language allows the unification of these elements into one frame. In the following section I will study how the concepts of habit and situation elaborated using the language of biology also constitute a central basis for Dewey's logic and theory of thought. In addition, an ideal of the experiment in natural sciences is used to make sense of the transformation of a situation. It will be argued, that as a result of this combination, paradoxically, tools do not play any significant role in his theory of logic.

Inquiry, continuity and learning: where are the artifacts?

Dewey's definition of inquiry in *Logic* (1938/1991, 108-109) is based on the concept of situation: "Inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole"⁸. Dewey presents the five phases (or essential functions, aspects) of reflective thought or inquiry in *How We Think* (1933/1989) and in *Logic*. In the following, I will present the

designations for the phases used by Dewey in *How We Think* (pp. 201-206). The corresponding, slightly different titles used in *Logic* will be presented in parenthesis.

- 1) *Suggestion (The Antecedent Conditions of Inquiry: The Indeterminate Situation)*. A disturbed, perplex situation temporarily arrests direct activity. Dewey says that a variety of names serve to characterize indeterminate situations. These include disturbed, troubled, ambiguous, confused, full of conflicting tendencies, obscure, etc. "It is the situation that has these traits. We are doubtful because the situation is inherently doubtful" (1938/1991, 110).
- 2) *Intellectualization (Institution of a Problem)*. The indeterminate situation becomes problematic in the very process of being subjected to inquiry. To see that a situation requires inquiry is the initial step of inquiry.
- 3) *The guiding idea, hypothesis (The Determination of a Problem-Solution)*. A possible relevant solution is suggested by the determination of factual conditions which are secured by observation. Ideas are anticipated consequences (forecasts) of what will happen when certain operations are executed under and with respect to observed conditions.
- 4) *Reasoning (in the narrower sense) (Reasoning)*. This process is composed of developing the meaning-contents of ideas in their relations to other ideas.
- 5) *Testing the hypothesis by action (The Operational Character of Facts-Meanings)*.

Dewey explains the relationship of reasoning and experimental actions in *Logic* as follows (1938/1991, 121):

The pre-cognitive unsettled situation can be settled only by modification of its constituents. Experi-

⁸ Dewey further defines the terms he uses (1938/1991, 109): "The original indeterminate situation is not only 'open' to inquiry, but it is open in the sense that its constituents do not hang together. The determinate situation on the other hand, *qua* outcome of inquiry, is a closed and, as it were, finished situation or 'universe of experience.' 'Controlled or directed' in the above formula refers to the fact that inquiry is competent in any given case in the degree in which the operations involved in it actually do terminate in the establishment of an objectively unified existential situation."

mental operations change existing conditions. Reasoning, as such, can provide means for effecting the change of conditions but by itself cannot effect it. Only execution of existential operations directed by an idea in which ratiocination terminates can bring about the re-ordering of environing conditions required to produce a settled and unified situation.

In characterizing the phases of reflective thought, Dewey mainly uses two sets of terms. First he speaks about the *constituents* of situation, which are analyzed in order to formulate an idea or a *working hypothesis*. The observation of constituents, directed by hypothesis, produces *facts*. These contribute to the redefinition of the idea (working hypothesis), which is formulated using *symbols*.

In Dewey's treatment of the inquiry of a problematic situation, the ideal of experimental natural science is visible. The working hypothesis directs the observation of the constituents of the situation, which leads to facts that contribute to the respecification of the working hypothesis. Following the model of the method of experimental natural science, Dewey regards observation and data on one hand, and inference and suggestion (idea) on the other, as key elements in reflective thinking (1933/1989, 198). It is conspicuous that the concept of tool is not used at all⁹. This is even more astonishing since Dewey used the natural-scientific experiment as a model in constructing his logic. As shown recently by the sociology of experimentation, instruments constitute a vital part of any experimental activity (Pickering 1995, Rheinberger 1997). In Dewey's logic, the idea or working hypothesis is the only means explicitly discussed. Tools and other means remain constituents of the situation and have no special methodologi-

cal position in the analysis. Although Dewey underlines the operative nature of both ideas and facts, it remains unclear how a working hypothesis is transformed into the "existential operations" needed for the reconstruction of the situation. Can these operations of practical transformation be made without the use of relevant tools?

Dewey's theory of inquiry does not deal with how a future-oriented working hypothesis is 'turned' into tools and rules that make the practical transformation of a situation possible. To solve this problem by referring to the operative nature of ideas and facts, in my understanding, is not sufficient. Activity theory suggests that it is essential to analyze the relationship between signs and tools, that is, the relationship and interconnection between the different types of mediational means that are necessary for the practical transformation of any historically constituted situation.

Dewey deals with the wider significance of 'situated reflection' in terms of continuity. What has been experienced before in previous situations is used (and possibly transformed) in novel situations. From the point of view of the individual, this transformation of experience constitutes a process of "growing" and learning. The question of what the 'carrier' is of such a temporal continuity in experience remains. According to Dewey, habits, or ways of doing things enriched by intelligence, are the carriers of the results of the previous experience. It, however, remains unclear what constitutes the foundation of the continuity of habits. In some instances, Dewey seems to think that habits are first of all embodied predispositions to ways of responding ingrained in the nervous and muscular system of an organism (1938/1991, 146):

9 Only once does Dewey mention in the description of the phases of the inquiry that operations involve "techniques and organs of observation" (1938/1991, 121). He says nothing about the techniques or tools of the practical transformation of objects.

I see or note directly that this is a typewriter, that is a book, the other thing is a radiator, etc. This kind of direct "knowledge" I shall call apprehension; it is seizing or grasping, intellectually, without questioning. But it is a product, mediated through

certain organic mechanisms of retention and habit, and it presupposes prior experiences and mediated conclusions drawn from them¹⁰.

Dewey does say that thinking includes not only the use of biological organs like eyes, hands and brains but also “apparatus and appliances of all kinds” (Dewey 1916/1985, 328)¹¹. In *Logic*, the idea presented in *Experience and Nature*, according to which tools and artifacts may function as carriers of prior experience, is not taken any further. Theoretically, the parts or constituents of environment, the affordances and potentialities of its objects, including tools, belong to habits. In *Logic*, as well as in many of its interpretations, however, the role of mediational artifacts in the transformation of situations is not elaborated.

Many of the modern interpretations of Dewey underline the embodied nature of habits (Joas 1996, Manicas 2002). Hans Joas, for example, uses the concept of body schema by Merleau-Ponty to make the formation of habits understandable. Tom Burke assumes the position according to which accumulation of experience and knowledge takes place without

the objectification of the results of activity in cultural artifacts (1994, 256):

Particular *knowings* as inquiries, i.e. specific instances of the applications of one's dispositions, aptitudes, and habits to solving given problems, are distinguished here from knowledge, constituting stable outcomes of specific inquiries (in the form of judgement), both of which is distinguished from *intelligence*, which is the result of the development and accumulation (learning, habituation, standardization, routinization) of capabilities to act (inquire) in specific ways.

Dewey interestingly speculates about the potential of the “by-product” of inquiry, an objectified meaning (1916/1985, 22-23): “And it may well be that this by-product, this gift of the gods, is incomparably more valuable for living a life than is the primary and intended result of control, essential as that control to having a life to live.” This position, the objectification of a hypothesis or a meaning into a shared cultural artifact, is, however, not developed in *Logic*. It is the language of the biological matrix that dominates the characterization of the inquiry in the book.

I think we face here a difference between pragmatism and activity theory and what they draw from the Hegelian legacy. For Dewey's pragmatism it is the idea of organic unity, and for activity theory it is objectification of the activity into cultural artifacts, signs and tools. Ilyenkov resumes the latter position by saying (1977, 277): “All forms of activity (active faculties) are passed on only in the form of objects created by man for man.” This tradition has developed the Hegelian idea of the objectification of activity into cultural artifacts. A.N Lektorsky (1980, 137) points out, “The instrumental man-made objects function as objective forms of expression of cognitive norms, standards and object-hypotheses existing outside the individual.” Marx expressed the significance of cultural artifacts in *The Economic & Philosophic Manuscripts of 1844* as follows (1964, 142): “The history of industry and the

10 On the other hand, in the *Public and its Problems*, Dewey characterizes the social origins and meaning of habit as follows (1927/1988, 334-335): “Habit is the mainspring of human action, and habits are formed for the most part under the influence of the customs of a group. (...) The influence of habit is decisive because all distinctively human action has to be learned, and the very heart, blood and sinews of learning is creation of habitudes. (...) The sailor, miner, fisherman and farmer think, but their thoughts fall within the framework of accustomed occupations and relationships. We dream beyond the limits of use and wont, but only rarely does reverie become a source of acts which break bounds...” This double definition of habit as an individual ‘organic’ disposition and as a reproduction of a custom of a group resembles Bordieu's (1977) concept of habitus.

11 “Since these physical operations (including the cerebral events) and equipments are a part of thinking, thinking is mental, not because of a peculiar stuff which enters into it or of peculiar non-natural activities which constitute it, but because of what physical acts and appliances do: the distinctive purpose for which they are employed and the distinctive results which they accomplish (Dewey 1916/1985, 328).”

established objective existence of industry are the open book of man's essential powers. (...) A psychology for which this ... remains a closed book, cannot become a genuine, comprehensive and real science." If we think about the significance of the breakthrough of information technology and the internet for the organization of creative work and the capabilities of individuals, the relevance of this argument becomes evident.

Vygotsky made the distinction between two kinds of means, tool and sign, that orient human behavior differently (1979, 55). The function of tools is to serve as a conductor of human influence on the object of activity. Sign is used as a 'psychological tool,' as a means of internal activity aimed at mastering oneself. In his study on the functions of artifacts in human activity, Wartofsky (1979, 202) made a distinction between primary artifacts (tools), and secondary and tertiary artifacts. A tool is a primary artifact. Secondary artifacts, in turn, are about the conditions, ways and patterns of using tools (in ecological terms, about forms of interaction of the organism and its environment). They become objectified into "externally embodied representations" of actions such as models. The difference between mediating artifacts is related to the social origins of human activity and language. Signs or secondary artifacts originate "as instruments for cooperative, communicative and self-conscious shaping and controlling of the procedures of using and making technical tools (Engeström 1987, 61).

The distinction between functional types of artifacts is related to the hierarchical structure of human activity. In an individual, learning is embodied in the body's ways of using tools and signs, that is, operations. However, the important problems of human activities are collective and highly shared and call for the transformation of secondary and tertiary artifacts that function as means of reflection and orientation to the future in activity. The

conjoint reworking of the latter seems to be vital in a change of activity¹². The ecological language based on the organism-environment relationship tends to remain on an individual level and does not supply means for analyzing the transformation of collective human activities.

Concluding discussion

Can Dewey's philosophy be characterized as a philosophy of cultural retooling? I would be hesitant to do so. Dewey recognized the significance of tools in human practice and the role of language in the formation of meanings. The idea of means for consequences was so central in his instrumentalism that his philosophy has been characterized as a philosophy of technology (Hickman 1990). The term cultural retooling would not, however, do justice to the permanent naturalistic ideal in his work inspired by biological psychology and evolutionary theory (see e.g., Dalton 2002). I analyzed in this paper one expression of this ideal, the use of biological and ecological language in Dewey's theory of inquiry and reflective thought.

It seems to me that the cultural interpretation of Dewey's philosophy allows the signs of the turn to culture in the late Dewey to characterize the whole of his philosophy. Dewey hoped to be able to write the book on *Culture and Nature* (Sleeper 2001, 106). In a letter written to Arthur Bentley in 1951, Dewey characterized how he intended to continue his philosophical project (cited by Sleeper 2001, 16):

If I ever get the needed strength, I want to write on *knowing* as the way of behaving in which linguistic artifacts transact business with physical artifacts, tools, implements, apparatus, both kind of being

12 For the significance of different artifacts in the development of work, see Engeström 1992, Engeström & al. 2005 and Miettinen & Virkkunen 2005.

planned for the purpose and rendering inquiry of necessity an *experimental* transaction.

The study of the semiotic mediation of the use of tools was the starting point for Vygotsky's theory 30 years before (1978, 24):

The practical intelligence and sign use can operate independently of each other in young children, the dialectical unity of these systems in the human adult is the very essence of complex human behavior. Our analysis accords symbolic activity a specific organizing function that penetrates the process of tool use and produces fundamentally new forms of behavior.

Once the discussion of the affinities between the Vygotskian tradition and Deweyan pragmatism started, the two have been interpreted using the language of the other. It is well known that the concept of retooling (or remediation) is central to the Vygotskian tradition. Eric Bredo, for example, has recently characterized the Deweyan conception of learning as "learning to use cultural tools in situationally appropriate ways" (Bredo 2003, 100). Bredo further describes Dewey's ideas of teaching and says (*ibid.*, 104): "Today we might say that the teacher should set up a properly scaffolded 'zone of proximal development'." This is an example of a reinterpretation of Dewey in terms of the Vygotskian tradition. It is possible that the interpretation of Dewey's philosophy as a philosophy of cultural retooling may be influenced by this debate.

Another issue that in my mind needs to be further discussed is the definition of "situation" as a unit of analysis for human activity in terms of the organism-environment relationship. In my understanding, it does not stimulate the analysis of the historical, distributed and institutional nature of human activities. The interpreters of Dewey have characterized "situation" (holistic context, integrated unity) in systemic terms. Burke (1994, 29), for example, defines it as a "localized instance of disequilibrium of an organism/environment system." However, the criteria of defining the

limits of such a system as well as its structure remain unclear. As a result, it is also hard to analyze and interpret a "disequilibrium" of the system and the nature of the problems or contradictions it faces¹³.

In *Logic*, Dewey characterized the concept of situation using the principle of immediacy which depicts reality in terms of the individual organism or body in its immediate environment. The principle of continuation complements immediacy: the experiences of prior situations effect the present situation and the ways in which it is transformed. Luria and Vygotsky (1992, 36) maintained that human behavior is governed "not by the laws of biology but the laws of the historical development of society." This implies that any situation must be located historically and can be understood as a part of the development of society including its contradictions. The biological conception of equilibrium does not help in achieving such a historical contextualization. Edwin Hutchins (1995, 372) suggested in his ground-breaking study *Cognition in the Wild* that any moment in human practice (event or situation) needs to be also understood and analyzed as part of several developmental sequences of activity, each having a different rate of change. Hutchins defines three of them: acts of navigation, development of the practitioners, and development of navigation work (*ibid.*), "crystallized in the material and conceptual tools of the trade and in the social organization of work." The analysis of these (and other) multiple simultaneous histories supplies a vital perspective in defining and understanding the nature of situated problems and for finding means of solving them.

At least two attempts have been suggested to specify a social context and find a workable unit of analysis for the study of human prac-

13 For a comparison of the accounts of disequilibrium or contradictions as a dynamic source of transformation of activity in pragmatism, phenomenology and activity theory, see Korchman et. al. 1998.

tices. Both of them take the concepts of object and objectification, collective nature, and the historicity of human activity as starting points. The first is the concept of an activity system (Leontjev 1978), a historically formed, culturally and socially mediated system of people and things, typically a local work community in an institutional setting (Engeström 1987). The contradictions of the capitalist society are expressed in every local activity system, manifesting themselves in the recurrent disturbances and problems to be solved. Problems of activity are, in this view, not only situationally specific but instances and expressions of ongoing historical transformations of the capitalist society.

Another complementary unit of analysis proposed by science and technology studies, and actor network theory specifically, is a trajectory of object construction or the creation of a cultural artifact, be it a scientific fact or a model, a piece of technology or a new product or service (Latour 1993, Daston 2000). In such a construction process – as in the development of an activity system – the cumulative, shared and historical nature of activity becomes evident. The already created individual and collective capabilities and resources are mobilized and used. The reciprocal development of individuals and their capabilities, the forms of the collaboration, the means and objects, can be made visible in such a process of creation. These units also imply that an activity is composed of hundreds of problem-solving situations that are related to the various aspects of the object to be constructed. Both of the units call for the analysis of multiple histories that are intertwined in an event or problematic situation and of the evolving contradictions of the commodity production in the capitalist market economy in which we live and into which the situations are embedded.

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