

# **From habituality to change: Contribution of activity theory and pragmatism to practice theories**

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## **Abstract**

The new social theories of practice have been inspired by Wittgenstein's late philosophy, phenomenology and more recent sociological theories. They regard embodied skills and routinized, mostly unconscious habits as a key foundation of human practice and knowledge. This position leads to an overstatement of the significance of the habitual dimension of practice. As several critics have suggested this approach omits the problems of transformative agency and change of practices. In turn classical practice theories, activity theory and pragmatism have analyzed the mechanisms of change. Pragmatism suggests that a crisis of a habit calls for reflection. Through working hypotheses and experimentation this leads to a transformation of a practice. Activity theory introduced the concept of remediation. A collective elaboration of shared mediational artefacts is needed to transform an activity.

## **Introduction**

The concept of social practice has been widely used in sociology and organisational studies to the point that many scholars have started to speak about the practice turn in social theory (e.g. Schatzki, Knorr-Cetina, & Von Savigny, 2001; Reckwitz, 2002a; Stern, 2003). It is difficult to characterize this turn when there are so many partially overlapping, yet different approaches associated with it. Nevertheless, the term practice theory is largely identified with a group of sociologists and philosophers in the late twentieth century who either presented a fully fleshed-out theory of practice or who at least found practice to be an important concept in their work. Bourdieu (1977), Giddens

(1984) and ethnomethodologists are often mentioned as social theorists, and Heidegger along with Wittgenstein in his later works are the philosophers cited as establishing the background for the new practice theory (see e.g. Schatzki, 2001, p. 1; Reckwitz 2002a, pp. 243-244; Turner, 2007, p. 111; Rouse, 2007, p. 501; Schmidt, & Volbers 2011, p. 19). Latour and other actor-network theorists are also often mentioned (e.g. Reckwitz, 2002a; Schmidt & Volbers, 2011), as is Foucault. Actor-network theory emerged from constructivist science and technology studies, which examined laboratory and scientific practices (Pickering, 1992) and also led to theoretical accounts of the concept of practice (Pickering, 1995; Rouse, 1996).

Practice-based approaches were widely adopted in organisational studies in the 1990s, especially in organisational learning and knowledge management (Blackler, 1993; Nicolini, Gherardi, & Yanow, 2003; Brown & Duguid 2001). Since the 1990s several approaches have been developed to study strategy as practice instead of analysing strategy as rational decision-making or planning (Whittington, 1996; Samra-Fredericks, 2003, Jarzabkowski, 2005). In organisational studies Schatzki's (1996) and Reckwitz's (2002a) understanding of practice theory are widely cited and used. That is why we will refer to the interpretations of those two scholars.

We will suggest that an important shared feature of the new practice theories is their emphasis on habituality of practice, that is, the recognition of the primacy of pre-reflective embodied actions in contrast of individual rationality and conscious reflection. We suggest that this position makes it difficult for these theories to make sense of the change of human practices. In contrast, the classical practice theories, pragmatism and cultural-historical

activity theory – a heir the of dialectical tradition – focused from the beginning to explain the change and development in human practices. They focus on how people can influence such changes when emerging problems or contradictions in practices are faced (Miettinen, 2006).

Cultural-historical activity theory (Engeström, Miettinen, & Punamäki, 1999) and sociocultural approaches (Chaiklin & Lave, 1993) have their roots in the work of the Russian psychologist Lev Vygotsky and his followers, who took up Hegel's and Marx's concept of work as an important starting point. Work is here understood as a prototype of creative activity mediated by tools and cultural artefacts and as a process in which humans simultaneously create both themselves and their material culture. In pragmatism, the crisis of established habits requires reflection of the condition of activity and the formation of a working hypothesis for the experimentation of a new way of acting. Both activity theory and pragmatism regard intervention and experimentation as a means of influencing the direction of the change, and both have developed methods of doing just that. Activity theory in particular, based on the concept of mediation by cultural artefacts, has developed a vocabulary for dealing with the materiality of human practice.

In this paper we will proceed as follows. Firstly, we will discuss some of the differences between the classical and a selection of new postmodern theories of practice. Secondly, we will discuss the problem of habituality of practice and its consequences for making sense of the change of activities. Thirdly we will analyse the idea of reflection as a mechanism of transforming habits. Fourthly we will bring forth theories of artefacts in practice theories. We maintain that the transformation of artefacts or remediation, that is, collective

elaboration of shared meditational artefacts – suggested by the activity theory – is an essential part of the transformation of practices. In addition we suggest that an analysis is needed of the various functions that different artefacts play in activity.

### **Bringing back the classical practice theories**

The concept of practice, or praxis, is not, of course, new, either in philosophy or in the social sciences. The first generation of practice theorising took place in the late nineteenth and the early twentieth centuries. The ideas of this generation were summarised by the philosopher Richard Bernstein (1971) in his *Praxis and action: Contemporary philosophies of human activity*. Bernstein distinguished four philosophical approaches to practice. The first approach is the Hegelian tradition followed by Marx's thesis on Feuerbach, in which Marx finds the solution to the dualist opposition between idealism and materialism in the concept of practice or objective activity. The second approach Bernstein discusses is Charles Peirce's and John Dewey's pragmatist theories of practice, based on the concepts of habit, inquiry and interaction between the human body and its environment. Thirdly he addresses the concepts of practice in existentialism discussed by such post-war authors as Jean-Paul Sartre, and fourthly the concept in analytical philosophy.

As David Stern (2003, p. 188) points out, most of the accounts of the practice turn and theorizing do not refer, or refer only in passing, to these classical philosophical antecedents of the practice concept. The philosophical roots of the new practice theories are found in the works of Heidegger and

Wittgenstein. Current practice approach could also be characterized as postmodern practice theory, since it is a “response to failures of projects of modernity or enlightenment” (Turner 2007, p. 110).

We, in turn, find Bernstein’s (1971) distinction among his four philosophical approaches to praxis and action still relevant for depicting the differences and similarities among philosophical concepts of practice. Each of the philosophical traditions provide different basic concepts to make sense of practice or activity. Activity theory, an heir to Hegel and Marx, emphasises cultural (artefact) mediation and the object-orientedness of activity (Vygotsky, 1978; Leont’ev, 1978). Pragmatism deals with habits and their transformation through reflection and inquiry (Dewey, 1929/1988). Critical realism and its theories of transformational human activity and intentional agency continue the analytical tradition today (Bhaskar, 1986; Archer, 2000).

Phenomenology adopts from Heidegger (1962/2003) the idea of preconscious background knowledge. This background knowledge is often analysed in the way inspired by Maurice Merleau-Ponty (1945/2003) as embodied knowledge, that is, in the forms of bodily skills and dispositions. This idea resembles Bourdieu’s (1977) concept of habitus and also resonates with the idea of tacit knowledge (Polanyi 1957/2002). Ethnomethodology, a sociological approach that emerged from phenomenology, highlights the following of tacit rules.

Current discussion on practice theories emphasises phenomenologically inspired interpretations of practices as well as sociological approaches to habitus or routinized activities. In this paper we discuss Bhaskar’s transformational model of social activity and Lawson’s theory of artefacts as

versions of critical realism that contribute to the problem of change of practices. They are critical to the concept of habituality and deal with the problems of agency and role of artefacts in change of practices.

Two first traditions analyzed by Bernstein, namely dialectical tradition – represented today by activity theory – and pragmatism are far less often used in these interpretations than are the phenomenologically influenced approaches, although new practice theories have absorbed influences from many directions (Schatzki, 2001; Reckwitz, 2002a). If a single unifying feature of the current approach to practice should be named, then habituality – the primacy of routinized, prereflective, and/or unconscious, embodied actions and dispositions to actions in contrast to individual rationality and reflection – would be a good candidate.

Many distinguished observers, however, have pointed out that a habitual concept of practice has difficulties in making sense of the change in practices or of the contribution of individual agency to the process of change (Emirbayer, & Mische, 1998; Knorr-Cetina, 2001; Shusterman, 2008). Emirbayer and Mische (1998, p. 983) observe that such theorists as Bourdieu and Giddens focus on low-level reflectivity and “do not show us how schemes of action can be challenged, reconsidered, and reformulated.” They (Emirbayer, & Mische, p. 1006) find it important to create circumstances that “provoke or facilitate” human actors to gain imaginative distance from iterative, habitual responses, “thereby reformulating past patterns through the projection of alternative future trajectories.” Richard Shusterman (2008) finds that the reflective level of somatic consciousness helps to (Shusterman, p. 74) “acquire better means to correct inadequacies of our unreflective bodily habits.” Karin Knorr-Cetina

(2001, p. 175) states that a habitual concept of practice is insufficient for making sense of what she calls knowledge-centered activities. The transformation of practices is emphasized also by critical realism (Bhaskar, 1986).

As suggested above, the first two traditions introduced by Bernstein, namely the dialectical tradition (the Hegelian/Marxist) and the pragmatist tradition, can be characterized as classical or modernist theories of practice, and they share many ideas with each other (Miettinen, Samra-Fredericks, & Yanow, 2009). The pragmatist concept of habit also has a family relationship to the concepts of habitus and dispositions, which are important for the new social theories of practice. However, both pragmatism and activity theory find reflection, inquiry and thought – rather than practical coping – instrumental for agency and for the transformation of practices. The social theories of practice inspired by phenomenology regard the concept of embodied skills and their unconscious adaptation to new situations as central to understanding human practice and give reflection and thought only secondary significance in human activity. On the other hand, without a concept of an artefact, reflection is easily transformed into individual thought, or into a formation of collectively shared ideas lacking contact with the materiality of human activity.

### **Habituality, practical understanding and change of practices**

The ideas of habituality and the primacy of unconscious, embodied actions also call for a redefinition of knowledge and its role in human practices. According to Theodor Schatzki (2002), the new concept of knowledge opposes

representational accounts of knowledge and meaning. The integrative foundation of doings and sayings in Schatzki's theory of practice is "practical understanding." Schatzki defines practical understanding by referring to another set of concepts developed by practice theorists:

Examples of what I have in mind are Bourdieu's habitus, otherwise called practical sense ("having a feeling for a game"), and Giddens's practical consciousness ("tacitly grasping a rule"), both conceptualizations [sic] the phenomenon of knowing how to go on highlighted in Wittgenstein's *Philosophical Investigations*. Habitus and practical consciousness are alleged either always (Bourdieu) or often (Giddens) alleged to determine what people on particular occasions do. As a result, these phenomena also allegedly provide explanations of the particular actions involved. (Schatzki, 2002, p. 78-79.)

All of these concepts refer to skills, dispositions, pre-discursive rules and schemes of action that underlie activity. These dispositions are the primary forms of knowledge, and they are mostly unconscious and/or pre-reflective. In this vein the philosophical (ontological) thesis of the primacy of practical, bodily interaction with the environment in relation to knowledge is extended to a theory of knowledge. The phenomenological position was well articulated by Spinoza, Flores, & Dreyfus (1997):

Writers such as Henry Mintzberg and Robert Solomon, like us, think that skills are more important than theory when it comes to dealing with the real world. We go beyond these thinkers in that we claim, first, that the skills that form the background for dealing with people, things, and selves contain an understanding of what it is to be anything at all and that taking up such practices gives one an identity and so gives one's life meaning .... (Spinoza, Flores, & Dreyfus, p. 191)

Also, for the ethnomethodologists the attempts to reflect consciously and discursively the forms of activity, that is, formulations of activity, are mostly about *legitimizing* actions, which already by themselves exhibit orderly



structure and rationality (Lynch, 1995).

Karin Knorr-Cetina (2001, p. 175) has presented an explicit sociological critique of a habitus-, skill- and rule-based understanding of practice. In her view, research work and more generally professional work cannot be explained in terms of routine procedures. That is why she opts for the notion of practice, which is more dynamic and includes the potential for change. The challenge is “to dissociate the notion of practice somewhat from its fixation on human dispositions and habits, and from the connotation of iterative procedural routines” (Knorr-Cetina, 2001, p. 187). Knorr-Cetina thinks that, in a contemporary knowledge society, we need to understand the changes taking place in the knowledge processes themselves. To make sense of these we have to study their objectual relationships, the relationship of professionals to the objects of their work and practice. The objects themselves are changing in a ‘knowledge society’. Compared with mass products or services, these objects are ever more complex, dispersed and in constant need of being redefined and reconstructed. This is why they can be characterized in terms of open, constantly unfolding epistemic objects or knowledge objects.

*The lack in completeness of being is crucial: objects of knowledge in many fields have material instantiations, but they must simultaneously be conceived of as unfolding structures of absences: as things that continually ‘explode’ and ‘mutate’ into something else, and that are as much defined by what they are not ...than by what they are. (Knorr-Cetina, 2001, p. 182)*

According to Knorr-Cetina (2001), for understanding epistemic practice, the process of object-subject differentiation is crucial. She argues that Heidegger’s concept of instrumental being-in-the-world deals primarily with the

unselfconscious, but nonetheless goal-directed employment of a ready-to-hand equipment. In such a being-in-the-world the equipment becomes transparent or invisible, and a subject does not think of him/herself as separate from the immediate activity. This is an adequate description of routine or habitual practice, even in research work. However, when such a practice becomes problematic, the undifferentiated unity is dissociated from a subject-object relationship in which the properties of the object become an object of knowing and transformation. In this relationship researchers actively search for and use resources to overcome the subject-object separation.

Knorr-Cetina's critique focuses on the change in the interaction between human subjects and increasingly complex objects. She, however, does not discuss the means of this interaction. The concept of mediation in activity theory underlines the interactive development of subject, cultural means and an object. A follower of Vygotsky, A.N. Leont'ev developed the idea of an objective, mediated structure of the human activity system. Human activity is object-oriented: "Activity necessarily enters into practical contact with objects that confront man, that divert it, change it, or enrich it" (Leont'ev, 1978, p. 56). The object of an activity, something to be transformed by the activity into a use-value, is a driving force behind the activity. The object of an activity is material, as well as simultaneously imagined and projected. Its formation and realisation take place by using a set of relevant mediational artefacts. When an object changes the means also need to be transformed. For example, the medical tools and procedures developed for treating infectious diseases do not on their own help in the treatment of diabetes or coronary diseases. The means need to be redesigned to meet the demands of the changed object by

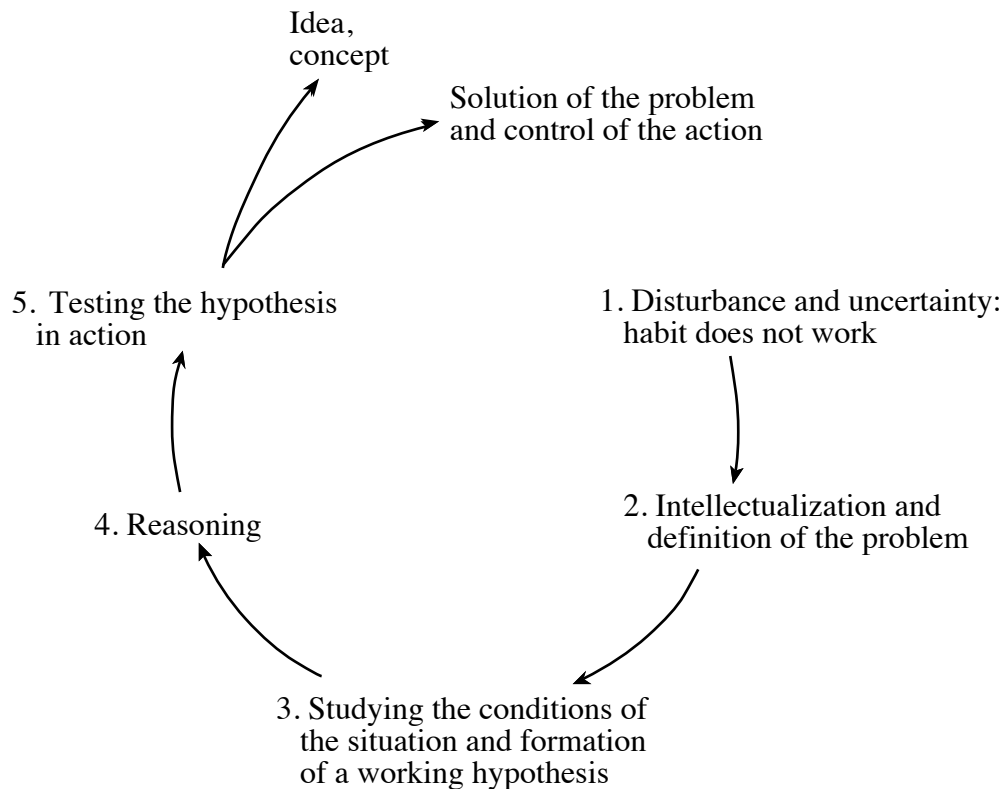
remediation. An object of activity turns into a means: a product designed and fabricated becomes a tool for use in another activity. The changing interrelationship between objects of activity and the means of their realisation is an important way to make sense of the materiality of human practice.

### **Breakdown of habits and reflection as explanations of transformation**

Most of the philosophical approaches to practice, phenomenology and Deweyan pragmatism, as well as activity theory agree that the bodily interaction of individuals with the material and social environment is primary to cognition and thought. All of them recognize (at least to some extent) that reflection, thought and future orientation are needed when established ways of doing things (ready-to-hand, habits, routine operations) break down, and novel solutions are needed (Koschmann, Kuutti, & Hickman, 1998). However, these phenomena are given different kinds of status in different approaches. While Heidegger regarded pre-reflective and pre-linguistic knowledge (philosophically) primary, he also focused on pre-linguistic forms of coping, leaving breakdowns as well as the processes and means of solving them largely out of his analysis.

For pragmatism, the breakdown of established habits and the disequilibrium of a situation constitute the starting point for reflection. Peirce (1992-98) introduced abductive reasoning as a special process whereby people confront unexpected phenomena, search for clues and form new candidate hypotheses for solving a problematic situation (Paavola & Hakkarainen, 2005). Similarly, in Dewey's theory, habit and inquiry are inseparable. To transform a situation, a working hypothesis is formulated and then tested in practice. The

central issue for Dewey was whether an authority-bound and routine way of acting could be replaced in a reconstructive and reflective way. Dewey's model of enquiry and reflective action can be depicted in six phases (Figure 1, based on Dewey 1933/1986, pp. 199-208 and 1938/1991, pp. 105-122.).



**Figure 1. Dewey's model of reflective thought and action. The graphic presentation is taken from Miettinen (2000, p. 65).**

When an established habit no longer functions an uncertainty and a crisis emerge and call for reflective thought and investigation of the situation (phase 1). The process of reflective thought starts with an attempt to define what is wrong in the situation (phase 2). The actor forms a tentative conception of the difficulty and defines the problem (Dewey, 1938/1991, p. 112):

Without a problem, there is blind groping in the dark. The way in which the problem is conceived decides what specific suggestions are entertained and which are dismissed; what data are selected and which rejected; it is the criterion for relevancy and irrelevancy of hypotheses and conceptual structures.

The analysis and diagnosis of the conditions take place in phase 3. The conditions include both material and social conditions including the means and resources with which the problem is supposed to be solved. The presupposition of a possible solution is called a working hypothesis. A working hypothesis can also be characterised as a guiding idea or a plan. Reasoning (phase 4) is composed of the elaboration of the meaning of ideas in relation to each other. Through reasoning, thought experiments can be done. In phase 5 the working hypothesis is tested by trying to implement it in practice, by reconstructing a situation or an institutionalized way of acting. Dewey says that only the practical testing of the hypothesis in material activity makes it possible to draw conclusions about its validity (Dewey, 1916/1985, p. 328):

Upon this view, thinking, or knowledge-getting, is far from being the armchair thing it is often supposed to be. (...) Hands and feet, apparatus and appliances of all kinds are as much a part of it as changes in the brain (...) 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.

Although Dewey recognized the significance of tools and the dependency of an aim on the relevant means, curiously, tools are not included in his theory of inquiry. The only artefact mentioned in his cycle is a working hypothesis. Since tools and artefacts are included in habits, it would be natural to assume that the

acquisition of new tools or the transformation of old ones is needed in order to experiment and change the situation or a practice.

In Bhaskar's transformational model of social activity (TMSA) representing critical realism people reproduce or transform existing social structures. Transformativity is part of a social ontology that provides solutions to several mistaken dualisms prevailing in social theory (Bhaskar, 1986, p. 125): "the ontological errors of voluntarism and reification, the constitutive ones of individualism and collectivism and the epistemic ones of methodological individualism and social determinism." Human activity is dependent on the materials, such as the means, media, resources and rules that it transforms. In characterizing the reflexivity of an intentional agent, Bhaskar (p. 128) resorts to psychological terminology: feelings, desires, want, practical skills, unconscious rules and rationalisations play a role in the process. An agent reproduces or transforms structures mostly in an unconscious and unmotivated way, although rational action is also possible (Bhaskar, p. 133). Artefacts are missing in Bhaskar's account, although his model comes close to acknowledging them by emphasizing "human activity or praxis as essentially transformative or poietic, as consisting in the transformation of pre-given material (natural and social) causes by efficient (intentional) human agency" (Bhaskar, p. 122).

The theory of expansive learning (Engeström, 1987), a recent version of activity theory, has made sense of the process of reflection in terms of collective remediation. This process first traces the historically-formed contradictions of an activity that causes disturbances, problems or breakdowns. A working hypothesis for a more advanced form of the activity or a zone of

proximal development is formed and is expected to resolve the contradictions. The process includes the modeling of the instruments for the projected new activity.

In activity theory the idea of theoretical concepts as a means of envisioning the future is inspired by Vygotsky's work on concept formation and by V.V. Davydov's theory of generalisation and theoretical thinking in education (1977). In this methodology a theoretical concept also assumes the form of a germ cell, which refers to a new instrumentality and a corresponding form of action that is developed as a solution to the contradictions of an activity. The implementation and development of the germ cell may lead to the emergence of a new form of activity (Engeström, Engeström, & Kerosuo, 2003). The reflection includes both concepts of and models for an alternative activity and the development of new tools and instrumentalities with which to experiment and develop the alternative (Miettinen & Virkkunen, 2005). Accordingly, the activity-theoretical approach regards retooling, that is, the shared creation of artefacts used, as a key of changing practices (Vygotsky, 1986).

### **Introducing mediating artefacts**

Recently there have been several attempts to clarify the fundamental role of *artefacts* in the change of activities and in the formation of agency. The sociologist Ian Burkitt calls cultural artefacts a prosthetic extension of the body and has emphasised how the human body and its capabilities are re-formed by cultural artefacts. He regards them as the basic units of cultural development

instead of “memes” (Burkitt, 1999, p. 12). In his theory of the evolution of human consciousness the psychologist Merlin Donald has convincingly suggested that modern human consciousness cannot be explained as the result of biological evolution alone. Instead, the key is the external memory or the externalisation of memory (Donald, 2001, p. 262): “modern humans can employ a huge number of powerful external symbolic devices to store and retrieve cultural knowledge.”

Bruno Latour has analysed the ways in which mankind (humanity) “delegates” tasks and norms to artefacts (Latour, 1992). As a result, technical artefacts have a script, an affordance, a function or a programme of action and goals (Latour, 1994). Human agency is here distributed between men and artefacts. This has been demonstrated in the empirical research conducted by Edwin Hutchins (1995), as well as in other investigations into distributed cognition (Goodwin, 1995). In these approaches, instead of working via cognitive processes in the head or in bodily schemes, human capabilities are preserved and transmitted, first of all, through the artefacts and the ways in which the artefacts are used. Where this is the case, a theory of artefacts, including representational artefacts, is needed to understand the dynamics of the change in practices.

Critical realist Clive Lawson (2007; 2010) has developed a theory of technological objects as an extension of human capabilities, and he provides a review of the extension theories. Electronic media can be understood as extensions of the information-processing functions of the nervous system. Radio, for example, is a long-distance ear. Lawson’s theory of technological objects as extensions of human capability is based on Roy Bhaskar’s critical



realism and his transformational model of social activity. Lawson likewise underlines that human activity harnesses the causal powers or intrinsic properties of material artefacts. Technologies are relational: an artefact is interconnected with networks of social and technical interdependencies, which can be typified according to their functions in human activity.

Lawson makes a distinction between different kinds of artefacts by means of the different kinds of causal powers within them (Lawson, 2007). Some artefacts (typically technical objects) derive their causal powers from their physical structure (a photocopier, for instance); other artefacts attain power more from their social relations and conventions (for example, a passport). Lawson's discussion raises the key question of the interrelationships of technologies – understood as tools and equipment – with semiotic means in human activities, although he himself does not draw a distinction between tools and symbolic or semiotic artefacts.

In activity theory and in the dialectical tradition (Ilyenkov, 1977b; Lektorsky, 1980) the objectification of activity into artefacts is emphasized as a key mechanism in the development of culture. A human being creates him/herself in the process of changing a part of the world and a culture, with a corresponding transformation of the mediational means. Human activity is objectified into cultural artefacts (Ilyenkov, 1977a, Lektorsky, 1980). The embodiment of forms of human activity within artefacts is the primary means of learning and transmitting human achievement wherein the role of individual agents is also important. "All forms of activity (active faculties) are passed on only in the form of objects created by man for man" (Ilyenkov, 1977b, p. 277). This insight goes back to Hegel, who suggested that the "spirit" develops

through its objectifications into material forms, such as artefacts. Vladislav Lektorsky (1980, p. 137) finds that norms, procedures and knowledge are embodied in artefacts: “The instrumental man-made objects function as objective forms of expression of cognitive norms, standards and object-hypotheses existing outside the individual.”

Vygotsky (1978) made the distinction between two basic types of mediational means, tools and signs. Although tools and signs are both cultural means, they differ in the way that they orientate an activity. Tools are externally orientated and are used to transform objects. Signs are used to coordinate the actions of individuals in a collaborative activity. Signs are also used as psychological tools, that is, to direct and control an individual’s behaviours and actions. In his *Thought and Language* (1986) Vygotsky showed that this function develops through the internalisation of language, first into internal speech and then into individual thought. Although he made a distinction between tools and signs, Vygotsky emphasized that the interpenetration of these two types of artefacts is the foundation of specifically human activity (1978, p. 24): “Although 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 behaviour.”

### **Towards a theory of change**

Pragmatism and activity theory differ from the recent social theories of practice. Social practice theories have been developed in the context of theoretical sociology and in social theory. They are often developed and used to

clarify a social ontology, to explain social order and to provide a solution to the perennial problems of sociology, such as the relationship between structure and agency. In such a theoretical context the discussion of agency is easily seen as a remnant of methodological individualism. Many practice theorists suggest co-evolutionary, reciprocal, relational, transactive or dialectical views and a mutual constitution of self, practices and structures. These suggestions do not supply accounts of the mechanisms by which individuals or collaborative agents contribute to the reconstruction of structures, artefacts, practices or institutions. The transactional approaches tend to suffer, as activity theorists Anna Stetsenko and Arievich (2004, p. 479) point out, from “a curious form of a ‘reductionism upwards’ ... whereby the self is dissolved in the collective dynamics of social processes.”

By contrast, cultural-historical and Deweyan pragmatist traditions were developed in close connection with developmental psychology or educational studies. That is why they supply articulated theories of learning and human thinking. Although these traditions recognise the primacy of practice and the social origins of the self, they also have viable concepts of relating individual thought and reflection and change in practices to each other. Dewey’s concept of reflective thought as a reconstruction of broken habits is an example of such an articulation.

The distinction between signs and tools suggested by Vygotsky is probably insufficient for making sense of the new ICT-based cognitive artefacts, which are radically changing human agency and practices. A ready-to-hand smartphone can be used as an example. An ever-growing assortment of old and new intellectual tools, equipment and databases, such as calculators,

dictionaries, guides (e.g. plant guides and bird guides with recorded birdsongs), cameras with the capability of sending photographs electronically, maps, satellite-connected route guides with timetables and so on, are being embodied in smartphones. Through internet connection, the smartphone provides access to e-mail and Facebook, e-commerce, bank services, Google and Wikipedia, as well as to libraries and scientific databases. Soon tablet computers, that is, equipments with high-quality screens such as the iPad, will make it possible to read material from libraries and databases. Such equipment is simultaneously a small portable material object; an external cultural memory and a generalised means of daily life and communication between people, in other words, a means of literally extending the mind (see Clark & Chalmers, 1998). Such extremely complex instrumentality and its consequences for human practice are at present poorly conceptualised. That is why we welcome Lawson's (2010) suggestion, for example, to study and develop further "extension theories", such as McLuhan's concept of media.

Both activity theory and pragmatism regard the study of change by means of intervention and social experimentation a central challenge for the study of practices. Marx formulated this position in his eleventh thesis on Feuerbach (1888/1978, p. 127): "The philosophers have only interpreted the world, in various ways; the point is to change it." Twenty years later Dewey (1908/1977, p. 104) agreed: "[T]he chief function of philosophy is not to find out what difference ready-made formulae make, if true, but to arrive at and to clarify their meaning as programs of behavior for modifying the existent world." Since both activity theory and pragmatism were committed to studying

education and ontogeny, the idea of making people's lives better and creating conditions for the development of human capabilities has been central to both.

Such a position calls for the development of an interventionist research strategy. Dewey's experimentalist school in Chicago is one famous example. The revival of pragmatism in social theory has focused on reintroducing the concepts of habitual action and transaction as methodological alternatives to dualistic approaches in the social sciences (e.g. Joas, 1996, Kilpinen, 2009). Thus far, however, the challenge of solving the problems of social practices has hardly been discussed. We find that social experimentation or, to use Dewey's term (1925/1988, p. 362), the formation of communities of inquiry for the recognition and resolution of important conflicts and problems of societal activities, remains a major challenge, both for the old as well as the new practice theories, and is crucial for understanding transformative agency (see e.g. Bernstein, 2010).

The modernist conceptions of progress represented by the classical practice theories might seem too simplistic or even naïve today, but they provide tools and means for dealing with rapidly changing world (see Emirbayer & Mische, 1998, p. 1013). The concept of artefact mediation and remediation emphasises that such a community needs not only to formulate a joint working hypothesis for its future activity, but also to develop and evaluate practical means for its accomplishment.

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