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Mead, Dewey, and Extended Cognition: The Relevance of the Chicago School for Contemporary Cognitive Science

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Abstract:

The paper examines views on the nature of cognition by two foremost representatives of the Chicago School of pragmatism – George H. Mead and John Dewey in relation to recent theories and trends in cognitive science such as the extended cognition theory. The paper reconstructs Dewey's and Mead's main arguments about the nature of cognition, which (in short) state that cognition is not a matter of creating inner mental representations of the world but rather of creating embodied strategies (habits, attitudes) of negotiating that world directly in action. Next, the author shows how these ideas find an explicit vindication and empirical support within recent research in cognitive science. As a result, in connection to theories of certain philosophers of cognitive science such as Andy Clark, Mark Rowlands and others, the author argues that rather than dismissing the notion of representation altogether, pragmatists should consider its redefinition in terms of practical bodily action. On such an account, we can point out to a certain class of acts which embody the pragmatic notions of habits and attitudes and thus serve as practical ways of negotiating the world. The paper shows that the nature of these acts can do justice to 5 analytical conditions of representation (informational, teleological, decouplability, misrepresentation and combinatorial condition) and yet radically redefine what role the notion of representation should play in the cognitive discourse.

In his recent book called *The Pragmatic Turn*, Richard Bernstein writes that a philosopher comes alive and speaks to us from the past when his work becomes a fertile source for dealing with current philosophical problems, when his work can be engaged in novel ways. In what is to follow, I would like to concentrate on the issue of the relationship between the epistemological theories of George H. Mead and John Dewey and some ideas presented recently by the representatives of the strand of cognitive science called the extended mind theory. More specifically, I will focus on what these two schools of thought have to say about the topic of cognition and representation. The main point of this talk is that representation should be defined in terms of action, that is, as a certain way of our active engagement with the world rather than creating inner mental pictures of any kind.

Where specifically does cognition stop and action begin? Traditionally, philosophers have tended to think of the relation between perception, cognition, and action in terms of what Susan Hurley once dubbed the “classical sandwich” paradigm of the mind. In her words, “this conception of the mind, widespread across philosophy and empirical sciences of the mind, regards perception as input from world to mind, action as output from mind to world, and cognition as sandwiched between” (2008: 2). In this view, cognition is considered some sort of a central process, taking place in our skulls, which transforms and processes perceptual inputs caused by the contingencies of our environmental surroundings. Action, on the other hand, is usually viewed as some sort of a “servant” to the central cognitive processes, that is, as their mere bodily-instrumental output.

At a certain level of analysis the problem of the relation between perception and action can be defined as a problem of the relation between stimulus and response. The main contention of psychological research in times of Dewey and Mead was that, if we are to explain what cognition is, we first have to give an account of the process by which perceptual inputs are transformed into motor action. Everything that happens in between can, supposedly, be called cognition. However reasonable such a position may seem, Dewey’s seminal 1896 paper *The Reflex Arc Concept in Psychology* considers this kind of outlook on the nature of cognition to be deeply misleading. In this paper Dewey executes a thoroughgoing critique of psychological methodologies that have found their goal in the program of establishing causal and nomological relations between stimuli and responses. Within this view, perceptual stimuli are taken to be independent sensory particulars which trigger in the organism cognitive processes that eventually lead to a motor discharge as a consequence of this processing. The crucial problem with such an approach is that it tends to apprehend external stimuli, internal processing, and external response as ontologically independent entities, clearly delimited from one another. Under this analysis, Dewey writes:

“The sensory stimulus is one thing, the central activity, standing for the idea is a second, and the motor discharge, standing for the act proper, is a third. As a result, the reflex arc is not a comprehensive, or organic unity, but a patchwork of disjointed parts, a mechanical conjunction of unallied processes” (Dewey 1896: 358).

Drawing upon an example of a child seeing a candle introduced first by James in the second chapter of his *Psychology*, Dewey illustrates the practical working of the reflex arc mechanism (see James 1892/1984: 5). The situation is that of a small child that, after seeing a burning candle in her vicinity for the first time, reaches out to its flame and gets burned. The ordinary interpretation of that situation from the viewpoint of the reflex arc theory would hold that the sensory datum of a light serves as a stimulus to the child, leading eventually to the execution of a motor response in the form of trying to grasp the flame. The resulting burn is, subsequently, a stimulus to withdrawing the hand and so on. Dewey argues that the basic defect of such a theory is the idea of the possibility of dividing the unity of human action into ontologically and temporally separated units. Whenever we try to divide experience or action into ontologically distinct pieces, we find ourselves unable to put them back together again. The traditional reflex arc concept, thus, has to be replaced by a new heuristic approach in which the stimulus, the central reaction, and the motor response are taken merely as functional moments of larger organic unity of action.

Dewey urged the psychologists of his time to shift their focus from seeing the child as a simple stimulus-response mechanism to an embodied creature situated in an environment, trying to achieve specific goals. That is why in order to understand human action, according to Dewey, we have to start with “larger co-ordination” of the live creature engaging in purposeful action and interacting with its environment. Conscious action always starts as a goal-directed activity that engages the whole organism. According to Dewey, in the process of cognition, perception is not separable from action for it controls the process of action as a purposive behavior from the very beginning until its successful completion. In the process of cognition, therefore, the organism and the world enter into what Andy Clark (2008: 24) has called *continuous reciprocal causation*, which occurs when some system is both continuously affecting and simultaneously being affected by activity in some other system.¹ The perceiving organism, therefore, is not a passive recipient of the stimuli but

¹ In this regard, Joas (1985: 66) remarks: “according to Dewey, unless we make an anticipatory judgment about the action in which stimuli and responses are joined together, we can speak only of a temporal succession and not of the causal relation implied by the stimulus-response model.”

actively selects them relative to its goals and interests. From the methodological point of view, Dewey's pragmatic understanding of action as a value-laden and goal-directed activity necessarily precedes its subsequent functional division into stimuli and responses (1896: 360). In contrast to mainstream philosophy of mind, pragmatists do not take cognition as a capacity on its own but rather as a phenomenon which evolved in order to, as Clark puts it, "make things happen" (1997: 1), to guide action and enable more effective coping with the environment. In short, the mind is an organ for controlling the biological body, rather than a disembodied logical reasoning device.

In Deweyan perspective, the basic characteristics of experience understood in terms of skillful attunement to the world and its implicit practical understanding have to be taken into consideration if we want to analyze the organism and its cognitive processes. As Alva Noë once wrote: "perception is not something that happens to us or in us. It is something we do" (2004: 1). If cognition is the kind of thing that can be localized anywhere, according to Mead and Dewey it cannot be situated exclusively in our heads (Mead 1934/1967: 112). In the same manner, Clark currently maintains that "the actual local operations that realize certain forms of human cognizing include inextricable tangles of feedback, feedforward, and feed-around loops: loops that promiscuously criss-cross the boundaries of brain, body, and world. The local mechanisms of mind, if this is correct, are not all in the head. Cognition leaks out into body and world" (Clark 2008: xxviii).

George Herbert Mead develops Dewey's notion of active cognition in his theory of the act. He claims, that in order to explain cognition we can postulate existence of neural events in the central nervous system which sensitize the perceiving organism to certain kind of perceptual stimuli and enable it to act toward them. Mead calls these mental events *attitudes*, and defines them as beginnings of acts in terms of specific readiness of an organism to perform particular sorts of responses towards perceptual objects. Attitudes are *inner*, however, "not in the sense of being in another world, a subjective world, but in the sense of being within the organism" (Mead 1934/1967: 5). Attitudes are an integral part of the act although they are not subject to direct observation. On the basis of the organism's active behavior and problem solving, attitudes come into existence as neural pathways encoding bodily habits which are responding to certain kinds of environmental stimulation. For Mead, the very concept or idea of an object is to be equaled with "such an organization of a great group of nervous elements as will lead to conduct with reference to the objects about us" (ibid.: 70–71). Perception, construed this way, is, from the outset, geared to tracking possibilities for action. Mead's notion of attitudes means that in perceiving the environment

as such a complex of action-possibilities, we create inner states that simultaneously describe partial aspects of the world and prescribe possible actions and interventions with reference to them.

Following Dewey, Mead takes the relation between stages of the act as being not primarily causal but rather functional. Functionality, for that matter, presupposes purposiveness. In Mead's theory of the act, this strand of thought is elaborated in his notion of natural teleology of attitudes. In other words, attitudes play an important role within the act as purposive, goal-directed elements that control certain course of action from the beginning until the very end. Mead says:

"If one approaches a distant object he approaches it with reference to what he is going to do when he arrives there. If one approaches a hammer he is muscularly all ready to seize the handle of the hammer. The later stages of the act are present in the early stages – not simply in the sense that they are all ready to go off, but in the sense that they serve to control the process itself. They determine how we are going to approach the object, and the steps in our early manipulation of it" (1934/1967: 11).

Mead's concept of teleology of attitudes built upon Dewey's model of organic action as goal-directed activity is currently gaining new credit due to the recent extensive research into *mirror neurons*. These neurons were accidentally discovered by a group of Italian neuroscientists led by Giacomo Rizzolatti during their research of the ventral premotor cortex in primates which is responsible for grasping and manipulating with objects. Rizzolatti's group noticed that certain group of neurons fire not only when a primate was executing a certain motor action but, surprisingly, also when one primate was merely watching another primate doing the same thing. What is important for our discussion here is that the mirror neurons are not a new kind of neurons. What Rizzolatti and his colleagues have found, to their own surprise, is that the mirror function is played by the neurons responsible for sensorimotor operations. The findings of Rizzolatti confirm on empirical grounds not only the very intimate connection between perception and action but also the goal-directed nature of individual action. In this respect, findings in mirror neuron research also seem to indicate the existence of attitudes. Analogically to Mead's example of grasping a hammer, Rizzolatti and Sinigaglia provide their own example with grasping a cup of coffee:

"[w]e will grasp it in different ways depending on whether we are picking it up to drink from it, to rinse it, or simply to move it from one place to another. Moreover, our grip on the cup varies according to the circumstances, whether we are afraid of burning our fingers, or the cup is

surrounded by other objects; it will also be influenced by our customs, habits, and our inclination to adhere to certain social rules and so on” (2008: 36–37).

The present conclusions seem to indicate that Dewey and Mead were right in maintaining that the simple stimulus-response model of action, that is still being advocated (however in somewhat more refined ways), is simply inaccurate a paradigm for explaining the nature of action. The one-dimensional model of having a perceptual stimulus of a cup of coffee → reaching for it → grasping it, etc., is incorrect because in the course of action all these elements work in parallel, the arm moves towards the cup and contemporaneously the hand already assumes the shape necessary for grasping it. The goal of our action is present in it from the very beginning and constantly controls our execution of particular bodily strategies leading to its accomplishment. If we now recall that, in Mead’s view, the concept of object is to be defined in terms of an organization of neural paths that will lead us to certain kind of conduct with reference to that object, we can see why he calls distant perceptual objects *invitations to action* (Mead 1938: 12).

Cognizing organisms are thus not to be understood as disembodied computing engines, but rather as cognitive agents, situated in environments in which they pursue their practical goals on the basis of what James J. Gibson called *affordances*. According to Gibson: “affordances of the environment are what it offers the animal, what it provides or furnishes.” (1979: 127). Affordances are possibilities for use, intervention, and action offered by the local environment to a specific type of embodied agent. In this respect, a comparative psychologist Louise Barrett (2011: 98) makes an insightful point: “Affordances are ‘organism-dependent’ ... because they reflect the degree to which an animal with a particular kind of nervous system can detect and make use of particular kinds of environmental opportunities.” For example, a human perceives a chair as affording sitting, but the affordances presented by a chair to a hamster would be radically different.

From the point of view of the argument I am endorsing here, Mead’s crucial concept of attitudes elaborated in light of Dewey’s abovementioned 1896 article enables us to redefine the notion of representation on pragmatic grounds. As we have seen, attitudes are outcomes of adaptive strategies of higher-order organisms. These attitudes take the form of neural pathways enabling the organism to accurately respond to certain perceptual stimuli in the course of their goal-directed action. They enable the organism to trigger adequate habitual responses in the presence of the stimuli that may lead them to fulfillment of their pragmatic goals.

If, on the one hand, there is no ontological gap between an organism and the environment and, on the other, attitudes and habits are formed as the cognitive agent's action-maps of the environment itself, then we no longer have to think of representations in terms of creating models of an external reality. Rather, we should understand them as *models of interaction* with it. Cognitive agents do not have to create rich inner models of the world, instead they can, in words of the roboticist Rodney Brooks "use the world as its own model" (1991: 1). Such a view of representation as creating models of interaction resonates also with Charles S. Peirce's words (1931-1966: 6.95): "we have direct experience of things in themselves. Nothing can be more completely false than that we can experience only our own ideas."

Following Mark Rowlands (2006: 95), I propose that the kind of human actions that embody attitudes and habits could be called *deeds*.² From the pragmatic perspective, deeds could be defined as bodily expressions of attitudes that, with time, slip under the threshold of personal-level consciousness and become pure habitual reactions to certain environmental stimuli in the course of our goal-directed intentional actions. To use Rowlands' example, deeds include such things as the positioning of fingers in catching a ball that is flying toward us, or the movement of our fingers while playing the piano. They work at sub-personal level of consciousness and as models of interaction with the environmental structures they attune us to the world. Deeds are pre-intentional acts – we usually do not think about them in our everyday experience, and yet, as expressions of habits they effectively map appropriate worldly structures and enable us to achieve our pragmatic goals. We employ them in accurate positioning of our legs when walking the stairs, spontaneous motor operations when driving a car etc. With Michael Wheeler, we can call deeds "action-oriented representations" (2005: 197). Deeds as expressions of attitudes and habits re-present the pre-existing world not as an internal image but as a virtual space of action. What is represented by means of deeds is not *knowledge that* the environment is so and so, but *knowledge of how* to negotiate the environment. In the action-oriented approach, says Wheeler, "how the world is is itself encoded in terms of possibilities for action" (ibid.). According to the pragmatists, mind and nature are, ultimately, the same thing, which means that in the process of cognition the mind engages the environmental structures and reaches out into the world: As Mead once remarked, "we can approach the noumenal nature of reality only through the noumenal nature of thought ... the

² According to Rowlands, the human action can be divided into three basic kinds. Deeds occupy the logical space between what Rowlands calls *actions* (which are intentional courses of action perceived and carried out on the personal level of consciousness) and *doings* (non-intentional movements, of which we are not aware and which serve no purpose connected with action). See Rowlands (2006: 93-111).

experience in which human beings are involved, is the constituent part of reality which they judge“ (Mead 1929/1964: 339).

If cognition functions within the brain-body-world nexus, the problem of how our representations match up with the world does not even come up. To paraphrase James' example, deeds represent the appropriate worldly structures in a similar way as the shape of a key matches with a particular lock. Neither the lock, nor the key, can by themselves open the door; they can do it only in conjunction with one another. Representation is not primarily a noun. Rather, we should understand it first and foremost as a verb. Deeds represent the world not in terms of creating inner mental pictures of it but by directly engaging it in our action. It could be, therefore, maintained that deeds *represent* the appropriate environmental structures if we can achieve our particular goals by means of enacting them in our action.

On this background, we can also maintain that deeds are able to satisfy the analytic criteria commonly regarded as necessary and sufficient for an item to qualify as representational. According to Rowlands (2006: 114), there are, it is generally accepted, five such criteria:

- 1) **Informational condition** – an item *r* qualifies as a representational item only if it carries information about some state of affairs *s* that is extrinsic to it.
- 2) **Teleological condition** – an item *r* qualifies as representational only if it has the proper function either of tracking the feature or state of affairs *s* that produces it, or of enabling an organism to achieve some goal in virtue of tracking *s*.
- 3) **Decouplability condition** – Item *r* qualifies as representing state of affairs *s* only if *r* is, in an appropriate sense, decouplable from *s*.
- 4) **Misrepresentation condition** – item *r* qualifies as representing state of affairs *s* only if it is capable of misrepresenting *s*.
- 5) **Combinatorial condition** – for an item *r* to qualify as representational, it must occur not in isolation but only as part of a more general representational framework.

From the pragmatist perspective, if the concept of representation has any content at all, it is precisely the above-mentioned one. If we should illustrate what such a representation through action looks like in practice, let us imagine the following scenario. I enter into a dark room and hit the switch of the lights. If the lights go on, then we can determine whether the deed of hitting the switch counts as representational of certain features of my environment on the basis of the above-listed conditions. The deed of hitting the switch counts as representational because, under the informational condition it, e.g. tracks the location, shape and size of the switch. The deed is

teleological because it has the proper function of achieving a practical goal in virtue of tracking the environmental state of affairs *s.* The deed is decouplable from the state of affairs it tracks because I can later remember and demonstrate how I hit the switch replicating the same act. In the process of representation through action, I can misrepresent my environment in many ways. Eventually, the deed in question can be combined into a more general representational structure (by means of hitting the switch I try to pursue some further goals – finding a book etc.). In this, quite minimalistic account, successful employment of deeds in the world means that they are correct representations of the appropriate environmental structures since they stand the test of practical action. This is not to mean that they represent the world in terms of accurate *copying* it, but rather in terms of accurate *coping with* it. Pragmatism, as I maintain, does not necessarily have to get rid of the notion of representation altogether but, rather, redefine it in such a way so as to put it back in the world where it actually belongs.

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