THE MIND IS NOT THE BRAIN: JOHN DEWEY, NEUROSCIENCE, AND AVOIDING THE MEREOLOGICAL FALLACY

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The purpose of this paper is to argue that however impressive and useful its results, neuroscience alone does not provide a complete theory of mind. We specifically enlist John Dewey to help dispel the notion that the mind is the brain. In doing so, we explore functionalism to clarify Dewey's modified functionalist stance (biological psychology) and argue for avoiding "the mereological fallacy." Mereology (from the Greek μερος, "part") is the study of part-whole relations. The mereological fallacy arises from confusing the properties of a necessary subfunction with the properties that derive from the unity of the whole functional coordination. We conclude that the mind is a complex distributed biological-sociocultural function that is not simply located anywhere and, therefore, is not completely in the possession of any one (person, place, or thing): it occurs wherever it has consequences.

Volume 1 · Number 1 · Spring 2017 · Pages 111-130

Introduction

From the popular press to academic journals, neuroscience appears to be enjoying a steady expansion of coverage. Newspapers headline "cutting edge research" in neuroscience. Corporations like Lumosity continue to promote the idea that the brain is a muscle and, for a monthly fee, will offer puzzles to increase "brain function." Instead of the familiar questions these examples illustrate regarding what the mind does (thinks, feels, cognizes, imagines, remembers, etc.), we shift the focus to query where it is located so as to avoid "the mereological fallacy."[1] The mind is not some *thing* located in the brain or any place else. It is a complex distributed biological-sociocultural *function* occurring wherever it operates in a complex world without withins.[2] We must avoid the mereological fallacy of confusing the properties of necessary subfunctions such as those studied by neuroscience with the properties that derive from the unity of the whole functional coordination of an agent's transactions with its environment.

Perhaps surprisingly, the classical educational philosopher and pragmatist John Dewey helps us recognize that the excessive claims of some cognitive neuroscientists involve a timeworn dualism:

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[1] We borrow the phrase from Maxwell R. Bennett and Peter M.S. Hacker, *Philosophical Foundations of Neuroscience* (Oxford: Blackwell Publishers, 2003). John Searle calls this the "fallacy of composition." See John R. Searle, *Freedom and Neurobiology: Reflections on Free Will, Language, and Politics of Power* (New York: Columbia University Press, 2004), 76.

[2] We must not confuse biological-sociocultural functionalism with philosophical functionalism, which we will soon see is its antithesis. The concept of a "world without withins" comes from an essay by J.E. Tiles. He argues that Dewey's reaction to Bertrand Russell's book, *Our Knowledge of the External World*, was to basically reject the problem assumed; that is, a separation between internal and external worlds. It simply was not a problem, on Dewey's view. As Tiles notes, "Dewey's whole philosophy suggests in effect that we do better to reconstruct our conception of the relationship between the mind and the world so that the problem does not arise." See J.E. Tiles, "Dewey's Realism: Applying the Term 'Mental' in a World without Withins," *Transactions of the Charles S. Peirce Society* 31, no. 1 (Winter, 1995): 137-166, 137.

> The advance of physiology and the psychology associated with it have shown the connection of mental activity with that of the nervous system. Too often recognition of connection has stopped short at this point; the older dualism of soul and body has been replaced by that of the brain and the rest of the body. But in fact the nervous system is only a specialized mechanism for keeping all bodily activities working together.[3]

The connection of neurology with mental functioning is immensely important as long as we do not confuse the nervous system with the mind. There is an even more fundamental error here toward which Dewey gestures.

Mereology (from the Greek μερος, "part") is the study of part-whole relations. The mereological fallacy arises from confusing the properties of a necessary subfunction with the properties that derive from the unity of the whole functional coordination. Cognitive neuroscientists and their votaries commit some version of the mereological fallacy when they confuse a part (e.g., the brain) with the larger whole involved in mental functioning. Humans are a psychophysical union. We may say of human beings that they reason, emote, consider, and self-reflect. We may not say of the human brain the same things.

Although Dewey does not use the word "mereology," he clearly identifies the fallacy:

> The dualism is found today even among those who have abandoned its earlier manifestations. It is shown in separations made between the structural and the functional; between the brain and the rest of the body; between the central nervous system and the vegetative nervous system and viscera; and, most fundamentally, between the organism and the environment. For the first of each of these pairs of terms—structure, brain, organism—retains something of the

[3] MW 9:346.

> isolation and alleged independence that used to belong to the "soul and the mind," and later to "consciousness."[4]

That somehow the mind could function without the large internal organs of heart, lungs, kidney, and such (i.e., the viscera) expresses the curiously disembodied thinking of many in cognitive neuroscience. Understanding mental functioning involves comprehending the *part* (i.e., brain or neural system) *within* the larger nervous system, viscera, and body as well as the environment, perhaps especially the social environment.

The Travails of Philosophical Functionalism

The following provides a useful working definition of philosophical functionalism, which dominates contemporary theories of the mind in psychology, sociology, and beyond:

> Functionalism is a philosophical theory (or family of theories) concerning the nature of mental states. According to functionalism psychological/cognitive states are essentially functional states of whole systems. Functionalism characterizes psychological states essentially…by their relations to stimulus inputs and behavioral outputs as well as their relations to other psychological and nonpsychological internal states of a system.[5]

Philosophical functionalism assumes the *internal* configuration of the system determines a mental state and not its physical or perhaps nonphysical (psychic?) substance.

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[4] LW 13: 324.

[5] Thomas W. Polger, "Functionalism as a Philosophical Theory of the Cognitive Sciences," *Wiley Interdisciplinary Reviews: Cognitive Science* 3, no. 3 (2012): 337-348, 337. For one indication of the detailed analyses of functionalism, see Martin Mahner and Mario Bunge, "Function and Functionalism: A Synthetic Perspective," *Philosophy of Science*. 68, no. 1 (March, 2001): 75-94.

Turing machine functionalism provided the first and still classic example. Hilary Putnam first proposed the idea that the mind is a Turing machine; that is, an abstract finite state digital computer that transitions from one state to another according to specific recursive rules (i.e., the code or program).[6] This theory identifies mental states with computer or machine states. Consider the following:

> Suppose a barometer displays an unusually low reading and upon seeing this George takes steps appropriate to wet weather. The barometer indicator standing where it does is not anything mental; the rainy weather (actual or prospective) is not anything mental. What is mental is the way the barometer indicator functions to influence George's actions as stormy weather would influence his actions. No one gets rained on or windblown by a barometer (even one indicating unusually low pressure); nevertheless the barometer prompts in George action which anticipates his being rained on or windblown.[7]

Levin (2010) believes it is going to rain is a machine state regarded as a disposition to take one's umbrella with them given the weather report.[8] A Touring machine functionalist account of George's action involves a two-ply account involving first dispositions to act and, second, mental states understood as internal functional configurations of some system.

Putnam ultimately abandoned not only Turing machine state functionalism, but also all other forms of philosophical functionalism. Chapter 5 of his widely influential *Representation and Reality* is titled: "Why Functionalism Didn't Work."[9] He outlines his

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[6] Hilary Putnam, "Minds and Machines," in Sidney Hook, ed., *Dimensions of Mind* (New York: New York University Press, 1960).

[7] Tiles, 142-143.

[8] See Janet Levin, "Functionalism," *The Stanford Encyclopedia of Philosophy (Summer 2010 Edition)*, edited by Edward N. Zalta, <http://plato.stanford.edu/archives/sum2010/entries/functionalism/>.

[9] Hilary Putnam, *Representation and Reality* (Cambridge, MA: MIT Press, 1988).

basic ideas in the first chapter on intentionality. Putnam gives three reasons why philosophical functionalism fails. We will not only discover all three operating in Dewey's social psychology, but will find them prefigured in biological functioning.

First, philosophical functionalism treats meaning atomistically as an isolated state and a set of rules (e.g., a program) for moving from one isolated state to the next. However, according to Putnam, meaning is holistic. This implies that meaning cannot be captured by words or sentences that are merely "given by . . . a rule which determines in exactly which experiential situations the sentence is assertable."[10] Holism also "runs counter to the great tendency to stress definition as the means by which the meaning of words is to be explained or fixed."[11] His example is the history of the word "momentum" in physics; "number" would work as well.

Second, meaning is partially normative. That is, "deciding to interpret someone one way rather than another is intimately tied to normative judgments."[12] Most commonly, this means a principle of "charity" that assumes "general intelligence" on the part of the speaker. There is an ancient report that the Pythagorean who discovered the proof of irrational numbers did so while at sea and his colleagues threw him overboard to drown because it destroyed their norms of rationality. Later mathematicians expressed greater charity regarding the meaning of number—including real numbers, imaginary numbers, and, quite recently, Chaitin's number.

Finally, and most devastatingly, "*Our Concepts Depend on Our Physical and Social Environment in a Way That Evolution (Which was Completed, for Our Brains, about 300,000 Years Ago) Couldn't Foresee.*"[13] This position leads to semantic externalism; the notion that psychological functioning is dependent on the environment. "The semantic externalist postulates necessary connections between the content of our thinking and the external world."[14] Such

[10] *Ibid.*, 8.
[11] *Ibid.*, 9.
[12] *Ibid.*, 14.
[13] *Ibid.*, 15.
[14] Timothy Williamson, "Skepticism, Semantic Externalism, and Keith's Mom," *Southern Journal of Philosophy* XXXVIII, no. 1 (2000): 149-158, 149.

considerations devastate those like Noam Chomsky and Jerry Fodor who are committed to strong psycho-functional innateness theories of mind.[15] How could the language of thought contain "carburetor" before its emergence in culture?

Consider, however, that "changes in a community's 'procedures' for using a lexical term do not usually count as a change in the meaning of the item [e.g., momentum or number]."[16] Indeed, "[I]f semantic representations in the brain are developed from experience, just as words in public language are . . . there is no reason to think that a given representation (described syntactically) will not come to be given *different* meanings by different groups."[17] There is no reason to think that the mental language is the same as the cultural language, or the "language" of the brain (i.e., semantic representations, or states and procedures) needed to establish meaning identity. Therefore, we should not suppose brain states uniquely match up with meanings of any kind. This is a version of Putnam's famous multiple realizability argument, which leads to a non-reductive (or emergent) materialism that closely resembles Dewey's emergent naturalism.

Putnam also developed a "direct realism" that emphasizes the way people actually experience the world and rejects the notion of mental representations as intermediaries between "inner" mind and the "outer" world. This view has much in common with Dewey, who writes: "The material and spiritual, the physical and the mental or psychical; body and mind; experience and reason; sense and intellect, appetitive desire and will; subjective and objective, individual and social; inner and outer; this last division underlying in a way all the others."[18] For Dewey the Darwinian, human nature is a part of nature. There is no dualism of the knower and the known, the mind and the world, or the inner and the outer. While there are serious problems regarding knowledge, how we know the world is not so different from how we eat it.

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[15] See Noam Chomsky, *Syntactic Structures* (New York: Martino, 1957/2015); and Jerry A. Fodor, *Psychosemantics: The Problem of Meaning in the Philosophy of Mind* (New York: Bradford Book, 1989).

[16] Putnam, *Representation and Reality*, 15.

[17] *Ibid.*, 16.

[18] LW 16: 408.

Dewey's Functionalism: Biological Psychology

In many ways, American functional psychology and sociology originated in the work of Dewey and his colleagues James Angell and George Herbert Mead at the University of Chicago in the 1890s. Unlike philosophical functionalism, classical functional psychology investigates thought, feeling, and action in terms of the organism's active adaptation to its environment. The classical statement was Dewey's "The Reflex Arc Concept in Psychology."[19]

In a past-presidential address to the American Psychological Association titled "The Need for Social Psychology," Dewey affirmed:

> From the point of view of the psychology of behavior all psychology is either biological or social psychology. And if it still be true that man is not only an animal but a social animal, the two cannot be dissevered when we deal with man.[20]

In this section, we concentrate on biological psychology, which includes the brain and other neurophysiological functions as well as all the biological functions of the body that the brain coordinates and depends upon. Social psychology involves abstract, arbitrary, linguistic meanings that Putnam argues are holistic, externalist, and normative.

Dewey the Darwinian identifies "experience with a living function."[21] Psychological functioning is an emergent living function. Experience is what happens to sentient beings as they transact with their environment, which seems to exclude plants and sponges much less Turing machines. It is a continuation of emergent physical and chemical transactions. The familiar example is water. Hydrogen is

[19] EW 5: 96-109. In 1943, a committee of seventy eminent psychologists polled by the editors of *The Psychological Review* voted this essay the most important contribution to the journal during its first fifty years.
[20] MW 10: 63.
[21] MW 13: 377.

combustible, oxygen sustains combustion, and H_2O puts out most types of fires.

Let us inspect some of the characteristics of any living function. Dewey claims: "Any process, sufficiently complex to involve an arrangement or coordination of minor processes, which fulfills a specific end in such a way as to conserve itself, is called a function."[22] Functions are exceedingly complex: "Any operative function gets us behind the ordinary distinction of organism and environment. It presents us with their undifferentiated unity, not with their unification. It is primary; distinction is subsequent and derived."[23] Dewey rejects the organism versus environment dualism asserting that "a living organism and its life processes involve a world or nature temporally and spatially 'external' to itself but 'internal' to its functions."[24] Food, water, and a mate are external to our epidermis, but unless they become internal to our functioning, the Darwinian imperatives of survival and reproduction become impossible to satisfy. No organism is simply located in space or time. We may say the same for psychological functions. This is the biological matrix of semantic externalism.

Dewey observes: "An organism may be studied just as organism (physiology, anatomy) separately from study of its surroundings. But at every point the connection with environment—or a prior unity of function is presupposed and implied."[25] We may study lungs, heart, and blood circulation apart from the chemical properties of the surrounding air, but we cannot hope for an adequate understanding without reference to the oxygen and carbon dioxide cycle involving the fauna and flora of the planet. The same holds for studying the brain as a subfunction of psychological functioning. *We commit the mereological fallacy in psychology just as we do in biology when we confuse a useful methodological simplification for the purposes of inquiry for the whole of a complex physical, biological, and social function.*

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[22] MW 6: 466.
[23] MW 13: 377.
[24] LW 1: 212.
[25] MW 13: 381.

What Dewey says next explains the parallels we have been drawing between organism-environmental transactions and mind-body transactions:

> Exactly the same state of things holds for psychology. We inquire separately into the states and processes that are referred to the subject. This does not mean that they *exist* separately. A tree may be subject-matter of legal inquiry, as property; of economic science as productive of saleable commodities; of horticultural art; of botany; of physics and chemistry; of geography; of trigonometry; even as geological subject-matter. So it may be studied as psychological subject-matter; as perceived, remembered, imagined, conceived, longed for, enjoyed, etc.[26]

None of these functions exist separately any more than an organism exists separately from the environment, the lungs from the chemical properties of air, or the brain from the body and the larger physical, biological, and social environment.

Dewey claims: "Habits are the basis of organic learning."[27] The neurosciences including brain research have much to offer educators who wish to understand the organic basis of learning. From birth, we have species-specific neurophysiological instincts, or so-called "first nature." Habits are "second nature:"

> Habits may be profitably compared to physiological functions like breathing, digesting. The latter are, to be sure, involuntary, while habits are acquired . . . . Habits are like functions in many respects, and especially in requiring the cooperation of organism and environment.[28]

Dewey observes that like "the functions of breathing and digesting, habits are not complete within the human body . . . . [F]unctions

[26] MW 13: 381.
[27] LW 12: 38.
[28] MW 14: 15.

and habits are ways of using and incorporating the environment in which the latter has its say as surely as the former."[29] He later remarks, "habits endure, because these habits incorporate objective conditions in themselves."[30] As with innate biological functions, habits are biological subfunctions of a transactional world without withins. They involve the brain, but the brain is only a subfunction of habitual functioning.

Habits, for Dewey, are dispositions to act evincing emotions; they are generalized forms of response to a given certain class of stimuli.[31] They are organic universals serving as instruments of existential inference while prefiguring formal logical implication. Even our formal theories of inquiry arise "as an articulate expression of the habit that is involved in a class of inferences."[32] "The universal is not primarily logic, but is factual, habitual."[33] "This concrete logic of action," Dewey believes, "long precedes the logic of pure speculation or abstract investigation, and through the mental habits that it forms is the best of preparations for the latter."[34] "Thought carried on by anyone," he insists, "depends upon his habits."[35] Habits become "articulate" when we acquire the habits of linguistic usage in the domain of social psychology.

Habits coordinate neurophysiological sensory-motor activity with environmental conditions. They involve the biochemistry of neurotransmission. A neuron's resting electrical charge is negative inside and positive outside; firing reverses the potential. The primary synaptic transmitters are an excitatory transmitter glutamate and an inhibitor gamma-aminobutyric acid. Donald Hebb developed the idea that "Cells that fire together wire together."[36] Demonstrating association in the brain occurs when neurons receiving information from stimuli fire simultaneously. Terje Lømo and Tim Bliss's long-

[29] *Ibid.*, 15.
[30] *Ibid.*, 19.
[31] MW 14: 32.
[32] LW 12: 20.
[33] MW 13: 389.
[34] MW 1: 93.
[35] LW 8: 171.
[36] See Joseph LeDoux, *Synaptic Self* (New York: Viking Penguin, 2003), 79.

term potentiation allows us to "translate neural activity generated by environmental stimuli into changes in synaptic efficiency . . . to record and store information."[37] There is no doubt that the brain is the primary site of this activity. We may study habits using functional magnetic resonance image (fMRI) and the like and draw important conclusions based on cognitive neuroscience. It is a useful methodological simplification that creates no mischief as long as we avoid the mereological fallacy. However we must never forget that there is much *external* to the neurophysiology of a habit that is nonetheless *internal* to its functioning. We must never lose sight of the larger functional *whole* of which a habit is a subfunction. Habits are not entirely "in" the brain or even the body. They distribute their functioning throughout a world without withins.

Dewey's Theory of Intentionality

In his essay, "Dewey's Realism: Applying the Term 'Mental' in a World without Withins," J. E. Tiles connects Dewey's participatory realism with his criteria of mental functioning.[38] A similar relation exists between Putnam's "direct realism" and his meaning externalism. Tiles begins by observing that the word "intention" derives from "the Latin, '*intendo*' meaning '*point* [at],' 'aim [at]', 'extend [toward].'"[39] Tiles observes that "signs, for example words [propositions, symbol strings, and such], can help to clarify the notion of an intentional state or act as well as the importance of the condition that it refer to or be 'about' something (normally) beyond itself."[40] A mental state or act such as reasoning, imagining, reacting emotionally toward an object "is not intentional, i.e., is not a mental state or act, by virtue of any inherent properties it may have but by virtue of its referring or being about its object or objects."[41] Hence, it is possible to speak of signs as having mental properties, which,

[37] *Ibid.*, 139.
[38] Tiles, *op. cit.*
[39] *Ibid.*, 140.
[40] *Ibid.*
[41] *Ibid.*

surprisingly, is precisely Dewey's position.

Tiles calls attention to the following passage in which it is the function that is mental not some substance supporting the function:

> But a thing which has or exercises the quality of being a surrogate of some absent thing is so distinctive, so unique, that it needs a distinctive name. *As exercising the function we may call it mental.* Neither the thing meant nor the thing signifying is mental. Nor is meaning itself mental in any psychical, dualistic, existential sense. Traditional dualism takes the undoubted logical dual*ity*, or division of labor, between data and meanings, and gets into the epistemological predicament by transforming it into an *existential* dual*ism*, a separation of two radically diverse orders of being. Starting from the undoubted existence of inference, or from a logical function, "ideas" denote problematic objects so far as they are signified by present things and are capable of logical manipulation. A probable rain storm, as indicated to us by the look of the clouds or the barometer, gets embodied in a word or some other present thing and hence can be treated *for certain purposes* just as an actual rain storm would be treated. We may then term it a mental entity.[42]

Compare this situation with the one depicted by Levin (2010) of believing it is going to rain as a machine state regarded as a disposition to take one's umbrella with them given the weather report. The philosophical functionalists are right that the platform upon which mental functioning is actualized is irrelevant, but wrong to simply locate mental functioning as "internal" to anything (body, brain, mind, or whatever).

Tiles asks us to imagine "George" noticing the barometer mentioned earlier as displaying an unusually low reading and taking appropriate action, perhaps taking an umbrella with him: "What is mental," to emphasize Tiles' point again, "is *the way* the barometer indicator functions to influence George's actions as stormy weather

[42] MW 13: 56-57.

would influence his actions."[43] We might say the same for the clouds. We will later consider the psychological difference between barometers and clouds. The point is that the barometer "may be taken to 'mean' severe weather," regardless of whether anyone notices it; that is because the relation that "connects the state of the barometer to the state of the weather, obtains objectively and independently of being recognized."[44] Of course, it requires a creature with sufficient intelligence to recognize the relation. What comes next is critical: "Compared to the account of 'mental' based on the criterion of intentionality, Dewey has displaced the term so that, instead of applying primarily to a state or 'act' of George, it applies . . . to a *function* of the barometer."[45] Remember, Putnam thinks it is a mistake to "postulate that desires and beliefs are 'functional states' of the brain."[46] On Dewey's account, the brain, a neural network, a state of a computer, etc., are only subfunctions of a complex distributed function in which, as Tiles states it, "the term 'mental' gets pushed out into the world," but not "divorcing it from, and treating it as independent of, subjects or agents."[47] Dewey's criteria replaces the "relatively simple two-term schema" to which intentionality usually appeals with "a three-term schema."[48] "Instead of a subject or agent whose state or act refers to something beyond the subject or agent," Tiles observes, "we have a subject or agent whose act is to *take* something beyond itself as referring to something else beyond itself."[49] This taking and using is a function of Darwinian intelligence operating so as to coordinate the organism with its physical, biological, and as we are about to see, its social environment.

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[43] Tiles, 143.
[44] *Ibid.*
[45] *Ibid.*
[46] Putnam, *Representation and Reality*, 7.
[47] Tiles, 143.
[48] *Ibid.*, 144.
[49] *Ibid.* Emphasis added.

Dewey's Functionalism: Social Psychology

Dewey deems that "modification of organic behavior in and by the cultural environment accounts for, or rather is, the transformation of purely organic behavior into behavior marked by intellectual properties."[50] "When things have a meaning for us," Dewey notes, "we *mean* (intend, propose, purpose) what we do: when they do not, we act blindly, unconsciously, unintelligently."[51] Instead of responding to stimuli, say a cloud, in terms of our first or second nature, we may respond because we grasp the cognitive meaning of the stimuli within a given situation; we literally have an *idea* (concept) of what needs doing; therefore, we act with intention. He remarks on "the especial function of language in effecting the transformation of the biological into the intellectual and the potentially logical."[52] Linguistic functioning supervenes upon habitual functioning: "Any habit is a way or manner of action, not a particular act or deed. When it is formulated it becomes, as far as it is accepted, a rule, or more generally, a principle or 'law' of action."[53] Articulate habits enable cognitive functioning.

For Dewey, to have a mind in the sense of abstract cognition is to have linguistic meanings: "Mind denotes the whole system of meanings as they are embodied in the workings of organic life; consciousness in a being with language denotes awareness or perception of meanings; it is the perception of actual events, whether past, contemporary or future, *in* their meanings, the having of actual ideas."[54] This is Dewey's semantic holism. For him it is "association, communication, participation" that "define mind as intellect: possession of and response to meanings."[55] To understand any language, we "have to be able to re-instate the whole social context

[50] LW 12: 49. Michael Cole's work on cultural psychology is an important *part* of psychology. He makes good use of Dewey. See Michael Cole, *Cultural Psychology: A Once and Future Discipline* (Cambridge, MA: Harvard University Press, 1996).
[51] LW 12: 34.
[52] *Ibid.*, 51.
[53] *Ibid.*, 21.
[54] LW 1: 230.
[55] *Ibid.*, 208.

which alone supplies the meaning."[56] This is the social component of Putnam's semantic holism.

Dewey states: "Through speech a person dramatically identifies himself with potential acts and deeds; he plays many roles, not in successive stages of life but in a contemporaneously enacted drama. Thus mind emerges."[57] Here is an example:

> A requests B to bring him something, to which A points, say a flower. There is an original mechanism by which B may react to A's movement in pointing. But natively such a reaction is to the movement, not to the *pointing*, not to the object pointed out. But B learns that the movement *is* a pointing; he responds to it not in itself, but as an index of something else. His response is transferred from A's direct movement to the *object* to which A points . . . .[58]

Linguistic meaning involves the functional coordination of A and B with the object O in a shared context of action. It requires taking the attitude of the other in the transaction.[59] B must *take* "the movement" of A and *use* it as a surrogate of the object to which it refers. As Dewey indicates, "there is something present in organic action which acts as a surrogate for the remote things signified."[60] That something is the habit that serves as the embodied interpretant of the meaning function. Like other habits, linguistic habits incorporate something, perhaps a conspecific, *external* to the living creature's existence yet nonetheless *internal* to its (meaning)

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[56] *Ibid.*, 16.

[57] *Ibid.*, 135.

[58] *Ibid.*, 140. Those familiar with the slab game in Wittgenstein's *Philosophical Investigations* know exactly what Dewey is up to here. Many have commented on the multiple similarities between the later Wittgenstein and Dewey, including such prominent philosophers such as W. V. O. Quine and Richard Rorty. Rorty rightly adds Heidegger to the mix.

[59] Mirror neurons facilitate taking the attitude of others. They fire much the same as the neurons of someone you see gesturing. Try yawning expansively at a social affair (see Robert Provine, "Yawning," *American Scientist* 93 (2005): 532-539). Neurology is an important *subfunction* of mental functioning.

[60] LW 1: 222.

functioning. However, "The nervous system is in no sense the 'seat' of the idea. It is a mechanism of the connection or integration of acts."[61] Here we may appreciate what the biological matrix contributes to semantic externalism.

Notice the meaning function is a three-term schema; the same schema Tiles uses to depict Dewey's theory of intentionality. In the context of the social construction of meaning we have two agents that *take* and *use* each other to refer to a third thing they *make* in common. More precisely: *The two subjects and the object emerge simultaneously in the social transaction.* They create each other as well as the common object within the emergent social-construction.

Dewey remarks: "For a meaning is a method of action, a way of using things as a means to a shared consummation . . . . Meanings are rules for using and interpreting things; interpretation being always an imputation of potentiality for some consequence."[62] Dewey's example involves rules of the road. He describes how traffic officers hold up their hands while blowing a whistle. It is not just an "episodic stimulus," because it "embodied a rule of social action;" i.e., a habit.[63] Its meaning involves socially coordinating the movements of persons and vehicles: "Its essence is the rule . . . the standardized habit, of social interaction . . . . This meaning is independent of the psychical landscape."[64] The rule, the meaning, is not just some brain state; it also has an objective and intersubjective as well as neurophysiological subfunctions (i.e., a habit). What we grasp when comprehending meaning is an objective *norm* of functionally coordinated action that, once rendered conscious, may be expressed symbolically using verbal gestures, writing, pointing, and such.

In Putnam's terms, meaning involves normative judgments requiring charity regarding the intelligence of our co-participants. Bring me a flower might involve agreement in action over a rose, a plastic rose, a rose window, and so on. [65] The difficulties are evident

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[61] *Ibid.*

[62] *Ibid.*, 147.

[63] *Ibid.*, 149.

[64] *Ibid.*

[65] After *Representation and Reality*, Putnam took a strong turn toward Deweyan pragmatism. Perhaps the chief debate of the 1990s in North American Philosophy

in games where referees not only interpret the rules, but also bend them within the "spirit of the game." Some linguistic communities are more rigid in their norms and rules (e.g., science and mathematics) than are others such as literature and poetry. The customs, laws, rules, norms, and such of a community inscribe themselves upon the bodies of individuals as habits of practice. Further, as with a traffic officer, the power of enforcement always accompanies the rules and norms. Normative interpretation is an ongoing affair, a constant struggle over power, and perhaps the most amazing act a sentient being can perform.

Conclusion: Where is the Mind?

We should avoid the mereological fallacy. Having a human mind requires having a human brain functioning in a human body continually transacting with its physical, biological, sociocultural environment. Lacking any of these, we lose mental capacity. Where is the mind? We argue that the question is misplaced, as it were, and indicative of the very problem Dewey helps us solve. The answer to the question, nonetheless, is: wherever intentional functioning occurs. *The mind is a complex distributed biological-sociocultural function that is not simply located anywhere and, therefore, is not completely in the possession of any one (person, place or thing); it occurs wherever it has consequences.*

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was between two Deweyan pragmatists: Putnam and Rorty over realism and nominalism. Both got it wrong from a Deweyan perspective, although Putnam was much closer. See David L. Hildebrand, *Beyond Realism and Antirealism: John Dewey and the Neopragmatists* (Nashville: Vanderbilt University Press, 2003).

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