



Pierre Steiner*

The Nature of the Modern Mind. Some Remarks on Dewey's Unmodern Philosophy and Modern Philosophy

In *Unmodern Philosophy and Modern Philosophy* (UPMP hereafter), Dewey develops a comprehensive account of mindedness and a genealogical picture of the modern concept of 'mind'. Chapter X, "Mind and Body", is the longest chapter of the book. Its three sections correspond to three different folders, yet all written in 1942. The title of the chapter – Dewey's own title – might sound surprising to the readers of chapter VII of *Experience and Nature*, where Dewey explicitly coined the term 'body-mind' for insisting on the *continuity* between mental qualities and non-mental qualities in experience¹. "Mind and Body" seems like a step back, presupposing a dualism between a *mind* and a *body* that should be reunited or put into relation. But the historical project of the previous parts of the books makes clear that "Mind and Body" denotes the problem that we have inherited from modern philosophy, and that Dewey wants to dissolve.

Not all the chapter deals with issues pertaining to mental phenomena, and we can find in other places of the book very interesting sections dealing with mindedness and its study. This is the reason why the present paper will be about Dewey's philosophy of mind (a potentially misleading expression, as we will see) as it is developed throughout the book, although with a special focus on the first section of chapter X. It is of course hopeless to give a substantial account of the richness of these sections. I will present some specific topics: the invention of the modern mind and contemporary Cartesian materialism (section I); Dewey's adverbial conception of mental phenomena (section II); the new status of the brain (and of brain sciences) in that view (section III); the importance of temporal continuity and transactions (section IV).

From the point of view of content, readers of Dewey's papers such as *What are states of mind?* (1912), *Body and mind* (1928), *How is mind to be known?* (1945), and of various chapters of *Experience and Nature* and *Art as Experience* will not find, in this book, *totally new* elements concerning the status of mental phenomena in Dewey's philosophy. *But* – and this is crucial – they will find a remarkable continuity between Dewey's remarks on mental phenomena (and the sciences pertaining to them), and historical considerations on the problem of knowledge, on the birth of philosophy, on the emergence of modern science, or on the technological dimensions of intelligence. This is why the reading of the book definitely suggests – in my view – how much Dewey's philosophy of mind is different from today's orthodoxy not only in virtue of its contents (Steiner 2008), but also and especially because of its inclusion and relations with Dewey's broader concerns with historical, epistemological, pedagogical and social questions.

* Université de Technologie de Compiègne (Costech) – Sorbonne Université, France & Knowledge and Action Lab, ENS-LSH (Lyon) / ECNU (Shanghai) (associate member) [pierre.steiner@utc.fr].

¹ "Body-mind simply designates what actually takes place when a living body is implicated in situations of discourse, communication, and participation." (LW.1.217)

I. The Invention of the Modern Mind and Contemporary Cartesian Materialism

As Dewey already pointed out in *The Quest for Certainty*, overcoming the Spectator Theory of Knowledge requires a criticism of the conception of mind that it presupposes (LW4: 18-19). The modern problem of knowledge, namely, “how is knowledge as a relation between an inner domain (the subject) and an outer domain (the object) possible?” (95), presupposes a modern conception of the mind according to which knowledge is the achievement of an individual and inner mind, facing nature and society (67, 119), and operating in virtue of representational powers radically different from natural forces (205). A better understanding of the historical origins of this conception of mind as an “inner container of ideas and representations” will be of great help for criticizing and rejecting it; and in UPMP Dewey does indeed deconstruct this conception by virtue of genealogical considerations.

As Dewey reminds us, modern natural philosophy fostered a materialist mechanization of the macrocosm and of the microcosm, including living nature: we pass from a living nature (‘nature’ comes from the Latin ‘nasci’, which means *birth*) in where it is the *absence* of life which requires explanation, to an *inert* world in which it is living phenomena that are peculiar. It is in virtue of this mechanization that nature could become an *object* of thought, but also of manipulation. Assimilating nature to a set of mechanisms allows one to ask not only which modes of action nature follows, but also which modes of action it *should* follow (Koyré 1965): as the engineer constructs machines and defines how they have to behave, the modern philosopher knows nature and its laws by creating truths about it. Truth (with ignorance and error) is no longer *in* nature, but in the representations we make *about* it. The basic form of manipulation is *experimentation*, where artificially produced and controlled effects help producing models of the artificiality of nature. In the laboratory, we manipulate a part of nature (simplify it, purify it, isolate it) in order to turn nature into its very own model.

In its pervasive Cartesian version, mechanism entailed that everything that was not mechanizable became a left-over remainder to be relegated into the realm of mind, the *res cogitans*: an unextended and individual thinking substance (87), outside of nature. The Aristotelian *unity* of soul and body is replaced by a Cartesian *union* between mind and the body, the latter entity being defined only by its spatial and kinetic properties. The paragon of this shift in perspective lies in the resultant appearance of *qualities*: since Galileo’s *Saggiatore* (1623), there are primary qualities (shape, position, speed), and secondary qualities such as colors, odors, tastes, pains, pleasures or sensations such as dryness or coldness. Since secondary qualities are not in the world, their occurrence is a subjective occurrence: they exist only in so far as they are in perception; they are mental entities in the mind of the perceiver. Psychological and vital phenomena proper to the Aristotelian ‘soul’ such as growth and movement are considered as mechanical (and non-mental) phenomena of the *res extensa*; the remainder of the ‘soul’ belongs to a non-extended inner substance, the ‘mind’ (204-205), which is a recipient of ideas and a producer of perceived qualities. This modern mind came to play an important role in the explanation of the success of modern science. However, its creation and mention is also a symptom of the imbalance between theory and practice that progressively emerged.

This picture of the ‘mind apart’ stood in continuity with the way the modern scientific mind (and its sequel, the European Enlightenment) understood itself: as the product of individual minds (Copernicus, Kepler, Galileo, Descartes, Newton,...), genially abstracting themselves from medieval traditions and prejudices, sometimes at the peril of their life (e.g. the popular interpretation of the Galileo vs. the Church case). The historiography of the last

50 years² has shown how much that (self)-understanding of the spirit of modern science is deeply misleading, if not ideological. Firstly, modern figures such as the ones mentioned above were all deeply influenced by Greek themes and Medieval practices (Kepler's astrology and Platonic view of the cosmos; Newton's interests in alchemy and in a chemistry based on the concept of affinity; the fascination of Copernicus, Harvey and Galileo with circular motion; Copernicus' Pythagorean insistence that a heliostatic universe would be simpler and more harmonious than a geocentric universe full of epicycles...). Secondly, as Dewey points out, if it is true that modern science has had a profound impact upon industry, the fine arts and politics, it is not because there is a principled and chronological distinction between 'pure' science and 'applied' science, but because modern science is a *product* of technical, artistic, political, military and economical innovations that occurred during the Renaissance and Medieval times (64-65)³.

Whereas modern science continuously developed *out of* its past (and not out of the isolated minds of a few geniuses), modern philosophy remained caught *in* that past, in order to provide answers and foundations corresponding to the practical upheavals of modern science and technology. A constant theme in *UPMP* (and, more generally, in Dewey's reading of the history of philosophy) is that the emergence of modernity relied upon an imbalance between, on the one hand, the new development of science and technology and, on the other, the preservation and reinforcement of many dualisms inherited from the pre-Modern area, and still present in the positivist and the phenomenalist traditions of the 19th century (181). Amongst these dualisms, we can mention: subject vs. object, mental vs. physical, knowing vs. doing, appearance vs. reality, or mind vs. world. These *mind-involving* dualisms were used for understanding and rationalizing the origins and the scope of modern science in relation with pre-Modern values and ideas:

The causes of the division and dualism did not lie in the methods of the new science as they were actually practiced nor yet in the concrete conclusions forming its subject matter. They came from an extraneous source; namely, from uncritical acceptance of Greek-medieval ideas which were projected into interpretation of the new science although they were themselves both a reflection and a justifying ground of the very attitudes the new science was displacing. (311)

As said above, modern philosophers took the cause of the new science as being the alleged emancipation of the individual intellect from "everything that impeded and diverted it from operating in accord with its own separate and independent being" (65), suggesting how much the individual mind is and should be independent of the outside world (MW9: 300). But modern individualism, Dewey thought, did not actually involve emancipation from beliefs and values from the past (witness the various dualisms mentioned above). The fact that the heirs of modernity (namely, we ourselves) have constantly undervalued the practical and technological roots of modern science that can be found in the pre-modern area, by understanding modern science as being primarily an intellectual revolution made by individual minds, is also a symptom of the imbalance mentioned above. The consequences of modern science upon our lives and practices have often led us to think that a change of our minds, values and ideas was a *requisite* for such a change in the practical scope and

² It actually began in 1931 in London at the Second International Congress for the History of Science, when English historians of science such as Needham or Haldane met Soviet (and Marxist) historians of science such as Nikolai Bukharin and Boris Hessen.

³ See Shapin (1996).

powers of science (“intelligent technology and science is necessarily the product of intelligent minds”), so that modern science could not but go with a shift of values and ideas. Symptomatically too, this reasoning presupposes that minds were at the source of modern science. This heroic picture of the modern mind is still entrenched today, notably in the history of ideas. As Dewey writes,

They [writers on the history of philosophy] write as if the mind of the philosopher, empty of prepossessions derived from tradition and uninspired by any humane interest of their [environment] were confronted by the universe at large, uncolored by any local properties and untempered by any temporal preoccupations: and as if the mind then proceeded, by direct intercourse in general with the universe in general, to bring forth a system (33).

One’s history of philosophy (and history of science) reflects one’s (often tacit) commitments to a specific picture of mind: a reconsideration of the latter commitments is a necessary step for a reconstruction of the former history. But it would be terribly misleading to understand Dewey’s quote above as defending the need for an externalist perspective on philosophical and scientific phenomena. In the history of ideas, proponents of internalism and proponents of externalism *both* presuppose the intelligibility of a distinction between a core of “intellectual” activities (a core made of experiments, theories, data, debates, discussions,...) and a wrapping of non-scientific or non-philosophical (social, economical, ideological, technological) facts – the controversy being merely about the extent to which the container (the wrapping) affects the contents. Dewey’s adverbial conception of mind and his pragmatic instrumentalism concerning knowledge radically overcome this dualism of content vs. container.

The cure for this isolation of mind from nature does not lie in a classical externalist philosophy of mind – according to which some kinds of mental *contents* cannot be defined or had in the absence of appropriate relations with the world. Finally, the solution cannot be an even more materialist and mechanistic conception of mind, as La Mettrie proposed in 1748 in his *L’homme-machine* and as many versions of cognitive science will assert it two hundred years later⁴ under different guises (representational-computational theory of mind, parallel distributed processing, computational neurosciences...). Indeed, this would not be a departure from the Cartesian tradition, but its supreme achievement: the mind is still inside an individual person (73), and is now identified with a material substance, the brain, whose events “stand for” external events (181), and thus try to reach out into an “external world” (318). What some authors recently called *Cartesian materialism*⁵ is just the name of a *new* dualism. As Dewey said in 1916, “the older dualism of soul and body has been replaced by that of the brain and the rest of the body” (MW9: 346). The brain becomes the physical substrate of mind (MW4: 132); the mystery of the relation between brain and consciousness then also nurtures the problem of knowledge (MW8: 60).

⁴ See Warren McCulloch’s 1948 paper “Why the mind is in the head”.

⁵ Dennett coined the term in his *Consciousness Explained*, meaning by it the view that “there is a crucial finish line or boundary somewhere in the brain, marking a place where the order of arrival equals the order of ‘presentation’ in experience because *what happens there* is what you are conscious of” (1991: 107). Teed Rockwell (2005) used the term recently with another meaning, close to the one I rely upon here: the idea that the *mind* is an *inner* material phenomenon. Peirce was perhaps the first author to castigate that Cartesian heritage in materialism: “Modern philosophy has never been able quite to shake off the Cartesian idea of the mind, as something that “resides” – such is the term – in the pineal gland. Everybody laughs at this nowadays, and yet everybody continues to think of mind in this same general way, as something within this person or that, belonging to him and correlative to the real world”. (*Collected Papers*, 5.128)

One's picture of history of science and philosophy depends on one's view of the mind, but the latter view also depends on specific pictures of what science reaches and teaches. Indeed, besides creeping forms of individualism and internalism, contemporary calls for the *naturalization* of mental phenomena also rest upon a very restricted conception of nature inherited from the mechanical philosophy and nurturing itself on oversimplifications of today's physical science: nature is reduced to a set of mechanical interactions between material parts. What Dewey called in other places "the materialist fallacy" (MW2: 9-14; LW17: 358) and "the analytical or reductive fallacy" (LW10: 319) in philosophy comes from the philosopher's fascination with some successful scientific theories in the natural sciences. This is an ironic situation, for Dewey remarks that very often the scientific theories (psychology in Dewey's time, and probably today the neurosciences) that are praised by naturalistic philosophers trying to import their results into philosophy, are themselves based on a set of dualistic views that originated in philosophy (stimulus vs. response, knowledge vs. action, intellectual vs. practical, representing brain vs. represented world...) These views, Dewey says,

find their way back into philosophy and are used without even the remotest sense of need for criticism, to say nothing of thoroughgoing revision, as standard means of philosophical inquiry. (331)⁶

Salvation will therefore not come from *more* naturalism, for the scientific discourses on mind that naturalist philosophers praise are often already contaminated by the very dualisms one needs to get rid of.

II. Mind as a Verb

Dewey opens chapter X of the book, "Mind and Body", by reclaiming his 'adverbial' conception of mindedness (the sources of which can be traced back to 1912, in the paper *What are states of mind?*). 'Mind' is a word of (ad)verbal force: it qualifies behaviors manifesting specific properties. In his *Nous n'avons jamais été modernes* (1991: 157), Bruno Latour argues that words such as 'science', 'technology' or 'organization' denote *effects* or *stabilizations*, but not *causes* or *explainers*. They are, as Latour says, good substantives, but very bad adjectives or verbs (as when one considers that science is made *scientifically*). For Dewey, when we speak about 'mind', the problem arises when the adverb ("mentally") gets transformed into an adjective ('mental') denoting a *special* property, and then into a noun ('mind') denoting an entity at the source of behavior (see also LW1: 66). Initially, the adverb denotes a specific mode of situated interaction (and not a cause or explanatory element). The only acceptable sense of 'mind' as a noun, for Dewey, is as denoting a body of organized meanings (LW1: 230; LW10: 277), a habitual *product* of our past interactions with the environment, and enabling our contemporary and future interactions with meaningful situations. Already in 1907, Dewey argued that ideas were not psychological pieces or entities, but modes of action in the environment: interpretations of the environment in reference to absent portions, for the purpose of action (MW4: 83-84). In the course of Dewey's works, that definition will be refined and extended in order to deal with mental phenomena in general. In UPMP, Dewey writes:

⁶ See also Dewey's ironic remarks on the interests of "spiritually" minded persons on modern physics (287).

Mind and *mental* do not stand for things which are inventions of psychologists and philosophers. They stand (...) for important properties of activities open to observation, the characteristics of which are so distinctive in comparison with other kind of observed events as to demand special recognition. (207)

Mind and mental events stand for properties of interactivities displayed by persons, and not by parts of them (206). But *which* properties? They are modes of behavior. Speaking about *modes* of behavior places us in an ontological framework in which energies, processes and events are primary for describing natural phenomena (215). The concept of mind, Dewey says, is made out of “conditions which exist only in processes of *active connection* with other modes of energy” (322, my emphasis). Mental or psychological properties differ from vital and physical properties not in virtue of their nature (since they manifest themselves only in certain physico-chemical and biological conditions (215)), but notably in virtue of their relevance in certain contexts of observation of human behavior (214-215), when the observer deals with aspects of behavior that physics or physiology do not describe. But which modes of behavior?

Here, again –as in *Art as Experience* (LW10: 268)– Dewey invites us to pay attention to the uses of the verb *mind* (206-208)⁷. *Minding* involves *attending* and *caring* (including affective *caring*), as special types of organic action: an organic action that is special not because of some experience or of some inner psychical activity that would produce it (attention, Dewey insists, *is attentive behavior*), but in virtue of the type of transactional situation it is a part of, namely a situation in which creatures are sensitive to meaningful qualities as instantiated in events and objects. These meaningful qualities are *publicly* shared; they presuppose participation and communication (LW3: 49):

Mental phenomena represent life-functions of a physiological order transformed by interaction with social conditions involving language and its cultural products. (318; see also 321)

We are now on familiar ground: there is no mind or mental items; there are specific ways of interacting with the environment, by displaying a sensitivity to meaningful qualities proper to a situation or transaction (MW7: 37-38 and 54-55; MW10: 58; LW3: 37), from habitual capacities (MW14: 124), from customs (LW6: 12), and from some enacted biography (LW3: 34). As a reminder, let me note that, for Dewey, meaning involves *aboutness* (not only in thought or language, but also primarily in action and manipulation of objects) defined with reference to *rules* that are *shared* (LW1: 147). It does not necessarily equate with written or spoken language (LW12: 27) (just as mental qualities are not necessarily conscious (LW1: 230; LW10: 270)).

Besides emotional (*caring for*), intellectual (*attending*) and volitional (*intending*) aspects, *minding* also involves *obeying* (209) – this is a new and important point, as Dewey defines here ‘obeying’ in relation with perceptual circumstances. Ideas, beliefs and judgments are formed in relations with actual environmental circumstances. Observation of these circumstances *commits* us to certain conclusions. This submission is active, since it

⁷ I would like here to quote Gilbert Ryle, whose adverbial views on mind are close to Dewey’s: “There is one word which Shaftesbury and Jane Austen do frequently use in the same apparently idiosyncratic way, and that a way which is alien to us and, I think, subject to correction, alien to most of the other eighteenth and early nineteenth-century writers. This is the word ‘*Mind*’, often used without the definite or indefinite article, to stand not just for intellect or intelligence but for the whole complex unity of a conscious, thinking, feeling and acting person” (Ryle 1971: 290).

requires that we accept to free ourselves from some prejudices and some preconceptions (there is no *tabula rasa*, of course), and to consider what natural conditions could teach us. This capacity of epistemic freedom is acquired in practices:

We have, to speak metaphorically, to let events in, and there are so many obstructions in the way to their admission that the attitude of submission required is radically different from that of passive acquiescence. The obeying or submission, the “objectivity”, involved in minding specific conditions (or the “world” generally) is an art attained only by discipline and through prolonged practice. (209)

Dewey also compares this attitude of free submission to intellectual integrity (209). Two points are important here.

(1) This normativity of inquiry is not so much a conformity to epistemic rules or norms that would be absolutely defined and respected, but rather the capacity to consider environmental circumstances as resources for the discussion and the testing of our hypotheses, and not as resources for the confirmation of propositions and hypotheses defined independently of these circumstances.

(2) Environmental circumstances and conditions do not say or prescribe anything. It is only in the context of inquiry that their constraining nature can appear, facing our projects and our hypotheses. This might shed new light on Dewey’s basic realism. For Dewey, it is well known that inquiry involves obedience to *facts*, a cor-respondance or co-operation between existence and thought (MW6: 5). Dewey’s pragmatic instrumentalism or experimentalism does not run against a basic realistic commitment according to which objects stand – persist, change – independently of their relations to knowers and their judgments (MW6: 117)– hence the possibility of *constraint* and of *experiment*. As is well known, Dewey escapes from the classical and contemporary opposition between realism and anti-realism in virtue of its view of mental activities. Both realism and anti-realism assume that knowledge and, more broadly, mental activities are intellectual activities, consisting in inner episodes occurring inside of some static subject. For Dewey, knowledge and judgment are not internal, mental affairs; they are natural modes of experiencing. Experiencing is not sensing or feeling: it involves doing, undergoing, suffering, adjusting and readjusting with the environment in the course of continuous and situated interactions. *With* idealism, Dewey retains the *creative* nature of intelligence (LW4: 111); *contra* idealism, he asserts that *intelligence* is embodied, pragmatic (and notably technological) and *re-constructive*, and that there is much more in experience than knowledge, ideas and judgments (MW6: 86; LW1: 28). *With* realism, Dewey acknowledges that inquiry involves (co-)responding with facts whose constraining nature is not a fancy of our ideas or imagination, as the quoted passage above testifies. *Contra* realism, Dewey denies that the function of knowledge and, more broadly, mind, is to reflect or to represent a reality that would be independent of experience, and that some kind of discourse (such as scientific theories) would be able to describe facts and reality *as they are*, providing a (epistemically or ontologically) privileged description of reality. On the contrary: it is because the primary nature of knowledge and of intelligence is to make a difference in the world that it is *vain* and *useless* to refer to some reality standing outside of experience (our “inclusive frame of reference”, Dewey says (329)) and whose access would guarantee the success and the acceptability of our claims and hypotheses. It is not only the case that material actions change the world: claims and hypotheses help us to do something in experience. More precisely, what they refer to now make (us) (ready to) do something new, so that the world is continuously changing and changed. Knowledge (espe-

cially scientific knowledge), for Dewey, exhibits and modifies the range of connections, relations and potentialities that define what some thing is (182; LW4: 213):

The fact when it is known enters into a new environment. Without ceasing to belong to the physical environment it enters also into a medium of human activities, of desires and aversions, habits and instincts. It thereby gains new potencies, new capacities. Gunpowder in water does not act the same as gunpowder next a flame. A fact known does not operate the same as a fact unperceived. (MW14: 206)

If one decides to equate the “physical environment” with “what exists independently of us”, a hopeless path is opened, aiming at describing *what there is* by transcending *our* situated and pluralistic point of view:

How can we segregate, *antecedently* to experimental inquiry, the ‘physical’ chair from the chair which is now the object to be known; into what contradictions do we fall when we attempt to define the object of awareness not in its own terms, but in terms of a selected type of object which is the appropriate subject-matter of some other cognizance! (MW4: 139).⁸

Back to the quotation of UPMP above: the objectivity that thought and inquiry meet is *constraining... and objective* not because it exists outside of experience, but because it consists in relations and connections that take place *between* us and things in relation with inquiry. “Letting events in”, as Dewey says, does not amount to pure receptivity, since observational behavior also involves anticipation (211). This is a basic biological fact, already at play in non-human organisms, where vital behavior is simultaneously in a state of attraction *towards* and repulsion *from* actual environmental conditions (212) (human awareness derives from this dialectics, Dewey argues). These constraining facts are never captured all at once: in order to meet their constraining nature for testing our hypotheses and define the consequences of our ideas, we must act.

Mental qualities, Dewey insists, are related to behaviors proper to persons, and not to parts of them (their body, their brain). Indeed, it is persons who engage in interactions with the environment (206). But modernity, too, built itself on the idea that mind was personal (73). Still, there are alternative ways of defining what a person is: the mention of some *Ego*, or of some inner consciousness, standing against the world, is not the only way. Indeed, being a person, for Dewey, is a relational property. Persons only exist in networks of social relations, duties and commitments, broader than morals (190). The fact someone is a person means something more than being a human being: it means she possesses capacities that operate “only in a group in which there exist such relational functions as formulated liabilities, rights, duties, and immunities” (199):

It is in and because of interplay among expectations, demands, fulfillments and evasions, with accompanying praise and blame, reward and penalty, approval and disapproval, that modes of behavior take on acknowledged social importance and become representative of social values; that is, of activities which are taken by the group to be important for group welfare and per-

⁸ See also in UPMP: “the very notion of a ‘world’ which is physical and nothing but physical is itself a product of social factors” (317, also 314), and LW4: 105.

petuation. Human beings as the bearers of these representative functions, or offices, come into possession of the properties that describe a *personal* being (p.190; Dewey's emphasis).⁹

There are thus at least two questions that are opened up. Firstly: how much can the normativity of inquiry defined above be a part of the network of commitments that define what persons are and do? And secondly: if mind is a personal (and situated) achievement, what about the status of the organs that are involved in this achievement? I will follow UPMP here, where Dewey expresses important elements for answering the second question.

III. *Rediscovering the Brain?*

The foregoing remarks have consequences for reconsidering the role of the brain in minding behavior. The brain, Dewey says, is an organ of adaptive behavior (216): we must try to stick to that picture when we try to understand what happens when we – humans – think and do:

As far as animals below man are concerned, most persons would not need argument as a condition of believing that the brain is an organ of adaptive behavior. It is only with respect to man, and with respect to him chiefly among philosophers, that the brain is regarded exclusively or mainly as the organ of *knowing*, or more absurdly yet the 'seat' of mind. When the body in general and the nervous system and brain in particular are taken for what they are, organs of vital behavior, the problem is not how 'matter' can give rise to mind, how psychical volition can move physical muscles, nor how physical nerve-processes can get translated into 'mental' sensations and ideas. The problem is one of strictly scientific inquiry (...) It is to discover the characteristic or definitive differences between behavior in the way of searching, finding out, and other modes of interactivity of organic and environing energies. (216)

This is one of the clearest passage in Dewey's work¹⁰ where a crucial relation is established between, on the one hand, the rejection of what I called above "Cartesian materialism" and its implications for epistemology and, on the other, the imperious need of achieving a scientific understanding of the real (i.e. non-Cartesian) role and status of the brain in environmental interactions. These requirements Dewey expresses are more pressing than ever today: for instance, many proponents of the *extension* of cognitive processes in the world still endorse an understanding of the brain as the *central* organ of cognitive processes, manufacturing and retrieving internal representations or informational contents (Clark 2008). Other radical proponents of the extension of cognitive processes in the world (Chemero 2009; Hutto and Myin 2013) insist on the need to reject (to a large extent) that information-processing model of the brain and the idea that the brain is a central or essential component of cognitive processing, but they seldom mention *what* status one should then attribute to the brain, *how* the empirical results produced in neurosciences should be understood, and more broadly how research in neurosciences might proceed for studying

⁹ I cannot refrain from quoting here Wilfrid Sellars' definition of what a person is, in his *Philosophy and the Scientific Image*: "To think of a featherless biped as a person is to think of it as a being with which one is bound up in a network of rights and duties... To think of a featherless biped as a person is to construe its behavior in terms of actual or potential membership in an embracing group each member of which thinks of itself as a member of the group" (1963: 39).

¹⁰ See also MW4: 132, MW7: 53, MW9: 346, and MW10: 26.

the extended character of cognitive processes¹¹, but also their embodied character (embodiment is not enbrainment). These issues must figure in the explanatory agenda of what John Shook and Tibor Solymosi recently proposed as *neuropragmatism* (see, for instance, Shook and Solymosi 2013).

Later in the text, Dewey tries to make explicit his own view of the purposes of the brain. We are in 1942: one year before McCulloch and Pitts' formal neuron, six years before *Manchester Mark I*, the first computer running with stored programs and before John von Neumann's seminal text "The general and logical theory of automata" (at the Hixon Symposium) where an analogy between the nervous system and computational machines is suggested.

Dewey considers the classical "central telephone exchange" metaphor for the brain: it is misleading, Dewey argues, for the brain does not *transfer* messages. Dewey rather suggests, about the brain, that

It is its office to receive a large number of messages, each of which is too partial, too incomplete, to make sense by itself (i.e., to make sense from the standpoint of the interactivity to be finally attained) and to coordinate them so that a unified final adaptive action will occur, which is quite different from what would be done if any one sensory stimulus or a mere aggregate of them determined the motor outlet (217).

By talking of 'messages' that are received by the brain, is Dewey committed to a classical information-processing model of the brain? Surely, Dewey's rejection of representationalist ontology of mind and knowledge, his insistence on the incomplete and partial nature of the messages, and his criticism of Cartesian materialism make it very difficult to see him as a pre-cognitivist philosopher, for which the brain would process, retrieve or manufacture information it would receive from sensory channels, in order then to trigger behavioral outputs. When Dewey asserts that the activity of the brain makes a difference so that adaptive action is possible and is not identical to a motor output that would be stimulus-determined, he does not presuppose that the workings of the brain just take place *between* sensory inputs and motor outputs. The brain does not play a *mediating* role between *given* sensory stimulus and a piece of motor behavior that would be the *outcome* of the intracranial operations: paradoxically, this role would turn the brain into a barrier between independent sensory inputs and independent motor parameters. True, the more complex the form of life, the more refined the motor responses of the organism must be – and so must the brain (217), but the brain is not an intellectual machinery in virtue of which we would be more than reflex-life, stimulus-determined creatures. Assuming this would entail renewing with the Cartesian-material picture Dewey wants to get rid of. The brain – like the muscles, the nerves and the stomach – is a means through which transactions with nature and the social world are carried on (LW16: 412). This is what we must start from. The chapter coming after "Mind and body", named "The Practical and the Theoretical" includes a notable attempt by Dewey of using the results of scientific inquiry for discussing the shortcomings of the idea that the brain would be an intellectual organ, and hence the seat of knowledge – before the motor outputs, and after sensory inputs. This idea is reflected in the classical separation between "higher-level" cognitive functions that would reside in the cortical part of the nervous system, and "lower-level" ones (related to sensori-motor behavior) related to

¹¹ But see recent suggestions in the collective volume edited by Stewart and *al* (2010).

the spinal cord and basal ganglia. 46 years after his first considerations on the continuity and behavioral integration of sensations and motor behavior (EW5: 96-110), Dewey writes:

The difference between the action of the spinal and basal ganglia and the cortical-cerebral marks a division of labor *within* an inclusive unified scheme of behavior; not a separation or divorce. (...) The view that what goes on during deliberation and planning involves participation of practically all organic functions, instead of the brain alone, is proved as a matter of general physiological teaching by the impossibility of completely closing off cerebral activity but shutting down all the channels by which energies are transmitted to and from cerebral action. There is simply bound to be an inflow and an overflow. On the more definitely psychological side, the same conclusion is established by the fact that without sensori-motor participations (sustained in turn by vital organic functions), we should not be aware what we are thinking and planning. (260-262)

At the level of the nervous system, we already find a non-separation between “theory” and “practice”: abstract, complex, idle, disengaged mental activities are never totally *off-line*, since their cortical correlates require a continuous flow of energies in order to be effective, and thus a living organism hosting them, breathing, experiencing, sensing and moving (this is why *brains in vats* could not produce thought or experience (Thompson & Cosmelli 2010)). As Dewey says, “thinking in words involves innervations of sensori-motor tracts” (263). Conversely, sensori-motor phenomena are not condemned to be mere *inputs* or *outputs* of intellectual operations, gateways or consequences of knowledge (208). *On-line* behavior never exclusively deals with some neutral “here and now”: what we perceive and what we do take place in some history, in tension between the past (and its sedimented products: habits and meanings) and the future (280-281). Proponents of Cartesian materialism might argue that we must not confuse the *background and enabling conditions for the occurrence of X* with the *realizers of X*. Indeed. But it is a *petitio principii* to consider that this distinction corresponds to the distinction between the surrounding environment of the brain and the brain itself (Hurley 2010). Cerebral processes are *enabling conditions for the occurrence* of cognitive behavior; the realizer of the latter behavior being the organism-environment transaction (see below). The practical activity in which the brain is involved is not a behavioral output: it is the whole conduct of life (218). A science of the brain must not be brain-centered, just as psychology does not deal with *psyche* but with interactions of living organisms in socio-cultural settings (315).

These biological considerations, Dewey says, are crucial for framing any theory of knowledge. This *is* naturalism at work, like Dewey did in other places (from 1886 onwards), for instance when he proposed a theory of experience in accord with biological considerations in *Reconstruction in philosophy* (MW12). This is, of course, a *non-reductive* naturalism, for which science does not exhaust the realm of experience (16), and for which there is no science that enjoys some privilege or exclusivity for dealing with that which exists:

The fact that a theory of knowledge must be *in accord* with biological conditions of behavior, that it must not contain factors which are openly incompatible with basic physiological aspects of behavior, is far from signifying that these conditions of themselves provide complete data for a theory of knowledge. (282)

Renewing this version of naturalism in contemporary debates is therefore definitely compatible with a use of neuroscientific resources for criticizing theories of knowledge relying upon *Cartesian materialism* and on the separation between knowledge and action, theory and practice.

IV. A Matter of Time and Transaction

Dewey famously wrote in *Experience in Nature* that

to see the organism *in* nature, the nervous system in the organism, the brain in the nervous system, the cortex in the brain is the answer to the problems which haunt philosophy. And when thus seen they will be seen to be *in*, not as marbles are in a box but as events are in history, in a moving, growing never finished process. (LW1: 224)

The last sentence is sometimes omitted in contemporary quotations of that passage. True, as we have just seen, Dewey's writings on mental phenomena in UPMP rehearse the need to situate the workings of the cortex in a broader context. But temporality – and not only spatial inclusion – is also the key here. Some passages of UPMP remind us why. The isolation of the sensory system is presupposed by both those who assert that the senses are organs of knowledge and those who claim that the senses are too poor for generating knowledge. In both cases, there is a failure to see the genetic and functional place of sense-organs in the “total extent of life activities” (219). It is only by understanding this place that one can also begin to see how what human beings sense is transformed by the social settings in which perception occurs: sensations carry values and qualities. The classical question was to know which additional mental ingredients were necessary for the passage from sensations to knowledge: but there are no additional ingredients; these alleged ingredients are only abstractions from sensations, themselves situated in cultural settings and organism-environment interactivities. There are never pure sensory qualities – except from a reflective/analytic point of view, not to be confused with actual experience¹². Sensations are experiential, and not physiological causes of what is experienced (227). *Continuity* – the temporal extendedness of the life of the organism, instantiated in the situated growth, development and movement – is the keypoint from which sensations should be defined and understood (228) and, more broadly, mental events. These events are not points in space or moments in time (222): they come from the continuity, and are directed towards some future outcome. As Dewey says,

The theory which regards the psychological as a separate order of existence which is merely *inner* or *subjective* is the product of an attempt to combine the *fact* of past and future reference with the fiction of existence independent of interactivity with environmental conditions. Hence the basic significance of emphasis upon the intrinsic connection of psychological subject matter with life-behaviors, interactivity of organic conditions with environmental ones – qualified throughout by socio-cultural energies. (222)

Of course, from the *thickness* and from the *situatedness* of experience, one can abstract different aspects, and thus different kinds of tensions (sensuous vs. ideal, impulsive vs.

¹² See, of course, James' definition of the psychologist's fallacy in *The Principles of Psychology*, vol.1, chapter VII, and its influence on Dewey (for instance MW1: 118).

thoughtful,...), but these distinctions pertain to the temporal and the spatial ranges of the factors that are involved (225; see also Steiner 2011).

The second part of the “Mind and Body” chapter comes from a different manuscript, but insists on this same question of continuity, with the use of the concept of *transaction*. At that time (1942), transaction is not, for Dewey, a variety of interaction. On the contrary: it denotes a primary situation of integration, spatially and temporally continuous and extended, *from which* (interacting) elements (subject vs. object, organism vs. environment,...) may be distinguished as phases or aspects of that situation (p.322). Life itself *is* a transaction, extended and extending beyond the organism (LW.12.32; MW.6.437; pp.235-237). As biologically-grounded events, perceptual events are therefore not situated *in* sensory organs (p.235): “the living creature sees; it sees with and through the eyes” (p.237). The last chapter of the book –“Experience as Life-Function”– defines the subject-matter of psychological studies as human living behaviors. These behaviors are life-functions (315). Their psychological aspects are related to their inclusion in social conditions involving language and culture (317-318). Dewey also defines continuity in terms of situatedness and connections:

Because everything experienced is determined by interactivity of organic-ongoing conditions, everything inquired into and discussed belongs in a field or situation. Fields and/or situations possess spatial and temporal *togetherness* of the existence and events which constitute them. They are extensive and enduring. ‘*Togetherness*’ as used here covers what is often named by the words connections and relations, and interconnections and relationships. (334-335)

For Dewey’s naturalism, it is well known, nature *is* culture (and conversely), and the naturalist method is genetic and functional (331): a matter of investigation such as mental phenomena must be considered from their historical context, and from their functional role (in interactivities that are life-functions), as it is already the case with other phenomena (breathing, cultural exchanges,...) in disciplines such as biology or anthropology (332).

Conclusion

Needless to say, much more could have been said on what Dewey brings us in UPMP concerning mindedness and its study. In this contribution, I have deliberately chosen to mention some specific points, putting them in relation with other parts of Dewey’s work, but also with contemporary stakes. It is well known that Dewey extends mental phenomena outside of the brain, in the qualities of situated interactions involving meaning and communication; UPMP reminds us he also extends the scope and the relevance of what a theory of mind should be. In a critical spirit close to Dewey’s, Robert Musil wrote in 1921¹³ that 98% of the phenomena of our civilization boil down to the fact that intellectual organization is running late in comparison with the numerical increase we can find in sciences (be they natural or not) and technologies¹⁴. Dewey’s UPMP clearly defines some roots of that state of affairs, and its various symptoms in history of science and in epistemology, but also in philosophy of mind¹⁵. Because of the interrelated character of these symptoms, the pos-

¹³ In his *Geist und Erfahrung. Anmerkungen für Leser, welche dem Untergang des Abendlandes entrommen sind*, reprinted in Musil 1994.

¹⁴ See for instance Dewey’s *What I believe* (1930; LW.5).

¹⁵ Musil himself suggested that “mind (*Geist*) itself has no mind (*Geist*)” (*Der Mann ohne Eigenschaften*, I, 40 –by the way, Dewey’s model of inquiry is probably present in the novel in the views of the “English writer Surway” as they are presented by one of the character (II, 29)).

sibility of a cure in of these domains (in philosophy of mind, for instance) can only be effective if it may make a difference in the other domains as well.

References

- Chemero A., (2009), *Radical Embodied Cognitive Science*, Cambridge (MA)/London: MIT Press.
- Clark A., (2008), *Supersizing the Mind. Embodiment, Action and Cognitive Extension*, Oxford: Oxford University Press.
- Dennett D.C., (1991), *Consciousness Explained*, Boston/New York/London: Little, Brown and Company.
- Dewey J., (1969-1972), *The Early Works: 1882-1898*, ed. J.A. Boydston, Carbondale and Edwardsville, Southern Illinois University Press.
- Dewey J., (1976-1983), *The Middle Works: 1899-1924*, ed. J.A. Boydston, Carbondale and Edwardsville, Southern Illinois University Press.
- Dewey J., (1981-1990), *The Later Works: 1925-1953*, ed. J.A. Boydston, Carbondale and Edwardsville, Southern Illinois University Press.
- Dewey J. (2012), *Unmodern Philosophy and Modern Philosophy*, ed. by P. Deen, Carbondale: Southern Illinois University Press.
- Hurley S., (2010), “The varieties of externalism”, in R.Menary (ed.), *The Extended Mind*, Cambridge (MA)/London: MIT Press.
- Hutto D. and Myin E., (2013), *Radicalizing Enactivism. Basic Minds without Content*, Cambridge (MA)/London: MIT Press.
- Koyré A., (1965), *Newtonian Studies*, Cambridge (MA): Harvard University Press.
- Latour B., (1991), *Nous n'avons jamais été modernes. Essai d'anthropologie symétrique*, Paris: La Découverte.
- Musil R., (1994), *Precision and Soul. Essays and Addresses*, ed. and translated by B. Pike and D. S. Luft, Chicago: University of Chicago Press.
- Peirce C.S., (1931-1958) *The Collected Papers of Charles Sanders Peirce*, Vol. I – VI. Ch. Hartshorne and P.Weiss (ed.); Vol. VII - VIII, A.W.Burks (ed.). Cambridge (MA): Harvard University Press.
- Rockwell T., (2005), *Neither Brain nor Ghost. A Nondualist Alternative to the Mind-Brain Identity Theory*, Cambridge (MA): MIT Press.
- Ryle G., (1971), *Collected Papers Vol. 1*, London: Hutchinson.
- Sellars W., (1963), “Philosophy and the Scientific Image of Man”, in *Science, Perception and Reality*, London: Routledge & Kegan.
- Shapin S., (1996), *The Scientific Revolution*, Chicago: University of Chicago Press.
- Shook J. and Solymosi T., (2013), “Neuropragmatism and the culture of inquiry: moving beyond creeping Cartesianism”, *Intellectica*, n° 59, 2.

- Steiner P., (2008), “Délocaliser les phénomènes mentaux : la philosophie de l’esprit de Dewey”, *Revue Internationale de Philosophie*, vol.62, n° 245.
- Steiner P., (2011), “Who’s on first? Living situations and lived experience”, *Journal of Consciousness Studies*, vol. 18, 2.
- Stewart J., Gapenne, O. and Di Paolo E.A., (eds.) (2010), *Enaction. Toward a New Paradigm for Cognitive Science*, Cambridge (MA)/London: MIT Press.
- Thompson E. and Cosmelli D., (2010), “Embodiment or envatment? Reflections on the bodily basis of consciousness”, in J.Stewart, O.Gapenne and E.A. Di Paolo (eds.) 2010.