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Discussion

Vygotsky versus Dewey on mental causation: The core of two divergent conceptions of human thought

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ABSTRACT

The developmental psychologies of Dewey and Vygotsky are often brought together, or even assimilated, by contemporary constructivist and social constructivist theories, including sociocultural approaches. These theories broadly subscribe to the naturalistic philosophical paradigm dominating educational research. Nevertheless, they are incompatible, as expressed from the outset in their antagonistic conceptions of the relationship between human development and biological evolution. This article proposes a comparative analysis of the meaning of key concepts such as sign, meaning, mind, consciousness, will, personality or freedom in Dewey's and Vygotsky's texts, and contrasts their respective interpretations of human choice and the mind-body problem. On this basis, the fundamental issue of mental causation appears at the core of the divergences between Dewey and Vygotsky's theories of human thought.

1. The mind-body problem and the internal divide of psychology

Almost a century ago the famous Russian psychologist Lev Vygotsky (1927/1997), in an influential work,[1] proposed a diagnosis of the condition he qualified as the "crisis in psychology" which has retained a constant topical form (Goertzen, 2008; Mammen & Mironenko, 2016). As Vygotsky had identified, the internal oppositions and divisions expressed by the idea of crisis in psychology, since the beginning of the 20th century, do not simply refer to points of view developed around a common core of integrated concepts and theories. Nor do they refer, as is the case with the scientific crises in Thomas Kuhn (1962/1970), to the existence of growing discrepancies between empirical results and the expectations generated by a dominant paradigm. On the contrary, these divergences reflect an essential hesitation and false compromises in the face of an impossible theoretical and methodological choice. In this context, the accumulation of under-theorized empirical studies presented in the literature in psychology (Toomela & Valsiner, 2010; Valsiner, 2006), and more generally in the human sciences as a whole, cannot allow for any overcoming, any new solution, or any true test. This accumulation only engenders superficial truths with no real meaning. The divergent orientations that split up the discipline, one rooted in the study of animal behavior and the other in that of human thinking of the more verbal sort, are the consequences of a deep divide between the approaches to the body and the mind. This cleavage, linked to Cartesian dualism (Vygotsky, 1927/1997) is manifested in the division, evoked by Vygotsky (1928/2014, p. 87–88), between two legacies: one from English empirical and associationist psychology and another from German metaphysical psychology. It expresses the mutual incompatibility between two conceptions of psychology, one that is explanatory, materialistic, causal and objective as opposed to one that is understanding, idealist, teleological and subjective.[2] It thus expresses the impossibility of accounting for mental phenomena on the basis of existing explanatory models of natural phenomena and therefore, the tendency to deny mental experience in order to satisfy these models. According to Vygotsky, if mental phenomena exist, they are material and objective, and therefore can be the subject of scientific analysis, for which the "substrate of unity", the "primary abstraction" underpinning the ways of explaining, had to be especially defined. The Russian

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[1] Vygotsky's manuscript was written at the end of the first period (1923–26) of his theory's maturity and remains as a draft which was not published during his lifetime, but he takes up its topics in two other articles: "The Science of Psychology" (Vygotsky, 1928/2014) and "The Mind, Consciousness, the Unconscious" (Vygotsky, 1930/1997). See Zavershneva (2012) for the dating of the text and specific issues with its published edition.

[2] These two influences are for instance distinguished by Goodwin Watson (1934), with the former more interested in the subjective, qualitative dimension of thinking, wholes and relationships, and the latter more interested in the accumulation of facts and physical controls. Current mainstream psychology tends to represent a continuation of this latter way of thinking, which developed in North America in particular (see Toomela & Valsiner, 2010).

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psychologist was working to create one single general science, including mental experiences and inner relations, with the "very idea of a scientific conception of the soul" and representing the "whole future path of psychology" (Vygotsky, 1927/1997, p. 336).

The monism that dominates the contemporaneous philosophy of mind, mainly represented by physicalism (the thesis that everything is physical or else, that everything "supervenes" on the physical), has not been able to heal the divide between mind and body approaches.[3] Debates on the problem of mental causation – the previous "psychophysical problem" – hinge on the same scientific contradiction. Moreover, in the field of psychology, the promise of overcoming the dualistic tension between the material and the mental, represented by the cognitive revolution, was not kept. The neuropsychologist and Nobel laureate Roger Sperry (1992) along with others observed, on this subject, that if the term cognitive is used in a sense that does not imply conscious awareness, the rise of cognitive science would prove to be more of an evolution than a "revolution".[4] Even the ambiguity inherent in the term of cognition, covering both conscious and unconscious processes, leaves little space for the role of conscious awareness and subjectivity. In this regard, Jerome Bruner (1990, p. 4) deplored the shift which took place very early in cognitive science from issues of meaning and its construction to issues of information and its processing, with the computational paradigm as the model of good science. As cognitive models were also usually used in the field of developmental psychology, the specificity of Lev Vygotsky's theory remained in the shadows. The educational lessons taken from his work may fruitfully be compared to those taken from John Dewey's conceptions in the literature. Both Vygotsky and Dewey consider knowledge and meaning as actively constructed by the human mind – what is captured by the contemporaneous notion of constructivism. But this likeness should not obscure the very different senses they attach to each of the notions at stake: knowledge, meaning, activity, as well as mind. The thesis defended here is that in reality their conceptions are fundamentally opposed on the crucial question of mental causation.

2. Constructivist conflation of Dewey and Vygotsky theories

2.1. The naturalistic framework of interpretation of educational constructivist theories

Constructivist educational theories have, on the whole, combined Vygotsky's and Dewey's ideas in the same naturalist paradigm which serves, under the guise of science, their aim to reshape the democratic personality through a reform of the teacher and the student.[5] By naturalistic philosophical paradigm is meant here an approach to humanity and human psychological development based on an assumption of continuity with biological and animal development. Here, the human mind's evolution and adaptation is conceived of as a growth from elementary functions to higher ones qualitatively involving the same basic, mechanistic or deterministic processes. As a consequence, adaptive principles of organic development are extrapolated to thinking and the formation of social personalities. Concrete practices, habit formation and the acquisition of so-called competencies take precedence over the mastery of representations and conceptual understanding. Furthermore, the educative goals tend to shift from acquisition to participation ideals, that is, from individual approaches and external standards of knowledge to collective and on-going learning activities (Sfard, 1998). The naturalistic interpretation of the human mind justifies in return the socio-constructivist educational premises, including the sociocultural types of approaches and other activity theories with their situated, embodied or distributed conceptions of cognition, involving highly social environments and contextualized activities, or interactivities, as modes of learning (Bulle 2017, 2020).

Even if moral-political ambitions for education have fostered the assimilation of Vygotsky and Dewey's theories within a naturalist philosophical paradigm, this is not the whole story. This philosophical paradigm is based on epistemological premises that blur the potential differences of their conception of science. It underpins the fact that the same type of scientific understanding applies to the mental and the non-mental, and thus gives precedence to explanations based on systematic linking of observable phenomena and mechanistic or law-like forms of causation, with, moreover, a tendency to conceive the non-mental as ontologically more fundamental.[6] This is generally the case in the North American intellectual context where the notions of objectivity and knowledge are shaped by a strong empiricist-positivist epistemological legacy revised on naturalistic grounds in the philosophy of pragmatism.[7] As a consequence, in this context, any recourse to mental phenomena in explanation is suspected of opposing the true modes of knowledge elaboration, and in this regard of conveying the influence of the old ontological dualism. Such confusing situation is referred to by Vygotsky's commentators, Anton Yasnistky and René van der Veer (2016, p. 229) who observe the difficulty of talking about consciousness and related problems, which are easily discussed in other intellectual traditions, for instance in Europe, but which in North America seem to escape scientific standards and generate misunderstanding.

2.2. The activity theorists' revisiting of Vygotsky's original conceptions

Vygotsky's international popularity developed a long time after his premature death in 1934, given that his work fell victim of censorship between 1936 and 1956 under the Stalinist regime, and that the first English translation of *Thinking and Speech* (also translated as *Thought and Language)* appeared in 1962. However, many psychologists who have claimed to follow him have in fact modified his views on fundamental dimensions to align them with the naturalistic philosophical paradigm dominating their own works. This has been the case, for instance, at the beginning of the scientific community's expansion of interest in Vygotsky's works. The American psychologist James Wertsch (1985), referring to Piotr Zinchenko (1985), developed a critical appraisal of Vygotsky's conceptions, and a revision in line with Alexei Leontiev's activity theory. Such revision underlies the sociocultural approaches generally attached to Vygotsky's psychology.[8] Nevertheless, as Alex Kozulin (1986, p. 270) explains, referring to the reinterpretation of Vygotsky's legacy by his "Kharkov school" followers, Leontiev's theory of activity betrays the core of Vygotsky's conceptions by neglecting the mental role of semiotic mediation and focusing on externalized forms of

[3] By equating physical causes with non-mental ones, mainstream physicalism a priori excludes the possibility of genuine mental causation (see Kim, 1989; Papineau & Spurrett, 1999).

[4] Sperry defended in numerous texts a notion of mental causation, which was inspired by the unitary manifestations of the mind's role even in the case of patients with two surgically disconnected cerebral hemispheres.

[5] Thomas Popkewitz (1998), who puts forward this moral-political interpretation, does not himself distinguish the fundamental differences between Vygotsky's and Dewey's approaches.

[6] For instance, Ernest Nagel (1954–1955, p. 8) puts forward as a central thesis of naturalism in philosophy "the existential and causal primacy of organized matter in the executive order of nature" which entails that "what naturalism does assert as a truth about nature is that though forms of behavior or functions of material systems are indefeasibly parts of nature, forms and functions are not themselves agents in their own realization or in the realization of anything else."

[7] See in particular Kim (2003) on this subject and, as a mark of the naturalistic basis of mainstream American philosophy in the middle of the 20th century, the 1944 vol *Naturalism and the Human Spirit* which includes essays by leading American philosophers such as John Dewey, Sidney Hook or Ernest Nagel (Krikorian, 1944).

[8] See especially Miller, 2011 on this subject and Bulle, 2021 for a review of the literature questioning Vygotsky's legacy.

mediation. With the replacement of "word meaning", which underpins Vygotsky's theoretical approach, by "tool-mediated action" as the unit of analysis,[9] the specific inward-oriented mediational role Vygotsky conferred to signs is absorbed by the outward-oriented notion of tool that, we will see, he especially opposed in reference to Dewey. For his part, under the cultural-historical label, Michael Cole (1996, p. 36) refers to a unitary paradigm supposed to have been collectively worked out by Lev Vygotsky, Alexander Luria and Alexei Leontiev as a resolution of "the crisis in psychology", and assumed to be part of Dewey's legacy.

As a consequence, Vygotsky's contribution to psychology is classically expressed by the notions of "the social origin of mind" or of "sign mediation" which were known before him and can also be associated, depending on theoretical premises, to social behaviorism (van der Veer & Valsiner, 2000; Veresov, 2010). Such notions, used as ready-made ideas, are at the basis of a Vygotskian vulgate which pervades developmental psychology and educational research, and tends to obscure the Russian psychologist's scientific contribution. Especially, the major forms of contemporary constructivist approaches in education broadly support the overt and contextualized activities, or interactivities, of the "learners", which in fact means choosing Dewey over Vygotsky.[10] The comparison between Dewey's and Vygotsky's conceptions has itself been the subject of lively debates, for instance in *Educational Researcher* (Glassman, 2001; Glassman & Wang, 2004; Gredler & Shields, 2004; Prawat, 2002) as evidenced by the evocative title "Does no one read Vygotsky's words?" from Margaret Gredler and Carol Shields.

2.3. Additional complexities in understanding divergences between Dewey and Vygotsky

Understanding how Dewey and Vygotsky conceive of the fundamental problem of mental causation, and how their views oppose on this subject, is nevertheless a complex matter. On the one hand, their theories have basic common points – notably, the search for a monist solution to the mind-body problem and, in this perspective, the central role accorded to the social dimension of the human being in thought. On the other hand, their ideas have undergone significant developments. Dewey started from Hegel and then embraced naturalism, under the influence of the psychology of William James (as mentioned in Dewey's 1930 autobiography). Vygotsky, for his part, started with the conceptual tools of Pavlovian reflexology from which he distanced himself to develop a psychology he truly understood as a science of consciousness (Vygotsky, 1997/1932, p. 129). In this regard Dewey, on the contrary, considered that psychology should not aim at being a science of consciousness but of thought and action (Dewey, 1922, p. 321). This contributes to complicate the understanding of his work, whose readings is often biased by the difficulty of breaking away from classic philosophical concepts preformed by a mentalist psychology he rejected.

But there are at least two other sources of complexity. One concerns the difference between passive and active approaches of causation, which can lead to hasty assimilations on the issue of mental causation. Jaegwon Kim (1998, pp. 115–120) explains for example that functional mental properties (i.e., involving input-output effects or properties) have a causal role – for instance, the pain I experience mentally causally explains the withdrawal of my hand from the flame. Nevertheless, they have no causal power as such: The withdrawal of my hand is determined by the brain state correlated with my pain, and thus by the physical circumstances provoking my pain. More generally, the notion of causal role is identifiable by a law or a simple counterfactual reasoning, so that it just involves the conditions that account for the phenomenon in play. Therefore, acknowledging a causal role for mental states does not involve considering them as efficient causal factors, doted as such of a form of causal power.[11]

The second source of ambiguity relates to the ultimate unfulfillment of Dewey's and Vygotsky's theories with regard to the body-mind problem they each tackle from a different perspective. Dewey favored the naturalistic explanation without seeking to account for the subjective experience of self-determination he held to be unreal, the result of un artificial isolation of the self from natural and social surroundings.[12] Vygotsky, on the contrary, started from this experience without being able to offer a complete scientific explanation for it. On major issues, their theories of human thought do not converge, but the relative obscuring of their weak points by bridges thrown toward the opposite side may have favored conflations.

In order to understand the opposition of Dewey's and Vygotsky's conceptions on mental causation, it is enlightening to start from the differences of meaning they assign to the key concepts of "sign", "meaning", "mind", "consciousness", "will", "personality", or else, "freedom". On these bases, their divergent notions of human choice and of the body-mind problem will then be highlighted.

3. Human evolution and biological evolution

First of all, let us note the opposing interpretations of the relationship of human thought evolution to general biological evolution in the two theories. In Dewey, an overall continuity relationship derives from ontological monism: "Mind when it evolves (…) should use the structures which are biological adaptations of organism and environment as its own and its only organs" (Dewey, 1925/1958, p. 211). Body-mind continuity underpins his functionalist psychology according to which rational processes serve, like organic processes, the functional adjustment of the organism and must be physically conceived as their natural outgrowth: "There is no breach of continuity between operations of inquiry and biological operations and physical operations (…) rational operations grow out of organic activities" (Dewey, 1938, p. 19).

On the contrary, Vygotsky builds all of his psychology on the basis of a rupture in the relationship between higher human functions' evolution and biological evolution. This rupture refers to a qualitative change which occurred at a given stage of animal development and which represented a form of discontinuity, a "leap" at the source of a new property "that could not be mechanically reduced to more simple phenomena". According to Vygotsky, this should not lead to seeing the mind as something added to the brain processes, or identified with them, but to considering that mental processes "form an inseparable part of more complex wholes" (Vygotsky, 1930/1997). The qualitative leap marked by human evolution underpins the idea that the use of artificial signs as tools of thought is at the source of a radically new form of intellectual development, specific to human beings: "The use of auxiliary devices, the transition to mediated activity radically reconstructs the whole mental operation" (Vygotsky, 1931/1997, p. 63). In the same way, Vygotsky explains that the later stage (of the development of inner speech and verbal thought) is not a simple continuation of the earlier, but that "*The nature of the development itself changes*, from biological to sociohistorical. Verbal thought is not an innate, natural form of behavior, but is determined by a historico-cultural process and has specific properties and laws that cannot be found in the natural forms of

[9] As Wertsch (1985) points out, the choice of a unit of analysis is so crucial for founding an approach in psychology that it has confronted every school of scientific psychology (we have sensations as units for associationism, figure-ground for Gestalt psychology, behavioral act for behaviorism etc.).

[10] See Bulle, 2018, 2019. On the profound misconceptions concerning Vygotsky's central theses see, for instance, Bakhurst, 2007; Clara, 2017; Gredler, 2012; Mikhailov, 2001; Miller, 2011; Toomela, 2000, 2015; Toomela & Valsiner, 2010; Veresov, 2010, Yasnitsky, van der Veer, & Ferrari, 2014; Yasnitsky & van der Veer, 2016.

[11] On causal powers, see especially Cartwright, 1999; Ellis, 2002.

[12] This is explained by the principle of natural continuity he supports (see below), according to which the cognitive derives from the non-cognitive (cf. Dewey, 1925/1958, p. 30).

thought and speech." (Vygotsky, 1934/1986, pp. 94-95).

The idea of continuity of human mind evolution on one hand, and the idea of rupture in such evolution, on the other hand, profoundly oppose the respective conceptions of Dewey and Vygotsky on thinking and mental causation which are displayed in the following.

4. The meaning of key concepts in Dewey's and Vygotsky's theories of mind

4.1. Signs and the meaning of meaning

The divergent interpretations of the relation of thought to biological evolution displayed above are reflected in the meaning allocated to signs and their relation to thought. For Dewey as for Vygotsky, signs have the quality of stimuli artificially created to activate connections in the brain and are, in this respect, the mediating instruments of meaning.[13] But meaning, mediated by signs, does not have the same function for the two thinkers.

In Dewey, meaning is externalized. It refers to relationships of things to other things, pointing to consequences: "Meanings are rules for using and interpreting things; interpretation being always an imputation of potentiality for some consequence" (Dewey, 1925/1958, p. 188). Therefore, the sign points to something that may come as a result of something else. Since a tool is used as a "means for consequences", language, as the "tool of tools", is a mediational device for indirectly referring to "sequential bonds in nature". Meaning is thus an imputation of consequences, and the sign an index of the latter. The function of the concept signified by the sign is not to represent any reality but to establish instrumental connections, that is, to denote the modification of experience it involves. Likewise, an idea is not "merely mental" but, as Max Hortkheimer (1947, p. 42), referring to pragmatism, puts it, "a scheme or a plan of action".

With Vygotsky, meaning is, on the contrary, internalized. The neurological effects of signs replace those of environmental stimuli by playing a different role from the latter. The conclusion of his masterpiece, *Thinking and Speech*, is devoted to this difference: With the word (the sign for a concept), thought reflects reality *by generalizing it*, so that it specifically involves mental forms of representations and activity. This generalization is inherent in his idea of meaning, and meaning itself inherent in what Vygotsky identifies with "intellectual consciousness". Hence Vygotsky's criticism of the tool metaphor beyond the simple instrumental analogy in Dewey, in one of the few passages where he refers to the philosopher: Tools as "devices for mastering the processes of nature" and language "as a device for social contact and communication" are conflated in "outward" activities whereas, on the contrary, the "sign is directed inward" as "a mean of internal activity directed toward mastering man himself" (Vygotsky, 1931/1997, p. 62).

4.2. Consciousness, mind, and psychology as science

The instrumental conception of meaning in Dewey gives consciousness phenomena a secondary status, while the representational conception in Vygotsky gives them a primary role.

"Conscious", Dewey writes, "is an adjective of some acts", "that phase of a system of meanings which at a given time is undergoing redirection, transitive transformation". Consciousness, as a resulting abstraction is just a mistaken inversion, the conversion of "an eventual function into an antecedent force or cause" (Dewey, 1925/1958, p. 233). Dewey's anti-dualistic stance leads him to exclude any split between the subjective mind and the objective world, and inspires in him an opposition to the inner conception of mind. In this framework, he develops a psychology based upon habits and focuses on "the objective conditions in which habits are formed and operate" because "'it thinks' is a truer psychological statement than 'I think.' Thoughts sprout and vegetate; ideas proliferate. They come from deep unconscious sources" (Dewey, 1922, p. 314). The American philosopher thus approved the advent of a new science of man, of which he saw the signs in "the movements in clinical, behavioristic and social (in its narrower sense) psychology" (Dewey, 1922, p. 324).

On the contrary, in Vygotsky "we have nothing 'from without,' for it is 'outside' for us precisely by virtue of the fact that we experience it, and it acquires meaning as such 'within.'" (Mikhailov, 2001, p. 19). In accordance with the generalizing role of concepts called to consciousness by signs, consciousness is identified, in his later works, with a "dynamic, semantic system" (Zavershneva, 2014, p. 66). As a result, psychology problematized as a science of consciousness is based on the problem of its verbal, language-related nature, considered as the focal issue of all human psychology (Vygotsky, 1934/1986, Author's preface, p. lxi).

4.3. Will, intentionality and human personality

The two different theoretical frameworks developed respectively by Dewey and by Vygotsky consistently do not allocate the same role to the mind in action and, in this respect, to the meaning of the human will. In Dewey's case, the will, like consciousness, is not likely to be hypostasized. It reflects the orientation of action resulting from previous experience. In other words, it refers to the predispositions of the organism to environmental stimuli. From then on, it is identified with habit, which is functional, projective, formed for the attainment of certain consequences. In this sense, the idea of will does not involve any form of teleological causality, but refers to the organic mechanisms underlying action: "The feeling of the direction and end of various lines of behavior is in reality the feeling of habits working below direct consciousness" (Dewey, 1922, p. 32). The motive represents the constitutive impulse of a habit. It is instantiated externally and not internally, so that it does not exist before the act and reflects its functional or projective dimension. An educational consequence is the focus on the selection of appropriate stimuli, that is to say, given conditions, to guide habit formation: "We must work on the environment not merely on the hearts of men" (Dewey, 1922, p. 22).

The power of things over his behavior through stimuli is, in Vygotsky, used by the individual himself to control his own action. Vygotsky's psychology is heavily centered on the substitution of semiotic stimuli for environmental stimuli in the control of behavior. In this regard, it relies on the human capacity to manipulate these semiotic mediators. Intention, that Dewey defines as a predisposition to certain environmental stimuli, represents on the contrary, in Vygotsky's work, the individual's control of his own behavior, based on the mastery of semiotic tools of thought as substitutes for environmental stimuli, which is expressed by auto-stimulation: "A voluntary action begins only where one controls one's own behavior with the help of symbolic stimuli" (Vygotsky, 1930/1999, p. 36). The will is underpinned by the semiotic function of the mind and identified with an "intellect that has achieved a level of development such that it is turned toward itself" (Zavershneva, 2010, p. 29). Individuals have the ability to use the power that things have over their behavior for their own ends, to subject their own (mechanistic, involuntary) behavior to their own authority, so that "reactive action elicited and organized by man himself ceases being reactive and becomes goal-directed (Vygotsky, 1930/1999, p. 63). The voluntary process is thus rooted in the creation of this mechanism and not in its execution. Semiotic stimuli, socially constituted, are the Vygotskian keys to the enigma of human intentionality left, it must be said, largely unsolved. The psychologist evokes the inspiration he found in Spinoza on this subject but will not have the opportunity to complete the solution he had in mind. The latter involves a theory of emotions of which he

[13] For instance, referring to higher mental functions, Vygotsky (1930/1999, p. 40) writes "They are constructed on the basis of using stimuli-means (signs) and because of this, they have an indirect, mediated character. See also Dewey (1925/1958 "Nature and Communication" pp. 187–193).

could only write the first part, devoted to criticism of literature on the subject (cf. Vygotsky, 1930–1933/1999; Vygotsky, 1931/1997, chap. 12: "self-control"). In this respect, intention, or act of will, is defined as "a concept that has become an affect" (Zavershneva, 2010, p. 66). It thus represents a meaning animating the mind, or else, the tension of the latter towards an internal meaning, the affective or volitional relationship of the individual with the reality that this meaning expresses.

Vygotsky develops a similar idea in his analysis of children's play, the essential attribute of which, he explains, is "a rule that has become a desire. Spinoza's notion of 'an idea which has become a desire, a concept which has turned into a passion' finds its prototype in play" Vygotsky goes on to mention values and deep goals formation: "In this way a child's greatest achievements are possible in play, achievements that tomorrow will become her basic level of real action and morality" (Vygotsky, 1930-1933/1978, pp. 99–100). Significantly, Vygotsky locates our "true motives" not in the unconscious but in the "supra--consciousness" (Zavershneva, 2010, p. 70), not in organic processes but, we may say, in forms of "meta-conceptual" aspirations, which abstractly guide the meanings that animate our mind. The particular dynamics of human aspirations would thus be guided by meanings developed "from above" and not by organic processes determined "from below".

Dewey and Vygotsky's respective conceptions of the springs of human action are ultimately reflected in the meaning they give to the human personality. The latter, expressing the unity of the relationship of the individual to his action, is defined as "the interpenetration of habits" by Dewey (1922, p. 38) and, on the contrary, as a result of cultural development which underpins the "unity of behavior that is marked by the trait of mastery" by Vygotsky (1931/1997, p. 242).[14]

5. The antagonism of Dewey's and Vygotsky's theories on mental causation

5.1. Choice and mental causation

The crucial question of the present analysis can now be asked: What are, ultimately, the ways in which the respective theories of Dewey and Vygotsky understand mental causation, the subjective experience of human choice and, in short, beyond a sometimes ambiguous use of words, freedom? Two monisms are opposed here which, by their own limits, express the opacity of the mystery they are intended to solve.

For Dewey, a choice is at stake when a situation appears indeterminate, unresolved, so that deliberation ensues. Deliberation denotes a suspension of action dependent upon established habits, and the search for a way to act through memory and imagination. In this process, memory and imagination involve indirect stimuli to act: When the consequences of an intended action supply an adequate stimulus, a definitive action is released. Mental states in Dewey have thus a causal role without being causally efficient. This is what happens with the functional reduction proposed by Kim (1998) mentioned above. The imagination here is a stimulus-giving mental process that is not subject to individual control as such. On the contrary, it represents an indeterminate process of finding a solution mainly by experiences evoked in memory and therefore resulting from conditions experienced in the past (human beings "largely repeat in imagination schemes of overt animal action" Dewey, 1925/1958, p. 230). "What then is choice?" Dewey asks. "Simply hitting in imagination upon an object which furnishes an adequate stimulus to the recovery of overt action. Choice is made as soon as some habit, or some combination of elements of habits and impulse, finds a way fully open" (Dewey, 1922, p. 192). This form of control of action by the search of possibilities in imagination is, according to Dewey, the crux of our freedom. It is not based on any notion of will or of efficient causation of mental states but involves their functional causal role only, "the conversion of causal bonds, relations of succession" within nature "into a connection of means-consequence" (Dewey, 1925/1958, p. 367).

For Vygotsky, the semiotic activity of human thought, a consequence of its historical-cultural formation, is the source of a specific and original individual's power, which touches most closely on the question of mental causation. We have seen that, in terms of self-control, the individual has no other power than that of things over himself, which he uses indirectly through semiotic stimuli. When, in Dewey's case, the stimulus emerges from the imagination to engender choice, in Vygotsky's case, it is administered by human beings themselves for their own control. But how may we understand auto-stimulation and self-mastery? How, according to him, do individuals focus on ideas, how do ideas follow one another, and what role do conscious states play in semiotic processes? Knowing that the conviction that man is free overwhelms his works (Zavershneva, 2010, p. 70), what is the meaning of this freedom, the ultimate meaning, in his repeated words, of the mastery of our own behavior with the use of signs? On these issues, Vygotsky assumes the existence of psychological connections of a new type appearing as a result of the inner use of semiotic means. Especially, we have seen that he assumes that the psychic life, through these semiotic means, has an intellectual and affective or volitional dynamic that is specifically human and accounts for the working of culture within the process of the individual's mental activity (Vygotsky, 1931/1997). The cognizant, or else semantic, consciousness would allow a mastery of action by its subordination to meaningful aim.

We find in *Thought and Language* Vygosky's specific keys to the interrelated issues of mastery, voluntary action and consciousness in connection with the development of semantic means of understanding. These means are especially based on scientific or else, postulated concepts. The characteristic property of scientific concepts is their organization into hierarchical systems of meanings, so that they express the generalized aspects of reality they point to and the logical relations of generality they entertain with other concepts, that is, within the system they constitute. It is, according to Vygotsky (1934/1986, p. 171), the hierarchical structure of scientific concepts which underlies conscious awareness and mastery, the mental role allocated to meaning being specifically involved: "reflective consciousness comes to the child through the portals of scientific concepts." The semantic embedding of scientific concepts allows a logical and deliberate use of concepts accounting for voluntary thought and reflexive consciousness: "A concept can become subject to conscious and deliberate control only when it is a part of a system. If consciousness means generalization, generalization, in turn, means the formation of a superordinate concept that includes the given concept as a particular case" (Vygotsky, 1934/1986, pp. 171–172).

Vygotsky's theory of voluntary thought and mastery involves the recursive capacities of the human mind, which are enabled by the organization of conceptual structures into systems. A link here can be drawn with Michael Corballis (2011)'s argument that recursion – requiring especially the relatively wide human working memory – represents the demarcation criteria of human psychology from animal psychology. Human thought, given its specific recursive capacity, allows the internalization of meaningful semiotic systems which, in their turn, underlie human reflexive consciousness and thinking mastery.

5.2. The mind-body problem requalified: "Thought and habit" versus "Thinking and speech"

Finally, the opposition of the psychologies of Dewey and Vygotsky is expressed in their respective redefinitions of the mind-body problem.

[14] This conception can, to some extent, be compared to that of Max Weber, who in the field of sociology chose the subjective sense of (social) action as the basic unit of analysis. According to Weber, personality is expressed all the better as the action is controlled through meaning mastery, that is, as it becomes intentional. So that free action represents the purest intentional action, when "personality" is confirmed as finding its "essence" in its constant inner relation to definite ultimate "values" and life "meanings" (Weber 1922/1974).

The resolution, or the overcoming, of such a problem constitutes for both of them the crucial criterion of their conceptions' accuracy, by virtue of their common scientific ambition involving the rejection of ontological dualism. But, in line with their opposing representations of human evolutionary dynamics, this overcoming is based on the instrument of continuity represented by habit in Dewey's work and on the instrument of rupture represented by language in Vygotsky's work.

Solving, or overcoming, the mind-body problem is so central to Dewey that it is constitutive of his naturalism and underpins his constant critique of established forms of dualisms, theory versus practice, life versus nature, knowing versus doing, purpose versus mechanism, subject versus object, etc. Dewey considers mind-body duality to be a false problem, rooted in the faulty separation of thought and habit. Thought processes are understood in the light of their functional role which meets the continuity principle underlying his monism: "The distinction between physical, psycho-physical, and mental is thus one of levels of increasing complexity and intimacy of interaction among natural events". In this regard, body and mind represent characters or properties, not substances or entities: "'mind' refers to the characters and consequences which are differential indicative of features which emerge when 'body' is engaged in a wider, more complex and interdependent situation". Dewey's attempt to contribute to what had "come to be called an 'emergent' theory of mind" (Dewey, 1925/1958, p. 261–285) is consistently correlated to an evacuation of any notion of causal efficiency or mental causation above the functional causal role of mind displayed previously.

Vygotsky, for his part, holds the mind-body problem as being at the heart of the crisis in psychology, its split between an explanatory-nomothetic or natural-scientific, reductionist psychology, and an understanding, teleological, or else, descriptive psychology without any real scientific anchoring. His work reveals his constant concern for opening up a new path that overcomes such a crisis: "In the final analysis, the question is: Does what is higher in man, his free and rational will and his control over his passions, allow a natural explanation that does not reduce the higher to the lower, the rational to the automatic, the free to the mechanical, but preserves all the meaning of this higher aspect of our mental life in its fullness? (…) In other words, the question is: Is scientific knowledge of higher forms of conscious activity possible or impossible?" (Vygotsky, 1930-1933/1999, p. 173). In response, Vygotsky rejects the mind-body problem understood in terms of brain versus psyche and translates it in terms of thinking versus speech. The latter opposition is not to be put in parallel with the former. It refers to the methodological approach of scientific conceptualization he defines in the introduction to *Thinking and Speech* as the decomposition of a whole into basic units. These cannot be analyzed any further and retain the fundamental properties of the whole (such as the decomposition of water into water molecules). Such decomposition is opposed to the reduction of a whole into elements (for instance, water into oxygen and hydrogen atoms, O and H_2). Vygotsky's analytical method evacuates any idea of levels of emergence, as conveyed by the conception of the appearance of mind properties from brain functioning. The question of the relationship between the mind and the brain appears to him as a nonsense prefabricated by a stratified conception of the sciences (Zavershneva, 2010, pp. 94–95). On these bases, the central problem that Vygotsky identifies is that of the internal relationship of unity between thought and its material support, language, through the study of their living union in the basic unit that *the word meaning* represents.[15] Besides, his method enables him to consider the unity of affective and intellectual processes, that is, of the emotional and of the reflexive, verbal dimension of thought. The unity at stake represents a dynamic system of meaning identified, as we have seen, with the notion of consciousness (Vygotsky, 1934/1986, chap. 1). The method of decomposition into basic units allows to understand, against any artificial reduction, the reciprocal transitions and inner connections between the internalized, the thought, and the externalized, the language, in the unity of the dynamic semantic system of consciousness. In this analytical framework, mental causation does not express the action of the mind on the brain, but the driving role of mental states in mind. Such a driving role, it is defended here, is inherent in Vygotsky's theory of thought. It is assumed by the fact that the units of explanation are living parts of the whole (conceived as a dynamic semantic system) because the meaning they convey is reflected in consciousness. This driving role is ultimately expressed by the Vygotskian idea that the will is a concept that has become an affect, that is, conscious intellectual states develop an affective and volitional drive through the understanding of meaning.

Therefore, according to Vygotsky, based on word meaning as the basic unit of verbal thought, the analytical approach in psychology enables us to discover the movement that goes from a person's needs and impulses to a certain direction of his or her thought, and the reverse process: "the influence of thought on affect and volition" (Vygotsky, 1934/1986, p. 10). Meaning, by associating intellect and affect, thus appears to justify the notion of mental causation, involving the proper animation of thought by its conscious properties, the reflexive liberation represented by conceptual meanings[16] associated to the power of action of affect.

In short, the hypothesis put forward here is that Vygotsky was looking for a causal power and not a mere causal role of consciousness as is the case with Dewey. The notion of causal power is revealed by the active qualities conferred on the intellectual and volitional role of the word sense as reflected in conscious thought. *Thinking and Speech* (Vygotsky, 1934/1986, p. 256) ends with the statement that "A word relates to consciousness as a living cell relates to the whole organism, as an atom relates to the universe. A word is a microcosm of human consciousness". The work was surely only at an introductory stage,[17] but its particularly innovative character should not be underestimated and assimilated to the now classic and rehashed ways of Dewey's biological naturalism.

6. Conclusion

In conclusion, Dewey's theory of thinking cannot be properly understood without his rejection of genuine mental causation, which goes along with his rejection of the notion of knowledge as conceptual representation. Through his "behaviorist theory of thinking and knowing" (Dewey, 1916, p. 332), the philosopher of pragmatism was looking for the continuity of the natural experience through a "world without withins" (Garrison, 2001; Tiles, 1995), so that he did not account for the subjective experience of thought control, or the specific processes of human reflection. In particular, the role he confers on imagination,

[15] Vygotsky (1934/1986, pp. 244–245) precises that the semantic peculiarities of inner speech involve the preponderance of the sense of the word – referring to its contextual use - over its meaning – representing the most stable "zone of sense". They thus underly the very dynamics of the word meaning: "This enrichment of words by the sense they gain from the context is the fundamental law of the dynamics of word meanings."

[16] This liberation is, for instance, notably expressed in some notes from Vygotsky's personal archives: "Why do concepts liberate action? 2 problems: 1) rel[*a*]t[io]nship between thinking and the real plane. 2) shifts in the pl[*a*]ne of thinking. In thinking-departure from field [forces]. 2. Why does thinking become increasingly important with age Concepts-Real rel[*a*]t[io]nships (numbers)-rel[*a*]t[io]nships between systems. Main thing in thinking-freedom: ich kann was ich will.10 From thinking it is transposed into action. But freedom is born in thought. In thinking-escape from the vector field" (Zavershneva, 2010, p. 46).

[17] Vygotsky (1934/1986, p. lxi) closes his preface to *Thinking and Speech* by writing: "We feel that in uncovering the problem of thought and speech as the focal issue of human psychology, we have made an essential contribution to progress. Our findings point the way to a new theory of consciousness, which is barely touched upon at the end of this book."

which refers to processes that are not initiated by the conscious mind, does not provide a convincing explanation for the complex and innovative solutions that can be achieved by human thought.

It has been defended here that, on the contrary, Vygotsky's theory cannot be understood without its support of mental causation as part of an approach to human will and intentionality that nevertheless has remained unfinished. Vygotsky aimed in a consistent way at refounding psychology as a science of consciousness and, in this perspective, proposed as its basic units active principles endowed with the properties of consciousness. His methodological stance counters any confusion of epistemology with ontology which identifies the subjective to the non-material, and in fact operates a regression towards dualism (Toassa, 2019, p. 6).

These fundamental differences between Dewey and Vygotsky's conceptions of human intellectual development, beyond their common opposition to ontological dualism, their shared (non-radical) epistemological constructivism and the central role they both accord to the social dimension of cognitive activity, open up antinomic avenues of research in developmental psychology. The forms of conflation these conceptions undergo in the dominant educational thought, via backward-looking activity theories, can only result in an impoverishment of the scientific imagination.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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