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Educating "Modern Mind" in the Light of the Evolution of Western Educational Thought

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Abstract: »Die Erziehung zu ‚modernem Denken‘ im Kontext der Entwicklung westlicher Bildungsgedanken«. My thesis is that liberal and progressive education models respectively refer to dual and unitary conceptions of intellectual development, and that these differences account for their pedagogical antagonisms. I test the validity of this argument by using it to account for the evolution of Western pedagogy and the fate of liberal and progressive education. I introduce the dualist epistemological premises of the major educational models that have followed one after the other in the history of Western education. Then, I account for the impact of classical empiricism, and later evolutionary doctrines, on the discredit of liberal education and the emergence of educational progressivism. Progressive educational conceptions are rooted in a representation of humankind developed under the influence of the Darwinian revolution. They justify an adaptive model of the mind within the framework of a functionalist psychology. According to alternative currents of modern educational thought, the use of auxiliary means of thought marks a rupture with human biological development. These currents underpin a dual conception of human reason according to which rational or theoretical understanding is a *sui generis* dimension of thought. They offer support for a modernized version of liberal education.

Keywords: Liberal education, progressive education, epistemology, intellectual development, curriculum.

1. Introduction: The Dilemma of Modern Education

The major interpretations of educational evolution which, following the founding works of Max Weber (1995 [1922]), connected types of political domination and dominant educational models, tended to emphasize the functional coherence between educational evolution and the democratization of social life. The contrast between liberal education and progressive education was usually explained in terms of changing sources of power in society. The present analysis, while relying on such changes, highlights the problems of interpretation of

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modern mind's educational needs taking into account the political role of schooling in contemporary democratic societies. Decision-making power must be developed, 'freed', by education. However, the risk is that on the contrary it would be alienated by the desire of the temporary educational and political actors to win over and control public opinion. Educational change could then take an inappropriate direction regarding the fundamental values and needs it is supposed to serve. As Emile Durkheim (1990 [1938]) shows in his analysis of the evolution of educational thought in France, the educational model which characterizes a given period depends on interconnected epistemological and moral conceptions, and on the struggle to control the education of the new generations. This is why I intend to put into question the beliefs which pervade modern educational thought while examining the intellectual foundations of its dominant principles.

2. Progressive Education *versus* Liberal Education: Outline of a Fundamental Opposition

2.1 Ideal Types that Reveal Interpretative Systems

Initially, I propose to characterize types of liberal and progressive education by digging up the features of the various forms they have had in the past, or have today and share in a general way, without claiming that the educational types described have ever been fully achieved. Ideal type portraits constituted in this way offer an essentially schematic representation of them, with the accent on one perspective in particular: The characteristics that tend to bring into opposition the educational types in question.¹ These characteristics serve the exposition of my argument, according to which, beyond the varied social and cultural contexts that each of the educational types in question developed in, their trans-situational differences reveal a fundamental philosophical divergence. This philosophical premise sheds light on the intellectual frameworks which underpin social actors' reasoning and value judgments in educational matters. Thus, the ideal types presented are not in themselves normative systems, but they express profound conceptions that structure individual interpretative systems. The impact of such conceptions on institutions is immense. In this respect, I

¹ The characterization of liberal educational models owes a lot to Durkheim's deep analysis set out in *L'Évolution pédagogique en France* (Durkheim 1990 [1938]), as well as other reference works and texts on the subject (Hadot [1984]; Hirst 1974 [1965], 1974 [1967], 2005; Kimball, 1986; Schwab 1949). The characterization of progressive educational models is based on official reports, articles and works produced in the Western societies regarding educational policies and pedagogical principles (see Bulle 2009) and on historical analyses (see for instance, Cremin 1962; Krug 1964).

share the point of view of the American epistemologist, Filmer Northrop, which Durkheim's analysis of pedagogical evolution in France illustrates particularly well. According to Northrop (1966 [1946], 216), the historical development of social institutions cannot be understood without a clear idea of the "philosophical ideology" that underlies social phenomena observed at a given stage in the historical process. Although ideational, this dimension is founded on reason and destined to have, during the course of individual lives and those of institutions, greater or lesser forms of rational revision and transformation.

From a first analysis, in order to specify what differentiates liberal and progressive educational models, I distinguish theoretical and empirical – or experiential – forms of intellectual learning. Let us consider that thought develops between two poles, from natural reasoning to formal reasoning. We will see that each of the two main educational types that interest us here develops toward one of these two poles. Liberal education is theoretically-oriented and progressive education is experience-oriented. The tension created by their opposition brings ideas of conveying knowledge, conceptual understanding, mental discipline, subject-structured curriculum, theoretical frameworks and problems into confrontation with ideas of experience, learning by doing, "situated", "cooperative" learning, and cross-curricular problems.

2.2 The Primacy of Reason in Liberal Education

Liberal education in the philosophical sense is defined by its ends, the intellect and the development of the potential to understand – "liberal education aims at understanding" (Hirst 1974 [1965], 36; Schwab 1949) – opening access to major knowledge and the great works of humankind. Giving supreme importance to the development of capacities of thought, it relies on the teaching of those kinds of knowledge which are deemed to be most appropriate for achieving these goals. This is so because one of its fundamental premises refers to the existence of a form of "harmony" or even "logical relationship" between knowledge and the mind (Hirst 1974 [1965], 29). Liberal education models – associated in the past with the teaching of liberal arts, and also scientific and literary humanism – link the learning of various cultural and intellectual disciplines to general thought development, human intrinsic values and, especially, concern for the idea of truth. Knowledge is not sought for its own sake but for its qualities in relation to cultivating the mind and enhancing moral virtues. For example, classical languages are valued for their propensity to develop quality of speech and rectitude of character; mathematics, rigor of mind and love of truth. In every field, comprehensive knowledge is taught because it underpins intelligent understanding and reflexive thought. The dominant educational goals aimed at rational faculties, intuitive mind and will, which liberal educational models associated with abilities, responsibilities, and the esteem of future social and intellectual elites.

Moreover, liberal education supposes an asymmetry in the relationship between the teacher and the student. The former represents an accomplished person, who is more advanced in mastering knowledge than the latter. The ideal is that the teacher should be a veritable ‘master’ who dominates his or her subject in order to convey its elementary structures that clarify the relationships between concepts and between specific areas of knowledge. Forms of liberal education focus on theoretical learning – firstly aiming at the progressive and structured development of concepts and problems – and value individual fulfilments.

2.3 The Primacy of Experience in Progressive Education

The single most important document that attempts to define the view of progressive educators can be found in a publication by the Progressive Education Association in 1918, which lists among the principles: (1) freedom to develop naturally; (2) interest, the motive of all work; (3) the teacher, a guide, not a taskmaster; (4) scientific study of pupil development (Hayes 2006, chap. XIII). Educational progressivism thus touches on a natural dynamic of human development, involving interests that are supposed to be fuelled through contact with the world and its activities. One of its fundamental premises supports the idea of continuity between nature and mind.

In prior as in contemporary forms of progressive education – examples of which are mostly educational constructivism, socio-constructivism, or competence-based approaches, which may more or less overlap – the focus is on the individual’s capacity to resolve problems in concrete situations of life. Knowledge is supposed to be meaningfully linked to the specific situations of learning and acquired through experience, on the basis of the procedures of various disciplines (we speak today of “learning to learn”). Teaching focuses on methods, because knowledge as such is not conferred any educational value and acquires the status of mere resource or ‘content’, that is, information. The crux of the matter is the activation of its functional role. Not only are the subjects of Latin, algebra, and history of literature part of an intellectual culture whose social function is outdated, it is also supposed that one cannot reinvest formal or theoretical exercises outside school.

Progressive education assigns the teacher the role of fostering learning situations aimed at allowing students to develop their knowledge and competencies by resolving the concrete problems they have been set. The teacher tends to be in a position of symmetry in relation to the student. The ideal is that curricula would not be defined by discipline but by interdisciplinary problems; the function of knowledge being to offer tools for resolving such problems. Forms of progressive education focus on empirical learning, firstly aiming at the development of methods and reasoning strategies, and value the social development of students.

2.4 Dual versus Unitary Conceptions of the Human Mind

We have seen that liberal education models imply an idea of harmony between theoretical knowledge and the mind. This assumption can, in the first analysis, be associated with the metaphysical problem of dualism. Body-mind dualism has tended to account for specific faculties of human intellect, linked to evidence of the reflexive consciousness and the logical ability of conceptual thought. It has established a natural relationship, implied by immaterial qualities, between knowledge and the mind. Conversely, progressive models of education are based on the idea of continuity of the mind with nature and, more specifically, continuity of the development of thought from elementary and intuitive forms toward superior and reflexive forms. This idea not only renders them foreign to metaphysical dualism but also, more generally, opposes them to any dual conception of intellectual development – involving that the nature of the development itself changes.

Therefore, the metaphysical question of dualism does not completely account for the differential conceptions of the nature of the mind, which underpin the two educational ideal types. My thesis is that liberal and progressive education models respectively refer to dual and unitary conceptions of intellectual development, and that these differences account for their pedagogical antagonisms as described by the constituted ideal types. These premises have taken on a deep moral meaning that has justified the role of the educative models at stake in the evolution of educational thought in the West. The dual conception was, in an early form, centered on the human mind and rational faculties as an expression of the divine. The unitary conception is centered on society as shaping human experience.

I propose to test the validity of this argument by using it to account for the evolution of Western pedagogy and the fate of forms of liberal and progressive education. To begin with, I introduce the dualist epistemological premises of the major educational models that have followed one after the other in the history of Western education. I then account for the impact of classical empiricism, and later evolutionary doctrines, on the discredit of liberal education and the emergence of educational progressivism. Progressive educational conceptions are rooted in a representation of humankind developed under the influence of the Darwinian revolution. I show that they justify a unitary model of the mind within the framework of a functionalist psychology that studies the organism as one whole evolving while adapting to its environment. Finally, I evoke alternative currents of modern educational thought, according to which the use of auxiliary means of thought marks a rupture with human biological development. These currents support, in contrast with the functionalist legacy of educational progressivism, a dual conception of human reason according to which rational or theoretical understanding involves a *sui generis* dimension of

thought. They invite us to support a modernized version of liberal education founded on a dual constructivism.

3. Western Educational Evolution and Rational Activity

3.1 The Dualistic Conception of the Human Being and the Foundations of Western Education

The major intellectual education models that succeeded one another in the West responded to ideals of intellectual and moral development that are driven by the dominant epistemology of their times. Up until the 18th century, they relied on a metaphysical duality existing between the mind and the natural world. This duality led to a subordination of human intellectual development to learning methods that broke away from natural or spontaneous growth, the latter then representing a rather passive aspect of human experience.

In Plato's writings, the possibility of knowledge is explained by the immaterial substance of the soul, similar to that of the immutable world of Ideas or intelligible Forms. These Forms are only imperfectly represented in that which is given in immediate observation, which pertains to the world of sensation, the world of becoming, which is perpetually changing. The goal of education, as defined for a would-be philosopher-king, is intellectual development – which is buttressed by the study of arithmetic, geometry, astronomy and music (Platon, *The Republic*, Book VII). The curriculum aims at preparing the student to engage in dialectic, considered as the science of intelligible Forms and thus as a method of searching for truth, which in turn opens up access to knowledge of the Good. The conversion of the soul, toward which Platonic education tends, represents a fully active movement, freeing humankind from traditional knowledge, from prejudice and opinion, by his training in intellectual inquiry. The development of the mind, conceived of as a return of the mind toward itself, opens to an aptitude for reminiscence. We could interpret this today as preparation for the elaboration and handling of conceptual systems that are means of establishing logical connections between ideas.²

² In the philosophical schools of Late Antiquity, teaching rested on the study of disciplines that served as preparatory instruction leading to philosophical studies, based, in particular, on exercises carried out by the student under the teacher's direction. This *askesis*, a voluntary discipline of the mind that thrives on the principles of a science through exercise, was intended to create in the subject a fundamental disposition – ability, virtue (Hadot 2005 [1984]; Hoffmann 2005). The cycle of seven liberal disciplines – associated with the medieval trivium (grammar, rhetoric and dialectics) and quadrivium (music, geometry, astronomy and arithmetics) – was only set up tardily on in the framework of Neo-Platonic philosophy. The seven liberal arts appear as a closed study cycle in *De Ordine* (book II) by Saint Augustine, which was inspired by Plato's ideas. In it, he sets out the order to be followed during

This was also the ideal for the training of minds that was endorsed by Christian morality. Durkheim remarks that the thinkers of Antiquity, up to the time of Socrates, had begun by turning their attention to the physical world. But Greek reflection was brought to bear first upon the world because the world was the location of divinity, while the human being represented profane values without importance in themselves. Christianity reversed this relationship. For Christianity, it is the mind, it is the human consciousness that is a sacred and incomparable thing: For the soul, the principle of our interior life, emanates directly from the divinity (Durkheim 1990 [1938], 322).

From the embryonic forms of the school institution during the Carolingian Renaissance, to the eve of the French Revolution, pedagogy as it developed was infused with the aim of developing the mind. It represented a moral project founded on an understanding of holy texts. It was the mind that brought humankind closer to the divine, so it was still the mind-body dualism that was at the basis of the pedagogical models developed by Christianity. Grammar during the Carolingian Renaissance, scholastic dialectic and the literary rhetoric of classical humanism aimed in the same direction: human consciousness, the training of thought and expression, and the development of basic powers of the mind.

A lot was said, especially by John Dewey, of the links between the faulty ontological dualism of the human mind and body and “spectator”, receptive theories of knowledge. But Durkheim’s epistemological account reveals that this dualism legitimized the teaching of liberal arts because this teaching was centered on the internal and fully active intellectual role of the mind. In this regard, the ontological dualism cannot be associated to the knowing subjects’ passivity, but accounts for the particular logical and theoretical form that was attributed to their activity.

3.2 Educating the Human Soul

Durkheim explains that of the three disciplines that made up general instruction and constituted the trivium at the time of the Carolingian Renaissance, grammar held a dominant position, above rhetoric and dialectics. Grammar represented science par excellence, because grammatical formalism was a pathway to the understanding of sacred texts. Scholasticism substituted dialectical formalism for grammatical formalism as a dominant educational ideal. This change represented a development in intellectual needs, as these were perceived in relation to the search for truth. There was a passage from the analysis of the expression of thought to the analysis of its very form – that is to say, its logical development. This shift was motivated by the need to understand and

study, based on the idea of an ontological affinity between Reason and intelligible truths (Hadot 2005 [1984], chap. IV).

justify Christian teachings. And this need itself, as well as the importance attached thereafter to training in logic, and most particularly in Aristotelian dialectic, was linked to then-dominant epistemological conceptions. Aristotle's dialectic is not intended to reach the essence of things as Plato's does, but aims at their rational representation. Nature, when it was the object of study, was studied through books, because the knowledge about it stemmed from the thought of authorized authors. Aristotle's dialectic thus opened a path to knowledge through the mastery of argumentation. In this regard, all the intellectual activity of the Middle Ages was initially aimed at the construction of a science that would strengthen and explicate dogma: The pagan dialectic was no longer something external and foreign to moral and religious education; it was the preparation for these. Perhaps humankind has never had, Durkheim notes, a higher idea of the moral value of education (Durkheim 1990 [1938], 193).

During the Renaissance, the desire to educate the members of a polite society, in the eyes of which the methods of the Faculty of Arts appeared excessively rude, led to a complete and, in a sense, destructive rejection of scholastic methods of instruction. This evolution was still within the framework of dualist thought, which no longer sought the truth in the logical articulation of language, but in a more direct rapport between the language and the soul. According to Erasmus, the source of truth, in important domains such as morality, community life and humankind's relationship with God, precedes demonstration. It is therefore internalized in order to express an essential link between humankind and transcendence. Speech is its instrument, just as it is the cement of human communities; it is the reflection of the soul, and the means "of touching the heart and establishing a soul to soul agreement" (Chomarat 1987, 33). The educational model defended by Erasmus aspired to infuse intellectual and moral qualities, based on the arts of speaking and writing, from the study of classical texts. The latter were supposed to train the mind, reveal human truths and offer examples of healthy natural virtues. It was a matter of producing a literary explication, which might draw on human experience, involving style and forms of literary criticism. Erasmus' model, which was based on the study of refined Greek and Latin civilization, answered the educational needs of the times. But, as Durkheim shows, classical humanism quickly became an instrument for Christian education in the hands of the Jesuits who succeeded, by the achievement of their students, in dominating the education of young people, imposing their model upon universities. Instruction, upon completion of what was called "grammar school", from the sixth form to the rhetoric course (11th grade), was devoted to "belles-lettres", that is to say the study of ancient languages and literature, with their pagan mentality removed. Through a continuous discipline of activity: versions, themes, compositions, explication of texts and many and varied tasks, ancient languages were thought to educate not only the mind, but also the will.

4. Classical Empiricism and the Critics of Theoretical Learning

4.1 The Rupture in Western Educational Thought

Compared analysis of major educative models that have succeeded in the West under Christian influence, shows that the knowledge taught and the associated exercises have always been intended to increase the students' abilities to approach the truth, to train the student's mind in connection with the dominant epistemological assumptions. Teaching aimed at liberating them from external kinds of subjection, by participating in the profound aspects of human nature. This is why, on the basis of philosophical conceptions which shared dualistic premises, the teaching of theoretical knowledge involved the most genuine natural activity of the human mind.

This leads us to pose a central question for our analysis: Why is it that nowadays students' activity is in conflict with academic learning – implying orderly frameworks of knowledge – and formal exercises? More precisely, why is the development of the mind, the increase in the capacity to learn and discover, today conceived of as a process that must rely on the student's own experience, theoretical knowledge playing a secondary, informative role? According to the assumptions of the present research, the answer to this question involves the opposition between dual and unitary sources of the development of mind, in connection with politico-cultural changes.

4.2 The Fall of Metaphysical Dualism

The 18th century represented a turning point, marked by a change of approaches in epistemology. Any transcendent mediation between the mind and the world was rejected, following in the footsteps of Lockean empiricism in particular. But John Locke, while rooting knowledge in sensation, distinguished, like Descartes (1908 [1641]), two types of substances. The mental substance held the mind's intellectual and spiritual faculties and was the source of conscious sensations caused by the action of material substances. His dualism led the English philosopher to associate an empirical theory of knowledge with a conception of mental training that, in a specific sense, continued the idea of mental discipline inherited from classical Greece. Locke (1979 [1689], I.1.2) thought that "the souls of men" do not bring into the world with them any ideas but "inherent faculties" which could be strengthened by education. Especially, Locke mentioned mathematics as "a way to settle in the mind the habit of reasoning closely and in train" and, to that extent, as a viable alternative to scholastic logic. "Men," Locke wrote, "having got the way of reasoning which that study brings the mind to (...) might be able to transfer it to other parts of

knowledge” (Locke 1706, section 7). On these bases, the philosopher’s respected authority tended to be used for justifying practices educators deemed desirable – Locke was considered as the “arch representative”, if not the founder, of formal discipline – but this was not based on a correct interpretation of his writings.³

The Lockean theory of ideas based on associated simple ideas in fact, as Northrop (1946, 115-6) explains, brought an end to the dualism of substances. If consciousness is made up of the association of perceived qualities and their sequences, then it can be argued either that material substances are not necessary to justify sensorial impressions and their associations, and therefore do not exist, or that only particular sensed qualities and their transitory associations exist, minds and material objects being nothing other than names for such associations. Hence the philosophies of George Berkeley on the one hand, and of David Hume on the other. Hence, also, the substitution of faculty psychology by association psychology.

4.3 The Fall of Liberal Education

British empiricists, by virtue of the role given to sensory experience in the formation of thought, accused the mind-body dualism. The importance of these epistemological developments for the understanding of modern critiques of theoretical learning is emphasized by the historian of liberal education, Bruce Kimball. Kimball (1986) notes in particular that usefulness (if we do not conceive of ‘useful’ in its narrow sense, meaning profit-seeking or money-making) became an important issue in regard to liberal education only after the empiricism of Locke and, we must add, the development of association psychology by his successors.⁴ A manifestation of this change appears in the reproach to humanities made by the positivist philosopher Alexander Bain, in his book *The Science of Education*, published in 1879, in which he said they provoke in the mind the habit of servitude. Reacting to such a reproach, the education historian, Gabriel Compayré, noted the reversal of thought by which liberal studies *par excellence* became a school of intellectual servitude. Compayré explained this turnaround by the legacy of Lockean empiricism and the rejection of any independence, any life of its own, of the mind, by a psychology that placed no intermediate between the facts of consciousness and ‘brain organs’: “Hence”, wrote Compayré (1886, 480), “a reduction, an inevitable lessening of the scope of education. There is only to let nature take its course and fill the vase that it itself takes care to build” (Compayré 1886, 480).

³ Hodge 1911; Kolesnik 1958, 92-9. The hypotheses of the faculty theory in their modern form, were developed by Christian Wolff (Klemm 1914).

⁴ Hume (2000 [1739], 1.3.9) sees education as indoctrination: the transmission of opinions and notions, which are transformed into beliefs by habits of mind.

In contrast, beyond all the historical meanings of liberal education Kimball (1986) observed, which apparently led to it being distinguished from all forms of training to acquire special, professional, career, vocational, technical or mechanical skills – by the leisure time required of its students, by the breadth of its curriculum, by the uncoerced motives required for its study, “most of all” liberal education was distinguished “by its purported devotion to the mind or soul to the exclusion of the sensory and material world” (Kimball 1986, 587).

The abandonment of spiritualist dualism and of fixist representations of truth, which were associated with pre-democratic worlds, led to found the modern education project on new conceptions of the sources of liberty and moral progress. A psychology developed that relied on Lockean empiricism, which held that individuals, born free from innate ideas and dispositions, was shaped by their environment. From then it was possible to imagine that “man’s institutional and intellectual life could be brought into complete harmony with the laws of nature” (Noble 1958, 8).

5. Evolutionism and Educational Progressivism

5.1 Society as Shaping Human Experience

An interpretation of life based on relationships between beings emerges from conceptions centered on the idea of evolution that dominated the 19th century – have they followed the path opened by biology or, in the wake of Marx and Engels, reversed Hegelian idealism. This interpretation, linked to what we used to name “historicism”, describe the element of a set as involved in an overall process of development. The principles that were previously thought to derive from specifically human characteristics, whether in morals, religion or art, appeared then as the results of historical processes, of a gradual transformation of ways of acting and thinking. With the biological model of evolution, relationships become constitutive of the nature of things in the very movement of adaptation of beings to their environment.

Following these developments of scientific and philosophical thought, many thinkers concerned with society and history believed that the discoveries derived from evolutionary doctrines could provide a scientific framework for solving social problems. The idea of progress of the human species that was associated with these doctrines ran through the entire 19th century. The social and moral progress that in the preceding century was expected from Reason or from the diffusion of the ideas of Enlightenment was now expected from progress in the social character of human beings. It was expected to come from the influence of circumstances, of the environment, upon action – i.e. upon the transformation of human nature. Human beings appeared as malleable products of social relationships (Mandelbaum 1971). To take up a theme dear to Au-

guste Comte, in this movement humanity is not so much described through man, as man through humanity, that is, in particular, all social relationships taken as a whole. A major reversal of social and human ontology results from these representations. They involved the disappearance of the idea of human nature centered on rational faculties and moral virtues and justified the representation of the world as essentially non-dualist.

Evolutionist doctrines approached the question of human nature taking biology as their starting point. The types of learning which once made possible the understanding and discussion of canonical texts no longer agreed with the moral education of the subject from a biological point of view. The aim of development, the superior ideal which animated nature, was life itself. It was thus the progress of life that the development of the human being had to serve from then on. As Henry Commager wrote:

Morality itself was furnished, for the first time, with a scientific foundation. Reason and intuition had wrestled vainly with the problem of evil in a universe logically or ideally good; evolution made the problem irrelevant, for evil, which was now seen to be but a maladjustment to nature, was destined inevitably to disappear in that larger harmony which was good (Commager 1950, 87).

5.2 Modern Education and Formation of Democratic Character

These ideas captured the *Zeitgeist* inasmuch as the image of human development they fostered seemed to give meaning to a democratic model of the social bond, based on horizontal and intra-generational relationships (McDonald 1964). The conception of the human being associated with them was linked to a social project. Most texts written by modern educators, more accurately identified as progressive, agreed on these aspects from the standpoint of purposes and goals, as well as in respect of methods. By and large, they grouped together around the biological model of development and its monistic naturalism, which in their view account for the formation of human personality as well as human thought (Bulle 2009). This model justified their discard of bookish learning, lectures, frontal teaching and explicit instruction which conveyed structures, notions and concepts heterogeneous to the supposed natural modes of learning. Theoretical knowledge, which is necessarily conveyed verbally, appeared as mere factual content, assimilated to information, and thus rigid, without life, and unsuitable for stimulating students' engagement. Accordingly, these conceptions linked notions of intellectual and moral education with the education of the whole individual through experience, principally conceived as practical and social experience.

A "complete" life was opposed to a life of reason. "Living is the job I want to teach him" (Rousseau 1969 [1762]), wrote Jean-Jacques Rousseau, summing up in this manner his educative projects for Emile. *Émile, or On Education* had turned the Erasmus project – which exhorted educators to begin teaching chil-

dren as early as possible – upside down (Woodward 1904); Johann Pestalozzi (1995 [1801]) intended not to create “schools for writing, for learning the alphabet and the catechism,” but “schools for men”; the school created by Robert Owen at New Lanark was conceived as an institution for the formation of character. The reason given for the creation of academic ‘chairs of pedagogy’ in the late 19th century in France was that the professors might understand the art of stimulating minds quite well, but still be ignorant of the art of educating young people’s character (Brunetière 1885, 7). For Dewey (1917, 122), culture conceived of as the internal refinement of the mind was at cross-purposes with a socialized disposition; for Jean Piaget (1932), human moral development required, on the basis of biological reasons, that new and active educational methods be adopted.

5.3 The Rise of American Progressivism

The influence of scientific ideals, and especially of the prestige of evolutionary ideas, sparked off the extraordinary development of all areas of knowledge in the second half of the 19th century. This intellectual environment nourished the major progressive ideas in education – especially through the biological model of evolution. The early US progressive movement, which started in the 1890s in the United States in parallel with political progressivism, represented the effort undertaken at multiple levels in order to place schools at the service of social life, and for new generations to adapt to a society perceived as undergoing a rapid transformation. For the progressive educators this meant that the goals of the school should be re-centered on preparing students for life, on the basis of psychological and sociological research results. Schools had to abandon the idea that academic curricula could have a universal value; on the contrary, these curricula appeared as obstacles to social progress (Krug 1964, chap 12).

Ideas of environment and experience were becoming central in curricular reforms: The school had to become an institution “which provides environments, regulates them, and directs environmental forces towards a defined and conscious goal” (Bagley 1905, 164). The foundation of the new curriculum was “the child active with work”, who needed “better modes of behavior for his present experiences.” It was in the generation of these better modes of behavior that school subjects played a part (Kilpatrick 1929 [1926], 123-4). Beyond the many, sometimes contradictory, forms then taken on by the different currents that represented the progressive trend – around the needs and interests of the child, questions of so-called social efficiency, vocational training, or else the measuring of intelligence, etc. – these currents were united in their criticism of teaching methods centered on the transmission of knowledge of an academic nature.

According to Lawrence Cremin, if this revolution had a beginning, it was with the work of Herbert Spencer.⁵ Conceptions with regard to education, as expressed by Spencer, were derived from the biological model of adaptation on which his system was based. They put into play capacities for learning that were genetically acquired and naturally developed by individuals in the process of interaction with their environment:

In following the process of nature, neither individuals, nor nations ever arrive at the science *first*. (...) Children should be led to make their own investigations, and to draw their own inferences. They should be *told* as little as possible, and induced to *discover* as much as possible. Humanity has progressed solely by self-instruction (Spencer 1929 [1860], chap.2).

5.4 Knowing as an Adaptive Process

William James and Dewey only rejected the most mechanical aspects of Spencer's theory of the mind – seen as a passive ability to adapt to a fixed environment – just as they rejected, in a more general way, the legacy of British empiricism (sensationalism) to reflect on the mediatory role of the mind regarding the apprehension of data from experience. But they made the basic premise of evolutionary theories their own, involving “the continuity of lower (less complex) and higher (more complex) activities and forms” – deriving from the model of organic growth (Dewey 1938, 23).

Functional psychology relies in a very general way on the idea of continuity between organic and intellectual developments, applying Darwin's theory of natural selection to the mind:

Darwin held that the mind of civilized man is a direct outgrowth of the animal mind. He maintained that from the lowest animal upward we find evidence of mental processes which increase in range and power, but do not change in kind, until we meet their most complete expressions in man (...) Indeed, at the present time it is undoubtedly the case that most psychologists share Darwin's main convictions as to the continuity of mental evolution from animal (Angell 1909; 157, 159).⁶

According to this development of ideas in psychology, the natural order emphasizes “function” first. Therefore it was only through a continuous reconstruction of its modes of activity in actual experiences that the mind was supposed to develop the special elements of technique necessary to the most perfect control of the environment (Miller 1915). James and Dewey fuelled these ideas with founding texts. It comes as no surprise that James was one of the first to experimentally bring into question the idea of mental discipline which still bore the mark of the mind-body dualism.⁷

⁵ Cremin 1962, 91; see also Egan 2004.

⁶ See also, for instance, Green (2009).

⁷ See James 1890, 666–7; 1912 [1904–1905], especially chap. VIII.

Located in the theoretical continuity of these evolutions, so-called constructivist and socio-constructivist educational theories are modern forms of progressivism. This may be shown by core psychological hypotheses of educational constructivism bringing into play two fundamental principles, the principle of activity and the principle of adaptation (Matthews 1994, 141; Phillips 2000; Tobias & Duffy 2009). The former establishes a demarcation from the psychology derived from classical empiricism and the latter is associated with mind-body continuity:

- 1) Knowledge is actively constructed by the cognizing subject, not passively received from the environment.
- 2) Cognitive development is an adaptive process that organizes one's experiential world.

The adaptation principle leads to disconnect cognitive development and theoretical knowledge. The postulated continuity between nature and mind thus excludes that of harmony between (theoretical) knowledge and mind. These principles express the functionalist foundation of educational progressivism. Along with related views, contemporaneous "situated cognition" approaches and most of the inquiry-learning and problem-based learning approaches are based on the idea that thinking develops while the individual is confronted to concrete problematic situations.⁸ In competence-based approaches, which today dominate the philosophy of educational reforms in the West, intellectual development is linked with the construction of cognitive schemes through experiences supposed to generate classes of behavior that can be applied to families of situations.⁹

The biological model of human mind's evolution and adaptation, conceived as a continuous development from elementary functions to higher ones, has led to the separation of two things that were implicitly connected in former days: formal learning and the development of the power of thought. "You give science – splendid. I busy myself with the instrument fit for acquiring it." wrote Rousseau (1969 [1762]), as a precursor. This separation has pedagogical consequences that can be compared to the excessively formalist trends of liberal education, with the difference that they manifest themselves in contrast, emphasizing methods of empirical learning. Cognitive development becomes a matter of formation to concrete practice rather than formal learning. Plasticity – that is to say, learning capacity – is, viewed through the prism of biology, the product of genetic development that has allowed the substitution of cultural transmission for instinct (Baldwin 1915). In this framework, culture has no specific developmental function and becomes the source of conformism, i.e. a medium of habit transfer. It is here that the drama of modern educational

⁸ See for instance Anderson, Reder & Simon 1996; Brown, Collins and Duguid 1989; Greeno, Smith, and Moore 1992; Hmelo-Syver 2004; Resnick 1991; Rogoff 1990.

⁹ See for instance Ainsworth 1977; Norris 1991; Perrenoud 1997; Vergnaud 1990.

thought takes shape, involving the complete reversal of the liberal educational model.

6. Reason, Advances in Epistemology and Modern Psychology

6.1 The Relative Autonomy of Theoretical Reason

The principle of continuity referred to earlier assumes a unitary bottom-up dynamic of intellectual development such that higher intellectual functions are constructed on the basis of lower ones, the lowest level referring to an immediate apprehension of reality. The principle of continuity leads to a subjectivist epistemology that is intrinsically linked to classical empiricism, involving the epistemological situation of an observer facing reality.¹⁰ This principle fuels the radical constructivist idea in education according to which, in as much as the observer contributes to the resulting knowledge, knowledge cannot be transmitted using verbal expository methods (Meyer 2009, 332-41).

On the other hand, the results of modern physics invite us, as far as the development of scientific thought is concerned, to confer on 'reason' a place relatively detached from reality, and autonomous. Firstly, in its speculative research, reason does not aim to capture the essence of reality, but to understand interconnections between observed elements. Secondly, understanding these interconnections is not a matter of truth as such, but of valid assumptions of a theoretical nature. Major perspectives of modern epistemology, including those offered by Emile Meyerson, Albert Einstein, Gaston Bachelard, Filmer Northrop, Henry Margenau and Karl Popper, teach us that the imputation of relationships between observed or experimented elements – if these relationships are not mere habits of association – is mediated in scientific reasoning

¹⁰ See Popper 1972; Matthews 1994, 150-1. An expression of these conceptions can be found in the works of the Russian psychologist and epistemologist Vasily Davydov. Davydov, referring to Russian manuals and textbooks most widely prevalent in the 1970's, shows that they were rooted in an empirical theory of thought. Its central idea, Davydov explains, is precisely that all of the content of a concept can ultimately be reduced to direct sensory data and to finding the appropriate sensory correlate for any abstract attribute. Its essence is by no means that sensation is acknowledged to be the only source of cognition - this thesis being the basis for any materialism - but "consists in the thesis that in the transition from sensation to thought only the subjective form and method of expressing the raw data change - not their content". Therefore, the empirical theory of thought acknowledges the existence of a "man - description of things' scheme, but not that of a 'man - things - theoretical model of the connections among things'" scheme (Davydov 1990 [1972], 36-40).

through the intermediary of conceptual systems or models.¹¹ The crucial point characterizing the scientific or theoretical concepts is that their meaning depends on the system of concepts in which they are embedded. While the meaning of empirical concepts ultimately refers to factors which can be immediately apprehended, scientific or theoretical concepts derive their meaning from and refer to entities and relations which exist by means of postulation rather than by immediate apprehension (Northrop 1957, 60). Through conceptual systems, thought takes interest in the interconnections between elements that have been perceived or experienced based on constructed theoretical models. As Einstein explains with regard to scientific knowledge, reason constitutes the structure of the system, and the role of experience is to a great extent indirect: Experimental data are linked to theoretical systems by deductive propositions (Einstein 1934).

Dewey saw that scientific knowledge was founded on theoretical constructs, the validity of which could only be tested indirectly by an experimental approach.¹² And yet, according to him, concepts are devoid of significance unless they have a functional or active role implying them to be apprehended through the activity that is assumed to constitute them (Dewey 1891, 1938). Dewey's functionalist approach entails an epistemological operationalism centered on the functional or operational role of concepts. It leads to the definition of all knowledge based on an adaptive conception, as the solution to a problem, and rationality in terms of inquiry (Dewey 1929, 1938). In this unifying functional approach, the qualitative differences that set theoretical and empirical concepts apart, although not ignored – especially in the case of formal knowledge, a formal or mathematical concept is defined as “operations that are compossible with respect to one another” (Dewey 1929, 162) – have no particular developmental role to play. The consequence of this assimilation is the maintenance of the discredit of theoretical learning, which is seen as involving a reproductive conception of knowledge that leads to intellectual passivity and passive assimilation.¹³

¹¹ See for instance Bachelard 1951; Einstein and Infeld, 1938; Margenau, 1950; Meyerson, 1908; Northrop, 1947; Popper 1972.

¹² See for instance Dewey 1929, 1938.

¹³ These psychological aspects of Dewey's thought shed light on his influence in educational matters. We can add Northrop's (1966 [1946], 151-2) comments, which focus on epistemological issues: “Even Dewey's lesser error was not sufficiently slight to prevent his followers in the departments of education and law from getting the erroneous suggestions in his writings and from failing to grasp his less articulate truth. What Dewey's followers acquired was not his correct thesis that theory and theoretical problems are as necessary a part of scientific inquiry as empirical evidence and experimental methods – the theory being merely indirectly rather than directly and absolutely confirmed by experiment – but the erroneous assumption that experimentation and an appeal to what happens in practice, without guiding theoretical principles, are alone what matters both in science and in life.”

6.2 Toward a Dual Constructivism

The distinction in nature, previously evoked, between theoretical concepts – the meaning of which is defined by the links they maintain between one another – and empirical concepts – which refer to the perceived or experienced world, makes it possible to go beyond the ontological dualism of classical rationalism. It does not appeal to the idea of an abstract universal reason separated from the world. The theoretical component of knowledge does not take a categorical and necessary form, but a hypothetical or historical status. Because they are relatively closed, theoretical systems confer their public ‘objectivity’ on concepts, as well as their temporary stability. However, theoretical thought is applied to understanding empirical reality. This is possible thanks to the relationships, when they exist, between theoretical concepts and concepts that refer to perceived or experienced reality. These relationships linking two worlds that are different in nature, one theoretical and the other empirical, are named “epistemological correlations” by Northrop (1947) and “relationships of correspondence” by Margenau (1950). These two epistemologists expressed in a particularly clear way the duality of the fundamental sources of human knowledge.¹⁴

Modern epistemology thus invites us to develop a dual constructivism or, we could say, a cognitive rationalism. This constructivism is not reconcilable with the idea that truth belongs to a plane that is superior to human existence. Knowledge depends on human constructs as mediators of individual thinking. Correspondingly, it rejects the correspondence view of truth – and the transcendence of truth – and in this regard, it is a constructivism. However, this constructivism is based on the difference in kind between, taken to the extreme, theoretical and intuitive concepts to account for human knowledge. Moreover, it relies on two interrelated paths of concepts development, one being public, and the other individual. It is thus not reconcilable with any continuist or unitary conception of knowledge, this is a dual constructivism.

6.3 The Third Path of Modern Educational Thought

The functionalist, unitary or continuous conception of the mind’s activity was justified in the writings of James and Dewey by arguments developed to counter metaphysical dualism. But these arguments do not touch on the alternative conception of the activity of the mind, which is not dualist but dual. The differences in nature that characterize theoretical and empirical concepts have psychological consequences regarding the way they develop in the individual. These differences lie at the heart of the historical-cultural psychology of the

¹⁴ Northrop defines his epistemology as a “critical realism” – based on a theoretical public space, referring to unobservable entities, with no direct concrete reference, in epistemic correlation with a “radical empiricism” – for which, on the contrary, *esse est percipi*.

Russian psychologist, Lev Vygotsky. Theoretical knowledge sources mark a break from development of a biological nature. This break is related to the social dimension of human existence. Humankind has progressed solely by self-instruction, argued Spencer and, in this respect, he was right. But humankind does not play the same role in this advance as the individual. Social life transmits to the individuals external means of mediating their thinking, in other words, intellectual constructs that allow them to interpret the world. Theoretical concepts develop gradually from the acquisition of elementary notions to the understanding of more abstract constructs thanks to formal education. This transmission underlies a specifically human dynamic of development, which reinstates the idea of duality, not between two ontological planes but between two dimensions of thought. These conceptions are in line with evolutionary psychology when it situates the split with animal evolution in human recursive faculties – faculties allowing individuals to convey ideas that are uncorrelated with concrete situations, to embed them within their minds, and to think thoughts (Corballis 2011).

Vygotsky allows us to conceive of how, in the human mind, the theoretical components of knowledge are constructed in a dynamic way through interaction with intuitive forms of thought. This cognitive duality intrinsic to human intellectual development – linked to the idea of mediation of thought with auxiliary cognitive tools – reflects the essence of Vygotsky's contribution to modern developmental psychology and revives the idea of logical harmony between knowledge and thought (Vygotsky 1978 [1930-1933], 1986 [1934]). The operations of theoretical thought are inextricably linked to the organization of the concepts to which they apply, implying a complex system of mediating connections and interrelationships.¹⁵ Vygotsky explains that it is also because they are organized into a system that theoretical concepts are conscious or intentional.

This dynamic of intellectual development is in opposition to the Piagetian dynamic that is founded on the biological model of evolution (Piaget 1992 [1967]) and has as its driving force for development an equilibration process of internal origin.¹⁶ In Piaget, the problem is the artificial separation between

¹⁵ It is the existence of such a system that allows inferential relationships between elements of thought. These inferences bind one concept to other concepts, so that the meaning of theoretical concepts involves the particular constellation of inferences with which it is involved. There are therefore some links between Vygotskian psychology and Robert Brandom's work on reasoning, in which inferential (theoretical, involving articulated reasons) thinking is opposed to referential (empirical, representational) thinking (see Derry 2008). Brandom distinguishes himself from classical pragmatism by his rationalism about meaning: For him, understanding explicit statements is inseparable from mastering the inferential connections that are in play (Brandom 2000).

¹⁶ In this way, Piaget applies an extrapolation of adaptation phenomena and biological equilibration to the laws of reason. This unitary perspective of intellectual development places the formation of cognitive schema (by definition, the schema of an action is the structured

forms, or structures, and thought content, Piaget's work being, as Vygotsky notes, an extreme expression of the interest accorded to the structure of thought itself¹⁷. By contrast, the Russian psychologist endorses the view that human cognitive development is driven from the exterior. Higher level functions are constructed based on the use of signs and artificial instruments of thought. Hence the rupture between the development of elementary mental functions and the development of higher mental functions. The latter proceeds from a dialectic relationship with lower level cognitive processes.

Jan Derry shows that the accusations that Vygotskian conceptions maintain the idea of an abstract reason inherited from the dualism of classical rationalism reveal a deep misunderstanding of Vygotsky's work (Derry 2013). A purely formal and general reason that endures somewhat in Kantian philosophy is in fact to be found in modern constructivist currents, contrary to their claims, through Piaget's Kantian legacy, for instance. Derry highlights this deeper positioning and, to counter the accusation of dualism, points to the legacy of Spinoza and Hegel's philosophies in Vygotsky's thinking: For Hegel as for Vygotsky, the movement of thought is not distinguished from the world of which it is part. I am in agreement with these points but I place emphasis on another dimension of Vygotsky's theory: its convergence with certain major currents of modern epistemology (Bulle 2014) which, on the other hand, object to Hegel's errors concerning the nature of science (Meyerson 1921, Northrop 1947). They defend the irreducible duality of what is real and what is rational reflected by the irreducible duality of the empirical and theoretical concepts in their own work and the work of Vygotsky. Vygotsky allows us to conceive how, within the human mind, the theoretical components of knowledge develop, in interaction with the intuitive or spontaneous forms of thought.

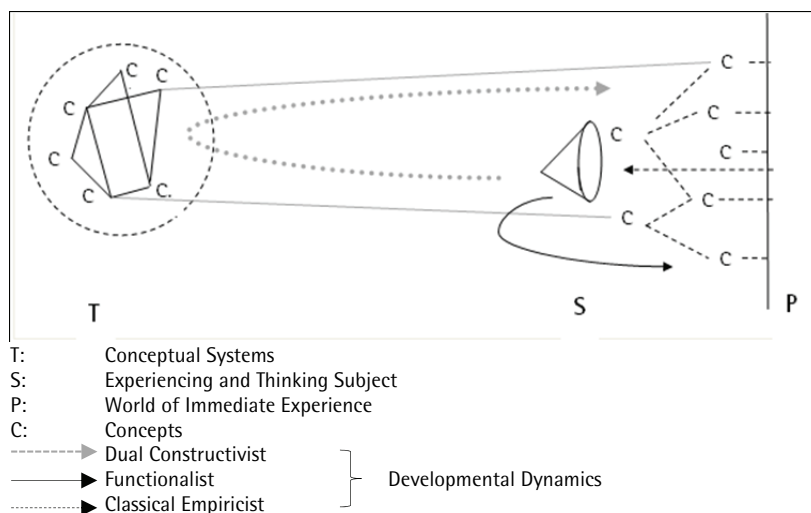
A major consequence of these dual epistemological and psychological insights is that learning must unfold according to the laws of the disciplines themselves, and in accord with the forms of their concepts. The problem modern education has then to overcome is, in each of the disciplines taught, how to provide the means of constructing, in the students' thinking, "models of the subject of each discipline", and give them means of "progressing in these 'models'" (Davydov 1990 [1972], 40). One condition, as Paul Hirst (1974 [1967], 93) explains on this subject, for the students to be able to gradually and

set of characters that can be generalized by that action, that is, those allowing the same action to be repeated or applied to new content) at various levels and that of sensorimotor schemas in the same dynamic that proceeds by way of successive levels of structuration-equilibration, the "forms" of the processes in play at a given stage becoming "content" at a later stage.

¹⁷ Derry remarks that the absence of any consideration of the inferential character of concepts in Piagetian pedagogy and the influence of this absence on constructivism, have fostered the idea that an individual learner left to his or her own devices in a rich environment will 'create' knowledge (see Derry 2008, 60).

adequately construct the network of relations between concepts underlying their understanding, is that concepts at stake in the historical development of the teaching of a discipline be true to the conceptual structure of that domain, or else, to its “logical grammar”¹⁸. Students develop and structure their knowledge with the aid of the explanations of the teacher and problem solving activities which enhance the mastery of this logical grammar, helping them to form valid links between theoretical concepts. In David Ausubel’s psychology of meaningful learning, the learner’s cognitive structures provide a dynamic framework in which new elements of knowledge are interrelated. In the absence of previous organized knowledge, rote learning substitutes for meaningful learning (Ausubel, 1961a; 1961b). According to these views, theoretical or scientific concepts and thought entertain close and lively links. As Vygotsky emphasizes, it is not because the construction of scientific concepts begins with some verbal explanation that such explanation marks an end, quite the contrary. Scientific concepts are not just assimilated by the children, nor are they registered in their memory, but are born and formed thanks to the high tension of all of their thought.

Figure 1: Dual Constructivist, Adaptive/Functionalist and Classical Empiricist Theories of Intellectual Development



¹⁸ Some general advocacy of educational ideas which find links with these psychological and epistemological conceptions, are also proposed in a classical text by Philipp Phenix (Phenix 1962). See also the more specific analysis of Liping Ma (2010), applied to the teaching of elementary mathematics and an interesting and an older text by Henry Crew related to the general teaching of physics (Crew 1900).

I propose to succinctly illustrate the three basic dynamics of intellectual development and concept formation in question here – classical empiricist, functionalist and dual constructivist – in a simple diagram.

I distinguish in figure 1 intuitive or empirical concepts and scientific or theoretical concepts. The meaning of the former refers to items immediately perceived or experienced; on the contrary, the meaning of the latter is gained by virtue of the system they form with other theoretical or scientific concepts (for example, in scientific thought, the concept of ‘blue’ refers to a wavelength in electromagnetic theory and cannot be equated to the intuitive concept ‘blue’). Experience elements are made “rationally tractable” – in other words, become experimentally significant – by links that put them into relation with intellectual constructs, these links (the epistemic correlations) are represented by grey lines.

7. Conclusion

I contended that the conflict between the notion of liberal education and the notion of progressive education is marked by a conflict between a dual conception and a unitary conception of the human mind’s sources of development. The dual conception accounts for the kind of logical harmony between knowledge and the mind, whereas the unitary conception accounts for the continuity between nature and mind. These conceptions were shrouded in deep moral implications which justified their role in the evolution of Western modes of intellectual education. The dual conception was centered on the human mind and rational faculties as an expression of the divine whereas the unitary conception is centered on society as shaping human experience. With the latter, reason is subordinated to action, and not the reverse. It serves proximate interests and not human ideals. Progress, truth and morality take on an immanent signification. The evolutionist foundation of progressive thought has come to associate ‘the good’ of education with the general progress of society, rather than that of any individuals within it.

Some important currents of developmental psychology in the 20th century, especially the historical-cultural psychology of Vygotsky and the psychology of meaningful verbal learning of Ausubel, give credit to a dual conception of the human mind’s sources of development. One of their premises is that humankind broke with nature since individuals developed thinking faculties based on artificial mediational means such as conceptual systems. On these bases, the meaningful interiorization of conceptual systems is supposed to have a developmental function. These currents take into account the rupture within human evolution marked by the constitution of a public world of knowledge, and the consequences of this rupture on the specific dynamics of human reason. The

duality of human paths of knowledge is also reflected by major developments of modern epistemology.

These advances in psychology and in epistemology invite us to support a modernized version of liberal education, which appears to be intrinsically founded on the duality of human paths of knowledge. In this regard it assumes, contrary to progressive education models, that theoretical knowledge contributes in an essential manner to the development of the reflexive faculties of human thought. According to such conceptions, the gradual structuring of theoretical forms of thought, concurrent with a deep awareness of their relationships to reality, is the primary aim of the school. This supposes to progressively, and explicitly, unveil the conceptual systems that structure knowledge, and to link them to empirical experience mainly through explicit teachings, formal exercises and, on these bases, problem solving activities. The modernization of the idea of liberal education should also take advantage of some of the important contribution of progressive educational trends at the levels where it is coherently possible.

Humankind has two irreducible and interrelated paths of knowledge, theoretical and empirical or experiential, one objective and public, coming from a historical-social construction, and the other one subjective and private, defined by the relation of the individual to the world as apprehended by him. These two components of human experience should be genuinely cultivated for the full accomplishment of human faculties.¹⁹ Students' interests, their learning potential and creativity depend on the development of their rational or theoretical understanding, but they depend also on the culture of the aesthetic, poetic, and artistic dimension of human experience. Finally, these educational conceptions open the way to a new interpretation of democratic individuality.

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¹⁹ See especially the developments devoted to this by Northrop (Northrop 1966 [1946], chap. 12; 1960, chap. 17 and 18) to education.

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