

# *The Epistemology<sup>1</sup> Behind the Educational Philosophy of Montessori: Senses, Concepts, and Choice*

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*Abstract: This article seeks to re-introduce Dr. Maria Montessori's educational philosophy, which has been absent from modern philosophy of education literature. It describes and analyzes crucial aspects of her epistemology, as best known through her Method. Discussed are the need for early education, the development of the senses, and the exercise of choice by the students. Concept formation is also shown to be an important part of Montessori's philosophy of instruction. This article concludes with a brief resolution of the "is-ought" objection as framed by Scheffler that might be waged against Montessori's approach.*

[W]e shall notice that the child has a personality which he is seeking to expand; he has initiative, he chooses his own work, persists in it, changes it according to his inner needs. (Montessori, 1914/1965, p. 131)

## **Introduction and Overview of Montessori's Method**

This article seeks to describe and analyze crucial aspects of the epistemology of Dr. Maria Montessori's *Method*. Her work in early education, which has led to an international presence and network of schools and state school programs devoted to this Method, has strangely garnered little academic interest in educational studies and educational philosophy in general (Berliner, 1989), as a simple journal search will reveal. And yet, as Lillard (2007) finds, Montessori's "major ideas ... are supported by a strong body of evidence in developmental psychology," and "none of the Montessori ideas ... consider[ed] central have been 'disproven'" (p. x). Historically, Montessori preceded (more renowned psychologist) Jean Piaget and influenced much of his later work. Montessori has been praised as ground-breaking by Anna Freud and Jerome Bruner, despite William Kilpatrick's evaluation of her work being outdated

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<sup>1</sup> In keeping with the concerns of a review of the poor use of the term "epistemology" in educational research (Siegel, 2006; Ruitenbergh & Phillips, 2012), I define the term in the classic philosophic sense of how we can justify our beliefs in order to call them knowledge. As this article will discuss, Montessori held an objective position on epistemology, and would not concede the multicultural or relativist positions used today which refer to "ways of knowing" and other similar terms. Instead, she held that epistemology is not qualified by any such "accidental" (in the Aristotelean sense) qualities such as race, gender, disability, *etcetera*. Our way of acquiring sense data may be "human" as compared with other animals which have different sense organs, but the standard of truth is the same for every living thing.

(Thayer-Bacon, 2012). Nevertheless, Montessori remains dominant globally in secular private education and is a frequent reference in early childhood education and educational theory (though often packaged with Froebel and Pestalozzi). Why, then, is Montessori a rare name in the titles of philosophy of education literature? Her ideas are not disproved but discounted, and my intention is to correct this situation by presenting an introduction and overview of some of her ideas for the purposes of future discussion in the modern literature.

Montessori's philosophy can be seen as a unique integration of many of the ideas of previous and contemporary educational philosophers. However, we only have evidence that she read the early psychological work of Itard and Seguin, both pioneers in instructing basic life skills to children found in extreme circumstances (Weinberg, 2009). From studying their journals, she discovered that "mental deficiency ... [could be] chiefly a pedagogical, rather than *mainly* a medical, problem" (Kramer, 1976, p. 61, emphasis added). Montessori's ideas formed while she operated a remedial pedagogical program for cognitively disabled orphans in Italy, later founding a school called "The Children's House," with a mixed-age classroom where she developed an educational theory and method for *all children*. Her success quickly became regionally and then internationally known, formulated into what would later be called The Montessori Method. Pestalozzi's dreams of a free school, Froebel's emphasis on early education, Spencer's naturalism, Rousseau's belief in starting with concrete rather than abstract learning, and Dewey's<sup>2</sup> "learning by doing" all resonate in her resulting educational work. Her somewhat constructivist (cf. Powell, 2000) process, where learning is fostered through the use of materials rather than through direct instruction, includes student choice in the materials provided, free movement in the classroom, and learning at one's own pace. Montessori stressed independent as opposed to social learning as she believed children should early on acquire habits of concentration on individual work and success rather than constant association, imbedding children too early in dependency sourced in teachers or peers.<sup>3</sup> For Montessori, this method was merely taking advantage of what children already will do given a supporting environment, the didactic materials imbedding learning in the physical world.

Montessori discovered connections between action, perception, and cognition, as well as the crucial importance of these connections to child development, an importance that new work in neuroscience and developmental psychology is beginning to unveil (Gopnik, 2009). As I will review in detail, her Method directs the senses—as early as possible—in order to enhance a child's already present desire and need for a *conceptual education*. This developing consciousness, the faculty of awareness, is tuned via experience to the metaphysical conditions of reality because of the altricial condition of our species' young. In contrast, Montessori criticized the carelessness of play-based or unsystematic experience (Soundy, 2009) in early cognitive development and in its place enhanced this

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<sup>2</sup> Since John Dewey and Montessori were contemporaries and began the proliferation of their ideas around the same time and half a world away from each other, it is likely they developed their philosophies independently. I am unaware of Montessori publishing discussion of Dewey's work, but certainly Dewey and his disciple, Kilpatrick (1914), published criticisms of Montessori (see also Beck, 1961; Thayer-Bacon, 2012).

<sup>3</sup> This individualism will be an important theme later, and could be contrasted with Dewey's democratic pedagogy. While she is closer to Piaget in this respect (although not his Kantian influence), she would reject Vygotsky's sociocultural learning theory based on her idea that the young mind needs to think on its own prior to it being ready to think within a group setting, perhaps in a Rousseauian concern of being unduly influenced by group dynamics. Berliner (1974, p. 295) addresses the "much published criticism" of Montessori's approach lacking social development, however the epistemological issue is whether the individual or the group justifies knowledge.

negative method of education by better responding to the nature of a child's developing consciousness and the nature of reality. Montessori's Method presents the conditions of an epistemologically-sensitive education, a philosophy contingent on epistemological questions of the validity of the senses and induction.

In this work, I plan to reveal, point by point, the epistemological aspects and consequences of crucial aspects of the Method as previously overviewed: (1) why "early" education is important; (2) why early education should begin with perception; (3) why educational experiences should be designed; and (4) why children should have control over the choice and termination of their activity. Some discussion of the didactic materials designed by Montessori are included throughout.

## **Analysis of Crucial Aspects of Montessori's Educational Philosophy**

An initial premise of Montessori's philosophy that often triggers criticism is that our knowledge of human nature can be used to infer or determine educational design. Scheffler (1966) affirms this Humean criticism, stating we cannot "postulat[e] a simple deductive implication between definitions of human nature and practical educational consequences" (p. 33). I propose a remedy to this classic problem in a later section. For now, to proceed fruitfully, the reader must assume the necessity of educational design with our best understanding of human nature; this approach will be evident in each aspect of Montessori's philosophy I will now review.

### **Why Early Education?**

Montessori advocated for education to begin "early" for two related reasons: (1) to begin the child's appreciation and awareness of the conditions of their reality; and, more fundamentally, (2) to lay a foundation in perception which later learning is built upon. I speak of "begin" as there are a variety of philosophical ideas regarding the mind's contents prior to experience and how the mind acquires ideas, such as John Locke's notion of *tabula rasa* (no innate knowledge). Montessori, nearing Aristotle, believed that "nothing is pre-established. The child only has the potentialities needed" (M. M. Montessori, 1992, p. 8). Potentialities (via pre-determined though flexible structures; see Pinker, 2003) are activated during the "sensitive periods" of childhood, corresponding to brain plasticity, or what she called the "absorbent mind," which drives activity differently during each period. This state of affairs posits educational implications if one values efficiency and cognitive ease, an ethical consideration of whether to treat human potentialities as part of, or inimical to, our aims of education and whether there are, indeed, lessons to impart to children we know they will need in their future life. In agreement, Montessori's aim was to develop the proper use of the mind—as opposed to others who believe the future is too uncertain, and thus education should not be foundationalist.

What appears to be behind Montessori's foundationalist thinking is the following: While other animals survive largely because they are pre-adapted to targeted environments, this survival method can no longer work for any species which creates its *own* environment, in our case a complex social and

technological one.<sup>4</sup> In Aristotelean meta-ethical terms, while biology for all living things provides its “good” via instinct to maintain their existence, humans have evolved and created a new kind of existence which depends on a (mostly) new “good,” and as a result, only humans need ethics.<sup>5</sup> Humans are unique among living things in having the choice to live (death usually requiring no action in the long term) and, in general, the choice to expend effort, or not. Volition implicates a moral (or character) education to make best use of choice. Montessori (1967) called this human condition a “double embryonic life” (p. 61), the first being in the womb, and the second in education. This second stage, prolonged infancy, is needed in order to begin as soon as possible an altricial learning program, brain plasticity (fostering critical periods) making this possible. In effect, the plasticity is an evolutionary response providing flexibility to adapt to the unknown (cultural) environment the child will be born into; nothing like this environmental erraticism is experienced by any other living thing.

In this way, biology mandates infancy to be a period of attunement to local conditions and preparation for adult survival. This is in contrast to those who believe “childhood” is an end in itself, a sacred time void of adult influences during which children should be allowed to age “naturally.”<sup>6</sup> For Montessori, childhood, for all relatively altricial animal species, should prepare the individual for the complexity of their expected survival environment; in other words, and contrary to mainstream education, precisely because the future is uncertain children need a foundational education. What allows this idea of “childhood as an end in itself” to persist is an error of omission: children, even when not educated, do mature and learn at least in a basic instinctual sense, as other living things do. A child’s default activity is to soak up their surroundings via a driven intensity from their faculty of awareness – the “absorbent mind.” If a child were left in an uncivilized area, he would either starve or, in very rare circumstances, become feral (see the works of Itard, or LaPointe, 2005). This is why, for Montessori, the environment is crucial. Obviously, a civilized but indifferent environment is superior to an uncivilized environment. Montessori proposed to make the environment not indifferent but invested, suiting it to the child’s appetite for experience for the purposes of expanding and perfecting the mind through sensory education. Learning happens by default, but as adults we can systematize and prepare this learning to provide an education, an ordered outlook and application of what the world is and offers based on what we hold as universal knowledge and skills, despite a context of rapid technological change.

Furthermore, to Montessori knowledge is hierarchical,<sup>7</sup> and establishing this mental framework early is important. Lillard (2007) confirms that a Montessori curriculum follows a “hierarchical sequence” (p. 21) and a depth of integration not found anywhere else. Hierarchical knowledge entails that perceptual knowledge (or lower-order concepts) are the building blocks of higher-order concepts. This suggests that even the highest of abstractions, such as philosophy, love, beauty, and the like, can

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<sup>4</sup> This further strengthens the earlier point that we can no longer sufficiently educate our young for survival by letting them simply observe nature and mature “via Nature.”

<sup>5</sup> The basic question of ethics is “how should I live,” but “live” is conditioned by the attributes of reality—in other words, the choice is not unlimited but contingent on what “choices” will actually maintain life.

<sup>6</sup> Interesting here is what constitutes neglect. Obviously, denial of food and shelter to the body, but how is “neglect of the mind” determined? Rousseau and Montessori fall at opposite poles here in terms of the young child. Hirst (2008, p. 119) also supports Montessori’s aim: “[T]he most fundamental good for us individually is the development of our naturally given mental capacities” (see also Hirst, 1965/1972).

<sup>7</sup> The idea of knowledge being hierarchical is an epistemological foundation of knowledge—the necessity to organize knowledge to be grasped by human faculties. We can help conceptual learning immensely by providing experiences that are organized, clear, and connected with relevant prior or contingent knowledge.

be tied, eventually, to the senses. As Aristotle argued, the proper route to these abstractions is through perception. Montessori's contribution is the urgency of training the senses as early as possible to provide a strong basis for later learning. Likewise, brain plasticity determines that lower-order skills are acquired far more easily when attempted early (during critical periods, as referred to earlier). An example of Montessori's (1914/1965) use of hierarchy in knowledge acquisition is her writing program (occurring before reading). It begins with previous skill-building in tracing letters and visualizing their shape, proficiency with the hand's grip of the pencil via special knobs, spoken language, and letter phoneme knowledge. Putting these antecedent skills together produces what Montessori (1955/1969) called the "explosion of writing" (p. 112), as acquiring these prerequisites generates writing automatically and often before reading. Note, however, that Montessori was working primarily with Italian, a near-perfectly phonetically-spelled language (consistent sound-letter links). It is theoretically possible that a language that is less phonetically-spelled requires an increase in a contextual component for optimum acquisition of reading. To Montessori, phonics was best because it was designed to grasp words (concepts) via experience (concrete), connecting sounds to letters, and learning words through their phonetic parts. In contrast, whole language instruction and sight reading (look-say method) forces children to tackle words from a basis of abstraction rather than a basis of perception. Moreover, while children memorize relatively few letter sounds with phonics, under whole language they must exhaust memory for every word. To Montessori this was inappropriate for children not only because of their age but also because the brain at this stage learns optimally from constructing concepts via perception and action rather than through passive abstraction alone.<sup>8</sup> The student dependence on the teacher that is created by whole language was also unacceptable to Montessori, who believed it was crucial for children, at this stage, to be able to learn independently, which phonics secured via sounding out words.

### Why Sensory Education?

As previously introduced, the need of the senses in early education can be attributed to their irreplaceable function in generating early conceptual knowledge. Montessori believed in "beginning the child's education with the concrete rather than the abstract" (Kramer, 1976, p. 63). Note that this view is also shared in early childhood literature surrounding emergent curriculum, High Scope, and the Reggio Emilia educational philosophy. Montessori was convinced of the urgency and success of this starting place from Seguin's physiological method and Wundt's physiological psychology. This pathway to knowledge follows a realist epistemology, defended by J. S. Mill, who argues that the senses are valid instruments of knowledge and sensory experience provides the crucial ingredient to basic conceptual knowledge.<sup>9</sup> This also means that the validity of concepts must eventually rest on percepts. In contrast, rationalists such as Plato and Kant argue only the *a priori*, through thought and reason, can yield knowledge, rejecting a basis of knowledge in the outer perceptual world since it is "mere appearance,"

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<sup>8</sup> This debate and the problems of teaching reading abstractly versus concretely, which could have been predicted by Montessori, culminated in Rudolph Flesch's famous 1955 work *Why Johnny Can't Read*.

<sup>9</sup> While Hardie (1962, p. 13) agrees with this claim, he disputes that the senses are the only means of instruction. While this is conceivable in later years, if we consider a context of early education and the idea of knowledge as hierarchical, epistemological realists conclude percepts must provide the basis for concepts. This is the peripatetic axiom of Aristotle, described by Aquinas when he says "there is nothing in the intellect that was not first in the senses" (*De Veritate*, q2 a3 arg19), which amounts to "extrospection before introspection," contra Plato's nativism and rationalism.

unreliable and unreal,<sup>10</sup> and relying instead on introspection and internally coherent (*a priori*) systems unanchored in perception. As a result, Plato declared mathematics the only true subject since it remains purely abstract and ideal and supposedly independent from the unideal world (though as the counting example will show below, Montessori believed and observed that mathematics taught abstractly, numbers without referents in objects, delayed acquisition of concepts in maths). Rationalists remain in the conceptual realm, basing the grasping of concepts within *a priori* logically connected truths detached from percepts. In practice, early education under this theory of concepts was extremely difficult for children, remaining the foundation of elitist “grammar” schools most notably of the Romans, which, similarly to whole language (contextual) instruction, relied on conceptual (semantic) understanding prior to or without connection to percepts (lexical). This language instructional method predictably “accentuates” cognitive load (Allal, 1997) and memory because it is inappropriately suited to young children. Montessori’s view was that concepts require a basis in perception, and perception is a skill learned by careful scrutiny and organization of incoming sensation via didactic materials and instruction.

Montessori believed that “seeking sensation” is the first propensity of the young child, and consequently a biological clue to his or her current needs. In this sense, just as instincts govern the precocial development of other animals, the biology of human beings still provides an instinct, an innate propensity to learn for our needed altricial program. This takes the form of developing skills in turning sensations into perceptions: the tuning of the eyes for distance (focus), controlling the body’s movements (motor skills), grasping for objects and identifying textures, discriminating sounds such as noise from voices, *etcetera*. These activities are engaged in automatically by the child through self-discovery and then guided and perfected through education. In this way, “education is not something which the teacher does, but ... a natural process which develops spontaneously in the human being” (Montessori, 1967, p. 8). Education or teaching should be an “*aid* to life” (M. M. Montessori, 1992, p. 5), fueled by this propensity of all children which she termed “autoeducation,” similar to Aristotle’s pronouncement in the opening line of the *Metaphysics* that “all men by nature desire to know. An indication of this is the delight we take in our senses” (see also Adler, 1988). This may seem to be an empirical finding, but philosophy asks whether it is possible for a living being with an early immaturity period to have anything other than a precocial or altricial term,<sup>11</sup> and given an altricial one, whether the species requires an innate propensity to begin that development automatically.<sup>12</sup> In other words, how does human development adhere to reality? Montessori’s answer is clear: by beginning with the senses (a view also shared later by Piaget, 1976).

An ordered universe must be grasped in an ordered way. As Whitehead (1967) confirms, “the only avenue towards knowledge is by discipline in the acquirement of ordered fact” (p. 30). It can only be postulated that the first sensations of a fetal and newborn child are an erratic chaos (or “blooming, buzzing, confusion” as William James remarked)<sup>13</sup>. This is, in part, the reason why Montessori (1967)

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<sup>10</sup> See Kelley (1980, 1986) and Huemer (2001) for a critique of rationalist positions on the invalidity of the senses.

<sup>11</sup> In other words, as identified by Aristotle, there must be a beginning *actuality* (precocial) or *potentiality* (altricial).

<sup>12</sup> One can add, as Gopnik, Meltzoff, and Kuhl (1999) do, that as an innate desire to learn can be found in infants, “grown-ups are themselves designed to behave in ways that will allow babies to learn” (p. 7). In an evolutionary context of “design,” a partnership is likely an enhanced form of an altricial developmental program superior to a program that is merely fueled by infants imitating (educationally) indifferent parents.

<sup>13</sup> Locke could not fathom how empiricism could detect or permit a “conceptual glue” that could bind sensations into a perception of an entity. Hume extended this to dispute concepts as well (nominalism).

believed “movement has great importance to mental development itself, provided that the action which occurs *is connected with the mental activity going on*” (p. 142). The calming and control of the flood of sensations of the child are connected with the child’s anticipation of control over the environment (Martin, 1993). In other words, the self-efficacy at this stage is not yet secured—given erratic sensations, the child must begin to discriminate the sensations and link them to their sources<sup>14</sup> by way of acting in the world and awaiting feedback (from sensations to perceptions). If the child begins to see that their noises are responded to by familiar human voices, if they can interact with objects and see and feel the effects of their actions, the process of understanding their place in reality begins and the idea of participation in the world, of metaphysical cause and effect, becomes real and learned (Gopnik, 2009). For example, early imitation between mother and child seems to indicate a need of affirmation of action-reaction in other people, an “act of social cognition” (Slater, 1998, p. 114; see also Meltzoff & Moore, 1992, 1994). Only with time and action can the child begin to control their movements, find the limits of their own physical being, and realize everything outside of them is a reality filled with a variety of sensations, eventually grouped into percepts, and years later integrated into learning as concepts. Organizing sensation by way of a sensory education program is for the purposes of helping the child order reality so it may be grasped. In essence, the metaphysical nature of reality (such as the dimensions of objects, e.g. length) can be grasped more quickly through specific and concentrated methods of reference to it. Montessori wished to enhance what children do naturally (when allowed to) by way of preparing and structuring the inputs, the experiences, and then letting the “spontaneous activity” of the child proceed as normal.

### Concept Formation

I will deal here with Montessori’s position on the construction and validity of concepts. As a remedy to Scheffler’s objections noted earlier (and explicated later), all concepts are open-ended in order to account for new knowledge discovered in the future. As long as each stage or version of the concept is accurate (having some referents), no future conception will contradict a previous one; it only will further add to the concept’s “cognized referents,” improving our conceptual accuracy (Lennox, 2013).<sup>15</sup> This process of examining objects, making connections with other objects, and finding similarities and differences is our tool for survival. Put differently, Gotthelf (2000) believes concepts are dependent on the “metaphysical basis of similarity” (p. 59) as observed from what Bruner (1963) describes as “regularities in experience” (p. 120). Concepts can be instances of similar “objects,” such as balls, or concepts can represent an abstraction, such as length, a property of matter. Yet both types of concepts can be studied by examining matter, and more systematically studied by use of didactic materials designed with incrementally varying lengths (see below for an example with “counting”). In other words, whereas Aristotle treated “essences” as real and within the object, Montessori treated these as conceptual tools to be learned by the student: mental phenomena based on perception. In this

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<sup>14</sup> For more on this metaphysical topic, see Kelley (1986) who addresses the “primacy of existence” versus the “primacy of consciousness” views (p. 8). Descartes and Kantian idealists argue the latter, that the first thing one can know is that one exists. Realists like Montessori argue the former, that first we perceive the outside, which validates the inside.

<sup>15</sup> See Lennox (2013) who nicely explains this argument in detail as a defense of objective concepts within a context of conceptual change; he further shows “change” does not necessitate Kuhnian paradigms.

view, concepts are human inventions, but this does not make them arbitrary, as they are contingent via their basis in perception, in reality.

Human learning involves an extensive amount of concept formation, economizing facts (particulars) into memorable and applicable generalizations (Bruner, 1963). Humans have an excessive and unavoidable need to organize and derive (induce) concepts, replacing vast amounts of similar objects into fewer descriptive concepts, due to the limitations of working memory in the human mind (holding five to seven pieces of information at one time on average). For example, rather than holding in memory several individual books, I can count their number and represent only the objects as the concept “books,” dispensing with their non-essential attributes (such as their titles, cover art, etc.).

### Conceptual Counting Example

How the Montessori Method (1914/1965) teaches counting will serve as an exemplar of her epistemological foundation of concepts. Discussed in epistemology is the status of numbers, being either empirically verified or *a priori* (Audi, 2011). Taking the example of having 5 apples and 7 oranges, children are asked to combine them to form 12. The problem is *conceptualizing* quantity rather than remaining at the *perceptual level* of simply moving single objects closer together (e.g., “5” beads conceived as five single beads close together). Asking the child how many apples there are will yield 5, and how many oranges will yield 7. Using the concept “both” or “fruit” requires children to generalize the objects into a higher-level concept—to forget their particular identities and count them all as included within an hierarchically superior concept (fruit), yielding 12. Montessori (1914/1965) further aids numerical conceptualization by using materials that physically fuse ones together. Rather than counting marbles, which she found delays children’s abstracting to a quantity beyond “1” (p. 172), Montessori used square blocks that were fused together via a small connecting tube. In this way, while children learn to count via the blocks, the fused rods connecting the blocks provided the *concept* of number. Therefore, “five” could be conceived as a rod of 5, a whole, as compared to the traditional method of bringing five individual marbles closer together, which can easily fail to be conceptualized by the child, leaving them at a perceptual level viewing several separate marbles close together. Montessori claimed that her method provides the “*uniting into one whole* of a certain number of separate units” (p. 173). This is very important since mathematics depends on the abstract conceptual level, but *for the child* its conceptual nature must be initially grasped from a *basis* of perception but should not *remain* there. In this way, perception (*each* marble) builds into conception (*whole*, the rod, a number).

### Why Prepared Experiences?

Montessori proposed an education which would allow children to proceed in their own ways to begin to grasp the nature of the world around them through sensory education, a “developmentalist” view of learning. Like Piaget, she suggested that various developmental periods drive activity with the materials and environment children have access to. On the other hand, an indifferent or unpredictable environment cannot be said to provide an education as it lacks systemization. Montessori (1970) provides a unique contribution, arguing against both Rousseau’s negative education and Dewey’s life-based problem solving method: “[T]o make the process one of self-education, it is not enough that the stimulus should call forth activity, it must also direct it” (p. 73f). Unprepared experience, while “calling



forth activity,” will not direct how it is experienced, risking unintegrated concepts (errors) either learned or soon forgotten for children just beginning to learn how to conceptualize. For example, a child finding a green leaping living thing and later finding a brown variety will not learn them as “frog” or “toad” unless the child hones in on their similarities and differences, synthesizing further abstractions of “amphibian” and “animal,” and still later, “species.” Note that teaching words such as “amphibian” is not the point; it is teaching the various referents, their comparisons via attributes or qualities, and, later, using these now isolated percepts and integrating them into a concept to economize the information, introducing the word to label the concept formed. This order reveals Montessori’s epistemology of conceptual learning, what she theorizes as demanded by the altricial human condition of conceptual functioning.

The advantage of a constructed and prepared learning environment is that isolation of percepts for careful integration into concepts can occur; but Montessori (1970) goes beyond this, including the overcoming of “error” as an unavoidable part of the activity’s completion—the “*problem* presents itself solely in connection with the *error*” (p. 74). This is the reasoning behind the “self-correcting character” of her didactic materials. In this way, error is not seen by the child as negative and to be avoided, but inherent in learning and the impetus and lure of investigation. The other consequence of this—as Montessori alludes to in the first clause of the quotation above—is that children maintain their self-educational nature because the activity, once introduced, can be autonomously completed over and over again. For example, in the acquisition of knowledge about the property of length, a series of wooden blocks of varying lengths are to be ordered in holes of varying depths (see Montessori, 1914/1965, p. 67).<sup>16</sup> This activity satisfies a cognitive need for grasping metaphysical properties of matter by way of isolating the property in the environment using the senses, which is then abstracted into the concept. This order, from perception to conception, is Montessori’s way for early learning. In other words, the basis of concept formation must be the way concepts are learned. Other teaching methods which skip this process (skipping perception as the basis of conception) are not part of a Montessorian system. While adult learning properly teaches higher order concepts (justice, beauty, etc.) by way of lower-order concepts, this rationalist approach is inappropriate for early learning of basic concepts; they must be based in the senses.

A further consequence of prepared experiences is that they begin the development of focus, concentration, and self-regulation. To understand this, we must reveal Montessori’s perspective on liberty. Montessori believed that the Rousseauian<sup>17</sup> “wild child,” whose desires or whims were left to control all their actions, was not a free(-willed) child, but a directionless child, a child enslaved by their emotions and instincts (Berliner, 1975). The child is still driven by their natural “spontaneous activity,” but it fuels a frantic aimlessness. Montessori took a medical-model approach to the child’s outer behavior: “the child who is ‘bad’ is really sick—the product of an unhealthy environment” (Kramer, 1976, p. 99). Montessori wished to “free the mind” from these overwhelming urges and aid the child to better fulfill their intent through her activities. Aristotle’s dictum that “man is a rational animal” is

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<sup>16</sup> When doing the activity, children typically observe the length of each block and attempt to match this information by detecting the depth of each hole by sight or inserting their fingers.

<sup>17</sup> From Rousseau (1762/1943, p. 48, emphasis added): “That *man* is truly free who desires what he is able to perform, and does what *he desires*. This is my fundamental maxim. Apply it to *childhood*, and all the rules of education spring from it.” Berliner (1975) argues it is an equivocation to say students should be “free” in their education as adults are in a political context. As I suggest, Montessori advocates a unique combination of teacher- and student-centred pedagogy.

relevant here as Montessori saw her education as realizing the contemplative and rationally judging beings we need to be, as opposed to the whimsical and hedonistic beings we are born as (a fundamental break with Rousseau). It would be incorrect to call Montessori an idealist on this point, as she did not regard human nature as evil and to be circumvented, but rather as a great potential which, when directed and worked with, achieves good.

### Why Choice?

The existence and use of choice are separate issues. Fortunately, whether we are metaphysically free-willed does not pertain to the issue of granting or not granting choice to children in their educational endeavors.<sup>18</sup> What does pertain are the ethical reasons for subverting the choice of the child, but in this paper the epistemological consequences are the focus. Traditional rationalists would claim that knowledge should be transferred into the child because the teacher already has the knowledge constructed in a superior manner. Having the child construct the knowledge for themselves would not only be a waste of time, but it would likely result in an inferior construction of the knowledge (Gattegno, 1970). Montessori (1917/1970) is directly opposed to this. “[T]he teacher must guide the child’s mind. ... [H]e must, however, never substitute his own intelligence for that of the child, but rather make the child themselves think, and induce them to exercise their own activity” (p. 44). Epistemologically, Montessori is safeguarding the child’s own “spontaneous activity” by arguing that they must learn from the material for themselves, “decentring” the teacher as educational progressives advocate. Not only is this because of the practical reasons that each child is slightly different in how they understand and holds exclusive information regarding their present needs; the more crucial reason is philosophical: our nature being volitional demands that children, to reach their potential, be actors in the educational process and choose to expend the effort and think! And with thinking, they make the connections via perception that justify the concepts they learn. In this way, the Montessorian Method pays a great deal of attention to epistemology, requiring each student to expend the effort to justify their knowledge as a basis of their learning. This stance de-emphasizes instruction by way of the *a priori*, whether based in memorization or teacher authority, each of which results in information predictably poorly retained in the mind, for they depend on null or poor justifications of the knowledge offered.

Permitting and encouraging Montessori’s process is tied directly to the use of choice of the didactic materials. Students are able to choose materials and use them as long as they wish, and repeat the activity as long as they need, which is based on Montessori’s theory that children will do and act toward what they need cognitively.<sup>19</sup> In effect, as Montessori identifies a child’s “spontaneous activity,” she also includes that the child does not act spontaneously or randomly, but rather *teleologically* toward their development. A skill they acquire sufficiently quickly becomes a boredom to the child, causing

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<sup>18</sup> I believe this makes clear Montessori’s (1967) position: “The mind is not a passive thing, but a devouring flame, never in repose, always in action” (p. 177). This is an “active” consciousness view, not a passive (determined) consciousness one. An acting conscience must *will the formation of knowledge*; it is volitional not automatic.

<sup>19</sup> Recall that the context here is a prepared environment, thus while “choice” is confined in the environment, it is necessary to focus the child’s conceptual education via the didactic materials. Montessori also found that when giving children the choice between her didactic materials and regular toys, they preferred the former (see Kramer, 1976, p. 113). Interestingly, Montessori’s materials were designed scientifically, through trial and error, based on what children most preferred to play with, addressing motivational issues.

them to seek a new activity (a similar idea to Piagetian *habituation*). An activity that poses difficulty and is challenging to the child, assuming adequate self-esteem, presses the child to continue their investigation until they succeed. This self-fulfilling habit is part of the nature of the child, and the traditional school timetabling the day into various subjects suppresses this nature, either by way of material being too difficult (the children lacking prerequisite knowledge or skills) or material being too easy and the child being forbidden from choosing a subject at their skill level. These environments of mass instruction presuppose children can remain at the same place and pace so that instruction and curriculum can be generalized. Montessori would say that the nature and individual differences of the child makes this “practical” arrangement an immoral and unconscionable trade-off. She instead safeguards autonomous learning, and places the child and how children learn ahead of the efficiency of any educational structure which over time pacifies the child. Individualization of curriculum and instruction is consistent with the diversity of children’s developing minds and their need to learn by justifying knowledge.

What is fundamental here is the control of the learning process. Traditional<sup>20</sup> schooling tends to be teacher-centered, thus fostering child dependency. On the other hand, free or open schools tend to be child-centered to the point of granting license to the child (e.g., Summerhill, see Neill, 1960; and generally, Kozol, 1972 and Egan, 2012). Montessori took the best of both worlds: she accepted the child-centric idea that the child comes before the school system, the former designing the latter, but she rejected the child-centric idea that the child commands. In teacher-centered schools, while Montessori accepted that the teacher directs the education and prepares the environment, she rejected the idea that the curriculum need be designed based on the “generic” or abstract “grade 4 child,” calculated by state or national averages (Montessori, 1914/1965, p. 15; also affirmed by Barzun, 1992, p. 99).

In Montessori schools, right from the beginning and continuing throughout, the didactic materials allow the child to respect their “inner needs, rhythm and tempo” (M. M. Montessori, 1992, p. 12). Montessori points out that this organization requires the child to make constant and routine decisions. Making these decisions and seeing their consequences reinforces autonomy and control over the environment (Murray, 2011). Not only is comfort and familiarity attained, but children also learn self-reliance, the importance of which is emphasized in Montessori’s warning: “the heaviest chain, which may bind us in a humiliating form of slavery, is an incapacity to make our own decisions, and the consequent need to refer to others” (1917/1970, p. 182). This is similar to Dewey’s (1913) conviction that “interest means a unified activity” (p. 15), unified in both the object and the end of activity. Recall that Montessori’s aim “was to make the children independent, to teach them to do things for themselves” (Kramer, 1976, p. 119). The fearful results of a system which requires the child to sit idle and submit to an education—in other words, to teach children their minds are helpless and, in consequence, to defer to authority—is a dependency forced on the child, stultifying their autonomous will (Peterson, Maier, & Seligman, 1993). Rather than allowing the child to interact with the world at their own pace, exercising the skills they need and terminating when they are satisfied, in traditional schooling they must wait for material, creating the conditions discussed earlier of a passive

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<sup>20</sup> Montessori, upon visiting schools of normal children and observing them sitting in desks in rows, remarked they were “like butterflies mounted on pins” (Kramer, 1976, p. 95).

consciousness.<sup>21</sup> This view is reflected when we call teachers “educators,” sourcing the educational process in the teacher, not the student. This is why Montessori (1955/1969) referred to her teachers as “directors” —while they guide and manage the room, the child evokes the activity; he has “a *teacher within himself*” (p. 62). It is perhaps no wonder why autodidacticism is a rare trait amongst the majority of adults’ post-educational lives having not attended Montessori schools, receiving instead an early “denaturing” treatment of relying on authority and experts. As Montessori (1917/1970) explains, “school distorts the body and weakens the spirit. All that is needed is an act of liberation; and the latent forces of man will then develop” (p. 190). This sounds Rousseauian, but Montessori’s prepared experiences break with his “negative” educational philosophy and aim to secure not a communal society of mutual dependency ruled by a “general will,” but a society of self-reliance and independence where individuals can sufficiently justify knowledge on their own.

### The Is–Ought Objection

This section is provided to address a common objection to any approach, including Montessori’s own, which compels actions or policies based on relevant facts. This objection comes from antihumanists in response to such classic humanists as St. Thomas Aquinas.<sup>22</sup> Though often attributed to Hume, a more recent formulation of this objection in analytical philosophy is given by Scheffler (1966), who splits as irremediable its “descriptive and programmatic” definitions (cf. Ducasse, 1958). Taking the position on the non-*a posteriori* reliance of concept formation (*a priori* rationalism), his reasoning is as follows: “[T]here are an indefinite number of alternative definitions of ‘man,’ indefinitely many ways of dimensionalizing his structure and capacities, all equally accurate” (p. 33). This reasoning by “dimensionalizing” is an improper use of concept formation as advanced by Montessori and other realists. If we are to devise the proper education for a human, the framing of the question (education) would select facts about humans relevant to the frame, just as construction of a house selects various facts about the ground, the materials to be used, and so on. Scheffler argued this was impossible, hinging on a very common position of twentieth-century pragmatists and analytical philosophers who typically denounce any possible (or sensible) knowledge of metaphysics, *episteme* or universal or certain truths (Adler, 1942), such as human nature. In consequence of these views, concepts are seen as fluid, social conventions not fixed or even guided by reality (akin to Hobbesian nominalism, or the various “resemblance” theories of Hume and Wittgenstein). Returning to Scheffler, his error is to believe each descriptive stage is equally valid for derivation, that context is not possible. By referring to “dimensionalizing,” Scheffler may also have been considering nonessential attributes, such as defining humans as having two eyes, or as typically wearing clothing. But what is the educational context? What

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<sup>21</sup> See Peterson, Maier and Seligman (1993) for what they term “learned helplessness.” It may impart metaphysically a malevolent universe or worldview, including dehumanization, making human beings objects rather than actors.

<sup>22</sup> Antihumanists argue human nature is either historically relative or ontologically dependent, and either not a basis for prescription or merely one component that is not determinant in any way. In response, the only presumption made here that triggers the naturalistic fallacy is the assumption of life. Furthermore, there are “conditions” that life requires—there are not an unlimited number of ways to live. Therefore, “oughts” are contingent on conditions, the relevant “is” (see McInerney, 1997, Chapter 3). The field of ethics is based on this assumption: the typical question of “What ought I do?” is contingent both on “What can I do?” and “What must I do to remain able to choose?” Herbert Spencer also made this argument.

aspects of human nature are educationally relevant? Scheffler would have us believe there is no proper basis from which to derive these connections. Aristotle, in contrast, was able to devise a means, yielding his method of labeling attributes as “accidental” or essential. As such, accidental qualities of humans are not likely to inform education, while the essential aspects of humans are the most applicable to a context; in this case, an educational context. And as scientific and philosophic knowledge improves our understanding of our species, so will our context of knowledge applicable to educational design. We need not be convinced by Scheffler’s declaration of the “indefinite... dimensionalizing” of a concept, concepts without context or relevant “essentials,” which condemns educational theory to “perspectives,” Montessori’s approach as arbitrary as the next.

### Summary

I have attempted to present a variety of the ideas of the Montessorian educational philosophy and their epistemological foundations. Montessori denied both traditional rationalist (Plato, Kant, Spinoza) and empiricist (Bacon, Hobbes, Locke) positions in epistemology. For instance, in contrast to rationalism, she denied we are born with innate ideas. Furthermore, while she accepted concept formation through “reason” as valid, she denied the rationalist source: *a priori* logical frameworks or irremediable human distortions of reality. On this point, Montessori agreed with the empiricists that *a posteriori* frameworks are valid and are the proper *basis* of concepts (Aristotelian), but did not accept the empiricists’ critique that concepts are arbitrary constructions (or social conventions, as held by nominalists) and invalid because, as empiricists believe, only particular experiences are real and trustworthy. This critique is fundamentally the problem of induction, and is perhaps the most important and controversial epistemological issue in education given that it characterizes knowledge taught and learned in educational settings as either objective or subjective, with only the former permitting self-sufficient justifications of knowledge as the proper basis for learning. Montessori produced an educational philosophy occupying a considerable place in elementary-year private schools throughout the world today through her position on (1) the importance of early education, (2) the crafting of education to the senses as an ally to human cognition, and (3) the referral to what children need cognitively as determined by their choice of (4) select activities to concentrate the mind. Both the validity of concepts and how these can be grasped by the child are crucial to any educational philosophy; Montessori applied these conclusions to her educational system via perceptual foundations supporting conceptual knowledge as the apex. My hope is the unveiling of these ideas will serve to stimulate future discussions of what I find to be an unfortunate absence of Montessorian thought in our modern education and philosophy of education literature.

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