Chapter 3  Liberty and knowledge: the Enlightenment to the twentieth century

3.1 Two proponents of liberty in education

A commonly held view is that Montessori did not achieve a high level of theoretical sophistication but this study proposes that a proper appreciation of her theoretical ideas, and their implications for educational practice, can be developed through a social semiotic re-analysis of her work. The sources of Montessori’s ideas emerged in the eighteenth century and this chapter traces these sources and presents a first reading of her major theoretical proposals, including her conception of human development and her pedagogical principles.

In 1915, Maria Montessori spoke at Carnegie Hall, with the proceedings opened by Professor John Dewey. The scene is described in the following way:

... a crowd estimated at about a thousand had to be turned away from Carnegie Hall, where one of the largest audiences in its history filled every seat and rows of people four and five deep stood in the galleries (Kramer 1978 [1976], p. 194).

According to a report in The New York Sun (quoted in Kramer 1978 [1976], p. 194), the Carnegie Hall audience were:

... eager to hear Dr Montessori explain how she was able to make children advance rapidly in learning, make them polite, self-reliant and charming by giving them complete liberty and without rewards and punishments.

This description of Montessori’s educational approach summarises the Montessori method in terms that are recognisable both within and outside the Montessori movement today. The summary encodes the contrastive, even contradictory, relation which lies at the heart of the Montessori approach. The approach is child-centred (Brehony 2000b), aiming to give children the maximum liberty to choose work and move freely while at school. At the same time it aims to develop the type of educational knowledge and social bearing valued by educational traditionalists, who tend to limit student choice and movement. These apparently contradictory characteristics have meant that the Montessori method has been variously supported and rejected by both traditionalists and those educators who advocate child-centred approaches.
In 1915 it would have seemed natural for John Dewey to introduce Maria Montessori. The American educator and the European educator were both famous for establishing classrooms in which learning was enjoyable and children were respected and liberated from bleak, regimented nineteenth-century mass-education classrooms. Twentieth-century approaches, which sought to free children from oppressive teaching practices and to democratise the school, tend to be described as progressive, particularly when modelled on the ideas of Dewey (Cremin 1961).

Dewey’s philosophical approach, American Pragmatism, established by C. S. Peirce and William James, was based on the premise ‘that ideas are valuable if and only if they make a real difference in our daily lives’ (Cooney, Cross and Trunk 1993, p. 133). Dewey application of this approach to education, exemplified in his Laboratory School in Chicago, inspired the progressive education movement, the dominant force in American education before World War II. The progressive education movement has been described as having four main features:

First, it meant broadening the program and function of the school to include direct concern for health, vocation, and the quality of family and community life. Second, it meant applying in the classroom the pedagogical principles derived from the new scientific research in psychology and the social sciences. Third, it meant tailoring instruction more and more to the different kinds and classes of children who were being brought within the purview of the school ... Finally, Progressivism implied the radical faith that culture could be democratized without being vulgarized, the faith that everyone could share not only in the benefits of the new sciences but in the pursuit of the arts as well (Cremin 1961, pp. viii-ix).

These features, shared by the Montessori approach, remain highly valued by educators today, despite the late twentieth century reaction against progressive education. However two subtle, but important, qualifications need to be made in relation to Montessori pedagogy. First, what counted as ‘new scientific research in psychology and the social sciences’ in the early twentieth century was not the origin of the method. Second, ‘tailoring instruction’ for Montessori meant designing objects which bring an accurate representation of the meaning potential of educational knowledge literally within a child’s grasp, with the meaning potential neither diminished nor distorted to fit an adult perception of a child’s capacity to understand. Montessori objects are designed to be a material realisation of Bruner’s claim that ‘any subject can be taught effectively in some intellectually honest form to any child at any stage of development’ (Bruner 1960, p. 31).
After Montessori left the United States in 1915, her approach rapidly fell out of favour, despite Dewey’s initial endorsement and the fact that Montessori education exemplified the values of progressive education. This was largely because one of Dewey’s well-known supporters, W. H. Kilpatrick, popularised Dewey’s claim that the Montessori method was a misinterpretation of the Rousseau tradition of liberty in education and Montessori materials harked back to nineteenth-century conceptions of teaching and learning (Dewey and Dewey 1915, pp. 141-163; Kilpatrick 1915). A similar critique of Montessori education was published, in 1914, in the United Kingdom, by William Boyd.

The evaluations by Boyd and Kilpatrick are extended critical evaluations of the Montessori method on the basis of first-hand observations of Montessori schools of the era. In addition, Boyd traces the provenance of Montessori’s ideas from the work of John Locke in the seventeenth century. Specifically, Boyd and Kilpatrick argue that Montessori misconceives the notion of liberty in education by straying from the tradition of Rousseau and by not taking into account the realities of social life (For example Boyd 1914, pp. 211-227; Kilpatrick 1915, pp. 50-51). While both texts can be alienating, reflecting the paternalism of the era, the issues raised deserve a response. Lillard (2005, pp. 341-343) has addressed some of the issues raised by Kilpatrick but overall this task has not been satisfactorily completed, which may explain why these criticisms still have currency. The considered response demanded by Boyd and Kilpatrick is beyond the scope of this study. Nevertheless, Boyd’s criticism, *From Locke to Montessori*, reveals that the provenance of the Montessori

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1 This critique of the Montessori method is one of a series of Kilpatrick’s early works which included criticism of Froebel. According to Cremin (1961, p. 216), Kilpatrick ‘remained dissatisfied’ with this body of early work, and felt he was a better teacher than he was ‘an investigator or original thinker’. For an extended discussion and rejection of Kilpatrick’s criticism of Montessori, see Lillard (2005, pp. 341-343).

2 William Boyd was Head of the School of Education at Glasgow University from 1907 to 1946. He was a supporter of the early twentieth century New Education movement, a movement Montessori was closely aligned with through the 1920s and 1930s. In his history of the New Education movement, revised and republished just after his death, Boyd grouped Montessori with Decroly and Claparède, as one of the ‘doctors of genius’ whose educational ideas, developed in the first decade of the twentieth century, were based on work with ‘defective’ children. Boyd comments on ‘the disturbing effect’ on Montessori ‘of the lack of professional recognition [...] for her and other pioneer women of the period’, with the result that she was inclined to be ‘over-combative on behalf of her method’ and resistant to its improvement (Boyd and Rawson 1965, pp. 21-22; 55). Boyd summarises Montessori’s ‘great achievement’ as working out ‘by practical experiment a method by means of which children left free from adult pressure, learn joyfully and spontaneously what they need to learn’ but was of the opinion that neither children nor teachers in the Montessori system ‘get much chance to express themselves’ (Boyd and Rawson 1965, pp. 71-72; emphasis in the original).
objects and method deserves closer investigation. The tasks of this chapter are to
review the provenance of the Montessori objects, to understand more fully their
significance, and to provide a more stable basis on which meaningful responses to the
tradition of Montessori criticism established by Dewey, Boyd and Kilpatrick can be
developed.

As part of the reaction *against* progressive education, after World War II, the
Montessori approach regained popularity in the United States and in countries
influenced by American trends in education (Kramer 1978 [1976], p. 230; Petersen
1983, p. 233). In a more recent review of the history of progressive education from a
British perspective, Brehony (2000a, p. 97) generally equates the term *progressive*
with *child-centred* education and includes the Montessori approach in this category,
showing that perceptions about the degree of alignment between the Montessori
approach and the twentieth-century educational movements remain ambivalent.³

An underlying premise of the present study is that ambivalent twentieth-century
perceptions of Montessori pedagogy, initiated by Dewey, are based on a
misinterpretation of the significance of the objects which constitute Montessori
pedagogy. This chapter argues that the significance of the Montessori objects can only
be understood by clarifying their intellectual provenance. This provenance draws
attention to Montessori’s conception of the relation between liberty and the
development of educational knowledge, and the design characteristics of the
Montessori objects in particular.

In the Western tradition, child-centred and humane approaches to the education of
children, as exemplified by the Montessori approach, extend back to the work of
Aristotle, Quintillian, Erasmus and Comenius (See, for example, Lawton and Gordon
2002). Aristotle, in particular, constitutes the ground out of which Montessori’s
pedagogy emerges.

³ In his history of Montessori education in Australia, Petersen (1983, p. 233) writes:
The reception of Montessori in Australia was like that in most other English-speaking countries:
an initial wildfire enthusiasm followed by a flame-tending exercise by vestigial vestals over some
decades, followed in turn by a rekindling of interest in the 1960s and 1970s. It is the only method
of education that has enjoyed two vogues.
3.1.1 Aristotle’s ground

Montessori’s overarching use of the terms soul, spirit and psychic to refer to the non-physical aspects of human experience is an echo of Aristotle’s de Anima (See 2.2.3). Aristotle was concerned with relations between physical and non-physical processes, form and function, potential and actual (Lawton and Gordon 2002, p. 13). Other Aristotelian themes relevant to Montessori pedagogy include the relation between matter (substance) and energy (process), and the distinction between sensory and motor functions (Murphy and Korvach 1972, p. 331) and the role of sensory experience in mental development. In Aristotle’s empiricist view ‘what we think depends entirely on the sensations we have experienced’ (Lawton and Gordon 2002, p. 18; see also Hobart and Schiffman 1998, pp. 78-79).

Learning is achieved in Montessori pedagogy through a child’s sensory experience of the Montessori objects, specifically, the child’s sensory experience of what the objects are made of, their design, their use and their aim. These four features are reminiscent of Aristotle’s list of the four causes which shape processes: matter (the material cause), pattern (the formal cause), agency (the efficient cause) and goal (the final cause). An Aristotelian telos, as represented by the notion of final causes, is the basis of Montessori’s model of human development.

In a further link with Aristotle, the Montessori objects leave children with sensory impressions, which can be associated with relations of continuity, similarity and contrast. These associations, following Aristotle, contribute to the development of memory and learning, imagination and reasoning (Murphy and Kovach 1972, pp. 12-13; Shields 2005). The Montessori objects act as entry-points into developmental pathways, leading children towards educational knowledge, classified in Aristotelian terms. For example, the precision and certainty represented by the study of geometry and mathematics is contrasted in the Montessori curriculum with the evidence-based judgements demanded by the study of science, geography and history, not to mention the imprecise negotiability of ethical choices (Hooker 1996).

Aristotle’s concern with balance and moderation in social relations, the ‘golden mean’, also resonates with the child’s role in the Montessori classroom as a rational, social being at the centre of the educational process (Lawton and Gordon 202, p. 19).
Children in Montessori classrooms are expected to make reasoned ethical choices, commensurate with their levels of development and knowledge, in order to contribute to social cooperation and harmony.

Aristotle’s philosophy was integrated into Catholic theology by St Thomas Aquinas in the thirteenth century (Lawton and Gordon 2002, pp. 54-55). Being a devout Catholic, Montessori inevitably inherited an Aristotelian world-view, enhanced by her Italian heritage. Following the fall of Constantinople, Greek scholars migrating to Italy incorporated Aristotle’s ideas into the groundswell of the Italian Renaissance, when, in the fifteenth and sixteenth century, the spirit of humanism, empiricism, inquiry and reason began to challenge faith, doctrine and superstition, and educational knowledge became more widely accessible.

In this chapter Aristotle and his influence form the ground against which the provenance of the Montessori objects are explored. The exploration, however, centres on the French Enlightenment of the eighteenth century. As the Montessori approach foregrounds the liberty of the child, it is often associated with the French Enlightenment philosopher, and precursor of European Romanticism, Jean Jacques Rousseau, and the philosophy of education Rousseau proposes in the book Émile. I argue, however, that the significance of the Montessori objects cannot be understood from the perspective of Rousseau’s proposals. Instead it is necessary to seek out a more muted French Enlightenment philosophe, the Abbé de Condillac. Condillac’s ideas underpin the work of Itard and Séguin, the two nineteenth-century French doctors Montessori (1964 [1909/1912] pp. 31-47) acknowledges as her antecedents.

This chapter seeks to demonstrate, contrary to the views of Dewey, Boyd and Kilpatrick, that Condillac’s conception of liberty in education, rather than Rousseau’s, represents the most productive starting point for interpreting and clarifying the objects and their use which comprise the material practices of Montessori pedagogy, in particular the practices relating to the teaching of grammar and reading. I propose that clarifying the provenance of the Montessori objects reveals some crucial misunderstandings by these leading figures about what Montessori set out to do in the design of her materials.
3.2 Montessori and the Enlightenment

3.2.1 Charting the terrain

Montessori’s debt to the Enlightenment has its genesis in the seventeenth-century writing of John Locke (Boyd 1914). Locke described the development of consciousness and knowledge in humans and, two centuries later, Montessori used Locke’s descriptions in relation to young children. Locke’s terminology was handed down to Montessori via the writing of eighteenth-century French Enlightenment thinkers and the practical work of nineteenth-century reformers.

Jean Jacques Rousseau and his contemporaries, the *philosophes* of the eighteenth-century French Enlightenment, including Voltaire and Diderot, concerned themselves with themes launched in the late seventeenth century by the English philosopher John Locke\(^4\). Specifically, these themes relate to the origins and the nature of knowledge and liberty. Montessori conceived of liberty as both means and end in the development of knowledge, thus anchoring her approach in the Enlightenment tradition.

Locke and Montessori share noteworthy biographical details. Like Montessori, Locke was trained in the natural sciences and studied medicine. He also devoted a great deal of his life to education, teaching in universities and involving himself in the education of many children (Aldrich 1999; Boyd 1914, pp. 20-21; Garforth 1966). Locke was a friend and colleague of Boyle and Newton and was strongly influenced by the methods they were developing to build scientific knowledge from observation and experience. Locke applied comparable empirical methods to the study of the human sciences (Garforth 1966; Uzgalis 2005). Two centuries later Montessori would also apply the empirical methods she learnt in her medical training to the education of children. Medical training led Locke and Montessori to address the physical development of children, each emphasising the role of nutrition, exercise and rest (See relevant chapters in Locke’s pedagogical treatise, *Some thoughts concerning*

\(^4\) In his discussion of the eighteenth-century, Postman (1999, p. 103) describes a philosopher as ‘one who is devoted to the search for truths that are both universal and timeless ... something of a recluse’ and a philosophe as ‘a person who is involved in political and social affairs, who is eager to change the way things are, who is obsessed with the enlightenment of others ... interested in practical, concrete matters’.
education [hereafter Thoughts], written in 1693; Montessori 1964 [1909/1912] Chapters VIII and IX). Their training also led them to apply the scientific method to the study of the development of human consciousness.

To seventeenth-century Europeans the terrain of human consciousness was as uncharted as the terrain of unexplored continents. In An Essay Concerning Human Understanding (hereafter the Essay), published in 1690, Locke describes human consciousness, its origins and its limits. A respected interpretation of the Essay portrays the work as a ‘compass of human understanding’ and as a ‘map’ of knowledge, best interpreted in terms of the three divisions of the sciences proposed by Locke (Yolton 1970). The metalanguage Montessori used as she worked to solve the practical problems of educating disadvantaged children remains very close to Locke’s original categories.

3.2.2 Experience, perception and the senses

In the Essay Locke describes, in empirical terms, the origins and nature of human consciousness, encompassing the origin of knowledge and its relation to the development of language. Diverging from Plato and Descartes, and drawing on Aristotle, Locke argues that the mind of the newborn human has no preformed or innate knowledge or understanding (Lawton and Gordon 2002, p. 18). Locke (Essay 2.1.2) asks us to ‘suppose the mind to be ... white paper, void of all characters, without any ideas’, evoking the famous metaphor of the tabula rasa. On this white paper ‘all the materials of reason and knowledge’ are ‘painted’ by experience, which is the origin of the activities and functions of the mind, all of which Locke labels ideas. The Greek word for experience, empeiria, is the derivation of the term empiricism, the word used to label Locke’s philosophy.

First, in Locke’s description of the genesis of ideas, comes sensation, being the perception, through the senses, of the ‘sensible qualities’ of external material objects

5 The term tabula rasa, referring to ‘the mind in its primary state’ derives from Latin and means a ‘scraped tablet’ from which writing has been erased ready to be written on again. A description of the mind as an ‘unwritten tablet’ (pinakis agraphos) is found in Aristotle (De anima, 7.22). (Online Etymological Dictionary. Available at: http://www.etymonline.com/index.php?l=t&p=0. Viewed: September 2005; see also Cooney, Cross and Trunk 1993, p. 47; Murphy and Korvach 1972, pp. 29-31)
in the environment. In other words, the mind’s ideas have an empirical origin in the individual’s sensory experience of the external environment. This notion underpins Montessori pedagogy in three ways. First, Montessori argues that for optimum experience, and therefore optimum development, a child’s material and social environment should be especially prepared. Second, the objects in the environment should provide young children with access to abstract educational knowledge in a concrete, sensible form. Finally, Montessori argues that a scientific pedagogy demands that educators learn from experience, through close and careful observation of children.

3.2.3 Attention and reflection

In the Essay Locke describes the relation between attention and reflection. While growing up, children pay ‘constant attention to outward sensations’, and therefore, according to Locke (Essay 2.1.8), reflection emerges later in the development of consciousness. Reflection is an ‘internal sense’, through which we ‘perceive’ the operations of our mind. Locke suggests that the shift from sensation to reflection is a function of attention, which is necessary if ideas are not to be ‘confused’. Attention leaves ‘deep impressions’ in the mind and thus ‘clear, distinct, lasting ideas, till the understanding turns inward upon itself, reflects on its own operations, and makes them objects of its own contemplation’ (Essay 2.1.8).

The metaphor of experience, sharpened by attention, leaving a lasting impression on the mind recurs throughout Montessori’s writing. The metaphor evokes an image of a footprint left in wet sand or, the ‘signature’ of a signet ring pressed into hot wax (Cooney, Cross and Trunk 1993, pp. 48-49). The use of this metaphor demonstrates that both Locke and Montessori thought of the mind as ‘empty’, but not in the sense of an ‘empty vessel’ that must be filled, following Lillard’s interpretation (as cited in 1.2.4), but rather as material with a yet-to-be realised receptive and functional potential. In the same way that wet sand and hot wax have the potential to receive clear impressions from external forces, the human mind has the potential to receive impressions left by experience. The implication for educators is that the nature of the
impression varies at different phases of development, and, even more importantly, with the quality of experience.

In Locke’s words, ‘[t]he great skill of a teacher is to get and keep the attention of his scholar’ (Thoughts §167). The Montessori objects combine qualities which hold attention through a materialisation of key elements of educational knowledge. When a Montessori object holds a child’s attention, the child’s experience of the object leaves a clear and lasting impression on the mind. This then becomes a foundation on which further knowledge can be built. Montessori’s observations convinced her that the impressions left on the child’s mind trigger the development of mental functions, building the intellect, attention, memory, judgement, and eventually reason, echoing Locke’s functions of the mind.

3.2.4 Language and the functions of the mind

For Locke, the functions of the mind expand simple ideas gained through experience (Essay 2.1.4). The first act of the mind, following Aristotle, is to ‘repeat, compare and unite’ simple ideas to form complex ideas (Essay 2.2.2). The second act of the mind is to build relations, which Locke (Essay 2.12.1) describes in the following way:

The second is bringing two ideas, whether simple or complex, together, and setting them by one another, so as to take a view of them at once, without uniting them into one; by which way it gets all its ideas of relations.

The third act of the mind is abstraction, ‘separating [ideas] from all other ideas that accompany them in their real existence’ (ibid). Thus, Locke describes a typology of ideas emerging sequentially along a developmental pathway from simple ideas, via complex ideas and relations, to abstraction.

Locke’s view of the development of consciousness from concrete experience to abstraction is realised in Montessori’s pedagogy. The pedagogy comprises a series of passages to abstraction initiated when children manipulate specially-designed concrete objects. Each object embodies a simple idea. Moving the objects materialises

\[^{6}\text{Locke (1964 [1693]), p. 126.}\]
\[^{7}\text{See, for example, Montessori (1964 [1909/1912], 1965b [1916/1918]).}\]
\[^{8}\text{Emphasis in direct quotations from the Essay is in the original.}\]
the process of expanding these ideas to form complexes. When children separate, or abstract, the ideas from the objects, the objects are abandoned, with language as the key to separating the ideas from the objects.  

Language is described by Locke as ‘the great instrument and common tie of society’ (Essay 3.1.1). It is made up of ‘signs’ or ‘sensible marks’ of ideas (Essay 3.1.2; 3.2.1). Foreshadowing Saussure, Locke emphasises that there is ‘no natural connexion ... between particular articulate sounds and certain ideas, for then there would be but one language amongst all men’. Instead language is ‘a voluntary imposition, whereby ... a word is made arbitrarily the mark of ... an idea’ (Essay 3.2.1). Human consciousness and human knowledge expand with the evolution of ideas represented by language. Initially language represents ‘sensible ideas’ (Essay 3.1.5), and then ideas not obtained through the senses. Next, language expands to represent ‘general terms’ (Essay 3.3.1), valuable for their functionality rather than as referents of an idealised reality:

... general and universal belong not to the real existence of things; but are the inventions and creatures of the understanding, made by it for its own use, and concern only signs, whether words or ideas (Essay 3.3.11).

Finally, general terms evolve into abstract ideas.

That men making abstract ideas, and settling them in their minds with names annexed to them, do thereby enable themselves to consider things, and discourse of them, as it were in bundles, for the easier and readier improvement and communication of their knowledge, which would advance but slowly were their words and thoughts confined only to particulars (Essay 3.3.20).

Abstract systems of classification, which consider bundles of things rather than particular things, Locke argues, are like words, arbitrary because they are made ‘by the mind’ of humans, ‘not by nature’. The evidence for this argument is that such systems are not found ‘in all men the same’ (Essay 3.6.26). It is, therefore, important that the terms used in such systems are clear, distinct and defined. (For example, Essay: Book 3, Chapters 9, 10 and 11). Locke suggests that this is the key to building knowledge.

The most detailed published example of Montessori instructional sequences as ‘passages’ (i passaggi) from one form of mediation to another is Montessori (1971 [1934]). Instructional sequences, or ‘passages’, are also the bases of the ‘albums’ or handbooks prepared by Montessori teachers during their training.
Again foreshadowing Saussure, Locke (Essay 4.1.4) describes how ideas are perceived, or in Saussurian terms gain *valeur* and become meaningful, on the basis of internal relations of difference, rather than in terms of external reference:

> It is the first act of the mind, when it has any sentiments or *ideas* at all, to perceive its *ideas*; and so far as it perceives them, to know each what it is, and thereby also to perceive their difference, and that one is not another. This is so absolutely necessary, that without it there could be no knowledge, no reasoning, no imagination, no distinct thoughts at all. By this the mind clearly and infallibly perceives each *idea* to agree with itself, and to be what it is; and all distinct *ideas* to disagree, i.e. the one not to be the other.\(^\text{10}\)

Montessori shares Locke’s concern with the functionality and meaningfulness of ‘clear and distinct’ terms. Every object experienced by children in a Montessori environment is given an exact and precise *name* and is located in a *taxonomy*, first in spoken language and then in written labels. Children build classified nomenclatures, beginning with part/whole and categorised sets of everyday objects and progressing to sets of increasing *technicality* and *abstraction*. These classified sets introduce discipline-based educational knowledge, for example, mathematics, science and geography. Matching labels to classified sets of objects or pictures, and then written definitions to the labels, constitutes early literacy experiences in a Montessori classroom. The extensive use of classified nomenclature and definitions in Montessori pedagogy echoes Locke’s ‘knowledge of things’, or ‘natural philosophy’ (Essay 4.21.2).

Neither Locke nor Montessori limited their attention to classifying nomenclature; both emphasised the importance of combining words into meaningful stretches of language, or *discourse*. For example, Locke (Essay 3.7.1) writes:

> Besides words which are names of *ideas* in the mind, there are a great many others that are made use of to signify the *connexion* that the mind gives to *ideas*, or *propositions*, one with another. ... the mind does, in declaring its sentiments to others, connect not only the parts of propositions, but whole sentences one to another, with their several relations and dependencies, to make a coherent discourse.

In Montessori’s pedagogy, the emphasis on connected discourse emerges as an extended series of grammar activities designed to develop the ability to read longer

\(^{10}\) For a discussion of Locke’s conception of words as ‘meaningful sounds and marks’, as well as his emphasis on the precise use of words in the *Essay*, see Yolton (1970, pp. 196-223; emphasis in original).
stretches of text. Montessori offers children these activities at the age she observed children were 'sensitive' to logic and reasoning, and were thus receptive to the study of grammar. Montessori’s series of grammar activities for young children recall another of Locke’s divisions of the sciences, the doctrine of signs, or semiotics. The role of this division is to consider ‘ideas and words as the great instruments of knowledge’ (Essay 4.21.4). It comprises the study of signs and their logical relations, a study Montessori transformed into a grammar-based reading pedagogy.

3.2.5 Knowledge and reason

During the Enlightenment, knowledge and reason were valued as the opposite of ignorance, dogma and superstition (Lawton and Gordon 2002, pp. 89-90; Postman 1999, p. 18). Heralding this Enlightenment view, Locke locates the origins of knowledge in the impressions ‘sensible’ experience leaves on the mind. Through attention, these impressionistic ideas become subject to reflection and the operations of the mind. Operations of the mind include repetition, combination, comparison, the building of relations, generalisation and abstraction. All these experiential and reflective ‘ideas’ are signified by words. Locke (for example Essay 4.12) describes in detail the way each operation of the mind, signified in words, aids and develops the memory of ideas; that is, sense impressions become deeper through repetition of experience, and memory is further enhanced by building relations, abstracting, using distinct terms and classifying. In summary, ideas become knowledge through the ‘perception of the relation of those ideas’ (Yolton, 1970. p. 2). According to Locke (Essay 4.14.4), this process develops ‘two faculties conversant about truth and falsehood’ in the mind. The first faculty is knowledge, confirmed by experience and the ‘agreement or disagreement’ of ideas, and the second faculty is judgement, in which ideas are combined so it is possible to reason about what is true, or not true, even if it cannot be verified by experience. Reason is, thus, a function of ‘the perception of the connexion ... between the ideas’ (Essay 4.17.2).

Locke rejected Descartes’ views on innate ideas but he was influenced by the Cartesian view that ‘the ideal of knowledge must be that of abstract geometry’ (Knight 1968, p. 24). By abstract geometry, Locke meant, Cartesian ‘analytical
geometry’, which unified geometry with algebra (Hobart and Schiffman 1998, p. 113). Throughout the Essay, Locke uses geometric representations of abstract mathematical concepts to illustrate clear, exact and distinct uses of terms. He also draws on geometry for examples of definitions and procedures for establishing systematic relations and logical reasoning. Montessori inherited this geometric view of mathematics as an idealised model of knowledge and reasoning. The study of geometry permeates many aspects of her pedagogy, including the study of grammar.\(^{11}\)

### 3.2.6 Liberty

Liberty is central to Locke’s philosophy and Montessori’s pedagogy. Locke links liberty with the development of knowledge and reason. Liberty for Locke is a function of ‘thinking and motion’ and ‘so far as a man has power to think or not to think, to move or not to move, according to the preference or direction of his own mind, so far is a man free’ (Essay 2.21.8). For Locke the will is the mind’s ‘power’ over thinking and movement and volition is the exercise of that power (Essay 2.21.5). For Montessori the development of the will is both point of departure and of arrival. Montessori pedagogy gives children liberty in order to train and develop the will. The will develops and matures with the development of the intellect and with the development of control over movement. As these functions develop, children in Montessori classrooms are offered more liberty commensurate with their developing knowledge and developing control of movement.

Significantly Locke’s conception of liberty incorporates the power ‘not to think ... or not to move’ (Essay 2.21.8). If ‘true happiness’ is to be achieved (Essay 2.21.54), ‘understanding’ and ‘reason’ restrain desire and impulse. Locke expands this view when he discusses the relation between liberty and social order in the two Treatises of Government. The first opposes hereditary monarchy and the second argues in favour of forms of democracy. According to Locke, reason tells us that if humans are to survive they need life, health, liberty and possessions, because all humans are ‘equal

\(^{11}\) Voltaire (1734 [1964], p. 61; my own translation) describes Locke as ‘not a great Mathematician’, but that ‘no-one proves better than he that it is possible to have the spirit of geometry without the help of Geometry’.
and independent no-one ought to harm another in his life, health, liberty or possessions’ (Second Treatise of Government II, 6\(^{12}\)). This view of liberty underlies the Montessori pedagogy. For Montessori an individual ruled by impulse is not free and in a Montessori classroom the liberty and well-being of others (Montessori 1964 [1909/1912], p. 87) underlies the making of ethical choices.

In Locke’s cartography ethics lie at the limits of knowledge (Essay 4.3.19) and to illustrate this point, he contrasts the way geometric figures can be used to represent mathematical ideas with comparative precision and certainty while ‘moral ideas’ can only be expressed through ‘words’. Knowledge of ethics, of ‘that which man himself ought to do, as a rational and voluntary agent’ and ‘the skill of right applying our own powers and actions, for the attainment of things good and useful’, Locke (Essay 4.21.1-5) argues, should be one of three divisions of the sciences along with ‘the knowledge of things’ and the knowledge of signs and logic.

Montessori’s pedagogy accords with Locke’s division of the sciences. While the present study is principally concerned with the way in which Montessori pedagogy directs children’s conscious attention to signs and logic, as realised in language, the Montessori emphasis on offering young children systematic and generalisable knowledge of the world, as well as knowledge and reasoning skills on which to base ethical judgements, will necessarily also be addressed, given the close interrelation between knowledge and language. The common thread linking these three facets of Montessori pedagogy is the principle of liberty.

### 3.2.7 Social relations between children and adults

Liberty in Montessori pedagogy enables children to freely choose activities in the service of their education. Such liberty is dependent on the explicit construction of respectful relationships between children and adults. This also finds an antecedent in the writing of John Locke. Locke’s proposals for the education of children are found in Some thoughts concerning education (Aldrich 1999; Garforth 1966; Locke 1964 [1693]). This treatise, originally a series of letters, was written specifically to address

\(^{12}\) Locke (1956 [1690]), p. 5.
the education of ‘a gentleman’s son’, and advocates a severe regime, when judged by today’s standards. It foreshadows the social relations between children and adults advocated by Montessori to enhance the educational opportunities of disadvantaged boys and girls.\textsuperscript{13}

Specifically, Locke foreshadows Montessori’s emphasis on the liberty of the child and the harnessing of the resulting spontaneous activity in the service of education:

... children love liberty; and therefore they should be brought to do the things that are fit for them, without feeling any restraint laid upon them’ (\textit{Thoughts} §103\textsuperscript{14}).

Further, Locke (\textit{Thoughts} §69\textsuperscript{15}) recognises the educational value of children’s free activity, within limits:

[Children] must not be hinder'd from being children, or from playing, or doing as children, but from doing ill; all other liberty is to be allow'd them.

This recognition of the value of children’s free activity leads Locke to encourage parents and tutors to make learning more like play, without the coercion adults often assume is needed to educate children. For example, with reference to the teaching of reading, Locke writes:

... if playthings were fitted to this purpose, ..., contrivances might be made to teach children to read, whilst they thought they were only playing (\textit{Thoughts} §150\textsuperscript{16}).

Locke also encourages parents and tutors to observe children’s free activity to better understand how to plan their education and to modify children’s experiences to match their stage of development, and to allow children to be free to behave and develop according to their capacities and interests.

In summary, Locke (\textit{Thoughts} §81\textsuperscript{17}) proposes that children should be treated as ‘rational creatures’, arguing that they understand reasoning ‘as early as they do

\textsuperscript{13} Locke’s initial thoughts on education were later expanded in a work entitled \textit{Of the Conduct of the Understanding}. Locke’s body of work on education contains a contradiction which demonstrates that he had not escaped the prejudices of his day. While on the one hand he offered enlightened advice to parents and tutors on the education of the ‘son of a gentleman’, on the other hand he writes little about the education of girls and his prescriptions for the education of the children of the poor were harsh and contrary to the philosophy of liberty and equality he espoused (Aldrich 1994; Lawton and Gordon 2002, p. 84).

\textsuperscript{14} Locke (1964 [1693]), p. 76.

\textsuperscript{15} Locke (1964 [1693]), p. 47.

\textsuperscript{16} Locke (1964 [1693]), p. 111.

\textsuperscript{17} Locke (1964 [1693]), p. 65.
language’, as long as it ‘is suited to the child's capacity and apprehension’. He opposes physical punishment and instead advises parents to model the behaviour they wish children to emulate, and to give children opportunities to practise valued social behaviours. Locke advocates building of the kind of social relations between children and adults which educators in Montessori classrooms strive to achieve:

... you should make them sensible, by the mildness of your carriage, and the composure even in your correction of them, that what you do is reasonable in you, and useful and necessary for them; and that it is not out of caprichio, passion or fancy, that you command or forbid them any thing (Thoughts §81).

The pedagogical rationale of respectful social relations between adult and child was articulated by both Locke and Montessori. Locke’s reasoning on this issue re-envokes the metaphor of the mind as ‘white paper’:

... teachers should raise no difficulties to their scholars; but, on the contrary, should smooth their way ... Keep the mind in an easy calm temper, when you would have it receive your instructions, or any increase of knowledge. It is as impossible to draw fair and regular characters on a trembling mind, as on a shaking paper (Thoughts §167).

3.2.8 The evolution of Locke’s terms

The scattered and diverse secondary Montessori literature tends to interpret Montessori’s writing and terminology from perspectives which were not yet envisaged when Montessori first proposed her pedagogy. Reviewing Montessori’s proposals from their origins in the writing of John Locke constitutes a first step towards a re-evaluation of the pedagogy. When Montessori used terms such as experience, perception, the senses, attention, impression, reflection, ideas, words, memory, knowledge and liberty, her meaning tends to resonate more closely with Locke than with meanings emerging in twentieth-century social science. This can be illustrated by returning to Montessori’s Aristotelian use of terms such as soul, spirit and psyche.

Throughout the Essay Locke uses the terms soul and spirit to represent non-physical aspects of human experience, in contrast to the terms material, body and senses, which represent physical experience. Montessori uses these terms in the same way,

18 Locke (1964 [1693]), pp. 124-126.
alongside the term *psychic*. Today the term *consciousness* tends to be used to refer to non-physical human experience in general, while terms such as *spirit*, *soul* and *psychic* are more likely to be reserved for religious or mystical experiences. A similar comparison can be made in relation to the term *truth*. The term *truth* tends to be restricted to the domain of ethics, a domain Locke places at the limits of knowledge. Locke and Montessori, however, held to the notion of *truth*, inherited from Plato, as both a defining characteristic and the goal of the development of knowledge and reason. In contrast to Plato, and predictably in accord with Aristotle, they found the origin of truth in empirical experience and its expression in distinct and precise language:

*Truth*, then, seems to me, in the proper import of the word, to signify nothing but the joining or separating of signs, as the things signified by them do agree or disagree one with another. (Essay 4.5.2)

By reconsidering Montessori’s terminology from the perspective of its origins in Locke’s writing, it is possible to avoid the tendency of late twentieth-century positive and pejorative commentators to interpret Montessori proposals as if they were romantic claims made from the perspective of a mystical or spiritual connection with children and childhood. Instead, it is possible to consider Montessori’s work in light of Locke’s concern with the relation between the physical and the non-physical realms of human experience. While Locke inherited this concern from Descartes, his observations on the relation between the two realms of human experience in the development of consciousness led him to model the relation as one of interdependence rather than Cartesian separation. Locke describes the non-physical realm, or consciousness, as a manifestation of what is attended to, sensorially and semiotically, in the physical realm. The way Montessori interprets Locke’s orientation to the relation between the physical and the non-physical in her pedagogy owes much to the way she inherited this tradition. While Locke’s inheritance was handed down to Montessori via the French Enlightenment, she did not view it exclusively through Rousseau’s romantic lens, as is so often assumed.
3.3 Pedagogies arising from Rousseau

3.3.1 The liberty of Rousseau

Montessori’s pedagogy is often located explicitly (for example, Boyd 1914, pp. 184-186; Crain 2000, p. 1, p. 85; Postman 1999, p. 120; Thomas 1979, pp. 451-455) or by implication (for example, Cooney, Cross and Trunk 1993, p. 169; Lawton and Gordon 2002, p. 99; p. 207) within the educational tradition of Rousseau. This follows from her emphasis on liberty as the foundation of her method and her developmental description of the phases of childhood. Cooney, Cross and Trunk (1993, p. 169) label the Montessori objects in behaviourist terms as ‘external stimuli’ but describe the way the objects appeal to ‘the individual nature of children’, allowing children to react ‘instinctively’, to satisfy ‘internal drives’ and to maintain ‘the motivation of the individual’. This description employs the conflicting theoretical terminology so typical of much Montessori analysis and evokes Rousseau’s emphasis on natural predispositions and inner feelings, or ‘sentiments’, as the source of human understanding, rather than Locke’s emphasis on external sensory experience.

Rousseau’s views on education are presented in his well-known description of the education of an imaginary child, Émile, in which he concedes that instead of educating a child, he has the easier task of writing about it (Rousseau 1974 [1762], p. 18).19 In this work Rousseau argues for giving children liberty from within the empirical tradition inherited from Locke.

Oh, wise man, take time to observe nature; watch your scholar well before you say a word to him; first leave the germ of his character free to show itself, do not constrain him in anything, the better to see him as he really is. (Rousseau 1974 [1762], p. 58)

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19 In one of his more generous comments about Montessori’s work, Boyd (1915, p. 186) writes: Rousseau, with a conception of education fundamentally identical with [Montessori’s], evades all the difficulties of educational work by expounding his methods with reference to the exceptional case of a child in a very uncommon situation. In spite of the fact that his ideals are implicitly democratic, the practical proposals he puts forward would only be feasible if education were restricted to an aristocratic few. Montessori, living in an age that makes greater demands on its idealists, could not escape the difficulties of converting her theories into practical forms in this easy and unsatisfactory way. She had to face, and did face, the modern problem of educating all the children of all the people ...
Rousseau (1974 [1762], p. 53), however, does not align himself with Locke’s proposal that children should be treated as rational. Instead, he exhorts his reader to view childhood as a natural state. Because children are born naturally good and become corrupted by society and culture, Rousseau isolates Émile in a village environment where the child, under the care of a tutor, can develop optimally through spontaneous and free activity, ‘far from vile morals of the town’ (p. 59). The child learns through discovery and personal experience in an environment manipulated by the tutor:

In the village a tutor will have much more control over the things he wishes to show the child; his reputation, his words, his example, will have a weight they would never have in the town (Rousseau 1974 [1762], p. 59).

In this way, the fictional child develops into Rousseau’s ideal adult, healthy, practical, independent, resourceful and resilient, and, thus, ready to join society without being so vulnerable to its limiting and corrupting power (See, for example, Cooney, Cross and Trunk 1993, pp. 63-77; Crain 2000, pp. 11-19; Lawton and Gordon 2002, pp. 94-99; p. 102).20

In the story of Émile, as Boyd (1914, p. 52) points out, Rousseau follows Locke’s principle that humans learn from experience through the senses:

In the dawn of life, when memory and imagination have not begun to function, the child only attends to what affects its senses. ... He wants to touch and handle everything; do not check these movements which teach him invaluable lessons ... (Rousseau 1974 [1762], p. 31).

For Rousseau (1974 [1762], p. 29), however, experience ‘precedes’, rather than constitutes, instruction. The child’s sensory experiences are not ordered, nor is he given language to draw his attention to distinctions which are salient in the wider social group. In contrast to Locke’s description of sensory experience as the source of ideas from which knowledge and reason develop, Rousseau devises experiences for Émile which link sensory experience with feelings, not always happy ones, so the child learns appropriate behaviour through natural limits. For example, Rousseau (1974 [1762], p. 55) writes:

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20 Lawton and Gordon (2002, p. 102) point out that Rousseau’s ideas on education are compromised by ‘the mass of contradictions’ in his personal life, including the treatment of his own children, and in the ‘amazing internal contradictions’ in his writing (p. 96). See also Crain (2000, p. 13).
Let him early find upon his proud neck, the heavy yoke that nature has imposed upon us, the heavy yoke of necessity ... Let him find this necessity in things, not in the caprices of man.

According to Rousseau (p. 165), children learn ‘to perfect reason through feeling. Moreover, experience should teach the child to read in ‘the book of nature’ (p. 124) rather than to teach the child cultural knowledge expressed through written language; a child’s mind is ‘not in his tongue, but in his brain’. This description is out of step with the interrelation Locke proposes between language and thought in the development of consciousness.

Elements of Rousseau’s approach are found in Montessori’s pedagogy. In particular, Montessori emphasised the importance of observing children’s spontaneous behaviour and her pedagogy is based on children’s free activity in a prepared environment. Like Rousseau (for example, Émile Book 1), Montessori modelled childhood as a functionally distinct period of human life, elaborating Rousseau’s stages of a child’s development. Furthermore, Montessori stressed the importance of children learning practical skills and becoming independent, expressed by Rousseau (1974 [1762], p. 42) as: ‘They can do more for themselves, they need the help of others less frequently’.

Nevertheless, Montessori deliberately differentiates her pedagogy from Rousseau’s ideas, specifically in relation to the role of liberty in the education of children. She would interpret Rousseau’s injunction that children should not be taught ‘science’ but be left to discover it (Émile Book 2) as abandonment. Montessori embodied educational knowledge in objects and exercises designed to interest children so that they freely choose to learn from them. The development of an ordered vocabulary of perception generated through interaction with the objects becomes the basis of true liberty. In summary, Montessori writes:

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\text{It is true that some pedagogues, led by Rousseau, have given voice to impracticable principles and vague aspirations for the liberty of the child, but the true concept of liberty is practically unknown to educators. (Montessori 1964 [1909/1912], p. 15)}^{21}
\]

\[^{21}\text{This statement is strongly refuted by Boyd (1914, p. 219 n1):}
\text{In view of Montessori’s mistaken disparagement of Rousseau’s advocacy of freedom in education, it is necessary to say that there is nothing she has said on the subject which has not been as well said by Rousseau.}\]
Pedagogues who followed Rousseau included the nineteenth-century educators Pestalozzi and Froebel.

### 3.3.2 Pestalozzi’s method

Pestalozzi was a Swiss-Italian who, at the end of the eighteenth century designed an educational method based on Rousseau’s ideas. Unlike Rousseau, however, Pestalozzi was a practical reformer, who developed humane methods for educating large groups of children of all backgrounds in institutional settings.\(^{22}\)

Pestalozzi’s approach became the benchmark for the nineteenth and early twentieth-century educational reformers who followed, including Froebel, Dewey and Montessori. Pestalozzi’s influence can be seen in many elements of Montessori’s method, for example, creating a secure home-like atmosphere in the classroom, conflating work and play, capturing children’s interest and attention, using freely-chosen, sensory activity with manipulable objects to introduce abstract concepts, and breaking the curriculum into a sequence of activities to match children’s development (Adelmann 2000; Heiland 1993, pp. 3-4; Lawton and Gordon 2002, pp. 97-99; Nourot 2005, pp. 4-6; Resnick et al 1998, p. 281).

Despite sharing Pestalozzi’s humanitarian goals, Montessori (1997 [1915], p. 274) criticises his method as ‘far from the realisation of the promise of his theories’ because it ‘proved too pedantic and too mechanical’. She is particularly critical of the ‘object lesson’ a methodology derived from Rousseau, which Pestalozzi used to encourage children to observe concrete objects closely and to reflect on their intuitive and personal experience of the objects in the environment before they were given conventional names or definitions.\(^{23}\) A reductive version of this methodology remained popular in Montessori’s time. Montessori (1964 [1909/1912], pp. 110-112) gives a scathing critique of an object lesson, pointing out that this type of teaching

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\(^{22}\) A century before Pestalozzi, the seventeenth-century Czech educational reformer, Comenius, argued for a general education to be offered to all children. Comenius is also known as the author of the first children’s picture book, *Orbis sensualium pictus*, published in 1658. In this book objects were labelled with both Latin and vernacular words (Nourot 2005, p. 4; see also Montessori, 1973a [1948], pp. 33-34).

\(^{23}\) For discussions of object teaching, see Adelman (2000, pp. 106-107); Dewey and Dewey (1915, p. 69).
traps children in their present experience, denying them the generalising power of precise terms and abstract understanding.  

3.3.3 Froebel’s gifts

In the first decade of the nineteenth century the German founder of the Kindergarten, Friedrich Froebel, visited Pestalozzi’s school and was influenced by his approach, including the object-teaching methodology (Adelman 2000; Brehony 2004a; Heiland 1993; Lawton and Gordon 2002, p. 98; pp.204-205). By the end of the nineteenth century the Froebel approach had developed a cult-like following.

Froebel, foreshadowing Montessori, gave children sets of precisely-designed objects to manipulate as a means of self-education. Froebel called his objects ‘gifts’. The geometric design of the ‘gifts’ emerged from Froebel’s study of crystals. On the basis of the gifts Froebel is often credited with inventing the idea of giving children building blocks for creative play. Like Pestalozzi before him, Froebel also described play as the child’s ‘work’ (Boyd 1914, p. 181; Brehony 2004b).

Illustration 3.1: Froebel’s gifts

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24 When describing the ‘miracles’ in Pestalozzi’s school, Montessori (1955, p. 27) draws attention to ‘the burying of the revelations’ of children doing things considered beyond their age. See also Séguin (1971 [1866], pp. 187-188).
25 Frank Lloyd Wright credits the Froebel blocks he played with as a child as the origin of his architectural inspiration (Brosterman 1997, cited in Resnick et al. 1998, p. 281).
26 In his discussion of Froebel’s conception of play Brehony (2004a) includes a review of the notion of play in Western educational literature drawing on Marx, Engels, G. Stanley Hall and Dewey. Brehony points out that, in all these sources, play and work are always considered in relation to each other.
Montessori admired Froebel’s work but she did not think his method was practical (for example, Montessori, 1997 [1915], p. 274). Her criticism of Froebel echoes that of contemporary educators, who followed the principles of pedagogy advocated by the early nineteenth-century German philosopher Herbart. Herbart was concerned, not so much with creative play, but with developing principled methods for teaching the formal disciplines of educational knowledge. One early twentieth-century supporter of Herbart criticises ‘Froebel’s failure to correlate his theory and practice’ (Adams 1907, pp. 41-42). This same critic argues that the plant metaphor, used by Froebel, paralyses teachers, relegating them to ‘humble under-gardener’ passively watching children’s development.

Herbart, like Froebel, visited Pestalozzi’s school and used it as the basis for his theory of ‘apperception’, proposing that what a person perceives at any moment, and thus attends to and learns, depends on remembered past experience (Wells 1987, p. 88). Herbart experimented with ways of teaching so that ‘the child passes systematically from familiar to closely related unfamiliar subject matter’ (Murphy and Kovach, 1972, p. 53). Herbart’s steps, from preparation to presentation to application, continue to dominate teaching practice to this day. Montessori (1965b [1918], pp. 36-37) argues that Herbart’s systematic approach can only work if children’s attention is captured by awakening their interest first, the kind of interest children manifest when playing. She also felt his approach concerned itself too much ‘with what goes on in the mind of the child’, rather than the ‘periphery ... that part of the child’s personality which comes in contact with the external world’, the more appropriate focus of the teacher’s attention (Standing 1962 [1957], p. 235). Thus, for Montessori, the task becomes one of reconciling the systematic teaching of subject matter with the attention, generated by interest, of the child at play in the external world; and for the child at play the unfamiliar is often what captures their interest and attention.

By the end of the nineteenth century, the German psychologist Wundt had elaborated the notion of apperception, highlighting the need for ‘a more serious study of the nature of attention’ (Murphy and Korvach, 1972 pp. 164). At the same time, the American psychologist William James disagreed with Wundt’s project of analysing consciousness as a structure of phases or parts, instead modelling consciousness as a dynamic process, or flux (Murphy and Korvach, 1972, p. 196; p. 216). Montessori’s
method was designed in the midst of debates surrounding these divergent models of consciousness, models not available to Froebel as he designed his kindergartens.27

Montessori felt that Froebel’s ‘gifts’, and the associated creative play he called the ‘occupations’, were too systematised, yet by the end of her life her own method had become a much more elaborate, interrelated system of educational objects and activities. Froebel’s gifts are no longer a fixture in contemporary kindergartens, although creative play is still emphasised. The influence of Froebel’s designs, however, remains strongly evident in the Montessori geometry material.

3.3.4 Competing interpretations

Pestalozzi and Froebel interpreted Rousseau’s ideas through the filter of the Romantic idealism of nineteenth-century Europe. Froebel, in particular, emphasised free-play, creativity, imagination, spontaneity and natural development, an emphasis maintained in preschool education to this day. From the end of the nineteenth century the Froebelian movement in Europe, England and the United States dominated ideas about early childhood education until the Montessorian challenge in the second decade of the twentieth century (Brehony 2004b; Peterson 1985, p. 244).

Montessori claimed her theories were ‘scientific’, the result of empirical observation and experimentation, in contrast to theories such as Froebel’s, which were ‘the result of philosophizing’ (Peterson 1985, p. 244). Nevertheless, in the advocacy of devoted Montessorians can be heard echoes of those who revered Froebel as:

... a great educator who had pioneered the means to an ever-improving world through the innate transcendence of children ... transcendence [that] could be gained only by following the spirit and the letter of Froebel’s educational principles (Adelman 2000, p. 103).

Such advocacy endows children with inborn, natural metaphysical qualities, which resonate with Rousseau’s idealisation of childhood. Montessori’s career and material legacy, however, do not accord with this type of advocacy.

27 For Montessori’s review of educational movements in Europe to the second decade of the twentieth century see ‘A survey of modern education’ in Montessori (1965b [1916/1918], pp. 23-54).
Montessori’s career as an educator emerged from her paediatric work with impaired children in the grim psychiatric hospitals of her time. Through her study of the psychiatric and educational literature of the day, and guided by her belief that education, rather than medicine, promised the best outcomes for the ‘defective’ children in her care, Montessori discovered the work of Itard and his student Séguin. She subsequently based her pedagogy on her interpretation of the work of these two doctors. In this way Montessori made a subtle, but critical, shift away from the tradition of Rousseau, and instead entered a tradition with links to Rousseau’s contemporary, fellow Enlightenment philosopher, Etienne Bonnot, the Abbé de Condillac.

3.4 The liberty of Condillac

In this section the provenance of Montessori’s didactic objects is traced back to the mid-eighteenth century and a Parisian school for the deaf. Visitors to this school included the Enlightenment *philosophes* Rousseau and Diderot. A member of their circle was the Abbé de Condillac.

French Enlightenment thinkers were influenced greatly by Locke’s proposal that ‘understanding’ is not an innate human characteristic, but is learned through experience via the senses. European maritime explorers had found ‘savages’ inhabiting distant continents and the liberty Rousseau proposes as optimum for Émile’s development accords with the role he imagines liberty plays in the lives of ‘savages’, uncorrupted by civilisation.

The … savage … is tied to no one place, he has no prescribed task, no superior to obey, he knows no law but his own will; he is therefore forced to reason at every step he takes. He can neither move nor walk without considering the consequences. Thus the more his body is exercised, the more alert is his mind; his strength and his reason increase together, and each helps to develop the other (Rousseau 1974 [1762], p. 83).

Rousseau’s idealised ‘savage’ develops an intellectual life in isolation because he is forced to make his own choices in order to survive, thus exercising and gaining control over movement, attention, judgement and reason. In the overlapping, but divergent view, of his contemporary Condillac, human liberty is a function of social
conventions, represented in language, emerging from distinctions made in the contexts of daily life.

From the perspective of the French Enlightenment, children and ‘savages’ had limited capacity for learning language, which placed them at the boundary of what it meant to be human (Lane 1976, pp. 23-25). Another group whose humanity was often denied because of their lack of language were sourds-muets (deaf mutes). Unsurprisingly, a school where the deaf were being taught to speak, and, therefore, to become fully human, was of interest to Rousseau and his fellow philosophes, including Diderot and the Abbé de Condillac.

When he first came to Paris in the mid-eighteenth century, Rousseau lived near a school for the deaf run by Jacob Rodrigues Pereire (Boyd 1914, pp. 36-43; Kramer 1978 [1976], p. 62). Rousseau visited the school regularly and, according to Séguin (1971 [1866], p. 25), Pereire’s practice greatly influenced the writing of Émile.

Pereire came to France from Spain as a young man. He had a deaf sister, married a deaf woman and devoted his life to teaching the deaf. Séguin (1971 [1866], p. 22), Pereire’s biographer, met Pereire’s ‘last surviving pupil (Lane 1976, p. 150) and reports that he succeeded in teaching deaf people to speak so effectively that they spoke with his peculiar southern accent.28

Arguably, the origin of Montessori’s educational practice can be traced to Pereire’s humane, and humanising, praxis. Pereire began by interacting with his students using three ‘temporary means of communication’: a ‘manual alphabet’, ‘another syllabic manual of forty-odd signs of his own invention’ and ‘pantomime’. The manual alphabet was derived from a ‘curious Spanish book’ of the seventeenth century written by a priest who had taught a deaf Spanish lord to speak (Lane 1976, p. 196).

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28 Pereire’s given name is variously recorded as Jacob or Giacobbo and his family name as Rodrigues Pereire or Rodriguez Pereira. Boyd (1914, pp. 36-43) and Kramer (1976, p. 62) use the Spanish spelling, but I have chosen Séguin’s French spelling.
This manual alphabet is the antecedent of the moveable alphabet still used in Montessori schools.\textsuperscript{29}

Pereire’s next step was to teach his students ‘to speak the speech proper, derived from the consciousness of the reciprocal nature of language’, developed through the initial communication activities. To teach deaf people to speak, Pereire analysed spoken expression into ‘two elements’: the sound, and the vibration which produces the sound. Sound ‘which the ear alone can appreciate’ could not be heard by deaf people but they could feel vibration, which ‘any flesh vibrating itself may be taught to perceive’. Once the deaf students learnt to perceive the vibration of sound, they could also be taught to reproduce it, reproducing at the same time the sound itself. In this way Pereire, in Séguin’s words, ‘practically made his pupils hear through the skin, and utter exactly what they so heard’.

Pereire’s students were also taught, in his own words:

... to understand the \textit{force} of different parts of speech, to use them correctly whether in speaking or in writing, according to the grammar and the particular genius of the language (quoted in Lane 1976, p. 152; emphasis added).

In other words, Pereire taught his students what different parts of speech do, their function in meaning-making. The semantic orientation of this interactive, sensory and grammar-based method was apparently very successful as demonstrated by the prominence of Pereire’s students in Parisian society and letters. Unfortunately, rivalry between Pereire and another gifted teacher of the deaf of the era, Abbé de l’Épée,

\textsuperscript{29} Montessori (1955, p. 25) notes that moveable alphabets were used by Quintilian to teach literacy in ancient Rome.

The Spanish priest who influenced Pereire, Juan Pablo Bonet, wrote his ‘curious’ book in 1620. In this book he described a method for teaching the deaf, derived from the work of a Benedictine monk a century earlier. The method was based on the use of a manual alphabet to teach the pronunciation of sounds and syllables as a basis for reading. A basic vocabulary was then learned by matching objects to words on cards, before being expanded on the basis of grammatical categories (Lane 1976, p.p. 195-196).

In \textit{Émile}, however, Rousseau (1974 [1762], p. 81) dismisses the value of manual alphabets, called ‘bureaux’, in the teaching of reading:

People make a great fuss about discovering the best way to teach children to read. They invent ‘bureaux’ and cards, they turn the nursery into a printer’s shop. Locke would have them taught to read by means of dice. What a fine idea! And the pity of it! There is a better way than any of those ... it consists in the desire to learn. Arouse this desire in your scholar and ... any method will serve.
caused Pereire to keep many of the details of his method secret (Boyd 1914, p. 38; Lane 1976, p. 185; p. 207).³⁰

Pereire’s work convinced many, including Rousseau, Diderot and Condillac, that all the senses are, in the words of Ségui (1971 [1866], p. 24), ‘modifications of ... touch ...’. Ségui continues by summarising the conclusions to be drawn from Pereire’s practice. First, it demonstrates that all the senses can be trained physiologically ‘by which their primordial capability may be indefinitely intellectualized’. Furthermore, one sense can be substituted for another as ‘a means of comprehension and of intellectual culture’ and ‘our most abstract ideas are comparisons and generalizations by the mind of what we have perceived through our senses’. Specifically, ‘sensations are intellectual functions performed through external apparatus as much as reasoning and imagination are performed through internal organs’.

The influence of Pereire’s work is seen in Rousseau’s emphasis on sensations in Émile’s early education (Émile Book I; see also Knight 1968, p. 215; Kramer 1978 [1976], p. 62; Malson, 1972 [1964], p. 85; Ségui 1971 [1866], p. 25). Diderot ‘followed Pereire’s teachings’ (Ségui 1907, p. 9), and between 1749 and 1751 published books on blindness and deafness, in which he ‘discussed the foundation of language and the relationship of speech and gesture’ (Knight 1968, p. 150), before compiling, with d’Alembert, the revolutionary and ambitious L’Encyclopédie (1751-1772), which had liberty as its overarching theme and the systematic classification of scientific knowledge as its goal (Knight 1968, p. 59).³¹

Rousseau, Diderot and Condillac met regularly and, Knight (1968, p. 10) argues:

... must have discussed problems relating to sense experience, such as the contribution each of the senses makes to human knowledge, and the relativity of our knowledge to the kinds of senses man has ... They probably also talked about language, how it originated and how it came to develop as it did ...

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³⁰ According to Ségui (1971 [1866], p. 82), ‘J. R. Pereire, after teaching for forty years the deaf to speak, saw his method reduced to mimic language and mutism’. Ségui may have been referring to Abbé de L’Epée, who taught the deaf sign language rather than vocal speech. The rivalry between Pereire and Abbé de L’Epée is echoed in current debates between those who advocate teaching deaf people vocal speech and those who advocate teaching sign language.

³¹ In the Encyclopedia Diderot and d’Alembert depict knowledge as a topological map of different regions linked together by mathematics, illustrated in the metaphor of the ‘tree of knowledge’ (Hobart and Schiffman 1998, pp. 148-149). The array of Montessori objects in Montessori classrooms for children aged six to twelve years is also designed to represent knowledge as interdependent regions of a topological map.
It was Condillac’s response to the problem of the relation between the senses, the development of language and the development of knowledge, rather than Rousseau’s, which was to be most influential in the educational heritage underpinning Montessori’s conception of pedagogy.

3.4.1 Liberty through signs

Condillac elaborated Locke’s ideas about the relationship between the senses and the development of consciousness. In so doing he rejected, even more strongly than Locke, the possibility of innate ideas (Weyant 1971, p. ix). For example, Condillac writes that Locke:

... did the opinion of innate ideas too much honour by the number and the solidity of the reflections he opposed to it. So much was not needed to destroy so vain a shadow (Condillac Traité des systèmes, quoted in Knight 1968, p. 53 n3).

Condillac went beyond Locke by arguing that, not only ideas, but the functions of the mind are not innate, both originating in sensory experience. The key to the development of ideas and the functions of the mind beyond sensory experience is, according to Condillac, language (Aarsleff 1982, pp. 149-150).  

Condillac was writing a hundred years before Darwin and could have had no idea of ‘the real antiquity of man’ (Knight 1968, p. 153), but he used genetic analysis to refute the rationalist philosophy of his predecessor, Descartes, a philosophy that viewed reason and language as innate capacities of humans. The genetic explanation devised by Condillac locates the origin of the non-physical, or psychic, capacities of humans in physical sensation and physical need (Aarsleff 1982, pp. 153-154, pp. 210-224; Knight 1968, pp. 79-80; Weyant 1971). To construct his explanation, Condillac describes a ‘gradually animated statue’ (Knight 1968, p. 11) in which one by one each

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32 Boyd (1914, p. 45) writes with disapproval that ‘Condillac attributed the whole of man’s ideas to social intercourse, ...’, preferring Rousseau’s idea of ‘the distinctive nature of the learning mind as the fundamental datum in the process of the education.’ For Boyd (1914, p. 48) it was Rousseau who ‘extended Locke’s doctrine far beyond its original limits and made it an inspiration of a new conception of education’.

33 Knight (1968, p. 28) contrasts the genetic explanation favoured by the French-Enlightenment thinkers of the eighteenth century with the historical explanation favoured by nineteenth-century thinkers. See also Culler (1985, p. 68 and p. 70)
sense is activated. In Condillac’s account of the statue becoming increasingly human, it is possible to glimpse Pereire’s deaf students becoming increasingly animated and ‘human’ as they learn to attend to, and make meaning of, their world through the senses.

First, Condillac activates the statue’s sense of smell, followed by sight and hearing, culminating in the ‘master-sense’ of touch (Knight 1968, p. 99). When touch is combined with the other senses and movement, the statue begins to observe and to differentiate, for example, between the self and the external world, between near and far, light and dark, large and small, between different shapes (‘the globe from the cube’) and their parts (Knight 1968, p. 101-104). The statue begins to make ‘sense’ of the environment by attending to sensory difference, elaborating Locke’s emphasis on the role of ‘distinct ideas’ in the building of knowledge and foreshadowing the ‘Saussurian principle, that meaning is the product of differences’ (Culler 1986, p. 9). Once the senses have been activated and exercised, the statue can make a conscious choice about where to direct its attention.

In Condillac’s view, attention is the ‘key to understanding’ (Knight 1968, p. 88) and our learning depends on it (Knight 1968, pp. 209-211). Where we choose to direct our attention depends on need, interest and relevance. Attention intensifies perception, leading to memory and learning. When attention is polarised, we begin to compare and to make connections. Attention, combined with memory, makes it possible to compare present sensations with past ones and to make judgements about them (Falkenstein 2002; Knight 1968 pp. 30-31). In this way attention, memory, comparison and judgement emerge from sensory experience, and form the foundations of understanding.

The potential of Condillac’s statue is limited, however, because it is not fully in control of what it perceives and what it thinks about. Such control, argues Condillac, requires the invention of signs (Aarsleff 1982, p. 154, p. 214; Knight 1968, p. 133). Condillac’s argument is summarised by Lane (1976, p. 54) in the following way:

A man without language, according to Condillac, depends on the sight, sound, and direct sensory experience of objects or events to evoke the corresponding ideas. Since

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34 Boyd (1914, p. 31) describes this explanation as ‘a naive fiction’.
he has no recourse to signs that designate these objects, he cannot imagine them in their absence, cannot recall them, and cannot contemplate their properties and relations, thus creating new and abstract ideas.

Again Condillac uses genetic explanation to further this argument. He describes how two children, separated from society before they could speak, might learn to communicate with each other (Culler 1987, p. 68; Itard 1972 [1801], p. 92; Knight 1968, p. 154). First, the children might find themselves using signs quite by accident, for example, the vocal and physical gestures which constitute reflex reactions to environmental circumstances. These reactions would not have been originally intended as signs but because both children shared the same context, they would both understand them in the same way. In another time and place these ‘accidental signs’ could be used, intentionally, to recall the same, similar or related objects and events. In this way, a language of ‘action’ develops, emerging from shared activity in localised contexts and taking the form of intentional physical gesture and vocal expression. Gradually, by using the language of action as an analogy, arbitrary or conventional signs come to be deliberately invented (Aarsleff 1982, pp. 163-164; Knight 1968, p. 41, pp. 155-156; Taylor 1984, pp. 213-214; Wells 1987, pp. 8-10).35

To Condillac, an exemplar of a fully-fledged language emerging from a language of action was the sign language of the deaf which Pereire’s rival, the Abbé de L’Epée, had developed based on the gestures deaf people used to communicate with those close to them (Lane 1976, pp. 71-82). This language emerged from a ‘language of action’, yet was ‘as artificial and analytic as any spoken language’ (Knight 1968, p. 167).36

Condillac argues that the invention of signs, in whatever form, frees humans from dependence on immediate sensory experience and gives them control of their mental

35 Itard (1972 [1801], p. 92) uses Condillac’s ‘ingenious supposition’ to explain that a wild girl abandoned with a companion was later educated more successfully than other wild children abandoned on their own because ‘she was indebted to this simple association for a certain development of her intellectual faculties’. Itard continues: ‘This was an education such as Condillac speaks of, when he supposes two children abandoned in a profound solitude, in whose case the sole influence of their cohabitation must give scope to the exercise of their memory and their imagination, and induce them to create a small number of artificial signs.’

36 As Condillac (quoted in Lane 1976, p. 81) wrote in his Grammaire: ‘All sentiments of the soul can be expressed by positions of the body ... We can render all our thoughts with gestures as we render them with words ... We can distinguish two action-languages: the one natural, with signs determined by the structure of our organs; and the other artificial, with signs determined by analogy. The former is necessarily very limited; the latter can be so enlarged as to express every thought of the human mind.’
functions (Knight 1968, p. 40). The use of signs develops and refines attention, memory and reflection, and makes it possible to reorganise remembered experience in imaginative ways.\textsuperscript{37}

In Condillac’s view, again recalling Pereire, not only do language and reason develop together through experience, reason is expressed in the grammatical structure of language. This idea found pedagogical expression in the curriculum Condillac designed in the nine years he worked as a tutor to the Prince of Parma, a grandson of Louis XV. Teaching grammar, for Condillac, was the same as teaching reasoning, or ‘the art of thinking’ (Knight 1968, pp. 164-167).\textsuperscript{38}

Boyd (1914, pp. 34-35) argues that the influence of Condillac’s proposals on education has come down to us through Rousseau, because Condillac did not see the educational applications of his own work, but this interpretation is rejected by Knight (1968, p. 307). After reviewing the many ways in which ‘Rousseau restates Condillac’s doctrines’, Knight (1968, pp. 215-216) concludes that, unlike Condillac, Rousseau was not interested in ‘the mechanics of learning’ (See also Aarsleff 1982, pp. 155-157). When teaching the young prince, Condillac aimed for his student to ‘take over the process of learning’. Instead of Rousseau’s comparatively haphazard vision of a natural education, Condillac designed a systematic approach which he believed followed nature’s lead because it began with sensory observation. He aimed to systematise haphazard and unconnected sense impressions, initially gathered in early childhood in an unreflective and uncritical way (Knight, 1968, p. 42; p. 47). His pedagogy began by overlaying conscious observation onto the child’s spontaneous activity:

I let him play and I played with him, but I made him notice everything he did and how he had learned to do it, and these small observations on his games became for him a new game (From the Cours d’études, quoted in Knight, 1968, p. 219).

\textsuperscript{37} Wells (1987, p. 9) summarises Condillac’s arguments as follows: ‘He ... notes that the use of signs led to a development of the mental powers and this in turn to an improvement in the signs. He does at times suggest that thinking without language is impossible [and states] that language and reason grew up together, mutually prompting one another as every animal function develops with the organ on which it depends.’

\textsuperscript{38} Condillac writes that ‘[t]he art of reasoning is a well-made language’ (quoted in Knight 1968, p. 172), in French: \textit{L’art de raisonner se réduit à une langue bien faite}. 
From sensory observations made during games Condillac lead the young prince towards general ideas, then the relations between ideas and finally to reasoning. This approach was the reverse of teaching practice at that time, which began with subject matter and general principles, rather than with children’s activity (Knight, 1968, p. 211; pp. 220-221).

A central concern of Condillac’s philosophy is analytical method. He valued observation, but argued that the data of observation need to be organised systematically if they are to become knowledge. He describes a visitor arriving at a chateau at night. Each morning the visitor is given only a brief glimpse of a beautiful landscape before the window shutters are closed. Each subsequent glimpse provides exactly the same sensory impression, but with each successive glimpse, the elements of the landscape are sorted out, for example, as more significant or less significant elements, and in terms of their locations and relations to each other. Once all the elements have been sorted out and arranged systematically, the visitor can ‘take them in in a single view’ (Condillac, La Logique 1780, quoted in Lane 1976, p. 75).

Condillac applies this understanding of the relation between observation and knowledge to his conception of pedagogy. Through guided observation, rather than memorising by rote, the teacher’s task is:

... to stock the mind with well-formed ideas whose genuine interconnections are properly grasped - ... this is what it means to teach a child to think (Knight, 1968, p. 214).

The connection between ideas is a function of signs.

Ideas are linked to signs, and it is only by this means ... that they are linked to each other ... (Condillac, Essai, quoted in Lane 1976, p. 93)

In Condillac’s view the connections between ideas (la liaisons des idées) underpin memory and learning. Children learn through experience, at first through impressions mediated by the senses. Out of this sensory activity emerges language and, with language, reason and abstraction, which is, for Condillac, ‘a result of the process by which signs are created’ (Culler 1986, p. 68). Thus, increasingly, experience is mediated through signs. Through the use of signs children gain knowledge, freedom and autonomy and become able to direct their attention and their perception consciously and intentionally to control their ideas and their imagination. A teacher
can set in train this developmental progression by tailoring the educational experience to the child’s needs, interests and age, as Condillac (from the *Essai* quoted in Lane 1976, p. 95) argues in the following way:

If a teacher who had complete knowledge of the origin and progress of our ideas considered with his pupil only those things that had closest relation with his needs and age; if he had enough address to put him in the circumstances best suited for teaching him to form precise ideas and to fix them by invariant signs ... what clarity, what scope would he not give to the mind of his pupil!

It is this view of education and liberty, and its pedagogical implications, which Maria Montessori inherited. It is possible to speculate that Condillac’s ideas about education and development might have been triggered by his observations of the effect of learning language on the development of the deaf at Pereire’s school in Paris. Condillac’s views on pedagogy were taken up by a young medical doctor who continued Pereire’s work after the collapse of the ancien régime. Appropriately for the early years of the French Republic, the next phase in the evolution of Condillac’s ideas concerned the education of a child whose circumstances in life could not have been further removed from those of the young prince.39

3.5 A child of nature

Montessori first became interested in pedagogy when she began working with children who were categorised as deficient, or idiots. Her search for pedagogical treatment for intellectual deficiency led her to two French doctors, Itard and Séguin, ‘the two great doctors who anticipated her in the yoking together of medicine and pedagogy’ (Boyd 1914, p. 17). Jean Itard is remembered for his work with the wild child of Aveyron. Itard’s student, Edouard Séguin, developed a sensory-based system of teaching mentally deficient children using didactic objects.

39 In a summary of Condillac’s legacy Culler (1985, p. 68) writes:

Through Condillac and his followers the origin of language became a central problem of eighteenth-century thought; but it is essential to note that it was investigated as a philosophical rather than a historical problem. One worked on the origin of language in order to shed light on the nature of language and thus on the nature of thought. By explaining the origin of something, one explained its nature. And thus eighteenth-century thinking about language came to focus especially on what one might call philosophic etymology: the attempt to explain signs and abstract ideas by imagining their origins in gesture, action, and sensation.
During the turmoil following the French Revolution a child of about four or five was abandoned in a forest near Aveyron in southern France. An unsuccessful attempt had been made to kill the child, as evidenced by a scar across his neck. Nevertheless, the child managed to survive in the forest. After various sightings, captures and escapes, the wild child was finally caught and brought to Paris in 1800, the eighth year of the French Republic.

The child, now aged about twelve years, wore few, if any, clothes in the wild. He had a disgusting appearance to those who observed him, could not speak, twitched convulsively, walked with a strange gait, ran on all fours and had a very limited diet. He bit and scratched like an animal, and could not focus his attention on anything. Clearly this child of nature did not exemplify, as expected, Rousseau’s ‘noble savage’ (Lane 1976, p. 4; Malson 1972 [1964], p. 35). Nevertheless, the child was brought to Paris in the hope that he would ‘help answer the central question of the Enlightenment, What is the nature of man?’ (Itard 1972 [1801], pp. 95-96).

Until 1800, this question had been addressed from three main perspectives. The first was the relation of humans to animals. In 1735, in the *Systema naturae*, Linnaeus placed humans in the order of primates along with the apes, a truly shocking juxtaposition at the time. Linnaeus later developed his taxonomy to include separate categories for ‘humans’, ‘savages’ and ‘wild’ children (Lane 1976, p. 19; Malson 1972 [1964], pp. 38-39; Séguin 1971 [1866], p. 17). Second, there was the debate between the followers of Descartes and Locke about whether human understanding was innate or whether it developed with experience. Finally, there was the debate about whether ‘man was nothing without society’ (Lane 1976, p. 26; see also Malson 1972 [1964], p. 24) or whether, following Rousseau, society was a debilitating influence. In the light of these debates, it was hoped that the wild child would reveal the degree to which human intelligence could develop in isolation from human society (Lane, 1976, p. 14; Malson 1972 [1964], pp. 38-39).

40 The conclusion to this debate is interpreted by Malson (1972 [1964], p. 24) in the following way: Man’s genetic inheritance is quite formless until it has been given a shape by social forces, yet the direction of these forces themselves may always be changed by the intervention of consciousness. It is as if the work of the environment in tapping man’s hereditary reserves were itself controlled by the conception he has of it which is implicit in his existential choices.
An influential philosophy in the newly-formed academic institutions of the Republic was *Idéologie*, the philosophy inspired by the writing of Condillac. This philosophy valued methodologies based on observation and analysis (Lane 1976, p. 21). It was hoped that by applying ‘Condillac’s insights into the origins of human knowledge’, the wild child of Aveyron would reveal ‘what is characteristic about man’ (Lane 1976, pp. 26-28). According to Lane (1976, p. 92):

> The education of the wild boy was, in fact, to be an experimental verification of Condillac’s theory of mind; the boy was to enact the psychological development of human understanding as Condillac had traced it.

When the child arrived in Paris, he was assessed by Citizen Pinel, the doctor who directed the insane asylums. Pinel brought the liberty of the Revolution to the incarcerated insane and mentally-impaired, famously striking off their chains and humanising their care (Lane 1976, pp. 55-57; Murphy and Kovach 1972, pp. 40-41). Building on Condillac’s analytical method, Pinel observed his patients, organised data according to classification schemes which emerged from observed facts, and tailored his therapeutic intervention to the needs of individual patients (Lane 1976, pp. 74-76; Malson 1972 [1964], p. 83; Montessori 1964 [1909/1912], p. 34; Murphy and Kovach 1972, p. 149). While he supported the newly-discovered technique of vaccination to protect against infectious disease, Pinel did not support medical intervention in the treatment of mental disorders, favouring instead ‘salutary human contacts, work and distraction, good hygiene and proper diet’ (Lane 1976, p. 76).

Pinel assessed the wild child’s ‘sensory functions and intellectual faculties’ and compared him to the impaired children in his care, forming the opinion that the child was ineducable, with the suggestion that this was the reason the child was abandoned in the first place (Itard 1972 [1801], pp. 97-99; Lane 1976, p. 56; Montessori 1964 [1909/1912], pp. 149-150; Murphy and Kovach 1972, p. 151; for an English translation of Pinel’s complete report see Lane 1976, pp. 57-69; see also Boyd 1914, pp. 65-66). Because *l’enfant sauvage* could not speak, he was placed in the Institute for Deaf-Mutes.41

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41 It is remarkable that Pinel, and others assessing the child at the time, did not acknowledge the child’s extraordinary powers of adaptation in being able to survive, from the age of about four, completely alone in a forest.
3.5.1 Visual grammar as pedagogy

The head of the Institute for Deaf-Mutes was Citizen Sicard, who had succeeded Pereire’s rival, the Abbé de L’Epée. Sicard describes Epée’s method for teaching sign language as leading the deaf-mutes ‘from perceptible ideas to abstract ideas by simple and systematic analyses’, based on ‘the process of metaphor’ (Lane 1976, pp. 78-82). Sicard’s teaching skill, praised in a heartfelt petition written by a student, helped him narrowly avoid execution in the massacres of 1792 (for an English translation of this petition see Lane 1976, pp. 83-86).

Sicard’s starting point was Condillac’s view of language as analytic and artificial. He reworked Epée’s sign language, in which each sign corresponded with a French word or morpheme, because he considered it to be merely mechanical copying. Instead he related the signs to meaning, noting that:

... words can only be conventional signs; and to agree upon their meaning, there must be some language mutually understood by those who make the agreement (Sicard, quoted in Lane 1976, p. 87).

Echoing Pereire’s approach to teaching deaf-mutes spoken language, Sicard taught gestural signs, using an active visual-grammatical method, beginning with names of objects (nouns) and then their qualities (adjectives). Combining names and qualities with the verb to be produced simple declarative sentences, a structure then elaborated with action verbs, in both active and passive forms, using a word order more compatible with gestural signs than standard French. Other parts of speech followed, as well as complex sentences and, finally, abstract meanings (for a more detailed account of Sicard’s method see Lane 1976, pp. 90-91).

3.5.2 A medical pedagogy

When the wild child was placed in the Institute of Deaf-Mutes, Citizen Sicard recognised that the Institute had an obligation to the child and he appointed a young doctor, Jean-Marc Gaspard Itard, as the child’s teacher (Lane 1976, p.53; Murphy and Kovach 1972, p. 151; see also Malson 1972 [1964], p. 72).
Itard was a loyal student of Pinel but, ‘with the rashness of youth’ (Boyd 1914, p. 66), he did not agree that the wild child was ineducable. Itard had also adopted Condillac’s philosophy and method, as illustrated by this excerpt from the Preface of his first account of the wild boy:

Cast on this globe, without physical powers, and without innate ideas; unable by himself to obey the constitutional laws of his organization, which call him to the first rank in the system of being; MAN can find only in the bosom of society the eminent station that was destined for him in nature, and would be, without the aid of civilization, one of the most feeble and least intelligent of animals; ... (Itard 1972 [1801], p. 91).\(^42\)

The wild child’s level of functioning demonstrated to Itard (1801, p. 138) that ‘a pure state of nature’ had been ‘unjustly painted in colours most attractive’. In the opinion of Itard (1972 [1801], p. 97), the child had not even reached the functioning level of domestic animals, which he argued was the result of ‘cultural loss’ (Malson 1972, p. 72). He aimed to educate the child and, if that was not successful, to discover ‘the sum, as yet not calculated, of that knowledge and of those ideas for which man is indebted to his education’ (Itard 1972 [1801], p. 93).

For Itard (1972 [1801] pp. 98-99), the most noteworthy aspect of the child’s impaired functioning was his inability to use his senses to differentiate perceptions. The child could not fix his eyes steadily on any one object and could not differentiate between touching ‘an object in relief and a painting’, between hearing loud noises or music, or between smelling perfume or ‘fetid exhalations’. He did not respond to extremes of heat or cold, snuff did not make him sneeze and he never cried. The only stimuli the child responded to were related to a very limited range of ‘physical wants’, in particular, food. For example, the child responded immediately to the sound of a walnut being cracked close behind him, but ignored the sound of a pistol shot at the same range (Itard 1972 [1801], p. 106).

\(^{42}\) Itard (1972 [1801], p. 91) implies that abandoned children are the only humans with ‘the features of man in the pure state of nature’, the only ‘model of man truly savage’. In his opinion, the ‘wandering tribes’ discovered on other continents are ‘regarded as not civilized at all, merely because they were not civilized in our particular manner ... man is only what he is made to be by his external circumstances; he is necessarily elevated by his equals; he contracts from them his habits and his wants; his ideas are no longer his own; he enjoys, from the enviable prerogative of his species, a capacity for developing his understanding by the power of imitation, and the influence of society.
The child was, according to Itard (1972 [1801], pp. 98-99), ‘incapable of attention (unless as it respected the objects of his wants) and consequently of all the operations of the mind which depended upon it; destitute of memory, of judgement, even of a disposition to imitation.’ Moreover, the child was:

... deprived, by his insulated condition, of all those simple and complex ideas which we receive from education, and which are combined in our minds in so many different ways, by means only of our knowledge of signs.

Itard’s accounts of his years working with the wild child remain, two centuries later, fascinating reading for educators and those interested in the development of language. A colleague of Itard (de Gérando 1848, quoted in Lane 1976, p 73) later wrote of his methods that:

... [he] insisted, following these great teachers [Locke and Condillac] that before trying to make the child associate ideas, it was necessary to make these ideas come to life; that in order to make them come to life, it was necessary to fix his attention; and that the only way to fix his attention was to engage his needs.

Itard divided the education of the child into two parts: first leading him ‘from natural life to social life’ and then providing him with an ‘intellectual education’ (Montessori 1964 [1909/1912], p. 150). What follows is a very brief outline of Itard’s methods, which have been grouped under headings based on Itard’s own categories.43

### 3.5.3 Awakening the child’s senses

Itard (1972 [1801], pp. 102-105) put the child in the care of a kindly mother-figure, Madame Guérin, and allowed him to fulfil the four ‘wants’ he had developed in the wild - sleeping, eating, doing nothing and running ‘about in the fields’. Itard observed the child’s resulting spontaneous activity closely. Montessori (1964 [1909/1912] pp. 150 -153) highlights Itard’s descriptions of the pleasure the child experienced from natural phenomena such as storms and moonlight. Itard’s gentle observations inspired the social relations between teacher and child which characterise Montessori classrooms, relations in which the teacher’s task is often summarised as ‘following the

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43 Itard’s methods are also summarised by Boyd (1914, pp. 67-81).
child’. Here is how Montessori (1964 [1909/1912] pp. 152-153) derives this approach from Itard’s work:

The gradual and gentle leading of the savage through all the manifestations of social life, the early adaptation of the teacher to the pupil rather than of the pupil to the teacher, the successive attraction to a new life which was to win over the child by its charms, and not be imposed upon him violently so that the pupil should feel it as a burden and a torture, are as many precious educative expressions which may be generalised and applied to the education of children… In the education of little children Itard’s educative drama is repeated: we must prepare man, who is one among the living creatures and therefore belongs to nature, for social life, because social life being his own peculiar work, must also correspond to the manifestation of his natural activity.

Itard’s observations of the wild child’s love of natural phenomena also inspired the importance Montessori placed on nature study in her pedagogy.

Following Condillac’s belief that the senses are the ‘portals of the mind’ (Lane 1976, p. 101; see also Boyd 1914, p. 67; p. 72), Itard (1972 [1801], pp. 105-111) used the activities of daily life as the basis for awakening the child’s senses and ‘to lead the mind to a habit of attention, by exposing the senses to the reception of the most lively impressions’ (Itard 1972 [1801], p. 106). For example, to teach the child to differentiate between hot and cold, Itard lead the child to ‘want’ to be comfortable by providing warm clothes, a warm bed and warm baths. The child soon began to check the temperature of the bath water with his hand and to put on his own clothes to keep himself warm. These activities produced early communicative gestures, for example, taking Madame Guérin’s hand and plunging it into the bath with his own to convince her that the water was too cold (Itard 1972 [1801], pp. 107-108).

Other sensory experiences Itard (1972 [1801], pp. 109-110) devised to attract the child’s attention included placing mirrors to reflect sunlight into the child’s room, letting water fall drop by drop onto his fingers and floating a bowl of milk at the far end of the bath so he could see how moving the water would move the bowl. Through these and other playful activities, Itard had taught the child to differentiate between ‘warm or cold, smooth or rough, soft or hard’, in three months. The child began to enjoy applying this knowledge, for example, touching velvet, feeling the softness of potatoes to check if they were cooked and avoiding flames.

The third goal attempted by Itard (1972 [1801], pp. 111-116) was to expand the child’s ‘wants’ and, thus, his ‘ideas’ and connections between these ideas. The child
rejected the normal ‘wants’ of childhood, such as toys and sweets, maintaining his desire for a limited range of foods, including potatoes, chestnuts and walnuts. Itard began to take him regularly to the city ‘to dine’ on his favourite foods. Gradually the child began to recognise preparations for these trips as a ‘signal of departure’ (Itard 1972 [1801], p. 113).

Itard describes a game he devised on one such trip to the city, in which he inverted several silver goblets placing a chestnut under the first one. The child was invited to find the chestnut. The game became incrementally more difficult, for example, by moving the goblets around, and by adding different objects, some food, some not. The child maintained his attention, and amusement at finding the objects, even when there was no longer food to be found.

### 3.5.4 Developing the child’s intellectual function

Itard’s fourth goal (1972 [1801], pp. 116-126; pp. 143-148) was to teach the child to speak by training the sense of hearing, the most important sense for Itard. By using a ‘comparative method’ and leading the child ‘gently and imperceptibly’ by demanding ‘greater attention, delicate comparisons and repeated judgements’, Itard (1972 [1801], p. 144-147) taught the child to make increasingly fine distinctions ranging from the distinction between a drum and bell to the distinction between different phonemes and intonation patterns of the language. To heighten the sense of hearing, Itard used a blindfold, which delighted the child. During these activities, Itard was faced with the teacher’s perennial problem of over-exuberance, which dissipates attention, while its ‘cure’, punishment, results in fear and timidity, with the same effect.

The child gradually learned to distinguish certain words related to his immediate circumstances, including his name ‘Victor’ and the word for milk, and the emotions attached to particular intonation patterns, but he never really learned vocal speech. Nevertheless, he did develop an elaborate ‘pantomimic language’, which Itard (1972 [1801], p. 124 n6) interprets, following Condillac, as a ‘language of action’. Itard describes many instances in which the child used this language to achieve quite elaborate purposes, and comments that the child might not have wanted to abandon
this very successful means of communication ‘for another, the advantages of which could not be foreseen, and the difficulty of which was so strongly felt’.

To develop intellectual functioning, Itard (1972 [1801], pp. 127-140; pp. 152-179) chose to place obstacles between the child and his ‘wants’:

... obstacles that are continually increasing, and continually changing their nature, and which he could not surmount without perpetually exercising his attention, his memory, his judgement and all the functions of his senses (p. 127).

In elaborating this approach, Itard (1972 [1801], p. 127 n8) writes that ‘Whenever his wants are concerned, his attention, his memory, and his intelligence seemed to raise him above himself’, an early foreshadowing of Vygotsky’s notion of the zone of proximal development extending beyond a learner’s present level of functioning (See, for example, Vygotsky 1986 [1934]).

Itard observed the child’s need for order and his perpetual, and repetitive, placing of everyday objects in their proper place, especially on hooks. It was this want that Itard exploited in order to train the sense of sight, in preparation for reading. Itard gradually extended the number of objects the child had to place in order on a series of hooks. As a memory aid, Itard drew an outline of each object beside its hook. As the number of objects increased beyond the limit of the child’s memory, he began to compare the objects with the outlines to establish the arrangement, even inverting the objects when the outlines were inverted. Itard then replaced the three-dimensional objects with abstract two-dimensional geometric shapes made out of cardboard - a red circle, a blue triangle and a black square. Next, the degree of differentiation was decreased by making the shapes the same colour.

Over time, and with setbacks, the child reached the stage where he could match the metal letters of a manual alphabet, similar to the one used by Pereire, to cardboard letter shapes. The child even devised his own routines to speed up the task. He also learnt to read and spell a range of words relevant to his needs. Itard’s achievement at teaching the child to read and write is noteworthy and deserves closer attention, in particular, his use of grammatical categories as the basis of his method.
Not long after the child had learnt to label objects with written labels, Itard (1972 [1801], pp. 157-159) realised that the child was using the labels as proper names but that he should not interpret this as error:

... my pupil, far from having conceived a false idea of the signs, had merely applied to them a too strict interpretation ... Thus a book which was not the one in his room was not a book for Victor (p. 159).

Itard believed that he had over-exercised the child’s sense of sight to an excessive level of discrimination and now needed to teach him ‘to consider objects not from the point of view of their difference, but according to their similarity’. In other words, he needed to teach the child to use labels as general names.

Itard (1972 [1801], pp. 159-160) described his task as introducing ‘the art of comparison’. In response to Itard’s active and tangible demonstrations of the use of general names, the child began to overgeneralise, using, for example, the label book not only for a book, but also for paper, a notebook, a newspaper and a pamphlet. Itard observed that over-generalisation, rather than being a set-back, lead the child to invention, imagination and the making of judgements. Even when these judgements were faulty, they were instructive. One day, in the period of overgeneralisation, the child brought a razor in response to the label for a knife and Itard gave the child bread to cut with the razor. The child experimented with the razor, discovered the razor did not function as a knife and ceased to label it knife. Itard observed that, as the child became more inventive and imaginative, he let go many of his repetitive routines and ‘automatic habits’.

Having ‘established in Victor’s mind the link between objects and their signs’, Itard (1972 [1801], p. 162) increased the number of labels for objects. This included teaching Victor to distinguish the parts of an object. Itard began by tearing the cover off a bound book and pulling out some pages. When Victor had learned the names for each of the parts, Itard put the parts together again. Victor could now label the whole and the parts.

In the same tangible and active way, Itard (1972 [1801], pp. 163-165) continued to teach more grammatical categories, entering ‘the realm of abstractions’ when he began to teach ‘the properties of bodies’. He used two identically bound books of different sizes which Victor labelled book. Itard then placed Victor’s hand flat on the
cover of each book. His hand covered one book completely and ‘barely covered half’ the other. When asked to label the books again, Victor ‘hesitated’:

... he felt that the same word could no longer be applied to two objects he had found to be of different sizes. This was what I was waiting for. I wrote the word book on two cards and placed one of each book. I next wrote big on a third card and small on a fourth; I placed them alongside the first cards, one on the octodecimo volume and the other on the octavo. After drawing Victor’s attention to this arrangement, I picked up the labels, shuffled them together for a moment and gave them back to Victor to place on the books. He performed the task correctly (Itard 1972 [1801], p. 163).

Itard verified Victor’s understanding of the qualities by writing the word nail on two cards to label two nails of different lengths. Victor correctly re-used the adjectives, big and small, with these new objects and name labels. Having taught Victor ‘the concept of size’, Itard (1972 [1801] p. 164) taught him ‘the signs representing other sensible properties of objects such as colour, weight, strength etc’.

### 3.5.5 Teaching the child to read and write

The next step in Itard’s grammar-based method was to teach Victor to read words expressing actions. Itard (1972 [1801], p. 164) wrote a label for a known object and performed a series of actions with the object, writing the word for each action as he did so. He repeated the same series of actions with different objects. Some objects resulted in ‘the action requested [becoming] bizarre or impossible’. These examples, again, gave Victor opportunities to exercise his judgement, reasoning and inventiveness.

Teaching deaf mutes to read remained Itard’s goal throughout his life. His opposition to teaching the deaf sign language, even though it appeared to be a more natural language for the deaf, and his commitment to teaching deaf people the spoken language of the wider community, was based on his belief that a prerequisite for learning to read was communicating through spoken language or writing. Without being able to read, the deaf-mute ‘remains for the rest of his life at the level of education at which he was left by his teachers’ (Itard quoted in Lane 1976, p. 240). The belief that the development of spoken language and writing ideally precedes instruction in reading became a premise of Montessori education.
Copying letters to make his own words required Victor to imitate Itard (1972 [1801] p. 165) so Itard’s first task was to teach Victor how to imitate. At first, he taught Victor to copy gross-motor movements such as sitting and standing and then increasingly finer movements such as opening and closing the hand, until he could imitate Itard holding a pointed stick. Finally, Victor copied Itard’s slow vertical movements with a piece of chalk on a blackboard, so together they traced perfectly parallel lines. From this point Victor learned to copy letters and words, and eventually to reproduce words from memory ‘to express his needs, to ask for the wherewithal to satisfy them and by the same means to understand the needs and wishes of others’ (Itard 1972 [1801] pp.165-166).

3.5.6 Itard’s influence on Montessori pedagogy

Itard’s pedagogy was based on Victor’s free and spontaneous activity. Itard observed the child’s needs and interests, and prepared a social environment which met those needs and interests, and developed new ones. Using sensory means, Itard called the child’s attention to differences in the environment, which were salient to the child’s needs and interests, and, therefore, meaningful to the child. Then, through sensory mediation, Itard expanded the range of meaningful differences, including differences which were salient and significant to those who shared the child’s social context. The sensory mediation of experience, based on contrasting sensory perceptions in a closely-shared social context, opened up a pathway which led to the mediation of experience through signs. In this way the child’s free and spontaneous activity was channelled towards the intentional control of attention, memory and imagination gained through sign-use. Itard’s goal for Victor was the liberty of Condillac, rather than Rousseau. Victor never developed as far towards social autonomy as Itard had hoped but it seems remarkable, looking back on Victor’s achievement, that he was able to develop sign-based social relations at all.44

The aspects of Itard’s technique most relevant to the present study is the progression from the ‘obstacles’ he placed between Victor and his need for order, and the later

44 In 1970 the French director, François Truffaut, made a film based on the story of Itard and Victor, entitled L’enfant sauvage. Truffaut played the role of Dr Itard.
grammar-based training in social signs. The outlines Itard drew for the objects Victor wanted to place, in order, on hooks were a memory aid which Victor was able to use once the number of objects became too many to order from memory. This study proposes that the grammatical categories Itard used to build Victor’s repertoire of signs are analogous, at a higher level of abstraction, to the outlines beside the hooks.

In other words, grammatical categories constitute semantic outlines which can function as a type of memory aid to assist with the ordering of meaning. Montessori, building on the work of Itard’s student Séguin, elaborated and extended both the sensory matching of shapes to outlines and the use of grammatical categories in the teaching of reading.

Itard, Montessori (1964 [1909/1912], p. 150) writes, ‘believed in the omnipotence of education and was opposed to the pedagogical principle which Rousseau had promulgated’. Instead Itard’s teaching method was influenced directly and indirectly by Condillac’s analytic approach, by way of Pinel’s work with the intellectually impaired, and Pereire and Sicard’s work with deaf-mutes. Itard’s approach has been summarised as:

... [t]he orderly progression from the known to the unknown, from simple to complex, from concrete sensory experience to abstract ideas ... gradually diminishing the old [cues] as the new gain control (Lane 1976, pp. 91-92).

From Itard, Montessori derived four key elements of her educational approach. First, there is the premise on which Montessori pedagogy is built, that the human child, in contrast to animals, is characterised by potential rather than instinct. The way this potential is realised depends on the society and culture in which the child is developing, and, thus, what the child attends to and imitates (See for example Montessori 1982 [1949], pp. 52-72; 1955, pp. 62-83). As Malson (1972, p. 10) writes with reference to Itard’s work:

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45 Montessori (1964 [1909/1912], p. 150) writes that Itard’s belief in the ‘omnipotence of education’ was because he was ‘a follower of Helvétius’, a thinker in the tradition of Condillac who believed ‘man is ... a product of his education’ (Weyant 1971, xiii). According to Boyd (1914, p. 45), Helvétius carried ‘the doctrine of the original blankness of mind a stage further, [asserting] that whatever differences there are between one man and another are entirely due to education’. Knight (1968, pp. 3, 10, 13) tells us that Condillac attended the salon of Madame Helvétius. Later at the same salon, at the end of the eighteenth century, Destutt de Tracy and others developed the philosophy of Idéologie based on Condillac’s writings.

46 In a bibliographical note Boyd (1914, p. 87) writes ‘It is necessary to add that the statements made by Dr Montessori about Itard’s work are in most case erroneous. There is one dreadful paragraph in The Montessori Method (p. 33) where every definite statement made is completely wrong.
... it is this very absence of predetermined characteristics which means that man’s possibilities are unlimited ... This is why there has emerged under the pressure of cultural circumstances a variety of social types which diversify man in time and space ... what [humans] have in common is a structure of possibilities, or rather of probabilities, which are only realized in some specific social context.

Second, there is Montessori’s conception of sensitive periods, which she derived from Itard’s suggestion that Victor’s developmental limitations, exemplified by his never learning to speak, were the result of his separation from human society as a child (Itard 1972 [1801], p. 99). Victor appeared to have been isolated during a critical developmental period in which human children learn to speak, and was never able to make up for this loss (See Merleau-Ponty 1958, quoted in Malson 1972 [1964], p. 56). Chapter 4 will explore the historical and conceptual links between sensitive periods, as described by Montessori (1983 [1936], pp. 33-42; 1982 [1949], pp. 43-44), and the zone of proximal development, as described by Vygotsky (1986 [1934], pp. 188-190).

Third, the Montessori classroom is described as a prepared environment, in the same way as Itard prepared Victor’s environment, by ‘fabricating things, sights, and sounds to serve as vehicles of instruction’ (Lane 1976, p. 95). Lane continues:

It was not merely a matter of introducing colourful objects to hold the child’s interest; Comenius and Locke proposed that sort of gambit as have educators before and since; in any event the wild boy was indifferent to toys. It was a matter of selecting or creating tools to teach particular skills.

Itard also constantly adapted the teaching sequence in response to the child’s spontaneous behaviour, an approach still used by Montessori teachers today.

Finally, there is sensory training, which, in Montessori pedagogy, is the basis for intellectual development. The sequence of activities through which this is achieved,

47 Contemporary research into the language-learning ability of nonhuman primates suggests that a critical period for language development is not limited to humans, as described in the following excerpt from Williams, Brakke and Savage-Rumbaugh (1997 p. 314), an excerpt which references Itard.

Development of linguistic skills in humans appears dependent on the proper exposure to competent language-using models during early life. If deprived of this exposure, various linguistic disabilities are observed (e.g. Itard 1932; Curtiss 1977). However, since the exposure to language at infancy is nearly universal in our species we must look to the nonhuman primate model to help us further understand the relationship between language and environment. The findings of this and other studies (Savage-Rumbaugh et al, 1990; Brakke and Savage-Rumbaugh 1995) suggest that early exposure to language-using models is critical and necessary for the appearance of speech comprehension in both common chimpanzees and bonobos. In conclusion, language acquisition, perhaps as well as the development of many other cognitive/perceptual abilities (Purves 1994), appears largely dependent on the type of environment experienced during the first year of life.
and the objects at the centre of the activities, have their origin in Itard’s techniques and teaching sequences. The spirit of Itard is particularly evident in the Montessori grammar-based reading materials.

3.6 Séguin’s physiological pedagogy

Itard worked with Victor for six years and both remained at the Institute for Deaf-Mutes for the rest of their lives. Itard dedicated his life to the teaching of deaf children, continuing to apply and extend the techniques he used with Victor (Boyd 1914, pp. 82-86; Lane 1976, p. 185; Malson 1972 [1964], pp. 84-86). At the end of his life he collaborated with a young doctor, Edouard Séguin who elaborated Itard’s techniques in order to build a physiological method for educating developmentally-delayed children. This method was widely used, before being quickly forgotten, in the second half of the nineteenth century in Europe and later in America (Boyd 1914, pp. 88-93).

Séguin is recognised as a pioneer, achieving remarkable results with children identified as idiots and ineducable, just as the deaf were deemed ineducable in the previous century (Boyd 1914, pp. 90-91, Lane 1976, pp. 264-278; Séguin 1971 [1866]). Idiocy is actually described by Séguin (1971 [1866], pp. 147-148) as ‘intellectual deafness’. Throughout his writing he refers to the ‘isolation’ of the idiot and his goal was to render the idiot ‘more social’ through education (Séguin 1971 [1866], p. 202). A large component of Séguin’s approach was concerned with socialisation, or what he termed ‘moral education’ (Séguin 1972 [1866], pp. 213-246). The training the children received in controlling the will, that is controlling attention and movement, was the basis, not only for the development of educational knowledge, but also for learning how to live harmoniously and ethically with others. It was Montessori’s work with developmentally-delayed children, in the last years of the nineteenth century, which brought her into contact with Séguin’s method and the work of Itard (Montessori 1964 [1901/1912], pp. 31-42).

Rather than evaluating Victor’s education as a failure because he never learned to speak, Séguin interpreted Itard’s ‘mental medicine’, as demonstrating that a child with
the characteristics of an idiot could be educated (Lane 1976, pp. 264-265). Over time, Itard’s program was elaborated by Séguin into a much more detailed and comprehensive training program for groups of children in institutional settings, rather than individuals. This program achieved results which seemed miraculous at the time and it remains as impressive today as it was to Montessori over a century ago.

Séguin detailed the methods used in his schools in a range of publications during his lifetime (for example, Séguin 1972 [1866]), and these are also summarised in Lane (1976, pp. 266-278).48

3.6.1 The well-being of children

Séguin’s institutions placed developmentally-delayed children in pleasant, dignified and hygienic living conditions and provided nutritious food, warmth and appropriate clothing, sleep, fresh air and outdoor exercise, not to mention ‘gaiety and mirth several times a day’ (Séguin 1972 [1866], p. 97). The demeanour of the teachers was also important, as Montessori (1964 [1909/1912] p. 37) describes:

[Séguin] would have them good to look upon, pleasant-voiced, careful in every detail of their personal appearance, doing everything possible to make themselves attractive.

The children worked in the garden, took nature walks and participated in musical activities, this last for enjoyment as well as to prepare them for learning spoken language. The children were closely observed at all times, both to match activities to their needs and to ensure they were comfortable, healthy and happy.

Both movement and attention are ‘intellectualised’ in Séguin’s method. For Itard (1801, p. 91) Victor’s level of functioning after his long isolation was due to ‘maladies of understanding’ but for Séguin (1971 [1866], p. 98) the characteristics of the idiot were attributable to ‘maladies of the Will’, to lack of control of both

48 A detailed first-hand description of Séguin’s methods was published in the United States in 1849 in a newspaper article entitled The education of idiots. This article is available online at: http://www.disabilitymuseum.org/lib/docs/1381.htm. Séguin’s most comprehensive description of his method, Idiocy: And its Treatment by the Physiological Method was reprinted in 1907 by Teachers’ College, Columbia University. This edition is available online at: http://www.ph-ludwigsburg.de/fileadmin/subsites/3c-gest-t-01/user_files/Seguin.1907.pdf. Boyd (1914, pp. 94-129) also summarised Séguin’s methods.
movement and attention. Movement and attention are described by Séguin as the ‘instruments of activity’ which, when they come under conscious control, exercise, as reflections of each other, physical and intellectual capacities.49

To develop voluntary control of movement and attention, the ‘intellectualization of the muscles’, Séguin (1971 [1866], p. 100) engaged children in activities from daily life. Each activity required controlled attention and movement to accomplish a functional and socially-relevant purpose. The training was extended to encompass ‘moral training’, or socialisation. These activities evolved to become, in Montessori pedagogy, the exercises of practical life (See Chapter 6).

3.6.2 Sensory training and comparison

Itard’s legacy and Condillac’s philosophy are most evident in Séguin’s sensory training. Séguin (1971 [1866], p. 19) refers to the unfolding sensory animation of Condillac’s statue as ‘the miracle dreamed of by de Condillac’. Systematic animation of the senses became the central principle of the pedagogical tradition Itard handed on to Séguin, although, where Itard emphasised the sense of hearing, Séguin (1971 [1866], p. 137) returned to Condillac’s belief, derived from Pereire, that touch is the master sense. Moreover, in Séguin’s practice, sensory training is equated even more explicitly with intellectual training, in particular, the training of the mathematical mind. The objects Séguin designed for sensory training expanded Itard’s repertoire, and in turn laid the foundation for the Montessori objects.

The foundation of the method devised by Séguin (1971 [1866], p. 206) is comparison. ‘It is impossible’ writes Séguin (1971 [1866], p. 189), ‘for us to feel with any of our senses any one thing alone’. The perceptions of difference and similarity, which attentive sensory experience inevitably yields, lead to ‘ideas’, a term which, in the tradition of Locke, can be conflated with meaning expressed as signs. Ideas, so generated, themselves become ‘susceptible of combination’, producing any number of new ideas’ (Séguin 1971 [1866], p. 209), as well as further physical and mental activity.

49 See also Vygotsky (1981b, pp. 167-168).
The emphasis on comparison extended in Séguin’s method to the alternate sequencing of contrasting activities and lesson types. A lesson using sight might be followed by a lesson using touch, and individual lessons followed by whole group lessons because by ‘doing this we give food to the mind as well as rest by variety, if our variety has a physiological and intellectual meaning’ (Séguin 1971 [1866], p. 95), foreshadowing the unifying interplay of physiological and intellectual meaning in the use of the Montessori objects.

An important goal for Séguin (1971 [1866], p. 192) was to train both memory and imagination. Memory training began with concrete objects, which Séguin (p. 193) describes as ‘mnemotechnic’. Memory, for Séguin (pp. 196-198), connects the past, present and future of an individual. When it expands to encompass abstractions, and connects the past, present and future of the social group, it has become imagination. The trajectory from concrete to abstract, from memory to imagination, is initiated in Séguin’s method when the concrete objects are presented to the child.

The concrete objects and their presentations embodied comparisons, first contrasts followed by similarities. The presentation of the objects to the children involved active and repeated imitation, in order to deepen the impressions they left. To accompany the presentations, Séguin devised a naming lesson, which Montessori elaborated as the three-period lesson. Together, exercise in comparison using the concrete objects and the accompanying naming lesson trained the memory in, what Séguin (1971 [1866], p. 194) describes as, the ‘double aspect of perceiving and expressing the impressions’, whose ‘convergence produces later the complete faculty’.

This study proposes that the ‘complete faculty’ produced by the convergence of perception and expression in Séguin’s naming lesson can be interpreted as a sign. Once comparable sets of perceptions and expressions, have become, for the child, sets of double-sided units of meaning, or signs in Saussure’s sense, they are in the child’s control, and become a function of memory and the potential for further comparison and control of more signs.

A feature of Séguin’s pedagogy, also central to this study, is the use of multiple representations. Typically, a target ‘impression’ is first presented to the child in the
form of a set of concrete objects, and then expressed as a two-dimensional image. Its expression in language is presented to the child first in spoken language, then in handwriting and then in print. This feature is described by Séguin (1972 [1866], p. 182), with reference to reading pedagogy, in the following way:

This juxtaposition or even identification of the three, four, or five forms of things, i.e., their name written, printed, and pronounced, their images printed and carved, and their own selves in substance, such are the forcible instruments by which the first ideas may be forced through the senses into the mind. Thus let us open to our pupil, by reading, the possession of everything which comes within the range of his prehension and comprehension; nature is his book, and his fingers are the printers.

3.6.3 Reading and grammar

Following Itard, Séguin’s reading pedagogy begins with the essentially grammatical activity of naming. Séguin (1972 [1866], pp. 185-186) writes that ‘we make [the child] nominate by writing, reading, and spontaneous appellation everything that he can comprehend’, describing naming lessons, that is, ‘the identity of knowledge with nomination’, as being analogous to the experience of Adam being given names in the Garden of Eden. There is no ‘discovery without instant nomination, no nomination which was not simultaneous with discovery’. The combination of the sensory lesson with the naming lesson leads to the ‘identification of the image and the name’.

The metaphor of the Garden of Eden extends to the next stage of the reading pedagogy, when Séguin (1972 [1866], pp. 186) comments that ‘our parents’ were ‘not instructed as to the qualities of things, but permitted to appreciate them all’ - except the taste of one particular fruit of course. Similarly, to appreciate qualities, expressed by adjectives, children must experience them. Séguin’s uses the metaphorically-consistent example of a sweet apple and a sour apple. An ‘idiot’ child, no less than ‘his mother’, presumably conflated with Eve, must taste the apples to appreciate the difference. That, writes Séguin, is ‘Knowledge’.

The lesson in sensory appreciation, which constitutes learning about qualities, gives way to an even more energetic experience of actions, expressed by verbs. Thus, in the footsteps of Itard, through activity, Séguin provides children with grammatical categories as semantic outlines, memory aids to support first steps in reading.
Séguin’s reading lessons, echoing those of Itard before him, are the prototype for the Montessori reading lessons reviewed in Chapter 7 of this study.

3.6.4 Séguin’s developmental trajectory

Séguin’s methods represent the late nineteenth century culmination of a tradition of teaching practice which had its origins in Locke’s empiricism and Condillac’s sensationalism. Both Locke and Condillac used a developmental approach to describe human understanding and its genesis from sensory experience, by way of sign-use, to knowledge and liberty. Both involved themselves in the practice, as well as the theory, of education, and both recognised the ‘plasticity’ of the young child’s mind. From Locke’s recommendations for the education of a gentleman’s son to Pereire’s school for the deaf and Condillac’s academic program for a prince, this tradition of practice was adapted by Itard to achieve the socialisation of an abandoned child. Itard’s practice was, in turn, expanded and elaborated by Séguin into a comprehensive method designed for teaching groups of developmentally-delayed students in institutional settings. Séguin (1972 [1866], p. 209) summarises his approach as:

Sensation perceived like a notion, notion fecundated to an idea realized in life itself, such is the unbroken spiral of our teaching ... From collecting the sparse powers of muscles and nerves disconnected by the absence of will, to the gathering of the faculties in the act of thinking, our progress has been a constant ascension on the steps leading from isolation to sociability.

Séguin’s trajectory of development, an intellect-building spiral of compared sensory experiences leading to sign use and further possibilities for comparison, of physical and mental activity as mutual reflexes, is the basis of the teaching sequences in which the Montessori objects are used.  

Séguin died in New York in 1880, where, as a committed social reformer, he was forced to flee after the 1848 uprisings in Europe. He has been described as ‘the

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50 Boyd (1914, pp. 151-153) argues that Montessori misinterpreted Séguin’s trajectory by representing it as a ‘serial view of mental development’ rather than one centred on ‘the whole nature of the individual’. According to Boyd (1914, p. 153) Montessori ‘concentrates attention on the training of each single function without any concern about its place in the whole physical and mental activity’, raising the question of whether the Montessori approach comprises unrelated atomistic elements or whether it represents a unified whole.
greatest figure in the [nineteenth] century in the training of mental defectives’ (Murphy and Kovach 1972, p. 151), but his method had almost been forgotten by the last years of the nineteenth century. It was then, however, enthusiastically and successfully appropriated and elaborated by Maria Montessori to teach developmentally-impaired children in Rome (Boyd 1914, p. 139; Montessori 1964 [1909/1912] pp. 31-46). In 1907 Montessori further adapted Séguin’s method to teach slum children in an educational experiment which rapidly became internationally-recognised. Montessori’s expression of this tradition of practice has waxed and waned in popularity through the twentieth century, but continues to be used in schools around the world in the twenty-first century.

3.7 Pedagogy and modernism

3.7.1 A generation of intellectual pioneers

The development of systems of knowledge was of great interest to Condillac (Knight 1968, pp. 52-78) who described a true system as ‘a body of knowledge with mutually dependent parts, derived from a single principle successfully expanded’ (quoted in Knight 1968, p. 52). A true system for Condillac was based on experience; it organised and explained the data of empirical experience in conventional ways (Knight 1968, p. 68). An interest in system-building re-emerged in the last decade of the nineteenth century, the era in which Maria Montessori was forming her ideas. By this time, Darwin and Marx had changed thinking about the biological and the social world in ways Condillac could not have imagined.

Montessori’s contemporaries included a generation of intellectual pioneers, emerging in the 1890s in France, Germany and Italy. These were ‘builders of great inclusive systems’ and included Durkheim, Bergson, Freud, Jung, Proust, Croce, Gramsci and Weber (Stuart Hughes 1958, p. 14). The following description applied to these thinkers also applies to Montessori:
Personally they were humanists; they combined a philosophical with a scientific education, and they drew no clear line of demarcation between literature and social science (Stuart Hughes 1958, p. 15).

In tandem with other members of her generation of European intellectuals, Montessori’s scientific training was a Positivist one. However, the generation of the 1890s were concerned with subjectivity in human behaviour and found Positivism to be too mechanistic, materialistic and deterministic (Stuart Hughes 1958, pp. 33-66). They were also ‘children of the Enlightenment, belonging to a two-hundred-year-old humane tradition’ (Stuart Hughes 1958, p. 27) which questioned the domination of society by a self-satisfied middle class to the detriment of those less fortunate, and they were making the transition from philosophy to social science (Stuart Hughes 1958, pp. 16-17). Montessori’s break with Positivism by the First World War, therefore, echoed the trend of her generation, which paved the way for Modernism.

The strategies associated with Modernism transformed ‘a whole series of disciplines, from physics to painting ... in the late nineteenth and early twentieth centuries’, and, following Culler (1985, p. 147), are most clearly expressed in the theory of language of the Swiss linguist, Ferdinand de Saussure, who insisted on ‘the primacy of relations and systems of relations’. Culler continues:

The strategy can be stated most simply as a shift in focus, from objects to relations. It is relationships that create and define objects, not the other way round.

51 In 1909 Montessori published The Montessori Method in Italian; the English edition appeared in 1912. In 1964 two editions of this book were reprinted in America. In the introduction to one of these editions Martin Mayer (1964 p. xxiii) writes:

Between the turn of the century and the start of the First World War, Europe played host to the greatest efflorescence of intelligence and imagination in the history of mankind. While Maria Montessori was putting together the basic description of her educational procedures and philosophies, Albert Einstein was at work in Switzerland, Arnold Schoenberg and Sigmund Freud in Vienna, James Joyce in Trieste, Igor Stravinsky, Pablo Picasso, Marcel Proust and Gertrude Stein in Paris, Earnest Rutherford and Niels Bohr in Manchester, Bertrand Russell, Alfred North Whitehead, John Maynard Keynes and James George Frazer in Cambridge, Wolfgang Kohler in Tenerife, Bronislav Malinowski in the Trobriand Islands. Except for Freud, Rutherford, Russell and Frazer, they were all at that time virtually unknown, even to the people in their own fields: they had in most instances completed, but were still in the process of polishing, the work which would give their names resonance through the century... Already massing behind these great figures, however, even then, were the armies of followers and expanders who would see further, in Isaac Newton’s generous phrase, because they stood on the shoulders of giants. Only in education was there to be a sudden and drastic end to the burst of innovation and analysis, synthesis and change, which was remaking almost every area of serious human interest. With the rejection of Montessori, in favor of recollections from the less perceptive Froebel and projections from the less specific Dewey, education turned away from the light of genius to darker corners that could be filled with the comfortable stuff of mediocrity.
Saussure’s theory was first delivered in the form of a course of lectures at the University of Geneva in 1907, two years after Einstein’s *annus mirabilis* gave the world the theory of relativity, and the same year Montessori opened her school in the slums of Rome.

By the end of her life, Montessori’s pedagogy had become a comprehensive array of didactic objects and accompanying exercises. This pedagogy presents the content of educational knowledge as a system of relations linking the major disciplines, including language study, mathematics, geometry, history, geography, science, music and the visual arts, to the interests and needs of the developing child, from early childhood to adolescence. For Montessori, the practice of education represented the starting point for building a theory of education, what she variously named *educational philosophy* and *educational psychology*. She states that ‘[w]e start essentially from a method, and it is probable that psychology will be able to draw its conclusions from pedagogy so understood, and not *vice versa*’ (Montessori, 1964 [1909/1912], p. 167).

Montessori’s pedagogy is linked directly to the Enlightenment, in particular the work of Condillac, through the pedagogies of Itard and Séguin. This link is found in the design of the objects which comprise the Montessori pedagogy, an approach to design concerned with physical experience and the related impressions and ideas it embodies, as well as the representation of ideas as signs. Similarly, Saussure returned to eighteenth-century concerns, specifically ‘the link between language and mind’ (Culler 1985, p. 70) and ‘the problem of the sign’ (Culler 1985, p. 83). Saussure’s proposals have been traced directly to the ‘legacy of Condillac’ through the influence of Séguin’s contemporary, Hippolyte Taine. Taine is credited as the source of Saussure’s metaphor representing a physical event and its correlative mental event as ‘the recto and verso’ of a piece of paper (Aarsleff 1982, p. 15; Culler 1985, p. 83; de Saussure 1983 [1915], p. 111). In this study, social semiotics, an enhancement of Saussure’s legacy, will be used to explore Montessori’s enhancement of the legacy of Itard and Séguin. Social semiotics will be introduced in Chapter 5, as one aspect of a framework for analysing Montessori pedagogy.
3.7.2 Liberty, observation and activity

The philosophy of liberty at the heart of Montessori’s pedagogy is summarised by the Italian historian of the era, Benedetto Croce, when he writes that:

... the record of past events reveals that only when men are free in spirit were they able to develop to the full their higher political and ethical capacities ... acts of judgement were an integral part of the process of understanding (quoted in Stuart Hughes 1958, pp. 219-220).52

As part of her retreat from Positivism, Montessori (1964 [1909/1912], pp. 14-15) deplored the contemporary use of measurements to design desks and benches which forced children to become ‘like butterflies mounted on pins’, not least of all because ‘[w]ith such material as this the experimental scientist can do nothing’, arguing instead that ‘[t]he school must permit the free, natural manifestations of the child if in the school scientific pedagogy is to be born’. Observing immobile children to collect pedagogic data was equivalent in her mind to observing mounted butterflies to collect entomological data. Providing the child with liberty, therefore, became a methodological concern for Montessori, rather than an expression of the Rousseau tradition. Transferring her extensive training in ‘observing, comparing, recording ... the study of physical forms’ to ‘the study of behaviour’ (Kramer 1978 [1976], p. 68), Montessori (1964 [1912], p. 28) made ‘spontaneous manifestations of the child’s nature’ the focus of her experimental pedagogy.

In this way, Montessori grappled in the first decade of the century with the methodological problems of positivist science, later identified by Vygotsky (1986 [1934], pp. 13-15), with reference to psychology, as a ‘crisis’ marked by ‘incongruity’ between factual data and the theories which emerged to fit the facts. This study proposes that Montessori’s practical pedagogy materialises solutions to this incongruity comparable to Vygotsky’s later theoretical solutions, specifically, his inclusion of activity as a concept within his theoretical framework. The value of

52 Croce, according to Stuart Hughes (1958, p. 227), began as a rationalist but ended up ‘in a kind of mysticism’, a description often applied to Montessori. In Stuart Hughes’s opinion (p. 220) Croce’s shift to mysticism is linked to his anxieties about the future of liberty in Europe following the First World War. In 1938, for example, Croce made ‘an appeal to the youth of Europe to recover its cultural and ethical heritage before it was too late.’ In the same decade Montessori made similar appeals, for example Montessori (1971 [1943]).
Vygotsky’s framework for exploring the theoretical underpinning of Montessori’s practice will be explored in the following chapter.

3.7.3 Montessori and twentieth-century ideas about education

The initial worldwide enthusiasm for the Montessori method died away after the First World War and Montessori’s work has subsequently been evaluated against prevailing theories of education, including progressive pedagogy and genetic epistemology (Piaget 1932 [1924], 1970; Piaget and Inhelder 1958). The marginalisation of Montessori’s work immediately after the First World War has been explained by the fact that her pedagogy was isolated from the dominant psychological and educational movements of the era, including the progressivism, behaviourism, intelligence testing and psychoanalysis (Hunt 1964, p. xiv; Kramer 1978 [1976], p. 375; McDermott 1965) and because of the reification of Montessori’s ideas by her followers (Kramer 1978 [1976], p. 378). However it could equally be argued that the isolation and the ‘conservative spirit’ of the Montessori movement may have protected Montessori’s method from being distorted by successive waves of conflicting ideas in twentieth-century psychology and pedagogy.

A revival of interest in Montessori education occurred in North America from the end of the 1950s, a period marked by the waning of progressive pedagogy in America (Cremin 1961, p. vii). The schools of thought, which had failed to support Montessori, were themselves losing support, but the resulting popular renewal of interest in Montessori also deserves scrutiny (McDermott 1965, p. xi).

In the same year in which John Dewey introduced Montessori to the enthusiastic audience at Carnegie Hall, he and his wife Evelyn included an extended discussion of her work in a review of educational innovation of the era (Dewey and Dewey 1915, pp. 141-16353). This evaluation is unusual in the field of Montessori criticism for its attention to the detail of Montessori pedagogy and for its willingness to engage with the theoretical issues raised by the Montessori objects and their use. The Deweys

53 The evidence suggests, according to Lillard (2005, pp. 341-342), that although Dewey’s first major publication had predated the establishment of Montessori’s school by several years, Montessori had not read Dewey’s work before she went to America in 1915.
highlight the viewpoint they share with Montessori that ‘liberty is necessary in the classroom if the teacher is to know the needs and capabilities of each pupil’ (Dewey and Dewey 1915, p. 141). In particular, they recognise that Montessori equates liberty with the free activity of children, describing, with approval, the positive discipline based on activity that is a feature of Montessori classrooms (Dewey and Dewey 1915, pp. 142-144; Montessori 1964 [1909/1912], p. 86). They conclude their discussion of Montessori pedagogy by stating:

It is significant of the wide-reaching development of the democratic spirit that the voice most influentially identified at the present time with the ideal of liberty in education should sound forth from Italy (Dewey and Dewey 1915, p. 163).

The Deweys’ discussion of Montessori pedagogy includes fine-grained descriptions of the Montessori objects, and their use, obviously based on classroom observation. They point out that liberty in the Montessori classroom is not the liberty for children to do as they please, but instead ‘[l]iberty is found in the use the children make of the material’, a liberty enhanced by the ‘self-corrective’ nature of the material (pp. 153-154). The following description of the relation between the design of the material, the liberty of the child’s use of the material and Montessori’s educational purpose resonates with the focus of this study:

The educational purpose Montessori aims to serve in making her material self-corrective, is that of leading the child to concentrate upon the differences in the parts of the appliances he is working with; that is, in trying for the fixed end he has to compare and discriminate between two colours, two sounds, two dimensions, etc. It is in making these comparisons that the intellectual value of training the senses lies. The particular faculty or sense that the child is exercising in using any apparatus is sharpened by concentration upon the relations between the things. Sense-development of an intellectual character comes from the growth of this power of the sense organ to compare and discriminate, not from teaching the child to recognize dimensions, sounds, colors, etc., nor yet from simply going through certain motions without making a mistake. Montessori claims that intellectual result differentiates her work from the appliances of the kindergarten (Dewey and Dewey 1915, pp. 156-157; emphasis in the original).

Thus, the Deweys recognise the intellectual impact Montessori objects have on children as a function of relations between contrasting elements in the design of the objects. Nevertheless, their final evaluation draws conclusions which overlook the significance of the meanings realised by these relations. In other words, while the

54 Similarly, Bertrand Russell (1926, pp. 35-37; pp. 169-170) praises at length the active discipline in the Montessori classroom attended by his three-year-old son.
Deweys (1915, p. 147) are aware of Montessori’s debt to Séguin, they continue to evaluate the liberty of the Montessori classroom in terms of Rousseau.

The difference the Deweys (1915, p. 157) identify between themselves and Montessori ‘lies not in a difference of opinion as to the value of liberty, but rather in a different conception of the best use to be made of it’. Specifically, for the Deweys 1915, p. 141), this difference relates to ‘the value of liberty in the use of the material’. In their view, the way the didactic objects are used in Montessori classrooms reflects an outdated nineteenth-century conception of intelligence and learning. In particular, they interpret Montessori’s insistence that her objects should be used by children in a particular and precise way as the realisation of a nineteenth-century belief in human ability being innate rather than developed; in other words, that children have:

... ready-made faculties which can be trained and developed for general purposes, regardless of whether the acts by which they are exercised have any meaning other than the training they afford (Dewey and Dewey 1915, p. 159; emphasis added).

This interpretation of the Montessori objects and their use is demonstrably at odds with the provenance of the objects outlined in this chapter. Furthermore, Dewey and Dewey (1915, pp. 157-162) argue that while students in Montessori classrooms had more freedom of movement and choice of work than in American progressive schools, they did not have as much intellectual or creative freedom, because of the restrictions placed on them by the material. It is this aspect of the Deweys’ evaluation, elaborated by Kilpatrick (1915), which contributed to the loss of interest in the Montessori method in the United States after World War I.

In the Foreword to a 1964 edition of The Montessori Method, a philosopher of Dewey’s Pragmatist school, McDermott (1965, p. xi), describes the ‘rejection of Montessori, after an initial burst’, as ‘largely the result of an unnecessary and false tension that developed between ‘Progressivism in American Education and Montessori’. On the basis of his own close reading of Montessori’s writings, McDermott (1965, pp. xii-xiii) claims that both Dewey and Kilpatrick misread Montessori when they interpreted her work as an expression of an old-fashioned atomistic psychology concerned with imposing order and structure without allowing for individual adaptation and interest. In contrast, McDermott (1965, p. xii) claims
that ‘[t]he notion of structure, so central to Montessori’s thought, does not of itself preclude the variety of experiences that is indispensable for learning’.

While McDermott contradicts the Deweys and Kilpatrick in their assessment of Montessori, he cautions against a false opposition between the ideas of Montessori and Dewey. Suggesting that both share a propensity for being diminished by their advocates as much as by their critics, McDermott writes (1962, p. xi):

> It takes little thought and yields less fruit to compare the Montessori system at its best with American education at its weakest. It makes no sense to adhere to Montessori at the expense of a John Dewey known only through the misuse of his perceptions. To do so would be the height of irony, since one reason why the Montessori method did not take root earlier in America was the fact that it was too often known through its ephemeral characteristics or through so-called Montessori schools that either diluted the central principles involved or substituted eccentric educational theory under the Montessori name.55

For McDermott (1965, pp. xiii-xiv), ‘Montessori is most fruitfully read within the framework of the late nineteenth-century upheaval in experimental and philosophical psychology’, in particular the re-ordering and re-valuing of process and structure. From this perspective, McDermott (1962, p. xv) argues for closer attention to be paid to ‘the varied exercises of Montessori’s pedagogy [which] form a remarkably coherent and unified latticework of theory and practice’. In other words, rather than harking back to the nineteenth century, and atomistic views about the structure of knowledge, McDermott recognises qualities in the Montessori objects suggestive of systematic and interrelated conceptions of knowledge, which, in Montessori’s time, were just emerging to shape the future. While disagreeing with followers of Montessori who regard the design of the materials as sacrosanct, McDermott (1965, p. xvii) argues strongly for a review of ‘the very notion of didactic materials’ from this perspective.

In the early 1920s, according to Kramer (1976, p. 326), the school founded by Claparède at the Institut J. J. Rousseau in Geneva, the Maison des Petits, was a modified Montessori school. It was at this school that Jean Piaget recorded his early observations of how children learn. The name of the school, a direct translation of

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55 Lillard (2005, p. 12), citing Dworkin 1959, comments: ‘John Dewey, America’s most famous progressive educator, lamented near the end of his life that he had not made any real impact on schooling’. 

Casa dei Bambini, and the description of the school by Piaget (1932 [1924]) reveal close links to the Montessori approach, although Piaget never states this directly. In the late 1920s and early 1930s, however, Piaget was a prominent sponsor of Montessori’s work.\(^5^6\)

The difference between Montessori and Piaget, as Kramer (1978 [1976], p. 326) describes it, is that Piaget formulated ‘a theory of cognitive development that went beyond’ Montessori’s focus on ‘the practice of teaching’. Specifically, in the words of Piaget’s interpreter, Elkind (1974, pp. 129-130), Montessori developed a ‘philosophy of education’, while Piaget developed ‘a philosophy of knowledge’ using ‘the study of the child to answer questions about the nature and origin of knowledge’. Elkind continues ‘Piaget sees his contribution primarily in the area of logic and epistemology, and only secondarily in the area of child psychology and education’.

Despite their different concerns, according to Elkind (1974, p. 129), both shared a ‘biological orientation’ to development and an interest in ‘normative’ aspects of child development. Elkind (pp. 134-136) also emphasises that neither advocated, despite popular opinion, ‘the acceleration of mental growth’. Where Montessori and Piaget differed was in the value they placed on direct instruction. For example, Piaget saw little value in teaching a child to read younger than the age of about seven, during the pre-operational period, whereas Montessori harnessed the special capacities of children in this period to make learning to read easier.

In his history of the genesis of the new educational methods of the twentieth century, Piaget (1970, pp. 146-149) draws attention to the ‘synchronism’ in the discoveries of both Dewey and Montessori. He aligns them with early twentieth-century thinkers who ‘reacted against the static nature of nineteenth-century psychology’, thinkers such as William James, Bergson and Janet. For Piaget (1970, pp. 147-148), the work of Dewey and Montessori is distinguished from nineteenth-century psychology because they incorporate into their approaches ‘work based on interest’, ‘activity

\(^{56}\) Boyd’s description of the Maison des Petits suggests this school exemplified for him the best New Education could offer, incorporating ideas from Froebel, Montessori and Decroly, as well as those developed in Geneva. Boyd also endorses the ‘scientific freedom’ of the teacher education methods used by the Institut J. J. Rousseau (Boyd and Rawson 1965, p. 59). The link between the Institut and Montessori continued until 1934 when Piaget attended the last Montessori Congress held in Rome in the months before all Italian Montessori schools were closed (Kramer 1978 [1976], p. 326).
providing training for thought’, and an understanding of development based on ‘genetic psychology’.

Piaget (1970, pp. 147-148) describes how Montessori, in her work with ‘abnormal pupils’ was ‘confronted [...] with the most central questions of intellectual development’, generalising her discoveries ‘with unparalleled mastery’ to ‘normal children’ into a method ‘whose repercussions throughout the entire world have been incalculable’. Piaget continues:

[Montessori] applied to normal children what she had learned from backward ones: during its earliest stages the child leans more by action than through thought ...

Here, significantly, Piaget fails to recognise that, for Montessori, the child’s activity and the child’s thinking are expressions of each other, as they were for Itard and Séguin. To suggest that a child might learn more through one than the other is not meaningful in the context of their tradition. Piaget bases his own theory on the notion of the active child, but because he does not recognise the provenance of Montessori’s ideas, he attributes her insights merely to ‘her power of intuition ... without [her] ever developing a theory’ (Piaget 1970, p. 98; see also Lillard 2005, p. 28).

Given Piaget’s admiration for Montessori’s work, those inside the Montessori movement have wondered why Piaget did not follow its ongoing development. For example, Montessori’s grandson, Mario Montessori Jnr, a psychoanalyst, writes:

It is particularly bewildering to me that the later developments in Montessori education have been ignored by the Geneva school. Jean Piaget, the grand old man of this school, knew Maria Montessori well and was, in fact, president of the Swiss Montessori Society in the 1930s. He worked along very much the same lines as Montessori, basing his thinking on direct observation of the behavior of children, and taking into account the sequences of development he observed and the interaction with the environment (Mario Montessori Jnr 1976, p. 65).

Mario Montessori Jnr (1976, pp. 66-67) identifies two areas of strong contrast between Piaget’s ideas about child development and the Montessori approach. First, from a Montessori perspective, Piaget mistakenly judges ‘the capacity of the child’s mind for abstraction’ on the basis of the ‘products’ of the child’s activity, not the activity itself. Second, Piaget’s view of the child is compared to the distorted view of medieval painters who gave the bodies of children’s the proportions of adults, ‘so that they resembled dwarfs’. Mario Montessori Jnr continues:
These painters were very skilled in perceiving and reproducing reality. However, their prejudice regarding what children were like prevented them from representing children as they really were ... I believe that something similar occurs in Piaget’s psychology ... [t]he view of the child as an imperfect adult ...

Piaget’s view of development, as interpreted in Montessori teacher training, is compared to an inclined plane which the child, in isolation, ascends in a lock-step, ‘causalistic’ fashion from birth to adolescence. The role of the teacher is limited. For Piaget (for example, 1970; also Piaget and Inhelder 1958) the child’s activity is determined by the emergence of innate capacities, unfolding in developmental stages independent of the child’s social setting. In this model, emerging innate capacities precede developmental steps in the physical and social realm. In contrast, Montessori charts children’s development as a series of phases in which different interests and sensitivities wax and wane, resulting in a process of alternating creative transformation and consolidation, achieved through engagement with the physical and social environment. The role of the teacher is to prepare the environment and to provide just the right amount of help to aid this development.57 In summary, the Montessori model of development promotes a view of the child as having special intellectual powers, in contrast to Piaget’s model, which is oriented to what children are not yet able to do. How the Montessori model orients the child to abstract meanings from an early age is investigated in Chapter 6.

3.8 Conclusion

This chapter has traced the provenance of Montessori pedagogy, from the metalanguage of John Locke and its interpretation by Condillac. Breaking through the limitations imposed by notions of innate understanding, Locke’s metalanguage made it possible for those who followed to talk about the development of human consciousness, from its origins in the impressions, or ‘ideas’, left by sensory experience and the association of those ideas by the functions of the mind. Locke describes consciousness as co-evolving with the intentional and conventional signs which constitute language. Language makes generalisation, abstraction and

57 Adapted from a lecture by Mr Camillo Grazzini, Director, Fondazione ‘Centro internazionale di studi Montessoriani’, Bergamo, Italy, Montessori Elementary Diploma course, 1984-85.
classification possible, leading to the development of knowledge and reason, or thinking. The power, which controls the non-physical functions of the mind involved in thinking, as well as the physical functions of the body involved in movement, is identified by Locke as the will. The free exercise of the will underlies the development of both consciousness and ethics, and for this reason, liberty becomes central to the education of children. Locke’s focus on liberty in education reappears in the work of the French *philosophes*, Rousseau and Condillac.

While foregrounding liberty and experience, especially sensory experience, in the education of Émile, Rousseau conceives of language development, and direct instruction in cultural and educational knowledge, as separate from and subsequent to, rather than constitutive of, learning through freely-chosen activity. In contrast, Condillac elaborates Locke’s description of human development, arguing that the functions of the mind originate in sensory experience and freely-chosen activity. The key, according to Condillac, is attention, and the use of intentional signs in shared, social settings to control the attention. Condillac’s description of the mediation of experience through the senses and the expression of this experience as signs underlies the work of Itard and Séguin, from which Montessori pedagogy is derived.

Tracing the provenance of the Montessori objects back to the French Enlightenment both clarifies their significance and reveals the nature of misunderstandings, which have characterised the evaluation of Montessori pedagogy by influential commentators in the twentieth century. In contrast to those whose conception of liberty in education was shaped by Rousseau, for example, the Deweys, Boyd and Kilpatrick, this study evaluates the Montessori objects in terms of the liberty of Condillac, the liberty endowed by the intentional use of socially-shared signs. To enable such an evaluation requires an analytical approach which can account for the relation between liberty and ontogenesis described by Condillac and elaborated in the pedagogies of Itard, Séguin and Montessori.

The review of the provenance of the Montessori objects contained in this chapter counteracts Piaget’s claim that Montessori’s concern with a child’s free activity was merely intuitive, rather than comprising a theorised approach to pedagogy. Whether Montessori developed her own theory is open to question but, as demonstrated in this chapter, she was working within an existing theoretical tradition, a tradition aligned
neither with Dewey nor Piaget. Dewey’s approach to pedagogy fails to recognise the significance of the contrasting meaning relations embodied in the design of the Montessori objects. In Piaget’s model of genetic epistemology the maturation of internal mental structures precedes development in the external, social environment. Thus, an alternative analytical approach is required to make visible the way Montessori pedagogy has realised the theoretical tradition of Condillac. In particular, such an analytical approach needs to review the extent to which the Montessori objects and their use constitute a ‘language of action’, or sensory gateway to abstract meaning-making, the extent to which they isolate and heighten the perception of difference that becomes meaningful, and able to be expressed as signs in Saussurian terms, and the extent to which they recontextualise the sensory mediation of experience as semiotically-mediated experience in order to develop educational knowledge.

In summary, once the Montessori view of liberty in education is uncoupled from the tradition of Rousseau, it is possible to confront, in a meaningful way, the interpretation of the Montessori objects as placing limitations on children’s educational experience and developmental opportunities. It is also possible to discern a theory of practice deserving of an analytical response. Chapter 4 represents a first step in the development of a meta-analytical framework with the power to achieve these tasks.