CONDILLAC'S METHOD BETWEEN PHYSICS AND METAPHYSICS[1*]

EL MÉTODO DE CONDILLAC ENTRE LA FÍSICA Y LA METAFÍSICA

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Abstract
In this article we analyze the general organization of knowledge proposed by Condillac's method. The most general field of knowledge is here equivalent to the discipline of natural history; the first subdivision of this general field is distributed between physics and metaphysics. We assess the meaning of this division taking into account the theory of knowledge advanced by the author, comparing it briefly with the Baconian, Lockean and Encyclopedic theses. In Condillac's new framework, the notion of a division of knowledge acquires a new meaning as he affirms a different kind of relationship between disciplines in this new regime. In order to do this, Condillac elaborates an innovative notion of logical reciprocity drawn from the discussions within the fields of natural philosophy and theology. The result amounts to an early methodological defense of what would today be called "the Humanities".
Keywords: Method, Taxonomy, Physics, Metaphysics, Condillac.

Resumen
En este trabajo analizamos la organización general del conocimiento propuesta por el método de Condillac. El campo más general del conocimiento equivale aquí a la disciplina de la historia natural; la primera subdivisión de este campo general se distribuye entre la física y la metafísica. Evaluamos lo que significa esta división respecto de la teoría del conocimiento avanzada por el autor, comparándola brevemente con las propuestas baconianas, lockeanas y enciclopédicas. En el nuevo marco de Condillac, el significado mismo de la división del saber adquiere un sentido nuevo, y en este nuevo régimen se afirma un tipo de relación diferente entre las disciplinas. Para ello, Condillac elabora una fecunda noción de reciprocidad lógica extraída de las discusiones de la filosofía natural y de la teología. El resultado equivale a una temprana defensa metodológica de lo que llamaríamos "las humanidades".
Palabras clave: Método, Taxonomía, Física, Metafísica, Condillac.

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The history of disciplinary divisions is an important part of the history of ideas about science and method. Whether we talk about the medieval genre of the *divisio scientiarum*, the organization of the curriculum from the Middle Ages to modernity, or the way in which geometry and arithmetic converge to form an ideal *mathesis universalis*, it is certain that the relationship between disciplines is fundamental to the history of knowledge. In an encyclopedic context, whose very aim is to provide a general and useful classification of all human knowledge, the question is not a small one. Diderot and d'Alembert were aware of these problems and discuss them in order to assemble their figurative picture of human knowledge, establishing as references to their work salient authors of the previous century, such as Bacon, Locke and Leibniz. The *Encyclopédie*'s proposal, however, does not offer the only possible solution to the problem. In this article, we will outline some basic problems concerning the issue of the classification of knowledge during the eighteenth century. We seek to reconstruct the solution offered by the Abbé de Condillac's method, which was extremely influential during the last decades of the century.

Accordingly, it is reasonable to characterize Condillac's philosophy as a kind of "alternative encyclopedism" because, while he retains the encyclopedic goals of a complete circuit (*cyclo*) of all human knowledge, he also proposes an innovative account of the very logical notion of circuit. The form of a logical circuit, as a property of all knowledge, is revealed textually in the relationship between Physics and Metaphysics as elaborated in the Introduction to his *Art of Reasoning*. This article will offer a detailed commentary on the assumptions and problems at play in this concept of circularity, which Condillac explains in the following quotation:

> There is really only one science and that is the history of nature: a science too vast for us and of which we can only grasp a few branches.
> Either we observe facts, or we combine abstract ideas. Thus the history of nature is divided into the science of sensible truths, physics and the science of abstract truths, metaphysics.
> When I consider the history of nature as a science of sensible truths and as a science of abstract truths, it is because I am only concerned with the main objects with which we can occupy ourselves. Whatever the subject of our studies, abstract reasoning is necessary to grasp the relations between sensible ideas; and sensible ideas are necessary to form abstract ideas and to determine them. Thus we see that, from the very first division, the sciences fit into each other: they also lend each other mutual help and it is in vain that philosophers try to put barriers between them.

> It is very reasonable for narrow-minded people like ourselves to consider each one separately; but it would be ridiculous to conclude that it is in their nature to be separate. It must always be remembered that there is really only one science and if we can grasp truths that seem to be detached from one another, it is because we are unaware of the link that unites them into a whole.
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> Of all the sciences, metaphysics is the one that best embraces all the objects of our knowledge; it is at the same time the science of sensible truths and the science of abstract truths. Science of sensible truths, because it is the science of what is sensible in us, as physics is the science of what is sensible outside. Science of abstract truths, because it is the one that discovers the principles, that forms the systems and that provides all the methods of reasoning. Mathematics themselves are only a branch of it. It therefore presides over all our knowledge and this prerogative is due to it: for if it is necessary to treat the sciences in relation to our way of conceiving, it is up to metaphysics, which alone knows the human mind, to lead us in the study of each. Everything is, in certain respects, within its competence. It is the most abstract science; it raises us beyond what we see and feel; it raises us to God and it forms that science which we call physico-theology (Condillac, 1947: I, 619, a34-b45)[2].

[2] "Introduction", in *The Art of Reasoning*. Condillac's works are referred to according to the 1947-51 French edition of his *Works*. Volume is followed by page number, column (A, B) and number of lines. Unless indicated otherwise, the translations of the cited passages of Condillac's works are our own: "Il n'y a proprement qu'une science, c'est l'histoire de la nature: science trop vaste pour nous, et dont nous ne pouvons saisir que quelques branches.

Ou nous observons des faits, ou nous combinons des idées abstraites. Ainsi l'histoire de la nature se divise en science de vérités sensibles, la physique; et en science de vérités abstraites; la métaphysique.

Quand je distingue l'histoire de la nature en science de vérités sensibles, et en science de vérités abstraites, c'est que je n'ai égard qu'aux principaux objets dont nous pouvons nous occuper. Quel que soit le sujet de nos études, les raisonnemens abstraits sont nécessaires pour saisir les rapports des idées sensibles; et les idées sensibles sont nécessaires pour se faire des idées abstraites, et pour les déterminer. Ainsi on voit que, dès la première division, les sciences rentrent les unes dans les autres: aussi se prêtent-elles des secours mutuels, et c'est en vain que les philosophes tentent de mettre des barrières entre elles. Il est très-raisonnable à des esprits bornés comme nous, de les considérer chacune à part; mais il seroit ridicule de conclure qu'il est de leur nature d'être séparées. Il faut toujours se souvenir qu'il n'y a proprement qu'une science et si nous connoissons des vérités qui nous paroissent détachées les unes des autres, c'est que nous ignorons le lien qui les réunit dans un tout.

La métaphysique est de toutes les sciences celle qui embrasse le mieux tous les objets de notre connoissance; elle est tout-à-la-fois science de vérités sensibles, et science de vérités abstraites. Science de vérités sensibles, parce qu'elle est la science de ce qu'il y a de sensible en nous, comme la physique est la science de ce qu'il y a de sensible au-dehors: science de vérités abstraites, parce que c'est elle qui découvre les principes, qui forme les systêmes, et qui donne toutes les méthodes de raisonnement. Les mathématiques mêmes n'en sont qu'une branche.

Elle préside donc sur toutes nos connoissances, et cette prérogative lui est due: car s'il est nécessaire de traiter les sciences relativement à notre manière de concevoir, c'est à la métaphysique, qui seule connoît l'esprit humain, à nous conduire dans l'étude de chacune. Tout est, à certains égards, de son ressort. Elle est la science la plus abstraite; elle nous éleve au-delà de ce que nous voyons et sentons; elle nous élève jusqu'à Dieu, et elle forme cette science que nous appelons théologie naturelle".

We would like to make explicit the nature of the circular logical relationship that is established between the two maximal divisions of natural history, namely physics and metaphysics. In order to do so, it is not enough to review methodological problems of taxonomy; it will also be necessary to revisit some aspects of the history of physics at the end of the seventeenth century and the ways in which it resonated across the eighteenth century in general and in Condillac's conception of metaphysics in particular. Regarding this conceptual imbroglio, it is necessary to comment on theology's situation amidst the other disciplines in this new arrangement. In the following sections, we will examine two central aspects of Condillac's method: the question of the general organization of knowledge and the logical function of reciprocity as a model of the internal articulations of this organization.

I. Newtonian physics and the legitimation of the reciprocal relationship

The "Newtonian triumph" is an unavoidable milestone in the history of physics during the Enlightenment. However, our understanding of the significance of this event is somewhat distant from that of the *philosophes* of the 18th century. Newton provides a model of reciprocity in the third law of motion as a mutual relation between two masses, which entails two identical forces of opposite directions. This model will be transferred to many other regions of knowledge. Unlike Descartes, Newton maintains, regarding collisions, that a relation of strict reciprocity does not have a prioritized antecedent pole; rather, both (antecedent and consequent) are equal in this respect. The sun in the Newtonian system is no longer the king that unilaterally coordinates the motion of the planets, sweeping them with its vortex. Rather, gravitation is one single kind of universal and reciprocal relationship that is proportional to the distribution of masses in space; and if the sun appears as the main determinant, this is only because its mass is many times greater than that of other bodies in the system. Relationships, however, remain logically reciprocal. The earth attracts the sun as much as the sun attracts the earth. The consequences of this change do not seem to have been emphasized by many of our textbooks on the history of science but they will have important repercussions in eighteenth-century discussions.

The admission of a strict reciprocity between all the portions of mass that make up the universe requires the admission of a kind of action at a distance (Hesse, 1965). What matters in Newtonian physics is not the initiative of a *singular* mass portion but rather the systemic relations between *all* mass portions at the same time. The admission that this force acts at every moment of continuous time with the same instantaneous global "presence" had led Newton to develop calculus as the mathematical instrument necessary to describe this interaction. At the same time, it brought about the famous three-body problem, widely known by the philosophers of the following century. From this perspective, what matters are no longer bodies taken as individuals; what matters is the system taken as a whole. Newton calls the integration of this whole an "Aethereal Medium" (1718: 327). Whether this medium is considered material or not is of little interest to us here, for the issue varies among later authors and could be controversial among commentators even with respect to Newton's philosophy. In any case, the *logical* consideration of the *complete set* of relations is given priority here over any singular phenomenon. The system is given priority over the parts. The emphasis lies on the whole.

Recent studies on the historiography of science show that early modern thinkers tend to retrieve several of the metaphysical principles of Ancient philosophies for their own systems (Funkenstein, 2019). As for Newtonian physics, a compromise between Stoic and Epicurean physics can be understood there (Dobbs, 1991). The systemic point of view would be analogous to the *pneuma* as a principle of Stoic physics, which reappears in Newton's "medium". As for matter, which is supposed to be composed of atoms, it expresses an Epicurean principle. Bodies, therefore, are understood as composed of atoms; but atoms unite according to a general gravitational force (to which other kinds of force could be added) that pervades the universe through ether. This metaphysical foundation had been inherited from the alchemical tradition, present in the context of the Royal Society, even if Cartesianism had momentarily weakened it. It is by careful observation of a series of "crucial phenomena" of action at a distance, such as magnetism, chemical relations and physiological phenomena (Westfall, 1971: 335), that Newton begins to admit a general force of integration of the universe, which he will call allegorically a "sensory" of God, since it guarantees that His powers are present throughout the universe. There are many studies that show the experimental origin of the legitimation of this idea for Newton. Boyle's *Treatise on Nitre*, for example, recognizes in this substance a fixed part and a volatile part (Zaterka, 2004: 171). Here, Nitre as a substance is understood as the emergent result

of the interaction of its two sub-parts. The fixed part is qualitatively distinct from the volatile part, because each has properties of its own; and the union of the two is qualitatively distinct from any of the two parts of which it is composed because it acquires new properties. This relationship between the parts is not that of an aggregate, it is a mixture, "mixtion", that is, an emergent phenomenon (Bensaude-Vincent, 2008: 51-64). Against materialism, the experimental method can only work with the aggregate by supposition, because the very origin of experimental knowledge is perception, itself considered as a kind of physiological mixture from which things individuate. At the time, physiology and chemistry amount to the same discipline.

Therefore, without the notions of the whole and the medium we cannot conceive gravitational force. This position implies that the immediate integration of the universe is possible due to something that is beyond the strictly mechanical, an idea that will later be transferred to the method of other sciences, such as physiology and more generally metaphysics, after the Newtonian success (Duchesneau, 1982).

The developments of Leibnizian dynamics, although not strictly reconcilable with Newton's theses, nevertheless confirm what has been said so far with respect to the preponderance of the reciprocal logical relationship for the constitution of a system. Where Newton saw a strictly reciprocal relationship in his notion of force, Leibniz will also seek to see the universe from the point of view of a complete system given beforehand by God, which is called pre-established harmony. The same influences in both cases (the chymical doctrine of matter, of Stoic inspiration) promote a holistic outlook. The mathematical modeling of a simultaneous global perspective that unfolds temporally by the continuous application of a law (i.e., at infinitesimal intervals) leads Leibniz to develop calculus in parallel with Newton. However, Leibniz does not attribute this to ether. For this philosopher, it is the conservation of the amount of living force (*vis viva*) in the universe that would explain the physical presence of something virtual, not immediately expressed in terms of matter and motion but rather in terms of force or vigour (Desmaizeaux, 1740: 3). In both cases, the logical problem of integrating the parts into the same whole becomes pressing. Consequently, different metaphysical systems and philosophies at the time tackle this issue in their own terms: ether, harmony, occasionalism (Malebranche), etc. What we find here is the general problem of the communication of substances. During the course of the century, the perspectives of different authors will tend to be reconciled in a unified

physical theory, a "leibnizo-newtonianism" (Rey, 2013). However, 17th-century authors are well aware of the theological implications of this debate.

II. A short detour: Theology

The question surrounding what exactly makes up the ultimate integration of the universe is not classified as strictly pertaining to physics by the authors we have hitherto discussed. According to the disciplinary organization in place, these questions fall within the domains of metaphysics and theology. The Leibniz-Clarke dispute is immediate evidence of the importance of this theological problem. While this episode attests to the conscious presence of Epicurean and Stoic inspirations (for each of the authors often ascribe one of these positions to their opponent), it is certain that none of the modern authors want to fully recover any of the ancient doctrines. Both Epicureans and Stoics imagined a universe without transcendence and in the confrontation between Leibniz and the Newtonian Clarke, both of them Christians who admit divine transcendence, one finds the very relation between immanence and transcendence to be central. Here, the Newtonians resort to the ether or the "divine sensory" as a concept that guarantees a certain immediate co-presence of the whole universe to itself. Leibniz, on the other hand, preferred to resort to divine design and its harmony. In any case, we see the accuracy of Funkenstein's thesis concerning the historical influence of theological debates on the physical theses of modernity: the emphasis on a "Stoic" ideal, concerning homogeneity and the perspective of the whole is, in these letters, in agreement with other aspects of the Christian doctrine[3].

However, the eighteenth century will choose to unburden itself of this kind of theological dispute. But far from that clearer and more polemical rupture with the theological discipline for which Diderot is well-known, Condillac's strategy is much more subtle. It is nonetheless equally effective in neutralizing theological influence over discussions within natural philosophy. For the abbot, theology diverges from all other human knowledge regarding its source. For if human knowledge is derived entirely from the senses (and in this it follows the "experimental method" via Locke and Newton), theology is said to be *revealed* knowledge and therefore cannot be verified or discussed

[3] See Funkenstein (2018: chapter 2, section B3).

within natural philosophy. Condillac rejects the traditional confusion between the disciplines of theology and metaphysics:

> The first defect of peripatetic scholasticism, as of pure scholasticism, is to have made only one science [out] of philosophy and theology. For if sound philosophy is based solely on experience and if sound theology must draw only from scripture and tradition, it is obvious that these two sciences, having a different origin, must be treated separately. They are not opposites but they cannot be confused. What confusion, then, must their mixture not produce, when one employs an absurd philosophy, without principle and without method? (Condillac, 1947: II, 183, b5-22)[4].

The particular issues of knowledge of the perceptual world were already somewhat excluded from theological discussions in the experimental tradition stemming from Bacon. Newton, for example, does not resort to divine design to legitimize particular aspects of his astronomical discoveries such as gravitational force. This is because, from his theological point of view, God's designs are unknowable. Thus, God created gravitation as inversely proportional to the square of the distance, which is something that can be only experimentally verified; for He could have done it in any other way He wanted. The argument from design, based on the complexity and wonder of natural phenomena, inspired, during the transition to the 18th century, the appearance of several texts of "physico-theology" –a movement Condillac refers to in the text cited at the beginning of this article as "natural theology". In this context, the universe is something marvelous that legitimizes all objects of study through devotional admiration of the spectacle of nature. All study of nature could be thus considered to be indirect devotion to the intelligence of the creator (Daston & Park, 1998: 337).

Condillac finds in nature itself a slimmed-down theology, very close to Voltairian deism, which is able to accommodate revealed theology without fully affirming it. Condillac's strategy consists in recognizing that the senses are incapable of completely

[4] *Modern History*, book XX, chapter 3. "Le premier défaut de la scholastique péripatéticienne, comme de la scholastique pure, est de n'avoir fait qu'une science de la philosophie et de la théologie. Car si la saine philosophie est uniquement fondée sur l'expérience, et si la saine théologie ne doit puiser que dans l'écriture et dans la tradition, il est évident que ces deux sciences, ayant une origine différente, doivent être traitées séparément. Elles ne sont pas contraires, mais elles ne sauroient se confondre. Quelle confusion ne doit donc pas produire leur mélange, lorsqu'on emploie une philosophie absurde, sans principe et sans méthode?".

providing certain and necessary knowledge and in protocolarly turning to theology in order to be able to move from the *observation* of the constancy of a phenomenon to its metaphysical *necessity*. Thus, the soul (the object of metaphysics) feels continuously but this does not in itself imply that it feels by necessity. Only theology can make this passage, which consists only in the modal transition of something that is already continuously found in experience. Therefore, metaphysics for Condillac is exclusively experimental and provisional, while all passage to general and immutable laws lies within the domain of theology. In practice, the two disciplines should harmonize, for the natural order created by the divine order is good; but the autonomy of metaphysics is here guaranteed, while theology remains detached from positive phenomena.

Unlike the English, Leibniz did resort in his correspondence with Clarke to theological arguments in order to defend his thesis of the conservation of the amount of living force in the universe, subsidizing it with arguments about divine perfection. About half a century after that episode, in the second half of the 18th century, this theological question had already lapsed. For Condillac, the theses coming from ecclesiastical authorities have no longer any use in the sciences but they remain professed in his philosophy without actually being followed. If theology is the only knowledge that does not start from experience, it does not directly interfere with an experimentally constituted system. The coherence between theology and natural history is assumed, asserted and even confirmed by him but never explored. Ideally, metaphysics and theology will come together harmonically, without one having to transfer any of its theses to the other. Condillac employs this strategy to protect himself from public censorship, something at which the abbot is more successful than Diderot. Thus, theology aside, let us see what features Condillac's metaphysics acquires.

III. Metaphysics as the ultimate disciplinary integration

Condillac's metaphysics is not linked to theology or its sources. It will become the discipline "that best embraces all the objects of our knowledge [qui embrasse le mieux tous les objets de notre connoissance]" (Condillac, 1947: I, 619, b20-22). To understand this, we still see the fixed idea of an encompassing unity, a general system of all thoughts. They report to a single discipline because, according to Condillac, they all concern sensation.

One can understand mid-eighteenth-century physics as a combination and as a result of discussions stemming from at least two authors, Newton and Leibniz. Similarly, eighteenth-century metaphysics must draw on more than one source. In Condillac's case, commentators emphasize on Locke's influence, although it has been clear for some time now that Leibniz's theses have a concurrent relevance in the constitution of his philosophy. The juxtaposition of Newton and Locke as the physical and metaphysical aspects of a single English doctrine had been successfully accomplished by Voltaire in his *Letters on the English* (1733), where the author opposes it to Leibniz's doctrine.

In Locke, questions regarding knowledge had become a problem concerning the agreement between ideas (1741: iv, 1), given the closed character of personal identity that brings together, by memory, present and past representations (1741: ii, 27). The metaphor of the white sheet of paper, characterizing memory as the support of all representations, is well-known. This unity, however, had no metaphysical guarantee in Lockean philosophy, given the English philosopher's speculations on the possibility that matter could think. On this point and once again avoiding quarrels, Condillac aligned himself with Leibniz to say that the soul is, indeed, a substance. Keeping the Lockean experimental perspective (that of the continuous perception of mnemonic solidarity among representations), the abbot advances, by the same strategy of neutralization applied to theology, the thesis that the soul is an eternal essence. However, this substance that the soul is, whose model is Leibniz's monad as is made explicit in *Les Monades* (Condillac, 1994), can only be known by experience after the Fall, which means that to all intents and purposes it is just like personal identity as conceived by Locke. The difference here is that the Leibnizian perspective on a systematics of representations, that is, of the soul taken as a whole, will be also maintained. As a final result, metaphysics or the knowledge of the human soul will become a history of the development of its ideas, as Locke wanted but from a more systemic perspective of the correlations that are established, as in Leibniz. Condillac therefore wishes, since his first work, to make a *tabula rasa* out of the monad. The result is the conception of the soul as the integrity of a perceptual field that unfolds itself.

Just like the monad, the soul is the true substantial unity, of which sensations are only modes. Only the integrity of the soul's experiences can stand as the point of view from which to understand the relations that are internally established within it. Here, again following Leibniz, the virtual appears as a kind of potentiality of the soul, from which it

draws its own representations, enclosed within itself. This potentiality appears, for those who experience it, as an appetite, that is, a necessity or a lack [*besoin*] which motivates action. The appearance of said lack or necessity will be linked to the material situation of the physiological body with which this soul is associated, in hunger for example. From the metaphysical point of view, lack is a "generic tensor" (Kossovitch, 2011: 100) between sensations, whose properties are always relative, since they always concern the whole of the system. The nature of this whole is given and unknowable and therefore referred to theology. From the experimental point of view, however, the soul is only known through its effects. This primitive and inexplicable unity, though immediately ascertainable, is called by Condillac "the principle of connection of ideas" [*principe de la liaison des idées*]. Here, we are still searching for the constitution of the whole as a system and conceiving the whole as the only possible nexus for the explanation of the phenomena of perception and thought.

Yet another source of some of these reflections is what has been called by commentators a "sensualist aesthetics", focused on the role of the spectator. In front of a painting, the eye knows how to distinguish the different parts that compose it and then recompose the general nexus that is portrayed in the work. The relationship between the whole and the parts is here reconstituted by the eye's movement when observing a painting or a real landscape. What matters in this process are the viewer's passionate motivations which drive the gaze, so that the understanding and interpretation of a painting depend on both affective and cognitive aspects of experience. This was present in Malebranche, in Bernard Lamy, in Du Bos but also in Leibniz. In fact, according to the Leibnizian principle of the identity of indiscernibles, things are considered incontrovertibly singular. But this means, for Condillac, that the gathering of these singularities under the same view, in the same simultaneous frame, can only be accomplished by the primitive gathering of the spirit, that is, by the principle of connection of ideas. The soul, therefore, is nothing but the *ensemble* of sensations that present themselves to it and which it remembers. The term *set*, today, is fundamental to logic; in the *Encyclopédie*, the corresponding French term *ensemble* is a term that comes from the visual arts vocabulary and refers to the harmonic composition of paintings.

A white sheet of paper, or the hidden canvas that is not revealed behind the inks: two images for the support of representation. These are two metaphors for the soul's assimilative principle. There is nothing that can be thought by a person without that thought taking part amidst all the other thoughts that constitute and have constituted it.

The occurrence of a thought or a perception for the soul is its inclusion in the set of representations that constitute its memory. Thus, the representations are continuously brought back to the encompassing unity of the system, which is taken as its condition. For Condillac, this function of a *background* or foundation [*fonds*] appears explicitly since the *Essay on the Origin of Human Knowledge* as the unifying factor of experiences. His favorite metaphor, however, remains the "moving picture" [*tableau mouvant*][5]. In this way, it matters little whether there are bodies outside the soul, or whether the world is actually reducible to thought. One can only reach the objects of physics through the preliminary conditions of metaphysics, that is, through sensible experience. As a general science of the sensible, that is, of everything that presents itself to the soul, metaphysics will be the ultimate discipline, the most general systemic unity possible. All knowledge, from any discipline, will be considered a part of it. We will now see how it is further distributed and divided.

IV. Problems of taxonomy: Bacon, Locke, *Encyclopedia*

The problems concerning the division of knowledge according to the *Encyclopedia* are well known, inherited in general terms from Bacon's tripartition into History, Poetry and Philosophy. Nevertheless, the Encyclopedists do not follow the Baconian division too strictly: even though they preserve the tripartition, they propose a change in the priority among the disciplines in question (Malherbe, 1994). Bacon recognized three faculties: the first would be Memory, to which corresponds History, a type of knowledge that aims to collect observations and facts about everything that exists. Memory therefore records. Among the subdivisions of history, there is natural history, responsible for collecting and organizing the facts of nature, a human history that does the same with human facts and that also comprises an ecclesiastical history, etc. The second faculty would be Reason, to which Philosophy corresponds. Reason puts in order the facts that history has recorded. The priority of history with respect to philosophy is due to the elements being understood as prior with respect to their potential arrangements or assemblages. Hence, the facts must first be established by history so that they can then be put in order, a task assigned to philosophy in the general sense, which also includes "physics" or natural philosophy. The

[5] *Fonds*: Condillac (1947: I, 50, a20). *Essay*, I, V, §6. *Tableau mouvant*: (1947: I, 249, a47). *Treatise on Sensations*, I, 11.

third faculty would be Imagination, which reorders or rather disorganizes the elements brought together by Reason; it corresponds to Poetry, which primarily aims at producing works of art which bring pleasure to mankind. Poetry will also require facts already established by history and ordered by philosophy, so that the artist may then reorder them with verisimilitude. The Encyclopedists, on the contrary, place reason as prior to history and in this they depart from Lord Verulam's original conception.

Condillac will not follow Bacon to the letter either, although he keenly agrees with many of his observations. At the same time, Condillac responds to the encyclopedic division. There are several articles in the *Encyclopédie* that refer to the abbot directly or indirectly and he is close to various contributors of the project, such as Diderot, although both seem to have definitively distanced themselves from each other throughout the 1750s. The quotation at the beginning of this article shows that the abbot's conceptions of the global partition of knowledge do not match Bacon's or the Encyclopedists'. Condillac has his own conception of this general systematics and we understand that its main attribute is the emphasis placed on the unity of the system: "There is only one science and that is the history of nature [Il n'y a proprement qu'une science, c'est l'histoire de la nature]" (Condillac, 1947: I, 619, a34-37). In that passage, taken from his last philosophy, there is therefore only one faculty for all knowledge and that is memory. It records facts regardless of the taxonomies into which they may be organized: there is only one function that records facts, whether natural or human. Condillac elsewhere notes that Bacon's subdivisions were too numerous to be useful (Condillac, 1947: II, 230, b17-19)[6].

Bacon belongs to the (post-)ramist tradition, a logical tradition which divides knowledge between contents and forms, in the form of boxes of boxes that proliferate indefinitely[7]. This entails a fundamental methodological division between the elements, on the one hand and their arrangements, on the other, which corresponds to the division, borrowed from rhetoric, between invention and disposition. This is why history has priority: it finds the elements of knowledge (*inventio*), while the other two are concerned with arranging them (*dispositio*)[8]. Ong among others has shown that the *Sylva sylvarum*, for example, are understood as a great inventory of observations, that is, they provide the materials, whose privileged metaphor is the virgin forest, *sylva*, before it is cut down and

[6] *Modern History*, book XX, chapter 12.
[7] See Ong (1958: 116-121); and Serres (1972).
[8] See Bacon, *The Advancement of Learning*, Book V.

transformed by art. As for Condillac, there is in his philosophy a continuous and irresolvable tension that affects the whole system from the beginning, a tension that presents itself since the *Essay* between the "*matériaux*" (materials) of knowledge and their "*mise en œuvre*" (employment)[9]. For these two poles are considered simultaneously necessary: the elements must be logically prior to the arrangements; yet every experience is already arranged by the principle of the connection of ideas. The priority of the materials is the priority of the elements in relation to the whole. Conversely, the priority of their arrangement is the priority of the whole over the parts. The two theses must be sustained at the same time, for the relationship is reciprocal; but this creates a tension at the very core of the system, which must not be understood as a contradiction but rather as the original constitution of the logical tools for constructing any system whatsoever.

The fundamental function of a storehouse of knowledge had already been fulfilled by the principle of the connection of ideas since the *Essay* of 1746. According to Condillac, it is not possible to compare this tree that I see today with another one that I saw yesterday without there being a kind of *substratum* that preserves these representations, that is, my soul (Condillac, 1994: 134). Knowledge requires a solidary function of mutual relations, which makes present observations permeable to past memories[10]. If his first work was concerned at length with discriminating the faculties of the soul, i.e., perception, attention, imagination, memory, in his late philosophy the function of connecting ideas is identified with memory, furthermore by a conscious choice of economy of the notions that make up the system. The single principle will also be a single faculty. The later works depart in this respect from his early writings. In contrast, the later works, among them *The Art of Reasoning*, emphasize on operative unity, a single function that continuously brings together all lived experiences. As the producer of an inventory of notions, this memory function becomes the sole operation of the soul, rendering the Baconian or Encyclopedic tripartition of faculties useless and arbitrary.

The disciplinary division proposed by Locke at the end of his own *Essay* (IV, 21) will also be unified by Condillac. According to the English philosopher, knowledge could be usefully divided between that which refers to Physics, i.e., to things, to Practice, i.e., to human notions concerning actions and to "*Semeiotikê*", a doctrine of signs, i.e., knowledge

[9] Condillac (1947: I, 6, b18-23). *Essay*, I, I, 1, §5 and passim.
[10] Condillac (1947: I, 766, a6-16). *The Art of Thinking*, II, 3.

about the instruments that constitute knowledge. From Condillac's perspective, the division still holds and one can clearly see the persistence of the distinction between Physics and Practice in his approach to the "definitions of thing" (Physics) and "definitions of word" (Practice)[11]. But what used to be the third part of the division, semiotics, now takes on the role of the all-encompassing whole. Definitions are connected through a metaphysical substratum and thus Locke's division is not followed to the letter. Everything leads back to the encompassing and articulating function of metaphysics.

It is known however that Condillac's sensualism lumps all metaphysical functions together in *perception*, not in memory, an observation which would make it difficult to accept what has been proposed so far. Nevertheless, there is no contradiction here. Reading his Grammar, we find one of the most important arrangements of his last philosophy: the assimilation between perception and affirmation[12]. To clarify this point, the division between sensible ideas and intellectual ideas comes to our rescue[13]. A remembrance will be considered exactly the same thing as a present sensation as far as its content is concerned. While consciously perceived, a sensation is a sensible idea. While registered and remembered, it becomes, by this transformation, an intellectual idea. There is no difference in content between the two, even though at the same time their difference is complete. What the intellectual idea acquires is only the possibility of repeating itself and nothing more. As repeatable, the intellectual idea takes part in the simultaneous system of knowledge; as a mere unrepeatable and forgotten experience, the sensible-only perception (which is not yet an idea) is outside the retrospective reach of the soul and takes no part in the system. Therefore, all ideas that form the system of knowledge are memories, whether sensible or intellectual; and memory as thought-gathering is the only faculty for knowledge, whose proper realm is natural history. It is interesting to see, in the Condillaquian equation between perception and affirmation as two expressions of the same judgment, a historically important manifestation of the logical principle of idempotence[14].

History is considered *natural* because there is no division between nature and artifice. The unifying perspective that Condillac chooses to assume takes all phenomena as

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11 Condillac (1947: I, 748). *The Art of Thinking*, I, 10.
12 Condillac (1947: I, 437-438, b37-a2). *Grammar*, I, 4.
13 Condillac (1947: I, 334, b32-41). *Extrait raisonné du* Traité des Sensations*:* Précis de la quatrième partie.
14 Even though Nuchelmans (1984) does not say it explicitly, one may well take his analysis of Condillac's logic (chapter 9.1: 174-180) as an opinion in this direction.

solidary and indifferent to watertight and definitive classification. Things are all natural because they occur according to the laws of nature, referred to the Creator's plan. At the same time, the human soul is endowed with its own activity, so that all its products are artificial. All things are therefore seen as simultaneously natural and artificial. Nature itself must be understood only in analogy to artifice, while human artifice must all the time be referred to the natural laws on which it depends. Memory itself is natural or artificial, depending on whether we wish to see it as a consequence of natural laws or as a product of human activity. But if human activity itself is the consequence of natural laws, the distinction becomes inessential. Every fact, therefore, is natural in the trivial sense that it does not contradict the laws of nature imposed by God. The distinction between nature and artifice does not establish a real division.

These observations do not yet solve the problems concerning the order of knowledge. They rather describe the pre-existence of an open and permeable field that must be ordered, that is, they merely pose the problem. Condillac's truly original maneuver will therefore be found in the logical form of interaction amidst the first subdivision of this overarching field, that is, the distinction between physics and metaphysics.

V. Physics and Metaphysics in Condillac's method

The division of knowledge necessarily starts from natural history, understood as the observation of facts that are recorded by memory-aids. Since these facts are only grasped because they are recorded by memory and are therefore the purview of metaphysics, the latter can at the same time be understood as the most global division of knowledge. We saw in the quotation at the beginning of this article, however, that Condillac affirms the distinction between physics and metaphysics, albeit a relative one, constituted by the logical relation of reciprocity. Let us finally see how it is done.

The soul gathers sensations but it can only observe itself through them. According to Condillac, the spirit is opaque to itself, as Malebranche would have it. But the external bodies are opaque to it as well. Since Locke, sensation is already a relation and therefore it does not exclusively concern the body or the soul: it is rather a kind of bridge or balance reached between the two poles and is relative at the same time to both. If this is so,

sensation is the object of physics when it refers to external bodies, that is, when one thinks of bodies as organic systems where the physiological functions necessary for a sensation are developed; but it is also the object of metaphysics when one thinks of the ineluctable principle of reunion between sensations described above, without which these sensations would not form a single whole, rendering them imperceptible to one's spirit. Condillac thinks of Haller's description of the strictly reciprocal physiological relationship between sensibility and irritability (1755)[15].

Thought and matter: the distinction between soul and body is understood as a representational late individuation of both poles out of the original reciprocal relation. This means that, for perception, the relation is prior to the poles that produce it. Therefore, the arrangement is from this point of view prior to the materials, which will only be obtained by analysis later. From this open field in which sensations appear, one slowly begins to distribute them: some will report to the "outside" and others will report to the "inside". The distinction is not given from the start, it is rather slowly constructed, as we see in the second part of the *Treatise on Sensations*. Touch is the sense that provides the general idea of distinction, because it organizes things "one outside the other" [*les unes hors des autres*]. In the sensation of solidity, one finds boundaries to one's own body and thus representation is split into two reciprocal parts. The logical form of this distinction between the world and the self is analogous to that between physics and metaphysics.

The Dictionary of Synonyms makes the distinction between a contingent connection and a fundamental connection explicit:

> LIAISON. s.f. Lien. That which serves to hold several things together. But the connection is part of bound things and forms one body of them, one whole: The link, on the contrary, is quite different from the things bound [by it] and only prevents them from separating, or puts them in dependence to each other[16].

The background function taken by the soul fulfills the *liaison*, the connecting principle of ideas. The relations we find between objects and between notions amidst the

[15] Condillac (1947: I, 346b, note 1). *Treatise on Animals*, I, 4.

[16] Dictionnaire de Synonymes, "Liaison". "LIAISON. s.f. Lien. Ce qui sert à tenir plusieurs choses ensemble. Mais la liaison fait partie des choses liées, et elle en forme un seul corps, un seul tout: Le lien, au contraire est tout différent des choses liées, et il empêche seulement qu'elles ne se séparent, ou il les met les unes dans la dépendance des autres (Condillac, 1947: III, 358)".

general field that is the soul, however, are only links (*liens*). Given the preliminary metaphysical connection that is the condition of perception itself, human knowledge then strives to constitute the links between the ideas and the facts that present themselves.

It is perhaps surprising that such a logical relation of strict reciprocity is not itself taken from logic. This relationship comes rather from grammar: it is an *anti-strophe*: "In Grammar or elocution, antistrophe or epistrophe means conversion. E.g. if after saying *the jack of such a master*, we add and *the master of such a jack*, this last sentence is an antistrophe, a sentence turned from the first" (*Encyclopédie*, art. Anti-Strophe, by Du Marsais)[17]. Therefore, to everything physical corresponds something metaphysical and vice versa. The logical form of this antistrophic relationship will make it possible to subdivide knowledge without ever losing sight of the original unity from which it arises. If one sees two different bodies before oneself, it is because they have already been unified by the perceptual field of one's soul. They are therefore equally thinkable as two, when one thinks of them in their singularity, or as one, when one refers them to one's perception. If this were not so, they would not be seen together, because it is only possible to see those things that have been preliminarily unified by perception. There is no arrangement without elements; at the same time, there are no elements that do not present themselves as already arranged. It is necessary that the elements had already formed a system, by an original fact of metaphysical order, in order to be able to distribute them systematically in a coherent form.

The antistrophic relation is further analogous to the grammatical relation itself: "What is Grammar? It is a system of words which represents the system of ideas in the mind, when we wish to communicate them in the order and with the relations which we apperceive [Qu'est-ce que la Grammaire? C'est un système de mots qui représente le système des idées dans l'esprit, lorsque nous les voulons communiquer dans l'ordre et avec les rapports que nous appercevons]" (Condillac, 1947: I, 421, b7-b14)[18]. The relationship is therefore not only between elements but between entire systems. There is a single original foundational system that splits into two and places them in antistrophic relation: the system of words and the system of ideas. These two systems, taken together, form a single one. We can then consider them alternatively as a single system or as two distinct systems, according to our circumstantial objectives.

[17] Cf. *Encyclopédie*, vol. I, 516b-517a:
http://enccre.academie-sciences.fr/encyclopedie/article/v1-2227-0/
[18] *Cours d'Études:* "Motif des leçons préliminaires".

The relationship between physics and metaphysics –implemented throughout Condillac's work– may sound at first glance counterintuitive or worse, contradictory. This is, in fact, they way in which Condillac's doctrine was described in the French intellectual environment a few years into the 19th century. Against this simplistic, superficial and politically interested interpretation, we propose here to portray this architecture neither as contradictory nor as hesitant. By taking up some fundamental points of the abbot's conceptions, the construction seems to us perfectly coherent and capable of accommodating all kinds of knowledge, including those that have not yet been completely clarified and arranged in a "geometric", synthetic and apodictic order and even those that could never be so (Belaval, 1952).

The relation between the whole and the parts, in which the whole or the arrangement is the seat of metaphysics and the parts or the observed facts are part of physics, remains antistrophic. There is rather a metaphorical relation between systems: the order of perceptions is imitated by the order of propositions. We can therefore say that there is a kind of "syntactic emulation" between the two. A proposition is true when it reproduces precisely the order that was already there, before it was formulated, among the sensations themselves. Intellectual ideas must repeat the order of sensible ideas. The basic logical unit is not the term but the judgment as a whole, for here again the relation is prior to the poles. This further means that on the plane of sensible ideas the judgment is already there, even without expression; the statement that makes the judgment explicit, if true, merely repeats on the plane of words what was already given on the plane of perception. When a judgment comes to be expressed as an affirmation, it remains identical to the perception. This is the form that Condillac gives to the leibnizian idempotence principle[19].

Since every proposition has the form "A is B", A and B are individuals obtained by abstraction after the pre-existence of the relation "is", which expresses the primitive union of the perceptual field. The copula, however, is always partial, since it is relative to the judging spirit. When one says "A is B", one is not saying that "A is completely coincident with B" because A and B are each unavoidably singular. Every proposition about the world is therefore an improper, partial, metaphorical assimilation, relative to the limitation of our knowledge and sensibility. Relations are only fully identical when they refer exclusively to

[19] The principle of idempotence, commonly traced back to Leibniz, is better known as Boole's law and often expressed as $x^2 = x$. Here, it could mean that a judgment in perception (x) and its doubling by affirmation (x^2) amount to the same thing.

intellectual ideas, which is the case in domains such as morality, mathematics and metaphysics. We thus see how it is possible that mathematics be considered "only a branch" of metaphysics but also that equations are but exact antistrophes. Rather, metaphysics is organized as grammar and algebra itself is only a language. This is laid out very clearly throughout *The Language of Calculus*, whose introduction already presents the following (perfect) antistrophe: "Every language is an analytical method and every analytical method is a language" (Condillac, 1947: II, 419, a1-3)[20].

Now, we know that words are not things. Just as the proposition "A is B" can only signify a partial assimilation, words are tools for picturing things. But there is mutual mobility on the part of each of the two poles and this is why it was possible to distinguish between them in the first place. On the one hand, we make movements to obtain sensations; on the other hand, the individual at the beginning of their life slowly learned to regulate their movements out of sensations of pleasure and pain. Now, for us, as adults who have learned to speak, words have already contaminated perception, just as perception once inspired words. In the origin, the system of sensations was supposedly an indistinguishable whole; but soon the sensation-elements appear and with them the judgments that situate them reciprocally to each other. Thus, new orders discovered between sensations demand new expressions and the methods of expression (signs of any kind, always sensations in any case) reorganize perceptions. These two systems are both composed of transformed sensations and could be understood as first and second order sensations. This distinction between first and second order, however, is inessential, given the principle of idempotence. The constituted relationship is a two-way one. Between the two systems, there is therefore a kind of dialectic without synthesis, a perpetual tension that will never be resolved as long as there are passions, which correspond antistrophically to the physiological functioning of the living body.

VI. Conclusion

What is thus the distinction between the different regions of human knowledge for Condillac? It is not a distribution of *objects* exclusive to each science but a distinction between different *aspects* that coexist in the same thing. The soul corresponds to a primitive

[20] *La Langue des calculs*, "Objet de cet ouvrage".

and physiological union of the body; body and soul exist after the Fall only antistrophically[21]. Physiological organization is relative to the integration of the universe expressed by the laws of nature, which in turn requires a primitive intelligent union that produces it, which Condillac calls God. The relationship is original; only later the poles are individuated as aspects of it. The same thing, sensation, is at the same time physical under one aspect and metaphysical under another. The distribution of the aspects of things that exist outwardly, on the plane of extension, will constitute the different parts of physics. The distribution of the aspects of things that exist inwardly, on the metaphysical planes of the sensible space of touch and of the virtual space of memory, will constitute the different parts of metaphysics.

Condillac's reduction to a single principle is therefore contrary to "reductionism" in the contemporary sense. Physics is not understood as mechanics, for it concerns the entire field of natural philosophy, which includes mechanical, chemical, vital and so many other phenomena, as yet undiscovered or never to be discovered. Condillac finds in the optical phenomenon of reflection a metaphor to express the methodological imperative to never lose sight of the original unity underlying all knowledge:

> The limits that we raise to circumscribe each science intercept the light and necessarily cast shadows. Let us remove the limits, at once the shadows dissipate; the light which spreads freely, reflects from above the objects we observe, to fall on those we wish to observe; and by these reflections all become illuminated (Condillac, 1947: II, 391, b34-49)[22].

This transfer of observations takes place by comparison. When it comes to the transfer of observations from one field of knowledge to another, it is called an *application*; Condillac's doctrine becomes a method of the generalized search for the fruitful application of different regions of knowledge to one another. In the French *Encyclopedia*, the entries on "Application" retain this generality but still refer mainly to the application of a branch of mathematics to some other field. Condillac, however, insists on a more general

[21] Condillac (1947: I, 718, b1-31). *The Art of Thinking*, I, 1.

[22] *Discours de réception de l'abbé de Condillac à l'Académie Française*, le 22 décembre 1768. "Les limites que nous élevons pour circonscrire chaque science, interceptent la lumière et jettent nécessairement des ombres. Enlevons les limites, aussitôt les ombres se dissipent ; la lumière qui se répand librement, réfléchit de dessus les objets que nous observons, pour retomber sur ceux que nous voulons observer ; et par ces reflets tous s'éclairent".

semiotic aspect which also embraces symbolic, poetic and rhetorical instruments, as much as mathematical ones. If the requirement of exactness imposes greater value on algebra, usefulness remains possible in all fields. The general form of the antistrophe allows us to think both on the rhetoric of logic and on the logic of rhetoric.

A given object does not belong to any specific science. But it is possible to apply to any given object the different sets of disciplinary knowledge: those of mechanics, those of chemistry, those of grammar, etc. It is also possible, therefore, to create hybrid sciences. By making everything dependent on metaphysics, a kind of natural semiotics is consecrated as the foundation of all cognitive arrangements. This method, as valid indifferently for knowledge about the world and for knowledge about representations, can therefore be seen as an early methodological and coherent defense of the knowledge now classed as the humanities[23]. The union of all knowledge under this scheme ends in a kind of multiperspectivism and only the ideal union of all perspectives would be complete knowledge. Such complete knowledge, however, is impossible, for the original union, whether that of the body, of the soul, of nature, or of God, is inexhaustible. This logical configuration is no longer a tree of unequivocal divisions in the manner of the traditional ideal but already assumes without a doubt and more clearly than the encyclopedic arrangement the features of what would be called in contemporary philosophy a rhizome[24].

Hence, what matters from a methodological point of view is only to collect aspects of interest in search of nexuses between phenomena and nothing more:

> Today, some physicists, especially chemists, are only interested in collecting phenomena, because they have recognized that it is necessary to embrace the effects of nature and to discover their mutual dependence, before posing principles that explain them. The example of their predecessors has served as a lesson to them; they want to at least avoid the errors in which the mania for systems has led. How much it

[23] A similar argument is successfully deployed by Bertrand (2010) in a comparison between Condillac and Hume.

[24] "A midway solution between the tree and the rhizome was the one proposed by the Encyclopedists of the Enlightenment. Trying to transform the tree into a map, the 18th-century encyclopedia, the *Encyclopédie* of Diderot and of d'Alembert, in fact made the rhizome thinkable" (Eco, 1984: 82).

> would be wished that the rest of the philosophers [had] imitated them! (Condillac, 1947: I, 127, a6-17)[25].

The praise of the chemical knowledge of Condillac's time, not yet systematized by Lavoisier's *Elementary Treatise*, leads to the praise of observation: patterns will emerge naturally through careful inspection and continuous recording. In this unavoidably human knowledge, therefore, everything is ultimately known through natural history. We invite the reader to come back to the quotation from the beginning with these considerations in mind.

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[25] *Treatise on Systems*, chapter 2. "Aujourd'hui, quelques physiciens, les chimistes surtout, s'attachent uniquement à recueillir des phénomènes, parce qu'ils ont reconnu qu'il faut embrasser les effets de la nature, et en découvrir la dépendance mutuelle, avant de poser des principes qui les expliquent. L'exemple de leurs prédécesseurs leur a servi de leçon ; ils veulent au moins éviter les erreurs où la manie des systèmes a entraîné. Qu'il serait à souhaiter que le reste des philosophes les imitât!".

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