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ANALYTIC-SYNTHETIC METHOD AND CORPOREAL LEVEL OF RESOLUTION IN HOBBS' PHILOSOPHY

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Juan Ramón Álvarez

Hobbes a vécu exactement dans la période la plus chaude de la grande révolution scientifique du XVII siècle, période dont, comme chacun sait, Francis Bacon, Galilée et Descartes ont été les personnages les plus importants au point de vue philosophique.

Vasco Ronchi, "Preface" to Hobbes, *Traité de l'homme*.

Hobbes's political writings were motivated by the Civil Wars.

George H. Sabine, *History of Political Theory*.

Hobbes once said that his best known work, *Leviathan*, had "its cause in the disorders of the present"¹, a present that was undoubtedly disordered philosophically, scientifically, and politically. Someone with a linguistic-classificatory fondness could venture the ingenuity that the philosophical and scientific revolution constituted the *context* of Hobbes'

¹Hobbes brings the *Leviathan* to an end with these words: "And thus I have brought to an end my *Discourse on Civil and Ecclesiastical Government*, occasioned by the disorders of the present time... without other design than to set before men's eyes the mutual relation between protection and obedience, of which the condition of human nature, and the laws divine, both natural and positive, require an inviolable observation", *Leviathan*, IV, "A Review", EW, 3, 713; *Leviathan*, edition prepared by C. Moya and A. Escotado, Madrid: Editora Nacional, 1979, p. 743. The translated quotations from *Leviathan* are from this edition, except for some modifications on my part. All quotations from Hobbes' works refer, in principle, to *Thomae Hobbes Malmesburiensis Opera Philosophica quae latine scripsit omnia in unum corpus nunc primum collecta*, studio et labore Gulielmi Molesworth, London: Joannes Bohn, 1839, 5 vols.; 2nd. Ed, reprint in Aalen: Scientia Verlag, 1966 (abridged in the following OL) and *The English Works of Thomas Hobbes of Malmesbury*, now first collected and edited by Sir William Molesworth, London, John Bonn, 1839, 11 vols.; 2nd.ed.,reprint in Aalen: Scientia Verlag, 1966 (hereafter cited EW with the corresponding volume and page number).

philosophy. In contrast, the English political revolution -the so-called Puritan revolution- constituted its *situation*. This situation prompted him to write the works for which he has gone down in history, mainly the political ones. But witty phrases, however interesting they may be, often do not satisfy reality. The truth is that Hobbes intended to set forth his philosophy as a comprehensive treatise in three parts, which were entitled according to the following order: *De corpore*, *De homine* and *De cive*. The situation -the political revolution- without altering the main lines of this thematic, altered the order of its parts instead, publishing first what should have been the last.²

There are many ways of approaching a philosophical work to unravel its meaning in connection with the historical circumstance. But if one intends to make a philosophical approach to a work born and grown up among the concerns of his time, it is necessary that the philosopher's "reactions" to the "stimuli" -often intense- of the environment must be philosophical and treated as such, without any reductionism. The political pressures of a turbulent time such as that one, perhaps compel us to vary secondary aspects such as the chronology of philosophical works, but they do not usually go so far as to change their meaning.

For this very reason, it is legitimate to analyze Hobbes' work, despite all the motivations of the moment, as a philosophical work containing philosophical "reactions" to the vicissitudes of the time. And it is possible to refer to its philosophical context using its methodological and ontological concepts, as well as to the political turmoil of the time through its theory of the State, which, even if those events impelled it, does not exhaust its meaning in them, but claims to be of general value since, as we shall see, it is based on a universal idea of human nature, from which it extracts with that method, applied to the analysis and synthesis concerning the *level of resolution linked to the scale of bodies*, the appropriate conclusions.

* * *

With Francis Bacon, Hobbes understands that true knowledge is based on the *knowledge of causes*. For Bacon, we know when we determine the causes that produce and serve to produce specific

² *De cive* was published in 1642, *De corpore* in 1655 and *De homine* in 1657.

effects.³ In defining philosophy, Hobbes follows Bacon in his conception of causal knowledge, which also admits the inverse relation.

Thus, in *De corpore* I, I, 8, Hobbes asserts that philosophy is

the knowledge of effects or appearances acquired by correct reasoning from the prior knowledge of their causes or generations; and also (the possible knowledge) of the causes or generations of the prior knowledge of their effects.⁴

If we pay little enough attention, we can distinguish certain paired terms -effects or appearances and causes or generations- and from the knowledge of the one, one passes to the knowledge of the other through correct reasoning. There are here, therefore, two kinds of knowledge: the knowledge of the terms and the knowledge of their relation.

This distinction is made explicit in *Leviathan* I, 9.

There are two kinds of knowledge, of which one is knowledge *of fact*, the other, the *consequence* of one statement with respect to another ... The first is nothing but sensation and memory, and is *absolute* knowledge ... The latter is called science, and it is *conditional*... and this is the knowledge that is required of the philosopher.⁵

Consequently, philosophy, and the science to which it amounts, is conditional knowledge based on reasoning carried out on absolute knowledge, factual knowledge. This knowledge of facts (sensations and memories) cannot provide any necessity, however much they are repeated, and without the consequences, they would be scattered. Conversely, the consequences are mere logical structures; without facts, they would be empty. Hence, all knowledge is plentiful of facts, among which consequences are established. But facts appear as effects or appearances -as phenomena- and as causes or generations. Thus, philosophy or science is "the knowledge of consequences and of the dependence of one fact on another"⁶ that links causes and effects reciprocally. As a science of consequences, philosophy divides into:

Natural philosophy, or science of the consequences of the accidents of natural bodies and

³ Francis Bacon distinguished between statements that present the content of a law and the operative version of the same, namely, a rule that says how to produce a certain effect knowing the law of its production.

⁴ This quotation is not literal or, at any rate, it enjoys the literalness of merging the original Latin text and its English translation. From the union of both is obtained an adjusted text. For the original texts, cf. OL, I, 58; EW, I, 65-66.

⁵ EW, 3, p. 71; translation quoted p. 185.

⁶ *Leviathan*, I, 5 (EW, 3, 35; translation quoted p. 154).

Political or Civil philosophy, or science of the consequences of the accidents of political bodies.⁷

This division does not agree, at first sight, with the programmatic tripartition of Hobbes's work: Natural philosophy (*De corpore*), Philosophy of man (*De homine*) and Political or Civil philosophy (*De cive*). This is probably to be credited to the role of human corporeity in Hobbes' philosophy, as a methodological and ontological 'hinge' that refers to man alternatively considered as a natural body and as an 'artificer' of artificial bodies, a distinction similar to the one that Kant will later make by separating a *physiological* Anthropology, which deals with man as nature has made him, from a *pragmatic* Anthropology, which is concerned with man as he lives in the world as the framework of his activity⁸. This is not equivalent, however, to Malherbe's conclusion, according to which, although Hobbes's philosophy is not based on man as the original evidence concerning phenomena present only in human experience, it is nothing but a philosophy (science) of language.⁹

Anyway, it allows us to approach the objective sphere of Hobbes' philosophy. And this is so because the consequences refer to the accidents of bodies. The concept of body exhausts the objective extension of this philosophy, while within that extension must be determined the adequate scale from which the method must proceed in its *decompositional regress (analysis) and in its compositional progress (synthesis)*.

Bodies must be considered as linked to facts. They must manifest themselves somehow on the scale accessible to the sensible experience characteristic of absolute knowledge. From there it must be possible to return to their parts and, in reverse, to progress towards corporeal wholes of a higher order.

Now, Hobbes clearly establishes that if the objective extension of scientific-philosophical knowledge encompasses all that is corporeal, bodies are to be understood as *inseparable from motion*. It is these

⁷ Cf. *Leviathan*, I, 9 (EW, 72-73; translation quoted pp. 187-188).

⁸ Cf. Immanuel Kant, *Anthropologie in pragmatische Hinsicht*, in *Kants gesammelte Schriften*, edition of the königlich Preussischen Akademie der Wissenschaften, Berlin: Reimer, 1917, vol. VII, pp 119-120

⁹ Cfr. Michel Malherbe, "La science de l 'homme dans la philosophie de Hobbes", *Revue Internationale de Philosophie*, 129 (1979) , p. 551. Unfortunately, I have not had access to his recent book *Thomas Hobbes ou l'oeuvre de la raison*, Paris: Vrin, 1984.

bodies in motion that must undergo the double process of decomposition and composition. Thus, he says in the English translation of the *De corpore* I, VI, 1,

that there is no method by which we discover the causes of things that is not either *compositional* or *resolutive* or *partly* compositional and *partly* resolutive. And the resolutive is generally called the *analytic* method, just as the compositional is called *synthetic*.¹⁰

This philosophy description could now be sketched, agreeing with Hobbes' statements. Philosophy would be that way of knowing obtained by an analytical-synthetic method applied to the different scales of bodies in motion, as some of these scales are accessible to our sensory experience. This categorization makes it possible to see that God can hardly be the object of scientific or philosophical knowledge. Thus, it follows from these words of Hobbes:

The object of philosophy... is every body of which we can conceive of any generation... or which is susceptible to composition and resolution ... therefore, this excludes *Theology*, by which I mean the doctrine of God, eternal, inseparable, incomprehensible, and in whom nothing exists which can be divided or composed, or in respect of which no generation can be conceived.¹¹

Note also that in this passage in which he separates theology from philosophy, he speaks of analysis and synthesis concerning *generation* and *composition* (whole and parts). Thereby, Hobbes seems to make equivalent composition of the parts and generation of the thing. This equation, which may be considered a rather crude scheme of thought, is not so if one notices that the composition of the parts reproduces the generation of the thing *if and only if* the parts are what Hobbes calls *parts of the nature of the thing*. These are the parts relevant to scientific knowledge. In *De corpore* I, 2, he makes it clear:

However, in this place, I mean by parts, not the parts of the thing itself, but the parts of its nature.¹²

The parts of man, in this sense, are not his head, shoulders or arms but his figure, size, motion, sensibility, reason, etc. To understand this affirmation, it is necessary to further specify Hobbes's methodological ideas.

¹⁰ OL 1, 59; EW 1, 66.

¹¹ *De corpore* I, I, 8 (OL 1, 9; EW 1, 10). Cf. J. W. N. Watkins, *¿Qué ha dicho verdaderamente Hobbes?* Trans. by Antonio Gallifa, Madrid: Doncel, 1972, p. 82.

¹² *Ibid.* I, VI, 2 (OL 1, 60; EW 1, 67).

Watkins¹³ has highlighted the marked influence on Hobbes of Galileo and Harvey, both of whom studied at Padua; hence, Watkins associates Hobbes's method with these thinkers rather than with Bacon and Descartes, and speaks of Hobbes' Paduan methodology. In the Galilean decomposition of the motion of a projectile that starts to fall from the edge of a horizontal plane, the half-parabola described by the fall is to be understood as a 'compound motion' whose parts, as parts of its nature, are the horizontal and vertical components at each point of the trajectory. Therefore, the resulting trajectory must be understood from those parts which are of its nature and not of its figure. The motion is understood as generated by the composition of those natural parts that analysis discovers but that experience *does not* perceive. Hobbes does not subscribe to any naive empiricism.

As Watkins points out, Galileo's analysis is mathematical; for Harvey, analysis is anatomical analysis, breaking down the organism to the anatomical seat of specific functions or certain biological principles. But when these principles affect the organism's integrity they must be looked for, not in the synchronic dissection of the body as it is given, but in the beginning of the process that has led to its present form. Harvey suggests going the path of generation in reverse to the starting point. He argues thus:

When it is no longer possible to go backwards, we can feel sure of having arrived at the beginnings; at the same time, we will perceive from what original matter, from what efficient principle and what form the plastic force proceeds through them¹⁴.

Here, it is not a question of the synchronic components of a whole (of its simultaneous parts) but of its diachronic components (successive parts: *stages*). As Watkins rightly concludes: "the compositional method becomes a genetic method".¹⁵ Where it follows that the issue at hand is more complex since the initial opposition -analysis/synthesis- is joined by the opposition genesis/structure. The combination of the two in Hobbes' methodology offers four different perspectives (Table 1).

METHOD(S)	GENESIS	STRUCTURE
ANALYSIS	Analytic-genetic method	Analitic-structural method
SYNTHESIS	Synthetic-genetic method	Synthetic-structural method

Table 1

¹³ Cf. *op. cit.*, pp. 61-78.

¹⁴ Cited by Watkins, *op. cit.*, p. 78.

¹⁵ *Ibid.*

The analytical method can be genetic, when going back to the origin it solves the processes in stages (successive parts) and it can be structural when it solves the processes in their simultaneous parts (synchronic components) without reference to time. The synthetic method can be genetic, when it reconstructs the process by means of the stages and can be structural when it recomposes the whole from the synchronic parts.

Hobbes' methodology encompasses, therefore, these four views and is much richer than it appears. But these four operational modes of the method have to be referred to the objective contents to which the method itself applies, namely, to the different scales of bodies in motion, the analysis and synthesis of which must be guided by the parts of the nature of the wholes studied. What Hobbes calls *parts of the nature* is akin to what Bueno¹⁶ calls *formal parts*, as opposed to the *material parts* of a referent whole, with respect to the processes of analysis. Formal parts are those that *preserve the form of the whole* and allow for that very reason its synthetic reconstruction. Material parts, on the other hand, are those parts which, because they do not preserve the form of the whole, do not permit synthetic reconstruction.¹⁷ There must exist, with respect to any analytical procedure, a scale of parts, with respect to which synthesis is possible, but beyond which it is unfeasible. This scale would mark what I have called elsewhere the *level of resolution* of a science as regards its analytical procedures.¹⁸ Likewise, the level of resolution is not reduced to a scale of objects, but to *two contiguous scales*, between which the elementary explanatory schemes take place. Thus, for example, the level of resolution of structural linguistics might be characterized by the conjugate pair distinctive units/meaningful units; that of classical chemistry with the pair atoms/molecules; that of the general theory of biological evolution (including the origin of life) with the pair duplicative polymers/organisms.¹⁹

Hobbes asserted that scientific knowledge refers to different scales of bodies in motion, which constitute the actual reality. To understand Hobbes's attempt, it must be realized that these motions of bodies must be decomposed into their natural parts. Therefore, if the level of resolution of science is determined by the contiguity of two corporeal

¹⁶ Cf. Gustavo Bueno, *Ensayos materialistas*, Madrid: Taurus, 1972.

¹⁷ Cf. *ibid.* p. 329.

¹⁸ Cf. Juan Ramón Álvarez, "El nivel de resolución de las ciencias biológicas", *Estudios Humanísticos*, (University of León), 3 (1981), pp. 69-93.

¹⁹ Cf. *ibid.* pp. 91-93.

scales., whose generic appellation would be 'simple bodies/complex bodies, as the bodies are operationally cognizable through motions, then this level of resolution turns into the pair 'simple motions/complex motions'.

This is shown in examples like that of the projectile trajectory and when the bodies are artificial (political) in which the motions are 'behaviors'.

In this respect, Cassirer went so far as to say that

Hobbes no longer conceives of motion as a nature and an internal quality but as a pure mathematical relation, which we can construct on our own ... The analysis of natural objects does not lead to abstract entities, but to laws of mechanism, which in turn are nothing other than the concrete expression of the laws of Geometry.²⁰

This elaboration of Hobbes in the neo-Kantian style is excessive, but Hobbes indeed considered motion mathematically conceptualizable, which is not for him to a pure mathematical relation.

The problem arises when we think, as Hobbes does, that there are natural and artificial or human motions, although there are three kinds of generated things: *geometrical figures*, *natural things*, and the *State*, which are the subject of three different scientific knowledges: Geometry, Natural Philosophy and Political or Civil Philosophy. Geometry and political philosophy are similar in that geometrical figures, and the State are both *human productions* that do not do with natural things.

This seems to constitute an additional problem concerning Hobbes' philosophical program. Next to the triad of philosophies: of nature, of man, of politics or civil philosophies, there now appears a duality between human philosophy (in which Geometry has a place) and natural philosophy.

Hobbes' approach is bridged by the *operational* version of geometry since to understand geometry is to understand the process of generating geometric figures. Therefore, definitions must be causal or genetic, expressive of how those are constructed. The same is true of the theory of the State, whose adequate explanation will be offered by how its constitution takes place. This operational conception -or, if you will, operationalistic- cannot be transferred, however, to the sphere of the philosophy of nature where it is impossible to apply the notion of

²⁰ Ernst Cassirer, *El problema del conocimiento en la filosofía y la ciencia moderna*, trans. by Wenceslao Roces, México D. F.: Fondo de Cultura Económica, 1956, vol. II, p. 174.

'operation' immediately. On the contrary, it is only possible to use analogies which make it practicable to establish the causes merely hypothetically. The rationale for the application of the same method to nature resides in a "theological postulate" hidden in a passage of the *De homine* (II, X, 5) concerning the provability of geometrical theorems.

Thus ... because we ourselves create the figures, it happens that Geometry is held to be demonstrable and that it is. On the contrary, since the causes of natural things are not in our own power but in the divine will, and since the greater part of them... is invisible, we, who do not see their causes, cannot deduce the properties (of natural things) from those. However, from the very properties we see we can demonstrate consequences, deducing as far as it is granted to us to advance that there could be such and such causes of those (properties). This demonstration is called *a posteriori*, and the science itself, Physics... in politics and ethics, that is to say, (in) the science of the just and the unjust... *a priori* demonstrations can be made because... we ourselves have made the principles... which are the cause of justice, namely, laws and covenants.²¹

Note that the concepts of will and power, human or divine, insofar as they are linked to the concept of operation, discover the basis of the analogy in the following way: human will and power are to human operations as divine will and power are to natural processes.

However, if human operations, by the isomorphism of the systems, of operations of *cognizers* and *agents*, are the basis for guaranteeing the demonstrative scientific character of Geometry and the Theory of State, the divine operations constitute the basis of the analogy that allows to apply to nature the analytical-synthetic method. Surprisingly, God seems to guarantee the rationality of the natural world and the adjustment of Geometry (human operations) with Physics (divine operations). This God tends to coincide with the natural world itself and the natural processes taken as a whole with a sort of *natura naturans*, bringing Hobbes closer to Spinoza, as has often been pointed out.

The consequences of this approach must be considered because it follows that Political Philosophy and Geometry are sciences whose definitions are *categorical*. In contrast, the philosophy of nature is a knowledge of *hypothetical* definitions analogically grounded. However, both in one case and in the other, what is considered are operations-human or divine- and Hobbes subsumes operations in general under the category of *motion*. The *actual reality is bodies in motion*, and "body" is a concept which, broken down by degrees of complexity, establishes the *level of resolution* of science. As already remarked, bodies are

²¹ OL 3, 91.

knowable because they are what they are and appear as they appear by virtue of motion.

If "body" determines the ontological extension of Hobbes's philosophy, in particular concerning the scale of the human body wherein the experience of other bodies is given, *motion* is the concept encompassing relations and operations connecting bodies with another bodies. Cassirer has rightly pointed out that in Hobbes

the subject of philosophy is the body... The properties and qualities of this object should be attributed, in the last analysis, to motion since it alone adapts itself exactly and ultimately, in all its objective characteristics, to the method that is necessary to follow in order to come to understand any content.²²

Motion is, to say it now, in a Cartesian spirit, the *attribute* by which we know the real, that is to say, the corporeal. The universe of motions is, moreover, *a closed universe*. As Peters emphasizes, "a motion produces nothing but motions"²³. Motion is not only the attribute that allows us to know bodies but also a universally applicable concept insofar as it is coextensive with corporeality.

Just as every body is a compound of bodies, every motion is a compound of motions. Spragens²⁴ correctly contends that there is a sharp difference between Hobbes and Aristotle. For Aristotle, rest and motion were opposite terms; for Hobbes, instead, everything that exists is in motion, and rest is a particular case that results when another motion neutralizes one motion: "for Hobbes there is no such thing as rest;-there are only motion and contrary motions".²⁵

However, motion is nothing but a *change of place*, a spontaneous change of place that is only stopped by another contrary motion. If nothing stops it, motion tends to continue indefinitely. Spragens sums up this characteristic of Hobbes' thought very precisely.

Hobbes undertook the universal transformation of movement into a *change of place (motion)* with methodological exhaustiveness. He thought that the change of place (motion) was the fundamental principle of physical bodies and the components of the universe, including nature, life and mind. Once he had

²² *Op. cit.*, p. 178.

²³ Cf. Richard Peters, *Hobbes*, reprint, Westport: Greenwood Press, 1979, p. 103. Hobbes' text is found in *Leviathan* I, 1 (EW 3, 2; translation quoted p. 124).

²⁴ Cf. Thomas A. Spragens Jr, *The Politics of Motion. The World of Thomas Hobbes*, Lexington: University Press of Kentucky, 1973.

²⁵ *Ibid.* p. 65.

developed and articulated his basic model of motion, he systematically applied it to the entire apparatus of the universe.²⁶

In short, the set of the bodies (natural and artificial) broken down according to the opposition 'simple/complex' concerning certain bodies of reference determines the level of resolution of scientific knowledge according to Hobbes' philosophy, concerning a privileged corporeal scale: that of the human bodies in which experience takes place. The set of motions constitutes the horizon of intellection of the corporeal world. This can be appreciated by taking into account that from the point of view of method, it is assumed, in the analysis, a corporeal scale of departure and a scale of parts of nature of arrival, and, in the synthesis, the scale of parts of nature and the initial scale recovered. But what produces a body starting from others are the motions of its possible parts (*ingredients*) or of its parts in a trance of separation (*egredients*). The fundamental principle of Hobbes' philosophy is that in every corporeal system, there is essentially a system of motions which produces (genesis) or reproduces and preserves it (structure). Note how the opposition analysis/synthesis and genesis/structure appear dissociated according to the opposition 'knowledge/known objects'; at the first end of this last one is the opposition analysis/synthesis; at the second, the opposition genesis/structure. However, it is also true that knowledge is an *actual process* that takes place in the world, and, therefore, it must also be explained in terms of the same principles: by *determining the system of motions in which it consists*.

Without going into this question now, which has as its point of focus the concept of *sensation* as a system in which the subject and the objects are found, it is worth returning to the topic of the human scale as a privileged scale of reference.

* * *

Human bodies can be presented as wholes or parts on the human scale. When they are taken as wholes, they can be reverted to their component parts; when taken as parts, the resulting wholes will be composed of bodies to which we have to associate the genesis that produces them: the sequences of motions that bring them as results and the structures that determine their conservation: the systems of motions that preserve them. On these methodological assumptions Hobbes elaborated his political or civil philosophy, starting from that scale of reference and progressing towards the compound whose parts

²⁶ *Ibid.* p. 68.

are men: that State, that enormous "artificial animal" whose matter, form and power are studied in *Leviathan*²⁷.

Just in this sense the following words of Sabine should be understood:

Motion is the everlasting fact of nature. Human behavior, comprising sensation, feeling and thought, is a form of motion. Moreover, social conduct, based on the art of government, is nothing but that particular instance of human conduct which arises when men act concerning others.²⁸

From these considerations, the difficulty arises of 'deducing' human conduct from the ultimate components of human corporeality, i.e., to progress towards the modalities of human behavior starting from the elementary motions associated with the parts of human bodies. Since the components of human bodies and, therefore, their associated motions are natural, this would mean progressing in the synthesis by corporeal (and motion) scales in the following order: natural bodies (motions) → human bodies (motions) → artificial bodies (motions).

Furthermore, this mode of operation could mean, in the previous analysis, the reduction of the civil (political) and psychic to the natural. For many interpreters, this would be the most adequate interpretation of Hobbes's 'ideal' or 'intention'. However, this view encounters several obstacles. In the first place, it is at odds with the distinction above between human sciences characterized by the human production of their objects (Geometry and Political Philosophy) and Natural philosophy as merely analogical knowledge. Secondly, with Hobbes' own recognition of the difficulty of deducing the human from the non-human. Hence, it may be wiser to reconsider the peculiar status of the human scale.

The human scale can be considered as a starting point of the analysis or as the initial point of the synthesis. As a starting point of analysis, it is referred, by decomposition, to the parts of bodies (and motions) of a lower scale: the resolution of psychic phenomena into physical phenomena. As a starting point of the synthesis, it leads to a higher scale: that of the civil philosophy, which deals with artificial bodies.

²⁷ The full title reads: *Leviathan or the Matter, Form, and Power of a Commonwealth Ecclesiastical and Civil*.

²⁸ George H. Sabine, *Historia de la teoría política*, trans. by Vicente Herrero, México D. F.: Fondo de Cultura Económica, 1968, p. 339.

Within this framework of reflections, it is possible to give rise to two complementary and irreducible perspectives. On one side, the systematic ideal of reasoning on the ground of basic principles establishes an order that Hobbes emphasizes in the passage from Natural philosophy to Moral philosophy (coterminous with psychology) because the basis of the motions of the soul -appetite, aversion, etc.- is to be found in sensation and imagination, which are "the object of physical contemplation"²⁹. This affirmation would corroborate the systematic (synthetic) order Natural philosophy → Moral philosophy → Political philosophy, but Hobbes himself warns (*De corpore*, I, VI, 7) that it is not always necessary to follow this order in the case of animic motions, "for the causes of the motions of the mind are not only known by reasoning (*ratiocinatio*), but also by the experience of all men who take the trouble to observe these motions of the mind within themselves"³⁰.

There are, then, two alternative ways of considering the human scale, either as reconstructed by synthetic reasoning from more elementary principles or as given immediately to experience. Watkins argues that Hobbes does not reduce psychological principles to physical principles³¹, and Malherbe that "consciousness constitutes (in this context) a phenomenological threshold which can serve as a sufficient principle to establish, from the science of the passions, practical consequences for human life"³², which is said almost *verbatim* by Hobbes himself in the continuation of the quoted passage. Malherbe concludes, with concern to Hobbes's philosophy of man, that there exists in it a double anthropological record -parallel to the one I pointed out above by bringing up Kant's distinction between physiological and pragmatic anthropology- that configures "one (anthropology) physical and regressive, and the other, ethical and progressive"³³. "Regressive" and "progressive." are to be understood here in a technical methodological sense, not as negative and positive estimations. It is simply that physical anthropology regresses from the psychical to the physical practicing, let us say, a sound 'methodological reductionism'³⁴,

²⁹ Hobbes, *De corpore*, I, VI, 6 (OL, 1, 64; EW, 1, 73).

³⁰ OL, 1, 65; EW 1, 73.

³¹ Cf. *op. cit.* p. 18 ff.

³² *Loc. cit.* p. 544.

³³ *Ibid.*

³⁴ Methodological or epistemological reductionism can be compatible with non-reductionist ontologies. Thus thinks, for example, Mario Bunge; cf. this author's *Treatise on Basic Philosophy*, vol. 4, *A World of Systems*, Dordrecht: Reidel, 1979, p. 75. About the distinction between diverse types of reductionism, see Francisco J.

while ethical anthropology progresses from the psychical to the social (political; civil).

These precisions make it possible to relate the triad of physical bodies, human bodies, and social (artificial) bodies with the distinction between natural philosophy and Civil Philosophy (political; social). The key lies in that the scale of human bodies plays the 'hinge' role concerning the physical and the social. It serves as a link between these two scales because the human scale is that of *sensation*, to the point of making Peters declare with true conviction that

Hobbes seems to have suddenly stumbled upon the idea that a correct causal analysis of sensation was the key to both nature and man... Hobbes's Natural philosophy was like a snowball that grew steadily around the central core of the explanation of sensation.³⁵

It is not strange, however, that his treatise on man is largely a treatise on Optics. Ronchi recalls that Optics has been a theory of vision, a mixed discipline involving physical, physiological and psychological components³⁶. For this very reason, it is coextensive with the level of resolution *physical bodies (motions)/human bodies (motions)*.

On the other hand, in an ascending direction, sensations are the cause of the motions of the mind, of the 'dispositions' to act positively and negatively within the framework of human relations. The elementary human motions determine the sphere of behaviors. The behaviors ascribable to human individuals, which are, according to Hobbes, the matter and the makers of the State³⁷, allow progressive explanations toward the social, but for this, it is previously required that the *State* must have been considered as a *whole analyzable into behaviors*. That is the analytical procedure that establishes how the behaviors are the parts of the nature of the State. This would establish the level of resolution of civil philosophy or political theory by conjugating the scales of the *human bodies (behaviors)* and *political bodies (institutions)*.

Ayala, "Relaciones ontológicas, metodológicas y epistemológicas entre la Física y la Biología", *Contextos* (C. E. M. I.) II/3 (1984), p. 7 and ff.

³⁵ Peters, *op. cit.*, pp. 83-86.

³⁶ Vasco Ronchi, "Preface" in the French translation by Paul-Marie Maurin of Thomas Hobbes, *Traité de l'homme*, Paris: Blanchard, 1974, p. 8.

³⁷ For this distinction it is of utmost usefulness the first chapter of Raymond Polin, *Politique et philosophie chez Thomas Hobbes*, 2nd. ed., Paris: Vrin, 1977.

This formulation is the best known of Hobbes' philosophy and retains much interest. However, sensation and conduct are not peculiar to men. Animals have sensations, experiences and behaviors. For social institutions to be solvable into behaviors, the concept of human behavior has to be formulated in its specificity.

The possession of language and the projection toward the future make human behavior a different way of relating to the environment. Polin has insisted that "by the fact of having the word and the foresight of the future, they find themselves, in nature, in a unique situation"³⁸. However, the main linguistic operation, according to Hobbes, *nomination*, is *arbitrary*, and this arbitrary relation chains human discourse. A much-discussed passage in *De homine* (II, X, 1) makes this quite explicitly clear:

Speech (*sermo*) or saying (*oratio*) is the enchainment (*contextus*) of words constituted by the will of men to signify the series of concepts of the things they think of. And so, as a word is to an idea or concept of a thing, so is speech to the discourse of the mind. Moreover, this is proper to man. For although some animals understand, instructed by custom, those things which we desire and we command employing words; they do not through the words as words, but in so far as they are *signs* but not by the words insofar as they are words, because they do not know to signify what they have been constituted to signify by *human arbitrium*.³⁹

Hobbes thus distinguishes *human communication*, based on the arbitrary character of nomination, from communication in the *remaining animal species*, in which "a natural necessity"⁴⁰ makes the emissions of some animals to others *signify* (provoke) hope, fear, joy, etc. In animal communication 'voices' have the value of signs, today we would say of 'signals'. "The sign, in Hobbes's sense, fulfills its function univocally. He says in *Leviathan* I, 3.

A sign is the antecedent of a consequent; and, reciprocally, the consequent of an antecedent when the same consequences have been previously observed; the more frequently they have been observed, the less uncertain is the sign.⁴¹

The signs -read 'signals'- are reinforced by experience, and whoever has more experience in one kind of matter will have more signs through

³⁸ *Ibid.*, p. 10.

³⁹ OL 2, 88. For discussion of this text, cf. Thomas Hobbes, *Traité de l'homme*, cited French translation, pp. 147-148; also Polin, *op. cit.*, p. 6 and ff.

⁴⁰ Significatio autem, quae fit per vocem unius ad alterum in eodem genere animalium, ideo sermo non est, quia non arbitrio sed necessitate naturae suae voces illae ipsorum, quibus spes, metus, gaudium, etc., significantur, ab ipsis passionibus vi exprimuntur (*De homine*, II, X, 1; OL 2, 88).

⁴¹ EW, 3, 15; translation cited p. 136.

which he can conjecture the future. Hobbes calls this capability of conjecturing the future through signs *prudence*. Nevertheless, prudence, based on signs and reinforced by repetition, does not distinguish man from other animals.⁴²

Furthermore, the essential difference between the use of words and the use of 'signs' by other animals lies in the *arbitrariness* of the human linguistic sign and the *natural necessity* that attaches to each stimulating sign a response of the stimulated animal, which is reinforced by repetition until it becomes *one and only one* response.

However, human language rests on the *arbitrariness* of nomination and predictions of the future are *uncertain*: error is always a natural possibility in man. This creates an opening through which *natural causes* have an influence: "natural causes always affect man, but only through arbitrarily invented words".⁴³ Such ideas sound anything but old-fashioned, and they point to the place where the constitution of institutions *is not only possible but actually necessary* in the face of uncertainty and danger. The concept of *human behavior* leads from natural bodies to linguistic signs. The arbitrary character of nomination eliminates the univocity proper to internal teleologies: instinctive, "programmed". A new teleology emerges propitiated by the possession of language. This new teleology, this new determinism -one must remember that teleology does not exclude determinism- is the *institutional determinism* that necessarily springs from considering the behaviors in interaction.

In this respect, Polin has insisted that a distinction can be made between the natural human and the institutional human, following Hobbes's distinction between man as matter of and as the maker of the State.⁴⁴ However, suppose human behaviors are to be the "parts of the nature" of institutions. In that case, they must possess certain properties which, in the analysis, preserve the form of the whole: the institutions. *Individual behavior must be a kind of 'proto-institution'*.

Without going into the various possibilities of defining institutions, it is nevertheless possible to point out a common characteristic of

⁴² On prudence as 'foresight of the non-existent future', see Leviathan I, 3 (EW 14-16; translation cited pp-131-137). About the non-existent future and human activity, see Gustavo Bueno, "Ensayo de una teoría antropológica de las ceremonias", *El Basilisco*, 16 (1984), pp. 8-37.

⁴³ Polin, *op. cit.*, p. 19, which goes on to say: "Ainsi, la misere de la condition humaine nait de ses privileges".

⁴⁴ Cf. *ibid.* p. 9.

institutional realities: their *teleology*.⁴⁵ It seems that the *pursuit of specific goals* or one or more determined objectives are at the very core of the idea of an institution. Thus, the idea of *institution* must serve to unify the notions of human conduct and State, assuming that conduct is the *ultimate element* of the State. The teleology proper to individual human conduct, since conduct is the attribute by which bodies are cognizable, is essentially linked to the principle of the *preservation of life*, which underlies the elementary behavioral structure: *appetite/aversion*.⁴⁶

Hobbes understood that every stimulus affects each organism positively or negatively. If the stimulus is beneficial, the organism responds to ensure and prolong it; on the other hand, if it is disadvantageous, it reacts according to its suppression or attenuation. For Hobbes, this is a *general principle* of all conduct. Since life is a process that ceases only with death, every stage of life presupposes a subsequent stage in which conservation must also be ensured. The search for this security implies acquiring the means to continue living. Furthermore, this *desire* for the continuity of life equals, as Hobbes himself specifies (*Leviathan*, I, 11), an eagerness with a *will to power*:

So that, in the first place, I have for a general inclination of all mankind, a *perpetual and incessant desire for power after power*, which ceases only at death... Moreover, the cause of this is that (man) ... cannot secure the power and the means to live well which he has at present, without more (power).⁴⁷

The critical situation posed by the desire for power is the *war of all people against all* and the possibility of violent death. However, since the principle of the preservation of life is incompatible with the consequences of giving free rein to the desire for power, it must be restricted. Spragens puts it in these terms: "In Hobbes's approach, the genetically prior *libido dominandi* produces an opposing passion that is even more fundamental: the fear of violent death".⁴⁸

⁴⁵ Cf., for example, Georges Thines and Agnes Lempereur, *Dictionnaire général des sciences humaines*, translated by several, Madrid: Cátedra, 1978, entry "institution", p. 483.

⁴⁶ The sixth chapter of the first part of *Leviathan* shows Hobbes's use of these two fundamental concepts as the basis of the "geometrical" construction of the passions.

⁴⁷ EW 3, 85-86; translation quoted pp. 199-200. Hobbes agrees with Nietzsche, the great later theorist of the will to power, that the desire for power is the desire for more power, because the effective exercise of power is to have more power than others, it is to enjoy a *superavit* of power. Nietzsche states it very clearly: ... was der Mensch will, was jeder kleinste Teil eines lebenden Organismus will, das ist ein Plus von Macht ... " (Friedrich Nietzsche, *Sämtliche Werke in zwölf Bänden*, ed. by Alfred Baumler, Stuttgart: Kröner, 1964, vol. IX: *Der Wille zur Macht*, Aphorism 702, p. 473)

⁴⁸ Spragens, *op. cit.*, p. 194.

The grounding idea is that the state of war can admit two viewpoints. On the first hand, from the point of view of each individual, considered in isolation, is characterized by aggressiveness, by the tendency of each one to increase his power. On the other, taken from each individual in his relation to others, who are *more*, it turns out that each one can receive more harm than he can do. The *human reason* appears as the attempt of each one to avoid negative performance; it appears as a *calculation* -remember in passing that for Hobbes, the reasoning is nothing but calculating.⁴⁹ Given the disadvantage, one can 'calculate' the *irrationality* of the State of war, which entails negative returns for all. The process of generating the fear of death, starting with the will to power, culminates in a *negation*, or at least a *limitation* of aggressiveness. It follows that rationality in this context is nothing but a *correction of the natural inclination*: of a spontaneous tendency that would produce effects incompatible with the general principle of every conduct: the principle of conservation.

The above reasoning can be put as follows. In the -fictitious- assumption of only one man whose exercise of power had no limitations, reasoning would be unnecessary. However, a man in the face of other men is *a fortiori* rational because using his power in the face of impediments constitutes his rationality. Reason, insofar as it is the exercise of power in the face of impediments, is the limitation of one's own power. Hence, reason does not occur in the sphere of the individual man but as a result. Reason is institutional reason, it is "reason of State". All this leads to the reestablishment of the *parts of the nature* of the State. Parts are not now the isolated individual behavioral structures, based on the dual structure of *desire (appetite/aversion)*, but these parts insofar as they limit themselves on each other in the extreme horizon of *general death*.

This being so, Sabine's thesis, according to whom Hobbes postulates two principles of human nature -instinct and reason- as if they were mutually exclusive terms⁵⁰, but rather that reason springs in the process of *self-regulation* of the desire for power following the basic principle of self-preservation, must be discarded. Reason appears,

⁴⁹ "Per ratiocinationem autem intelligo computationem ... Ratiocinari igitur idem est quod addere et subtrahere ..." (*De corpore*, I, I, 2; OL, 1, 3; EW 1, 3).

⁵⁰ Sabine's position in confronting instinct and reason as exclusive terms falls under the extension of what Bueno calls *metameric relations*, while the interpretation I offer falls, on the contrary, conforms to a *diameric* relation, in which reason is nothing but the self-regulating structure of those very instincts. Cf. Gustavo Bueno, "Conceptos conjugados", *El Basilisco*, 1 (1978), pp. 88-92.

therefore, as the very teleology of human conduct, to which Hobbes alludes without any hint of doubt in *Leviathan* II, 17.

The final cause, goal or design of men, who by nature love liberty and dominion over others by introducing upon themselves that restraint by which we see them living in States, is the foresight of their own preservation and a more satisfactory life, that is to say, of escaping from that miserable condition of war, which is a necessary consequence... of the natural passions of men when there is no visible power to keep them submissive and bind them by fear of punishment to the performance of their covenants and the observance of those natural laws, and to observe those natural laws outlined in chapters fourteen and fifteen.⁵¹

Thus, this philosophy, which resolves all scales of reality in multiplicities of bodies in motion, could not but find the conditions of rational exercise in the need to preserve those living bodies, which only by being rational can survive.

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⁵¹ EW 3, 153; translation quoted on p. 263.