



Science

## **HOBBS AND SCIENTIFIC PRACTICE IN THE LEVIATHAN**

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### **Abstract**

Hobbes in the seventeenth century (1639 - 1668), we must emphasize that suggests that taste or infatuation for science bodies (physical), because as he reminds us at the end of the leviathan in 1651; you are happy to return to their initial speculations about (De Corpore) natural bodies. (Hobbes Leviatã, 2003, p. 22). Such luck with these initial observations, we used to locate a context of discussion on the topic of science in the seventeenth century in England, specifically in one of the authors as Kuhn; in late modernity, they propose a new paradigm of scientific knowledge as had been developed by the Scholastics; perhaps its medieval metaphysical knowledge. However, much it has been written about this particular issue. Excuses are many references to the subject in the person of Hobbes; as one of the first authors who knew how to take the first steps on what we now know as science in particular. I do not use science or sacred metaphysical arguments; but he wanted to investigate or propose arguments away from religion to build what was known as truth, from other fundamental axes; different to the subject of God.

**Keywords:** Hobbes; Scientific Practice; Experimentation; Geometry; Motion; and Maker's Knowledge.

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### **1. Introduction**

When we refer to Thomas Hobbes and a systematic study of his work; you will have to go to his *Elementa philosophiae*, where completely exposes its philosophical and scientific system; which it is divided into three parts, where each of its parts is to describe and justify the whole edifice of knowledge of his time. Ranging from geometric and physical principles of the motion of material bodies (De Corpore) through psychological and anthropological principles of the movement (behavior) of (De homine) human bodies, culminating in the principles (laws of nature) governing the behavior of social and political bodies (De Cive), as R. Tuck (2002) We suggested in his writings.

Above, taking into account that the logical order of the exhibition was subverted by political contingencies of the time as C. Hill (1987) it reminds us in his text historical character. A time

changing paradigm as what was termed as true in traditional medieval scholasticism and the nascent modernity in Europe and in England.

For its part Hobbes in the seventeenth century (1639 - 1668), we must emphasize that suggests that taste or infatuation for science bodies (physical), because as he reminds us at the end of the leviathan in 1651; you are happy to return to their initial speculations about (De Corpore) natural bodies (Hobbes, *Leviatã*, 2003, p. 22.).

Luck with these initial observations, we used to locate a context of discussion on the topic of science in the seventeenth century in England, specifically in one of the authors as Kuhn; in late modernity, they propose a new paradigm of scientific knowledge as had been developed by the Scholastics; perhaps its medieval metaphysical knowledge. However, much it has been written about this particular issue. Excuses are many references to the subject in the person of Hobbes; as one of the first authors who knew how to take the first steps on what we now know as science in particular. I do not use science or sacred metaphysical arguments; but he wanted to investigate or propose arguments away from religion to build what was known as truth, from other fundamental axes.

However, the philosopher of Malmesbury is recognized by many things in all kinds of ideas and fields of religion and politics; but not on the altars of modern science. It is known as classic policy or law by his best-known work is the leviathan, but neglects scientific spirit pacesetter another historical era had begun. In that vein, this visa to revise this perspective about how Hobbes interpreted the concept of scientific practice in his day job. Which was marked by an intimate love Galilean physics, without neglecting the geometry; in a different order and depth. These elements will be reviewed with particular interest in *Leviathan* (1651) and *De Corpore* (1655).

Such work is developed by applying the three phases of the traditional method of medicine, making a descriptive work thereof, as proposed by the *Encyclopedia of Medical Decision Making* (2009) Edited by Kattlan. This suggests that there is no better way to reach a "decision-making in the treatment or therapy" that through; first, diagnostic reasoning (descriptive); once it fulfills its task of determining causes, produce the second step is to define the prognostic reasoning and structure a possible treatment in therapy selection against possible disease (P. 68). With this comment I am obliged to explain why the choice of this method, and what epistemological object of treated here considered as a disease to be treated with therapy.

It is no secret in the twentieth century to observe the sciences through evolutionary history; these were not accepted at first, because it implied a paradigm shift that governed until then. An example of this resistance to the sciences themselves, and perhaps even fear in them, the changes would generate. We have in the twentieth century when T. Kuhn proposes a new scientific model and this is taken with caution; if not, that fear of error of what this may be, in a historical moment that science as such had taken the place of religion. Remember about the post-facio 1969 is *The Structure of Scientific Revolutions* (KUHN, 1996) in which it tells us that above all change, expressed in scientific communities as critical to his work fear.

One last alteration closely related to the PRECEDING, may help to facilitate that understanding. A number of critics doubted Have Whether crisis, the common awareness that something has gone

wrong, so invariably precedes revolutions as I have implied in the original my text (KUHN, 1996, p. 181).

Fear that tells Kuhn in his post-Facio, which invariably antecede every revolution is what makes us opt for the method of medicine where science itself in its notion of scientific practice that is awakening in the form of argument Hobbesian. Makes us think that for scholastics and contemporaries he his way of arguing was causing social disturbance in society, which obeyed scientific practices developed by medieval scholasticism still replacing in seventeenth-century England. Therefore, what better way to treat this anomaly within the Hobbesian context as a disease, which will spread across Europe in the following centuries. We subtract to suggest what would be understood disease. As I have expressly that mentioned in the preceding paragraph science. It would be the disease that does not base its arguments on Aristotelian metaphysics or Thomasina thing is invading universities. However, a new paradigm that bases its argument on a discursive rhetoric from the doctrine expounded by Galileo.

With these clarifications, we can proceed according to our method to make the first diagnosis about scientific practice in scientific policy Thomas Hobbes work.

## **2. Diagnostic Reasoning**

To continue our idea on this subject; we from a short presentation or diagnosis in the broad sense of the scope that may have the leviathan; which, based discussion on how science came to the concept of equivalent in this case the name of scientific practice at the time.

Thomas Hobbes's Leviathan is arguably the most brilliant and influential political treatise ever written in the English language as we read in the introduction that makes Springborg (2007) the work, and it definitely stands out as the first major work of English political philosophy in an encyclopedic corpus as we mentioned in the introduction written (*Elementa philosophiae*).

Furthermore, Leviathan institutional consent to the principle given *cuius regio*, in which the great schism created by the Protestant Reformation was decided. To this, we must add that such enrolled principle tacitly in the third and fourth of the writing, endorses the principle of the Peace of Westphalia in 1648, half a century of religious wars closed, and marked the creation of the modern international state system.

Therefore, we can say that sects and schisms are persistent topics in the works of Hobbes, but especially in the leviathan. For example, in 1645, he presented his debate with Bishop Bramhall in Paris, under the auspices of the Earl of Newcastle, but only those conclusions published in 1654 when Hobbes himself accused of heretic and blasphemous (Springborg, 2007, p. 1). Such heresy was a much larger problem, which initially arose due to contamination of the faith of Christ and his apostles by the Greek sects of the Roman and Hellenistic empires. However, Hobbes maintained in their positions and thinking is rooted in philosophizing about the Christian mysteries, and failure to observe the simple principles of faith; contained in the Holy Scriptures, accusing the Church of losing their way outside ecclesiastical create parallel power structures to challenge the sovereign state (Springborg, 2007, pp. 1 - 2).

However, the allegations made by Hobbes to the Church; which they were not unfounded, and thanks to which there had sigma created by the Protestant Reformation; lead in the perspective of the Church, also the subject under discussion for owners at that time the reigning paradigm of science; i.e. for scholastics. Heresy was well for them, the problem that the Church had fought in the synods and councils of the III and IV century in which the central tenets of the Christian mysteries were established, which in Hobbes in his Leviathan were being mined.

In this sense, Hobbes says Bramhall for a long time there was Trinidad, namely, all before the coming of Christ and the Holy Spirit time. Perspective when exposed in this way will deduce that God does not have three people as claimed by the dogma (Filoque), but as many as there are sovereign on earth. For if understood in this sense the representation of the person of Christ, politically speaking as Paganini (2003) expressed in his article, we look at the consistency that he wants to keep as discussed in the first two parts of the leviathan. Since it refers to the person as coincides with the actor, who has transferred his rights to the ruler for something in the state of nature did not, but stripped of all his power the concept of God. Element that the church will not accept idly, as evidenced by the many writings against the Hobbesian doctrine.

In another sense, this does not indicate that Hobbes is absent considered from the doctrinal struggles of these tips, and unless the medieval church ignore the paradigm, represented in the scholastics and knowledge are at a decisive moment for the Church. Springborg about it clarifies that such is the clarity of the author of Leviathan address this crucial fact that the proof is that he also wrote an Ecclesiastical History. A work which included *Historiae Ecclesiasticae* the fourth century to the fourteenth century, reaching portray historiographical positions such as Eusebio, Arian Philostorgius, Theodoret, Sozomen, Socrates of Constantinople, Evagrius, Beda, and Tolomeo of Lucca, partner with Aquino (Springborg, 2007, p. 2).

Such knowledge does is represent a difficulty in maintaining the paradigm of science or the truth in this case. Since making this ecclesiology Hobbesian in his own Church, it makes the story told and built by those who hold the dominant paradigm; not reconciled with wisdom exhibited in the last two books of leviathan. For, as we cited in case there are preventions Kuhn and fears that prevent this is done. It is obvious that these fears often are unfounded as in the case presented in the post-facio structures scientific revolutions, and the same could express looking back in time the revolution exposed by Hobbes in Leviathan. What it does, that such revolutions depend on the community to which this is referred (the Church) validating or denying knowledge exposed. That is how we ended up looking somehow the Leviathan as a libertine and Erastian, the episcopate as subversive text narrates Springborg (2007, p. 3).

If this diagnosis we add the express possibility of replacing the spirit of the Renaissance cetic a philosophy adapted to the ideas of Galileo understand the state in which science is. In other words, the (church) traditional scientific practice is being attacked by a leviathan, a mortal god who is absolute in his claims of government through a contract in which in a state of constant war to preserve life and hope A better future; natural freedom in a hypothetical offering pre-social and pre-political state.

In that vein, scientific practice set out in the introduction of the work affects life because defines "considering that life is nothing but a movement of the members, whose onset occurs in some inner

part because we could not say that all automata have artificial life.” (Hobbes *Leviatã*, 2003, p. 11). This implies that, for humans, the heart, nerves and joints would be similar to the springs, ropes and wheels; all these peculiarities of human body movement will print this key to understanding the thought Hobbesian idea. To the point that the philosopher compares the natural body of man with the state (an artificial body).

Thus, following the reasoning of the author in the introduction of the leviathan, the human body is compared to the body politic, or the social body. In the view of Hobbes, that State would be the artificial man and the main objective of which should ensure the protection and defense of the natural body of those who make up that artificial body, that is, the subjects. According to our author, the artificial soul is sovereignty, because he understands that it is the sovereignty that gives vitality to all parts of the body, "sovereignty is an artificial soul, as giving life and motion to the whole body"(2003, p. 11).

Moreover, judges and personnel would be in that the structure (together) joints of the body; and nerve function would be to promote the rewards and punishments. Wealth and prosperity correspond to the force; counselors would be the body's memory, laws, will, reason equity (Hobbes *Leviatã*, 2003, p. 12). With regard to concord correspond to what is in the body health, disease would sedition, and war would be conceived as the death of the social body (2003, p. 11).

Then Hobbes refers to the social pact that would be the moment when every man alienates his right to all things for a sovereign, leading to the birth of the State. To this fact, Hobbes compares the state institution with the creation of man found in Genesis. According to Hobbes, the word covenant is similar to that fiat (do) when God created man (2003, p. 11). Which brings us to consider somehow a couple of questions: How far this anthropological explanation of the state of nature that speaks of a passionate and selfish serves as a basis to substantiate his political theory? What if passions are the force motor that drives men to realize the social pact? Besides, what influences have many passions in a pre-social state for the creation of a civil state? Answers to develop along the chapters of his extensive work.

However, as presumably not going to try the answers in writing for space, and because the best development Hobbes in his writings. However, to complete this diagnostic radiography, let us stop specifically when talking about the subject of the passions, which are located in Chapter VI of the *Leviathan*. For these passions are underlying a current reading of scientific practices Hobbesian in experimental cognitive psychology, which at the time alluded to the state of nature or as mentioned Neufeld [et all] (2011) based on the calculation. "A science seems to be no calculation-based Ad men learn or world as you perform calculations" (P. 103). Element called arithmetic and mathematics.

Moreover, in what refers to man in a state of nature, which speaks of passion in which it originates and are manifested in every individual; the internal source of voluntary movements commonly called passions, which reference the physical, giving the language a function to express rhetorically in politics is proposed. This meaning is that the author will analyze the passions, which can be more factual value. In other words, scientific practice will be addressed, from concern for describing the passions that make a judgment about them, either good or bad. For which Hobbes

needed first, an outline of what is human nature; for second, highlight the origin of passion as they are expressly through language.

Consequently, the author distinguishes these two types of movement, in their understanding of the physical world, one that is vital and one that is voluntary. The vital, which can also be called involuntary movements are those found in the blood circulation, for example, movements of the heart, or respiratory or digestive processes. In addition to this, the voluntary movement is a response to what first goes through the imagination and finally by reason, as we can confront the leviathan (Hobbes *Leviatã*, 2003, p. 46).

- Thus, we can conclude that the first part is the diagnosis sponsored by reason. For Hobbes the practice of seventeenth-century science would be based in the movement would be the primary cause of human actions. Whereupon, in general we could say with Spragens (1973) Hobbesian vision of the nature of bodies is mechanistic and permeated by elements of physics. It is obvious that this implies that Hobbes is leaving aside the theological vision of classical nature (Aristotle) that all bodies were heading for a particular purpose, and a mechanistic and casual vision was presented, according to which the bodies are directed to an end determined, more *almejado* (desired).

### 3. Prognostic Reasoning

The diagnosis of scientific practice in Hobbes leaves us bare a difficult prognosis to make, even for the great commentators like Malcolm (2002) or the same Tuck (2002) which when addressing the issue of science to demonstrate knowledge in advance of what is understood in this area still have restrictions on the work Hobbesian. Because although the philosopher of Malmesbury devoted at least half of his life to try to understand modern science, as the first paladin to explore this issue; and their understanding was certainly as sharp as any of his contemporaries; We find, however, that his ideas are not discussed this perspective, as in *Leviathan* his theories are not considered so widely.

R. Tuck, he even think that the works in which raised their progress, just read today, and some of these have not been translated from the original Latin. Which leads us to think that, although the author is prolific in its production on this subject, the scientific community in many cases relegates knowledge to the leviathan. Only making this work (*leviathan*) is used to perform this kind of analysis, and although it is remarkable in many respects, was not really intended for him to be his main declaration, including political and moral issues. Raising our (unintelligible) concentration in just one area of your work has only distorted many accounts of what Hobbes was trying to make (TUCK, Hobbes. *A Very Short Introduction*, 2002, pp. 11-12).

In order to solve such distortion posed prognosis of science in the author at the dawn of modernity, and trying to maintain consistency with the written will focus prognosis Hobbes have about science around Galilean physics and geometry, as were the areas of knowledge about the most discussed. Knowing that they were not the unique perspectives of scientific knowledge and the only basis as we refer in the grounds of Shapin (1985) to propose analytical knowledge with the discourse of truth to the theory of Boyle. Such budget leaves us with the question of what areas treated in physics and geometry, which themselves are already well specific references in the Hobbesian universe. To advance on this issue, we turn to the approach proposed by Lloyd (2013) in his *The*

Bloomsbury Companion to Hobbes, who seriously categorizes science, method and philosophy of the author of Leviathan, starting not from a narrow view as suggested Tuck, but overcomes this lack of approach to the author's works, for the same how text is raised.

Starting from there and Lloyd recommendations we will analyze four categories that allow us to cover the prognosis of writing against science, but also know the status quo the same as I was raised in its initial target. Namely, the analysis categories are Experimentation, geometry, and motion. With which we will cover the concepts of the physics of Galileo, Hobbes and geometry.

### **3.1. Experimentation**

The state of experimentation in philosophy of science in Hobbes is complex. On the one hand, the criteria that science at that time is given a place of honor deductions a priori; which lead to mechanistic principles. Proposing a theory of science where experimentation does not have a central role. On the other hand, Hobbes emphasized that lack an epistemic approach to the inner workings of nature, and therefore must rely on conjectural or hypothetical explanations to account for a wide range of natural phenomena.

Lloyd (2013) It clarifies about such hypothetical explanations inevitably require some degree of experimental evidence or confirmation, so Hobbes argued that there must be some significant room for experimentation in natural science to properly develop this (P. 37). Thus we can conclude first that experimentation in the philosophy of Hobbes can be explained better to start with his general theory of science, then consider the development of its optical theory as opposed to Descartes and Boyle as us tells Shapin in his text around disputes over the limits of experimental science (Shapin & SCHAFFER, 1985, pp. 80 - 99).

However, Hobbes distinguishes science that occurs or, based on the senses and memory making the point that the difference of knowledge that gives reality in the early chapters of Leviathan. The first proposes it as a science with the statement that "sense and memory are"; but; the second, the knowledge that places it exposes reality as knowledge that is past and irrevocable thing. This indicates that well understood science, would be knowledge of the consequences and dependence on a fact upon others; as shown in Annex Table 1, which represents the Hobbesian classification of science.

Such knowledge of the consequences should start with definitions that can produce demonstrations; but which in turn establish conclusions with absolute certainty. About S. Lloyd notes that ideally, such definitions expressed causes things defined; so that adequate scientific evidence will show that something is descriptively, but also notice how he became so (2013, p. 37). This implies that his conception of science committed esteem or anticipated that either mathematics, politics or any other body of knowledge can be converted to the geometric method definitions. They are defined these first principles count as a science. However, Hobbes finds that, in natural science, such a principle of reducing the geometric method definitions cannot be done, since many phenomena in nature is hidden from us. As in the case of investigating air, light, water as a reference text Lloyd (2013, p. 37).

For example in reviewing conception of natural science, most of what Hobbes called "Physics" is concerned to demonstrate and explain phenomena such as gravitation or freezing water. All with a view to supporting a purely mechanistic explanation of nature. Take which it makes experimentation as shown in Annex 1 always favoring this interpretation of science at this time.

However, for this moment seventeenth century that sets the new currency is significant in the de facto practice of science that Hobbes can develop these physical principles, as proposed reasons a priori as objects of study that could not be carried were for experimental testing. In the words of Hobbes:

"One cannot proceed in reasoning Natural About Things That are Brought About by motion from the effects to the causes without a knowledge of Those Thing That follow from every kind of motion," and Concluded That there must be basic some principles physical That are THEREFORE geometric and demonstrable a priori (HOBBS, 1839, p. 93).

What it gives us to think that in particular the conclusions Hobbes made on the issue of physical sought abide by the principles of the movement: "It is understood that what him is at rest it will always be, unless you have a different body, for whom he can no longer stand any longer" (Hobbes, 2000, p. 107). This means that if there is a finite body at rest, so that the remaining space is assumed empty; if that body begins to move, it will for a certain way, and like everything that was in that body available to the rest, the reason why moving down that path will be out of it.

Similarly, Lloyd (2013) He thinks that if he had moved the other way, the reason for this movement would be out of it. But as we have assumed that out of it there is nothing, the reason to move along a path that would be the same for any other moved, then also move on all roads at once, which is impossible. Hence also understand that what moves, it always moves unless there is something out of it, for whom it was put at rest; because, if it is assumed that there is nothing outside it, there will be no reason why I should be at rest now more than once. Consequently, his movement would disappear at any moment of time, which is not understandable (P. 37).

Moreover, Hobbes regarding scientific practice experience in physics goes to respect the principle of contact action required for its theory, which says:

It cannot be any cause movement rather than a contiguous body and moving. Because if any two non-contiguous bodies between which there is either an empty or full but with a body at rest interspace are given, and it is assumed that the two bodies proposed one is at rest, it will always be in repose. Now if the cause of motion moves will be in an outer body, and therefore, if there is between him and that outside an empty space, we can conceive of any way that both external bodies such as the patient behave, will remain so as not to touch other (Hobbes, Treaty Body, 2000, pp. 113-114).

This proposal will allow you to develop several ideas of what will be his theory applied to politics, but also science. Knowing that there is no cause of motion in a body rather than a contiguous body moving, trying for the same reason that everything that moves will always do the same path at the same speed, unless something prevent it. What makes the reality is understood that the struggle with the movement is the opposite movement, because the rest does not fight.



Then we board the idea of geometry as part of the prognoses of the seventeenth century, which makes important part in the scheme of science that raises in Chapter IX of the leviathan, which attached in Annex 1.

### 3.2. Geometry

As we mentioned geometry to Hobbes also has an important place for not only in his scheme but in his theory and practical action, the science that is developed in this time allowed by this part of the experimentation of the science graph occurred. Physical at both through the laws of movement and the notions of optics to be had.

His friend John Aubrey tells Lloyd (2013, p. 50) He reported that Hobbes fell "in love with geometry" ("in love with geometry") after coming to find a copy of Euclid's Elements, and marveled at the Pythagorean Theorem. It concludes that such a proposition may be true, and, in order to provide sufficient grounds for such a demonstration decides to return to first principles. The same people who took him for a long stay in Paris in the 1640s, to raise their geometric research, and actively participate in groups around Marin Mersenne where geometric problems were discussed. This group included such mathematicians as Gilles Personne de Roberval and Jean de Beaugrand and contacts with important mathematicians throughout Europe, according to S. Lloyd (2013, p. 50).

So, we can conclude in the 1640s, had the geometry to be in the Hobbesian model their demonstrative tactical knowledge, he considers:

Therefore, in geometry that is the only science that so far God has willed to grant to humankind, men begin to establish the meanings of his words; this call meanings set definitions, and placed at the beginning of their reasoning's (HOBBS, 1989, p. 37).

In that vein this geometric fact in the life of Hobbes takes you even approach and knowledge of the discipline; but also, their extrapolation to politics. Since we agree with the observations of Spragens (1973) remember what it suggests about the introduction to the politics of motion. The world of Thomas Hobbes. Spragens is in this book, that desire to manifest in chapter IV Hobbes's Leviathan, where he tries to shed additional light on the perspective of identifying science and politics.

To achieve this Spragens will expose the relationship between natural philosophy and philosophy through civil discourse. Hence the importance that the Hobbesian rhetoric explain the definition of geometry, and the LIE as the core of truth to build through the truth of science or true knowledge that requires politics as science.

This implies that in reviewing the political ideas of Hobbes presentarn significantly influenced by their cosmological perceptions, although as Spragens puts it, these could not have been completely derived from that source (1973, p. 7). In that way, this gives us analyze this influence of Hobbes and his conception of nature in its vision of politics were conducted largely via analog permeability. In the words of Spragens it means that "the conceptual patterns and models

developed to deal with natural phenomena became prisms through which human phenomena are perceived and political" (Spragens, 1973, pp. 7-8).

In this sense the scientific dynamics as an intellectual practice are similar to those involved, Kuhn (nineteen ninety-six). Since this has been described in its text the functions of the exemplary paradigms. That is, the policy as we mentioned at the beginning of the text. In its post-Facio serves the scientific community to endorse the knowledge, to endorse this paradigm dominates.

However, in the estimation of Hobbes, we dare to ponder the positions of Spragens (1973) and Lloyd (2013). What could be the truly scientific fact, Hobbes dare to follow in the seventeenth century the model of geometry, a project involving the use of correct definitions and rigorous logical argument to derive substantive conclusions about the nature of sovereignty and obligations of subjects.

Philosophers have traditionally adopted the geometry as a science that investigates the properties of abstract, intangible objects whose properties can be captured by the intellect, instead of sense; without clearly exclude them this. In contrast, Hobbes rejected this characterization of geometry, since its materialistic metaphysical rules out the possibility of immaterial objects and strong empiricist epistemology, making the sensory experience the source of all knowledge. Lloyd when referring on the geometric concept Hobbesian speaks of the character of tradition which he had taken geometric figures to be radically different from anything in the material world (LLOYD, 2013, p. 50).

Hobbes argued that the geometry (Euclidean) is a generalization of materials science bodies, designed in a specific way. Therefore, where the term was defined "point" as "what has no parts" and the term "line" as "a length no width." Hobbes offers a materialist alternative explanation, as Lloyd confirmed in his text (2013, p. 50).

Moreover, Hobbes says that in *De corpore*:

(...) if it does not consider the magnitude of the body moving (though it's always some), walking path called line or dimension one and simple, however space walking is called length, and the body itself, point in the sense that the earth is often called point since its annual elliptical path line. But if the body moves is already considered long and is supposed to move in such a way that each of its parts draw a line, the path of each of his is called latitude width, and space is produced, surface, and has two dimensions: longitude and latitude, one of which is fully applicable to each of the parts of the other (Hobbes, *Treaty Body*, 2000, p. 105).

The above statement implies that Hobbes attempts scientific practice, as a teaching transposition, I.e. knowledge makes wise in Euclid's definition a simple point, and proposed to be replaced by a definition that can be understood in strictly material terms. Lloyd adds to this fact a characteristic rhetoric of his speech, applying a sort of *ad hominem* fallacy in the person of Euclid. For discredit his theory to the point of boasting with its materialist program for geometry with these words: "I have boasted that with the advent of His materialistic program for geometry, I was the first that hath made the grounds of Geometry firm and coherent (LLOYD, 2013, p. 50)".

This means that Hobbes argued that in addition to placing the geometry in a suitable "metaphysical" level allowed in focus geometric definitions that describe the causes in which the geometry of objects occurs. Arguing that when there is no place for the demonstration of first principles or definitions, there is nothing you can demonstrate how it should be. Because the definitions of Euclid's generally do not need to be replaced by definitions that express these motions (Pp. 50-51).

Lloyd argues that Hobbes was convinced that the true geometrical demonstrations are an instance of how we create knowledge to show all knowable properties. "Where the definitions knowable at the heart of a demonstration show how something is created, and thereby make all of its properties" "That Hobbes was true Demonstrations are convinced an instance of" maker's knowledge. (LLOYD, 2013, p. 51).

Perhaps this practice Hobbesian of "maker's knowledge" to determine the properties of a geometric object is easier to deduce the features we built from the principles describing its development path. The point to suggest that a problem of this type, it may be impossible to solve tantamount to holding that the right thing in science is determined by a "Commonwealth" (An "artificial body" built by humans who agree), no However, it may fail to resolve issues of law and obligations. However, for the philosopher of Malmesbury, such a prospect was simply inconceivable as the Commonwealth resolve one and the other.

In this respect we have to refer two contemporary readings fact a community that validate know and how they know, regardless of the branch of science that always analyze and when the pace of construction of validated knowledge is respected usually. In addition, Kuhn (nineteen ninety six) also referred this need in the text of the post-Facio expressing the need for Community agreement depends on what makes this community. Then, that as in the case of such specific studies as the subject members should not necessarily agree on that matter and less are required to know how this works, or if it is proved or not (KUHN, 1996, p. 180) Which obey the case proposed by Hobbes in developing the principles of Euclidean geometric theory.

Moreover, this practice of science that ultimately transformed into scientific practice, proposal from Hobbes compels us to refer to Wenger and Lave (1991) that somehow opposed to Kuhn validate social mind this knowledge, based on the world. The person and their relationships, arguing that this would be the way for the maker's knowledge is resolved through approval Commonwealth in its dimension of practice social that is part of the theory of knowledge (LAVE & WENGER, 1991, p. 47).

### **3.3. Motion**

In our outlook on science and practice in Hobbes, we arrived at the central to philosophical point Hobbes project. As Frithiof Brandt (1928) He said that instead of being called a materialist metaphysics, Hobbes should more properly be called "motionalist" (P. 379). Hobbes defines the movement simply as "The movement is the continued abandonment of one place and the acquisition of another" (Hobbes, Treaty Body, 2000, p. 104).

Thus understood, the movement involves nothing more than the transition from one part of space to another, where space is taken as:

... the phantasm one thing that had existed before the alleged disappearance of external things, and do not want to consider how it was that thing but simply that existed outside the mind, we have what we call space, imaginary of course, because it is merely a ghost, but still that same whom everyone calls as well. Because nobody called this space because it is busy but because you may be pregnant (Hobbes, *Treaty Body*, 2000, p. 94).

This commits Hobbes to a relativistic account of the movement. According to Lloyd, it committed to a vision of body moves just in case. That is, its location relative to surrounding organs changes, but there is no absolute reference frame with respect to which a body is finally at rest or in motion (2013, p. 57).

All this leads us to propose the importance of the proposed Hobbes in his philosophy, that is, this becomes relevant because it took the movement as a definitive causal principle. He declared that all things "have a universal cause it's your move" (Hobbes, *Treaty Body*, 2000, p. 79). However, if it is not known which is the movement and its properties from the maker's knowledge this will be the cause of a faulty reasoning.

Despite all these Reasoning wrong, he in the process of articulation of conception, which proposed the move as the beginning, the universal cause; it defines a series of physical concepts in terms of movement. For example will talk about Endeavor or conatus in Latin as a "movement point," Hobbes defined as: "We define the conatus as the motion space and less than the given time, ie less than which is determined or assigned by exposure or number, this is a point " (Hobbes, *Treaty Body*, 2000, pp. 168 - 169).

This implies that to explain this definition should be remembered that not understood about something that does not have much, or what cannot be divided, because in nature there is nothing of that kind, but that whose amount is not considered, that is, that from which neither the quantity nor has any part in the demonstration. Such that a point is not taken by indivisible as in Euclid, but divided. Similarly is not the time for taking time but one indivisible undivided. This allows the introduction of the concept of momentum in Hobbes, defined as "the speed or velocity of the driven body, but taken at various points in that time in which it moves. Therefore, a boost is the measure of the force exerted a body moving along a time interval, thus producing means for comparing the relative forces exerted by moving bodies (Hobbes, *Treaty Body*, 2000, p. 169).

This new concept of momentum, Hobbes defines force as "the speed of the pulse or multiplied movement either itself, or the magnitude of Movant, through which said Movant works more or less on the other body that resists " (Hobbes, *Treaty Body*, 2000, p. 169).

Hence, it is that Hobbes got concepts such as effort and momentum for fundamental science of geometry, and argued that "First we have to seek ways of simple movement" so that the result is a "method of motions" (Hobbes, *Treaty Body*, 2000, p. 79). Which he was thought able to solve a wide range of geometrical questions as well as provide a secure basis for physics. Moreover, Hobbes thought that conceives movement; it is governed by the fundamental and demonstrable

laws of the same definitions of the concepts involved in his theory of movement. Such laws are made from two basic laws that are the "principle of persistence" (a variant of the law of inertia) and the principle of action by contact.

Lloyd tells us about a Hobbesian concept that the author proceeded to derive laws collision two basic principles; such as equal angles of incidence and reflection, also; as well as the basic principles of static and mechanical principles. The resulting system is an austere Hobbes form of mechanism that leads the movement as its basic principle explanatory. An austere mechanism that involved a definition of movement under the concept of strength, power or energy; something subtle to say that strange at the time, but that makes defining terms such as stress, urge or force dropped purely physical in the notion of free force (LLOYD, 2013, p. 59).

The Hobbesian prognoses of science in the seventeenth century in his thinking and derived from various forms of leviathan now allow us to raise a Therapy, which will be our conclusion. Where we propose in a few short paragraphs explain the result of these historical practices in the science of Malmesbury Philosopher leviathan.

#### **4. Therapy**

Perhaps it is surprising that religion is not on this list analysis of science both proposed in Chapter IX on the leviathan (Annex 1) and our outlook on science. Precisely because it is the opposite of that scientific practice that was abandoned and in which the author did not want to delve deeper than it did in Elements of Law (1640), De Cive (1642) and Leviathan (1651).

However, we must consider that theology for Hobbes is the first of aspiring science to which denies scientific status. Hobbes motivation to exclude is likely to be complex and deserves a serious analysis on the subject. For now, we will just say that in texts such as De Corpore the author will not propose practical theology of scientific knowledge for the purpose of these negations was removing the moral authority of religious officials. However, it was a little further, wanting to deny the intellectual authority of ecclesiastical and ecclesial institution, particularly the Inquisition had banned the writings of his hero, Galileo.

However, we cannot rule that is also hinting that neither theology nor the doctrine of the worship of God can be "taught" in the sense that he made his demonstrations or under what we call maker's knowledge, systematically for setting up their theories, and science, which in the case of God deserve another approach. This implies that by denying that something is a science that does not mean that it is a field of knowledge. Nor it denies that non-science can promote science, in the particular case we are dealing with. He does not believe that only charlatans or quacks practice what they are not science. Therefore, a subject may be unscientific and yet science complement or help.

This support and complement, what it does is to introduce science as something beneficial, that is, the therapy in this way as we go through scientific practice means that benefits granted us this knowledge, experimentation, the geometry and motion. Thus, the benefits of science views of Hobbes is undoubtedly a point of scientist view. It implies that almost all the best things in life are due to science. The main products of which humanity is capable "and" the major products of

humanity "are one and all products of philosophy or science as in this case is occurring in other words, is the science alone -. In the form of a truly scientific or ethical policy - that can save us from most of avoidable calamities, namely, civil war and the leviathan is exposed as we run the risk of losing it all, but the raw materials sciences. Natural help us how to avoid civil war.

This would imply that having a civil war, under this construction would also have a civil science has offered a strong claim to be extremely beneficial; helping in times of peace through strength and ingenuity to develop industry, because the fruit thereof is uncertain, and therefore the cultivation of land, appropriate use of navigation, comfortable construction, the benefits of import by sea, as well as building tools to move and remove objects that need a lot of strength (Hobbes, Leviathan. The matter, form and power of an ecclesiastical and civil, 1989, p. 130). We are instructed on what we need to know to do the right thing, and this acts as a kind of insurance that we will continue to have a beneficial effect of science and technology. As Malcolm says (2002) is the knowledge of the consequences of express statements in science, which are applied in the leviathan or political science (MALCOLM, 2002, p. 49).

## 5. Appendices

Annex one. Classification of science in Hobbes. Chapter IX. [IV. EW IX]

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