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Marin Mersenne and Pierre Gassendi as Descartes' questioners

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Abstract

In the following pages, we will explore the proximity of Marin Mersenne and Pierre Gassendi's arguments against Descartes' *Meditations*. We will study how, in some of their objections, both Mersenne and Gassendi adopted a nominalist and empiricist view regarding central topics of Cartesian epistemology, such as the idea of God, and the origin and classification of ideas in the Mind. We propose that the assessment of the confrontation between the two objectors and Descartes may provide us a better picture of the complex intellectual debates that took place at the very beginnings of Modern Philosophy.

Introduction

In the following pages, we intend to address the dialogue held by Marin Mersenne (1588-1648) and Pierre Gassendi (1592-1655) with René Descartes (1596-1650), in the context of their discussions of the *Meditations on First Philosophy*.¹ This discussion will allow us to obtain a comparative vision of the first two philosophers as Descartes' objectors; although it is known that Mersenne and Gassendi defend an empiricist perspective, a careful analysis that would lead to identify the similarities and differences between their critical positions regarding Descartes has not been carried out, as far as we know. Next, we will explain why we have established the aforementioned Cartesian work as the intellectual framework for dialogue and, later we will elaborate some thoughts for bringing together Mersenne and Gassendi's objections in the same study.

Let us begin with the assertion that the Cartesian *Meditations* is a peculiar work. As we all know, Descartes was not content with the mere publication of his *Meditations* alone, but he also invited several philosophers of his time to make their objections, in order to respond to their rebuttals in his same publication. Far from being evidence of Descartes' arrogance - nor has to do with the immodesty of one who is sure beforehand to be the

¹ First printed on august 28th, 1641, under the title: *Renati Descartes Meditationes de Prima Philosophia in qua Dei existentia et animae immortalitas demonstratum*.

winner of his own debates, as some commentators have assumed- the thinker's attitude should be appreciated as an interesting characteristic of Early Modern philosophy that expresses the turn for a new conception of authority, and it has to be differentiated from the traditional scholastic notion of *auctoritas*. The Cartesian standpoint that a new philosophy will emerge after a collective examination of his work indicates the appearance of a new "philosophical" authority, which would be supported by rational exchange and critical dialogue based on a deep and acute argumentation. In doing so, the Cartesian strategy was in fact widening the road towards an ideal of free philosophical dialogue, too frequently restrained by religious censorship in his epoch.

In Descartes' *Meditations*, such an ideal was made real by situating *actual* interlocutors in a debate that was located in the same space-time. The philosopher did not use literary fiction as some other authors did, and he did not put on stage characters representing the positions in conflict. Galileo's *Dialogues* or the various apologetic works of Marin Mersenne are instances of the type of interlocution between characters who defend opposed claims, being all of them fictional *personae* emerged from the literary and rhetorical narrative, which also entails a pedagogical intention. In contrast, discussions between thinkers --not characters-- who share the same intellectual difficulties, did encourage their continuing research in other works that refined, reinforced, and broadened their respective arguments, as we may notice in the case of Gassendi's reply to the *Meditations* in his *Disquisitio Metaphysica* (published in 1644).

Thus, we can acknowledge that since Early Modern philosophy, the exercise of an open discursive structure has been encouraged as a significant antecedent of the plural character of Diderot and D'Alembert's *Encyclopédie* (published between 1751 and 1772), which intended, like other encyclopedic works of the time, to recover different visions from several authors about specific themes.

Mersenne and Gassendi, both religious men of Catholic background, seek to establish the ontological bases for the New Science from an empiricist perspective. In the last two sections of this study, we will consider the agreements and differences between them, since these are evident in their corresponding objections against Descartes (Second and Fifth respectively).

We would like to add that a central motivation for our work is to avoid misguided views about the authors we explore here, these views attribute to the objectors a bad comprehension derived from their supposed lack of sophistication and theoretical refinement, so they failed to understand Descartes' first philosophy. Instead, our position holds, as we have mentioned before, that these are rather three different philosophical projects in debate, so the value of the scholars' contribution in this regard would be to assess these projects based on the sources, rather than disqualifying them.²

1. Descartes, Mersenne, and Gassendi: three central thinkers of the Scientific Revolution in opposition

In the *Meditations*, we find these three philosophers facing each other; that offers us a good opportunity to define the different scientific projects proposed by each one and, therefore, it is possible to identify their specific tenets. We also have to bear in mind that they were educated in the Scholastic tradition and they also reacted against it. Each of them searched for alternative routes for the Reformation of science, and they also struggled to found a new edifice of knowledge; besides, each one was well acquainted with the work of the other two.

Undoubtedly, during the Seventeenth-Century, the development of scientific activity owes very much to the complex network of communication between natural philosophers that was promoted by Marin Mersenne: as an advocate of the New Science, the Franciscan played a central role in disseminating the findings and experiments of the entire scientific community of his time as no one else did. Galileo's free fall experiments and his astronomical observations with the telescope, Torricelli's experiments, as well as a long list of mathematical problems circulated and were well known to the intellectuals of the time, thanks to Mersenne's efforts. The contribution of the Franciscan Father to the

² Such is the case of Vidal Peña who, despite the value of his comments on the spanish edition of the *Meditations*, affirms that one of Gassendi's objections: "[...] expresses Gassendi's disdain or misunderstanding for the whole 'critical' approach of Descartes; his objection seems to deliberately assume a "healthy common sense" (in a way, "anti-philosophical") from which the proposal of subtle difficulties is nothing more than "verbiage" [...] Gassendi's 'tone' is, many times, (without prejudice to eventual ingenuity) that of rudeness that pleases itself. " René Descartes. *Meditaciones Metafisicas con objeciones y respuestas*, p. 150, n. 50.

Scientific Revolution is therefore undeniable and without him, it would be difficult for this intellectual revolution to have achieved its results with such effectiveness in a short time.

In the *Meditations*, as we know, Mersenne adopts the theologian's perspective and, right from the first paragraphs of his objections, he will assume the defense of science as an activity that supports the role of God in nature with the help of its discoveries and its experimental results; all this within the strict framework of Christian and Catholic theology, since, for Mersenne, the New Science and the traditional theology are compatible. According to him, it must be so because both science and theology are manifestations of the same truth. The Franciscan conceives the knowledge of his contemporaries as a new form of service to religion. It's clear that he projects an experimental and pious science, prefiguring the attitude that will later be found in the work of Robert Boyle (1627-1691) and the Royal Society (founded in 1660).

According to Mersenne and Gassendi (who was also a Catholic priest), the New Science must conform to the strict limits of Christian theology: both of them reproached Descartes for not having followed the senses and experience to prove the existence of God (for example, the argument from design, according to Gassendi). Belonging to the ecclesiastical institution, the two objectors interpret Descartes' views according to the theological commitments that they sustain: in this regard, they interpret the author of the *Meditations* as a new scholastic, in his eagerness to defend God's *potentia dei ordinata*.

Indeed, contrary to the philosophy of the schools, Gassendi and Mersenne are inclined towards nominalism,³ according to which the deep and necessary knowledge of nature is reserved only to the divinity; the knowledge of the immutable truths is not available to human beings, who only have access to contingent truths. Let us note here that in the objectors' views, this assumption is harmonized with a certain form of skepticism regarding the possibility of knowing the inner structure of world's phenomena, and this attitude is also endowed with a mistrust about notions such as forms, substances, and metaphysical entities of Aristotelianism. Hence, when Descartes refers to substances in his

³ Cf., Thomas M. Lennon, "Pandora: Or, Essence and Reference: Gassendi's Nominalist Objection and Descartes' Realist Reply", pp. 165-177.

Meditations, Gassendi and Mersenne interpret this move as a defense of the traditional Aristotelian substances; they read the Cartesian work, once again, in a Neo-Scholastic key.⁴

Besides, in his empiricism, Gassendi adopts the skeptical attitude derived from his naturalistic humanism.⁵ In his objections he refers to observation, he also engages in the defense of ancient academic skepticism, which makes him propose verisimilitude, probability, or moral certainty in the realm of scientific knowledge, instead of metaphysical certainty.

Descartes in his "Fifth Replies", disapproved the Gassendian position as one that is not capable of detaching itself from sensible knowledge and, therefore, unable to philosophize legitimately. According to the author of the *Meditations*, the search of truth must be guided by the investigation for *irrefutable truths*, which in principle can be accessible to the intellect. The New Science requires, in this case, a stable foundation which may give the new bases for the construction of the entire building of knowledge. A philosopher in the Cartesian way, according to the *Meditations*, is not a natural inquirer that relies on natural histories: a true philosopher can detach himself from the sensory sources of all the things he has learned (as mentioned before, both Mersenne and Gassendi held this task as impossible *ab initio*).

Descartes maintains that the true philosopher does not use rhetoric nor history in his metaphysical quest: to find the truth, the models that must be followed are rather those of the astronomers and the geometers, such as supposing that something is false, in order to

⁴ Concerning Aristotle's works, Mersenne's position is always fluctuating. In his early work (his apologetic stage) the Franciscan is conciliatory by assuming that Aristotelianism has to be accepted only provisionally, while a new philosophy is built, and only in the absence of something better, and only the part consistent with Christian philosophy. In his *La vérité des sciences* (1625), Mersenne puts on the lips of the Christian philosopher - his *alter ego* - the following statement: "We do not approve Aristotle's philosophy in all its parts, and we do not embrace his philosophy because it belongs to Aristotle, but because we do not find anything more true, that has a more beautiful continuity, or that is more general and universal." (Mersenne, 2003, p. 203).

⁵ Gassendian skepticism against Aristotelianism was present since the *Exercitationes paradoxicae adversus aristoteleos* (1624), *vide* Leonel Toledo and S. Herrera, "El escepticismo radical de Pierre Gassendi contra la filosofía natural de los aristotélicos".

Such naturalistic humanism involved at least two main tenets:

1. The principle that the explanation in philosophy must be formulated according to models of natural processes that account for the phenomena of the physical world, without appealing to hidden causes, or miraculous interventions from the divinity.
2. The resource of history (as natural history) in the analysis of philosophical problems. In Gassendi's view of the reform New Science, all knowledge is limited by experience; scientific results will always be probable (since we do not know the inner nature of things, which corresponds only to the divinity).

derive its contradiction (in the *reductio*), or to suppose an imaginative model to show something true thereafter.⁶

The models that Descartes is referring to, are clearly different from those of Mersenne and Gassendi's since, according to Descartes, the foundation of the New Science rests on a method that is more related to logical strategies and geometrical methodologies, such as projecting "supposed" situations that, although they cannot be seen, they may provide an (ideal) metric for the phenomena (to imagine an equator in the sky, for instance). Once obtained, these ideal measures are means of comparison with actual phenomena and, in that sense, reality can be mathematized and explained. This articulation of methods and their application to metaphysical problems are definitely a Descartes' innovation in his *Meditations*.

Thus, it is clear that these three main characters of modern natural philosophy show oppositions derived from the theoretical contexts from which they judge each other. Let us now describe their specific oppositions, and how they operate in Mersenne and Gassendi's rebuttals.

2. Mersenne: Second objector and Descartes' main correspondent

What objections, doubts, or comments to Descartes' work could Mersenne have left in the inkwell after decades of copious correspondence and close friendship with the philosopher? The question seems to be answered in the very title of the second series of objections: "Collected from the mouth of various theologians and philosophers by R. P. Mersenne".⁷

Indeed, in this debate Mersenne would express the view of the theologians and philosophers of the school as readers of the *Meditations*. If we also consider that in fact the author of this second series of objections was Mersenne himself -as reported by F. Alquié-,⁸ then this explains that, as an interlocutor, the Franciscan refers to themes already discussed inside and outside the context of the *Meditations*,⁹ but formulated to convey the main

⁶ AT VII, 349-350.

⁷ Cf. F. Alquié: ALQ II, 541, n. 1.

⁸ Cf. F. Alquié: "In fact, the main author of these objections is Father Mersenne himself". ALQ II, 541, n. 1.

⁹ At the end of his Replies to the Second Objections, Descartes confirms our observation: "Because, although, among the things you have proposed, I do not see any that I had not previously rejected or explained in my

concerns that this work could sow among the readers of the theological sector. In doing so, Mersenne is deliberately giving the occasion for the display of the vigorous Cartesian answers.

This could also explain the celebrated presentation of the *Meditations* according to "the method of the geometers" that appears as the final part of the answers to these objections:¹⁰ there, Mersenne asks Descartes to explain himself adopting the 'method of the geometers': "so that, in a single stroke and as with a single glance",¹¹ the readers would be satisfied after the definitions, postulates, and axioms of the exhibition in the "synthetic" (demonstrative) order, and not in the "analytical" (constructive) order of Cartesian discourse. Mersenne's request does not seem to be articulated with any of the objections previously formulated by him; it is presented as an (*ad hoc?*) petition, by which the exposition of Descartes is promoted (according to the geometer's fashion) and, thus, allowing him to explain himself in order to satisfy the expectations of an audience unfamiliar with the unconventional discursive (constructive order) of the *Meditations*.

If the purposes described above can be characterized as not explicit in the Second Objections, their explicit objective indicates the theological tone that Mersenne's arguments will adopt: he affirms that he's seeking to contribute for the *Meditations* reaching its "true" purpose, which consists of "consolidating the throne of the Author of all things", by demonstrating His existence and, in this way, "showing that there is an eternal divinity on whom all things depend".¹²

Mersenne presents his reading of the *Meditations* in a theological perspective, he adopts the view of a religious scientist who, although aiming to guide the New science along the route of experimentation and mathematical basis, he also tries to keep the theological realm out of innovations. In doing so, he is framing a conception of a pious

Meditations [...] Nevertheless, I judge that these objections will be very useful for my purpose, since I do not promise myself to have many readers who want to pay so much attention to the things that I have written, and who, having reached the end, remember everything they have read previously. And those who fail to do so will easily fall into difficulties that they will see, shortly after, that I had solved them with this answer, or at least they will take the opportunity from there to carefully examine the truth." (AT IX, 120-121). Throughout his Responses, Descartes emphasizes the importance of taking the time necessary to carefully attend his *Meditations*; he is quite aware that a radical change of perspective is proposed in metaphysics and epistemology.

¹⁰ Cf. AT IX, 124 y ss.

¹¹ AT IX, 101.

¹² AT IX, 96.

science that achieves its goals by glorifying God and, besides, it is also useful for human life without committing to unnecessary complications, such as admitting the existence of Aristotelian substances.¹³

In this context, Mersenne proposes seven groups of objections –here we have selected only a few–, all of them referring to problems related to divinity, but not without first questioning the Cartesian procedure, that Mersenne identifies as “the sole inspection of the spirit” through meditations, a strategy that, in his view, not only does not shed light but leads to darkness.¹⁴

The “careful inspection of the spirit” starting from rational first principles and their application, in order to resolve a problem - as exemplified by the principle 'nothing comes out of nothing' - contrasts strongly with the methodological procedure of its objector, who considers that the starting point must be accepting the evidence of corporal things. In this way, Mersenne establishes that the idea of God must come from the sensible world, which already contains all the perfections required to form this idea by ourselves, without resorting to a Sovereign who would externally cause such an idea.

Thus, according to the Franciscan priest, the Cartesian thesis that the effect cannot have any degree of perfection or reality that has not previously existed in its cause is doubtful, because there are clear counterexamples of it, as is the case of the cause that operates to produce animals and other living beings; in those cases, they have obtained their reality from the Sun, the earth and the rain, these are causes from which the effects have not obtained their reality.¹⁵

In turn, Descartes thinks that this objection is, at least, very weak and does not prove, in any way, "that a certain degree of perfection can occur in an effect, without first occurring in its cause".¹⁶ The effect obtains its reality from the totality (the combination and

¹³ Mersenne exposes the pious sense of knowledge in the following way: “I only wish for all recognition, that each one put the truth to his benefit, which, coming from God, should be offered in his honor; for what seems wrong to me of those who have so little spirit and judgment, is that they believe that the truth of Mathematics is useless, and that it cannot serve piety and Religion: I am sure that this opinion only comes from ignorance.” Cf. VSC, p. 113).

¹⁴ AT IX, 96.

¹⁵ AT IX, 97-98.

¹⁶ AT IX, 105-106. John Cottingham shows the problems of the "principle of causal adequacy" exposed in this answer ("principle of inheritance"), using the example of a cake; each of its ingredients: eggs, flour, sugar, milk do not have the quality of “being spongy”; the "sponginess" occurs as a result of the combination

interaction) of the causes that produce it - the sun, the rain, the earth - and Mersenne, in Descartes's opinion, does not see what the natural light evidently shows.

This seems also to be the case with another part of this same objection which shows the naturalistic sense of the Franciscan's view about the origin of the idea of God: according to Mersenne, this idea has to be investigated in the field of the contextualized experience of each individual, according to the environment where he inhabits, and from which it is obtained the cognitive material required for the formation of the idea of God, or any idea whatsoever.

Mersenne confronts Cartesian innateness¹⁷ since, according to him, the idea of God is adventitious in nature and it comes from what the empirical environment contributes to the subject in an "anticipated" way, as it is shown in the case of the Indian people, who lack such an idea. Then, in Mersenne's epistemology, also shared with several intellectuals of his time - among which Pierre de Gassendi stands out - it is convenient to maintain a "healthy common sense" that does not admit innate ideas: all ideas originate from the data provided by the senses, the idea of perfection and even the idea of God originates as a result of the operations of the understanding without the need of innate contents.

In this context, we may affirm that the debate around the idea of perfection is one of the main themes of the "Second Mediation". This debate also synthesizes the central differences between the interlocutors regarding the formation of our ideas. Mersenne points out that we only require the operation of the understanding, supplied with the data originated in our senses to be able to conceive, by degrees, an idea of perfection and, therefore, the idea of God.¹⁸ Moreover, from Mersenne's perspective, Descartes errs when he tries to affirm the existence of God based on an innate idea of Him, which the philosopher admits as "the mark of the artisan printed on his work".

As we may observe, according to the Franciscan, both the ideas of God and perfection are produced as a result of a natural process that is described by their genesis.

of those. However, Cottingham notes, contrary to Descartes, "sponginess" as such is not found separately in each of the ingredients. We think, unlike Cottingham, that Descartes's argument, in context, holds, by proposing that the effect is the result of interacting components of the cause (*adaequatae causes*). Furthermore, the weight of the answer rests in the inability to know all the causes that produce an effect. *Vide*, John Cottingham, *Descartes*, pp. 84-85.

¹⁷ AT IX, 98.

¹⁸ AT IX, 97.

Thus, the spirit forms the idea of perfection from: a) a perfection given in some degree and, b) from its power to add one quantity to another.¹⁹ It is then, the ability of the understanding to conceive potentially infinite ideas from particular ideas originated in the data provided by the senses. This process leads us to attribute the status of moral certainty to all scientific knowledge: the only kind of knowledge we may attain in science is gradual, approximate, probabilistic, and hypothetical.

Descartes' response tries to clarify what has already been stated in his Third Meditation and takes advantage of the objection, reinterpreting it, to highlight his defense of innateness: "when you say -Descartes writes- that we have a sufficient foundation in us to frame the idea of God, you are not saying anything contrary to my opinion. Because I have stated [...] that this idea was born with me and that it does not come from elsewhere, but from myself".²⁰ Contrary to Mersenne's naturalism, in his response, Descartes formulates his own meaning of the genetic consideration of ideas, resignifying the process of generation of concepts within the framework of his philosophical project; that project aims to demonstrate the possibility of having metaphysically certain ideas, since this kind of ideas is supported by an understanding that operates correctly. Besides, God has provided us with this intellectual capability, by which we can attain such mental contents. Thus, Descartes continues: "I also confess that we could form it [the idea of God], even if we did not know that there is a supreme being, but we could not form it if actually there were not one; because, on the contrary, I have noticed that the whole force of my argument consists in this: it could not be the case that *the faculty* to form this idea was in me if I had not been created by God".²¹

In this way, Descartes admits that there is a process for framing concepts, which although rests on contextual elements --*i.e.* although we did not know that there is a supreme being--, remains anchored, for its constitution, in the first principles with which God has endowed us. According to Descartes, the proof of this tenet is the very idea of God which is, as mentioned above, "the mark of the artisan printed on his work."

¹⁹ Cf. F. Alquié, ALQ II, 543, n. 1.

²⁰ AT IX, 105.

²¹ AT IX, 105. Our emphasis.

In the previous pages, we have presented some episodes of the debate between Mersenne and the theologians against Descartes, to illustrate the interlocution between two contrasting metaphysical and epistemological conceptions aiming to support the New Science. Let us observe that such conceptions, despite their differences, coincide in the use of experimentation, in promoting the mathematical view of nature, and in the trust for the collective rational dialogue. Now, let us see how these elements are present in Gassendi's objections.

3. Pierre Gassendi, or the cognitive faculties' natural history

Against the Cartesian proposal of innate ideas, Gassendi adheres to empiricism,²² holding that all the contents of the mind have a sensory origin.²³ This notion of knowledge allows Gassendi to confront Descartes' views on the origin and status of all ideas found in the mind. According to the objector, all ideas have been subjected to a process that has sensory bases, and have undergone several modifications by the operations of the intellect, until they represent abstract entities, which become *apparently* independent of any reference to any particular. Therefore, if there are no ideas in the mind before obtaining basic sensory information, there can be no "innate" ideas. Gassendi tells Descartes that: "Concerning the species that you call innate, it seems to me that there are none and that all those that have been named so, seem also to have an *adventitious origin*".²⁴

Furthermore, dealing with the Cartesian example of the triangle, with which Descartes has allegedly demonstrated the existence of truths that are independent of the senses, Gassendi explains general ideas according to his empiricist perspective:

The triangle that you have in your mind is a type of rule (*regulae*) by which you examine whether a thing deserves the name "triangle", but it is not necessary to say that the triangle is something with a real and true nature, which may be outside our

²² See Thomas M. Lennon, *The Battle of Gods and Giants*, pp. 106-117.

²³ DM, 138; OM III, 301^a.

²⁴ DM, pp. 214; OM, III, 318^a. Our remarks.

understanding: only this latter, after having seen material triangles, has formed this nature and made it common.²⁵

Gassendi opposes his empiricism to the Cartesian proposal: we observe particulars and, from there, we make inferences or perform cognitive processes such as abstraction, enlargement, and comparison of ideas, in order to construct the mental contents that may have a general character.

Furthermore, without reference to particulars and without the basic "material" that sensations provide, it is impossible to generalize any idea: the intellect is capable of abstracting the properties of the triangle, only after having had some experience with other "material triangles". Once the intellect has made the abstraction and has obtained a general idea of "triangle", it is then possible to start the way back, which consists of the mind "ascribing" its general idea to new particulars, applying the rules it has established before, and attributing or discarding these common properties to other things. If this is so, then we may have an account for abstract knowledge without the help of any innate idea: during the processes of obtaining knowledge by abstraction, and later, of applying abstract properties to other particulars, it is not necessary to assume that it exists, housed previously in the mind, something like a "true" triangle.²⁶

Let us remember here, as we have mentioned above, that the Gassendian perspective is contrary to that of Descartes. According to the objector, an examination of the elements of knowledge must refer to natural history, and not to what he calls "Prejudices" (perhaps in the same sense as Bacon's "anticipations"). Then, without any previous particular instance, the intellect could not make itself even the common idea of "thing".²⁷

Here, Gassendi refers to the process of abstraction and comparison that is required to obtain the common idea of "thing"- "abstract, or general idea", as John Locke will later say-, which is obtained through generalizations derived from suppressing the particular notes of the objects we observe. However, if we do not have this basic material, as in the

²⁵ DM, pp. 470-1; OM, III, 375^a.

²⁶ DM, pp. 470, 472; OM, III, 375^a.

²⁷ DM, p. 222; OM, III, 320^a.

situation supposed by Descartes in the "First Meditation", our intellect cannot form or obtain more complex ideas.²⁸

In our view, *Gassendi is assuming that if one intends to explain any mental content, one must describe or construct a natural history of such content.* The correct perspective of the method, according to Gassendi, must be historical (in the sense that it provides an explanation of how any idea came to be formed in the mind), discarding any metaphysical anticipation.

Descartes rejects this approach as follows:

It also amazes me that you maintain that the idea of what is called, in general, a "thing", cannot be in the spirit, if the ideas of animal, plant, stone, and all the universals *are not in it at the same time*: as if, in order to know that I am a thinking thing, I would have to know animals and plants, for I must know what a thing is, in general.²⁹

Strangely enough, Descartes seems not to understand what it is supposed in the Gassendian thesis: If we can use the notion of "thing", it is because the intellect has previously carried out operations with data that were in principle, perceived by the senses. The notes that the intellect was able to determine by abstracting these sensory data, constituted the cognitive elements of a notion ("thing"), which are now applicable to other objects. So, it is not the case that, to use a general notion the mind would require that *all our ideas must be present at the same time* (as Descartes wrongly interprets). According to Gassendi, it is possible to employ the general notion of "thing", because there are previous intellectual processes, that is, there is a *cognitive history* that must be accounted for. Let us notice then, that Descartes apparently cannot see this methodological principle and, by misrepresenting the assertions of his objector, he dismisses the Gassendian proposal as totally absurd.³⁰

Gassendi's answer would run along the following lines: to explain our ideas or general notions and to apply them -if we want to speak meaningfully-, we must give an account of two aspects, to wit, a) how this general notions have been formed, *i.e.*, from which processes performed by our cognitive faculties were they obtained, and also, b) how do we have learned to use these rules (*regulae*) in our language. An example of this is the

²⁸ DM, p. 222; OM, III, 320^a.

²⁹ AT VII, 362. Our emphasis.

³⁰ AT VII 362-363; R. Descartes, *op. cit.*, p. 287.

analysis of the triangle that we have seen earlier: "The triangle that you have in your mind is a type of rule by which you examine whether a thing deserves the name 'triangle' ".³¹ So, we do not only abstract, but also configure rules, norms that allow us to speak meaningfully when we use common or general notions; in all cases, these rules constitute not a metaphysical determination, but only a kind of "nominal essence", so to speak.³²

In contrast, according to Descartes, the philosopher's research is not about how we may form any idea through the operations of the mind, nor about describing how we can establish rules for using concepts; rather, the Cartesian inquiry is about the fundamental truth that is previously contained in the triangle: against Gassendi, Descartes maintains that a triangle with perfectly straight lines has never been presented to our senses, all we have seen in real triangular "material" objects are just irregular lines. Therefore, the historical method cannot provide us with the *truths* of geometry.³³

Instead of describing the cognitive process (or the history) for the formation of an idea or any rule at all, Descartes would warn us that these are only possible if we have in the intellect previously the true idea of the triangle. According to Descartes, geometric truths are of an epistemic and ontological level different from (and superior to) the sense data. Without accessing this fundamental and innate level, the intellect could not recognize the invariable and eternal qualities of the triangle.³⁴ The consequence that Descartes draws from this is that "in truth, we could never know the geometric triangle starting from the one that we see traced on a piece of paper, if our spirit did not already possess this idea".³⁵

While the consequence that Gassendi obtains from this discussion is that, certainly, reasoning depends on sensory first data for performing its more complex functions; hence, in the naturalistic description of mental contents, it is impossible to discard the mind's previous contents. For Gassendi, the alleged truth *per se* of innate ideas

³¹ Cf., Maria Seidl, "Mathematische Begriffe", in her *Pierre Gassendi...*, pp. 176-185.

³² Vide, Olivier R. Bloch, *La philosophie de Gassendi*, pp. 121-133; as well as Samuel Herrera and L. Toledo, "Crítica y reforma del conocimiento según la filosofía natural de Pierre Gassendi", pp. 269-275.

³³ AT VII, 382; R. Descartes, *op. cit.*, p. 300.

³⁴ Cf. A. Velázquez: "La naturaleza de las entidades matemáticas. Gassendi y Mersenne: objetores de Descartes", pp. 120-124.

³⁵ AT VII, 382; R. Descartes, *op. cit.*, p. 300.

is always explainable in terms of a constructed rule. The opposition between the two thinkers could not be greater.

Final remarks

We have pointed out that, in terms of its structure and development, the Cartesian *Meditations* inaugurates a new form of philosophical criticism, where disputes and intellectual dialogues occur in the present, between philosophical projects of reform and/or aims of foundation for the New Science. In this way, the novelty of the Scientific Revolution does not only refer to its contents, and methods: it includes also the idea that mutual disagreements can be rationally evaluated, it appeals to the debate of the arguments instead of relying on authorities. So, not only do we share a world to unravel, but we also share the intellectual resources through which we can carry out this task, as long as we are provided with a method that supposes a collective enterprise.

We have reviewed the theoretical principles as well as some argumentative strategies of Descartes' two objectors, Mersenne and Gassendi; we also have shown their common assumptions and their specific differences in their respective critiques. Besides, it is important to observe to what extent these philosophical projects differ, and how the theoretical frameworks they adopted determined the type of rebuttals they made against the Cartesian project. We think that this study allows us to place the *Meditations* in a more fruitful intellectual context than it might appear at first glance. Undoubtedly, Descartes, Mersenne, and Gassendi were central characters in the construction of the New Science, yet their controversies allow us to appreciate more deeply the heterogeneous roots of philosophical modernity.³⁶ We also have seen, in this case, the difficulties of the encounter (and the opposition) between dissimilar projects of knowledge that came from different conceptual routes, giving rise to either a naturalistic path focused on the intellectual-cognitive operations, or the innate path, centered on the recognition of mental structures and their potential as support for immovable truths.

³⁶ For a general assessment of the Gassendian views, see L. Toledo's discussion in "Pierre Gassendi y la transformación de la filosofía natural en la modernidad temprana". For Mersenne's case, we refer to A. Velázquez' "Marin Mersenne, crítico del sustancialismo".

However, despite these differences, these three authors shared basic aims that place them as central philosophers of the Scientific Revolution, and as critical contributors in the discourse of knowledge in Modern philosophy.

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