



## The Role of Sensory Experience in Descartes' Method

Miguel Vásquez<sup>1</sup>

**Abstract.** This article seeks to show that the role of experience in Descartes' philosophy cannot be considered independently of his claims on pure intellectual knowledge. First, as a brief introduction, some passages of Descartes' works, which highlight the importance of experimentation, will be reviewed. Then, the role of 'common experience' and sensation in Cartesian scientific explanation is shown. Finally, an explanation about the relationship between experience and reason will provide a general view on Descartes' scientific explanation.

**Keywords:** Knowledge; science; Descartes; hypothesis; explanation; experience; phenomena; perception; sensation.

### [es] El papel de la experiencia sensible en el método cartesiano

**Resumen.** El presente artículo busca mostrar que el rol de la experiencia sensible en la filosofía de Descartes no puede ser comprendido al margen de sus afirmaciones en torno al conocimiento puramente intelectual. En tal sentido, enmarcados en este propósito, se analizan primeramente, a manera de introducción, algunos pasajes de la filosofía de Descartes en los cuales éste resalta la importancia de la experimentación en su propuesta. Posteriormente se busca mostrar el papel que Descartes le asigna a las llamadas 'experiencias comunes' y a la sensación dentro de la explicación científica. Finalmente, se ofrece una explicación acerca de cómo se relacionarían experiencia y razón en la filosofía del autor a fin de apreciar de forma general en qué consistiría su modelo explicación científica.

**Palabras clave:** Conocimiento; ciencia; Descartes; hipótesis; explicación; experiencia; fenómeno; percepción; sensación.

**Sumario.** I. The role of experimentation in Cartesian philosophy. II. Common experience and sensation. III. Relation between reason and experience in Descartes' philosophy of science. IV. Is Descartes' scientific explanation circular? VI. Conclusion.

**Cómo citar:** Miguel Vásquez (2017): "The Role of Sensory Experience in Descartes' Method", en *Anales del Seminario de Historia de la Filosofía* 34 (3), 611-622.

### I. The role of experimentation in Cartesian philosophy

Most readers can easily recognize the main features of Descartes' metaphysics, but the confrontation of his most known doctrines with the role of experience in his

<sup>1</sup> Miguel Vásquez Rivero. Departamento de Filosofía Teorética. Escuela de Filosofía. Facultad de Humanidades y Educación  
Universidad Central de Venezuela  
miguelv@gmail.com  
Orcid.org: 0000-0002-8909-8694

conception of science is rarely undertaken and, by all means, it is not part of the traditional view of his thoughts. In fact, Descartes' works, such as the *Principles*, the *Discourse* or the *Dioptric*, are filled with references about the role of experience in natural science. However, the author does not give a full explanation concerning how experience and 'clear and distinct' perceptions are related. With respect to this relation, Clarke says that Descartes' effort is mainly focused in supporting the idea that science requires another kind of certainties different from those that metaphysics can offer<sup>2</sup>. Moreover, Clarke also draws attention to the fact that regarding Descartes' interest in natural philosophy his works are mainly concerned with experience.

Hence, the role of experimentation in Descartes' philosophy is mainly analyzed in the sixth part of the *Discourse*<sup>3</sup> and characterized as an important resource in scientific explanation in some paragraphs of the *Principles*<sup>4</sup>. In those works, the author regards the importance of experimentation in natural philosophy in order to have a proper idea about phenomena<sup>5</sup>. According to this, Clarke remarks: "we cannot expect the same kind of demonstration in physics as in pure mathematics, and we will have to settle for something else"<sup>6</sup>. Hatfield backed Clarke's observation saying that Descartes considers "lowered certainty"<sup>7</sup> in his natural philosophy. Laws of nature (remarked in *Le Monde*<sup>8</sup> and the second part of the *Principles*<sup>9</sup>) should be related to experiments based in common experience mainly qualified as merely probable.

Regarding Descartes' claim of including experiments in his philosophy, Garber says:

It is generally recognized that knowledge for Descartes is the clear and distinct perception of propositions by the intellect; knowledge in the strictest sense is certain, indeed indubitable, and grounded in the purely rational apprehension of truth. But it is also generally recognized that Descartes was a serious experimenter, at least in his biology and optics, and that in these areas, at least, he seemed to hold that knowledge requires an appeal to experience and experiment<sup>10</sup>.

<sup>2</sup> See Clarke, D. "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by Cottingham, J. New York: Cambridge University Press, 1992, p. 263.

<sup>3</sup> CSM I: 143-144; AT VI: 63-65. References for Descartes works are abbreviated as follows: 'CSM' stands for Cottingham, J.; Stoothoff, R.; Murdoch, D. (eds.), *The Philosophical Writings of Descartes*, 2 vols. (Cambridge University Press, 1985). 'CSKM' stands for Volume three of the preceding, by the same translators and Anthony Kenny, Cambridge: Cambridge University Press, 1991). Roman numeral refers to volume and Arabic for page (e.g., 'CSM I: 143' refers to volume I, page 143). 'AT' stands for Adam, C and Tannery, P. (eds.), *Ouvres de Descartes*, revised ed., 12 vols. (Paris: Vrin/CNRS, 1964-76). Roman numeral refers to volume and Arabic for page (e.g., 'AT VI: 63' refers to volume VI, page 63). The titles of Descartes' works are abbreviated as follows: '*Discourse*' for *The Discourse of Method*, '*Principles*' for *Principles of Philosophy*, and '*Meditations*' for *Meditations on First Philosophy* (e.g., '*Principles* III: 46' refers to article 46 of the third part of the *Principles*).

<sup>4</sup> CSM I: 187-189, 256; AT IX B: 16-20, 101.

<sup>5</sup> CSM I: 189-190; AT IX B: 20.

<sup>6</sup> Clarke, D. "Descartes' philosophy of science and the scientific revolution", *Op. Cit.*, p.282

<sup>7</sup> Hatfield, G. "Science, Certainty, and Descartes" in *Proceedings of the Biennial Meeting of the Philosophy of Science Association*, Vol.1988, Volume Two: Symposia and Invited Papers (1988), p.250

<sup>8</sup> CSM I: 92-97; AT XI: 36-48.

<sup>9</sup> CSM I: 240-243; AT VIII A: 62-66 (*Principles* II: 37, 39, 40, 41, 42).

<sup>10</sup> Garber, D. *Descartes Embodied*, New York: Cambridge University Press 2001, p. 85.

In spite of Descartes' search of clear and distinct perceptions, the author is also interested in developing experiments to prove hypotheses related to particular phenomena. In this sense, Garber and the majority of contemporary readers concur that Descartes' philosophy is not confined on itself, instead is open to the development of experiments in order to have an adequate idea about physics, dioptric and even medicine. In this regard, Garber comments that:

To the twentieth-century philosophers this looks a bit puzzling: How can Descartes be both a rationalist, who sees knowledge as deriving from the intellect, and an experimentalist, who sees experiment and observation as essential to the enterprise of knowledge?<sup>11</sup>

According to the puzzle that Garber mentions, Descartes is also interested in acquiring intellectual contents as well as experimental knowledge. Thus, experiments are designed to describe a particular mechanism in physics, while intellectual contents set the foundations of his natural philosophy. Likewise, according to Garber's view, to qualify Descartes' philosophy as rationalist, or even as *aprioristic*, will exacerbate the ambivalence between intellectual and experimental knowledge, and so will not depict Descartes' interest in experience. According to this, the term rationalist cannot describe Descartes' science, because, in spite of being based on clear and distinct perceptions, it is developed by using hypotheses to be confirmed experimentally<sup>12</sup>.

## II. Common experience and sensation

Descartes' scientific explanation attempts to explain physical phenomena in their most general form, according to natural laws previously conceived by the intellect<sup>13</sup>. According to this, experience is responsible to grasp specific details of phenomena, which are covered by general laws. That is, experience, guided by those laws, will lead us in developing further experiments. So, experiments should be designed and developed considering a wide range of common and simple experiences, as Descartes states in the sixth part of the *Discourse*<sup>14</sup>.

Hence, Descartes' natural science spreads according to different kinds of certainties (moral and 'clear and distinct'); and, in doing so, the author shows that science

<sup>11</sup> *Ibid.*

<sup>12</sup> Williams in *Descartes: The project of Pure Enquiry*, New York: Routledge, 2005 (first published in 1978) regarded the ambivalence between reason and experience in Cartesian philosophy, pointed out by Garber paragraphs above saying that "Those who know Descartes only from the *Discourse* may have felt some surprise when after what at least seem like very extensive claims for the power of human reason to know the world around us, he makes in the sixth section an appeal for funds to support experiments or guided observations, and moreover gives a justification of their necessity in terms of the very richness and fruitfulness of his explanatory principles, something which without further interpretation seems scarcely to make sense". Williams, B. *Descartes: The project of Pure Enquiry*, New York: Routledge, 2005, p. 242. The 'additional explanation' that Williams claims could solve the puzzle mentioned by Garber in which intellect has to face the challenge of relating clear and distinct perceptions (perceived by any intervention of experience), with 'sensitive experience knowledge' grasped by the intervention of the body.

<sup>13</sup> CSM I: 240-243; AT VIII A: 62-66 (*Principles* II: 37, 39, 40, 41, 42).

<sup>14</sup> See CSM I: 143; AT VI: 63.

should work considering principled knowledge, as well as probabilistic knowledge (which is, at the end, the main feature of moral certainties). From common experience, intellect cannot grasp indubitable knowledge, but only probable certainty.

Thus, Descartes clearly attempts to show that science cannot be developed using intellectual certainties only; probable and hypothetical reasoning (called moral) is also needed in natural science. According to Clarke's view, Descartes attempts to introduce a new perspective in natural science, opposed to the scholastic standpoint<sup>15</sup>.

In this regard, considering Descartes' view about the role of common experience relative to experimentation in natural science, Williams points that:

Descartes emphasizes, correctly, that experiments are use unless one has some insight into the nature of the problem (...). More elaborate and refined experiment can be actually misleading unless one has the right idea in the first place. One should start with common observation and reflection: experiments are both more necessary, and safer, the further on one is<sup>16</sup>.

However, despite Williams' attempt to clarify Descartes' view about the relation between common experience and experimentation, Descartes insists in the idea that experience cannot show anything, but features of *res extensa* previously described by intellect. In other words, Descartes says that intellect can only have a general idea about the whole nature using clear and distinct perceptions solely.

Accordingly, experience seems to be ambivalent because, on the one hand, Descartes is claiming for experiments in order to explain natural phenomena and, on the other, he remarks that, before experiments and its hypothetical assumptions, intellect can have a general idea about nature as a whole (considering clear and distinct perceptions related to attributes and modes of *res extensa*). In this regard, how can experience be associated with intellectual certainties? Before answering this question, it must be taken in to account that Descartes' conception of experience is based on the idea that intellect uses the body to know the features of matter. So, it can be said that, ultimately, experience is based on Descartes' concept of sensation. In order to answer the question, it will be necessary to focus on Descartes' concept of sensation, developed mostly in the sixth replies to the *Meditations*. There, Descartes distinguishes three different grades of certainties related to sensation<sup>17</sup>: (1) sensation as a capacity to affect our body; (2) sensation as a singular and differentiable mean (such as pain, hunger or any other) that makes reference to the union between mind and body; and (3), sensation as the object of the judgments done by intellect referring to what the senses perceived.

Regarding the third grade of sensation, Simmons<sup>18</sup> introduces a distinction between 'projective judgments' and 'constructive judgments', where the former "are those by which Descartes maintains that we "refer" our sensations to the world or judge that there is something in the world that "resembles" or "conforms to" our

<sup>15</sup> See Clarke, D. "Descartes' philosophy of science and the scientific revolution", *Op. Cit.*, p.275.

<sup>16</sup> Williams, B. *Descartes: The project of Pure Enquiry*, New York: Routledge 2005, pp.248-249

<sup>17</sup> CSM II: 294, 295; AT VII: 436-438.

<sup>18</sup> See Simmons, A. "Descartes on the Cognitive Structure of Sensory Experience" in the *Philosophy and Phenomenological Research*, Vol. LXVII, No. 3. November 2003, pp. 549-579

sensations”<sup>19</sup> and the latter are those that “help to construct of the phenomenological representation of particular qualities in the first place”<sup>20</sup>. In this sense, Simmons says, “Descartes attributes third-grade judgments to the intellect, with the consequence that our overall sensory experience involves the joint efforts of sense and intellect”<sup>21</sup>.

According to this, common experience implies these different grades of sensations. Hence, common experience, founded in sensations, presupposes (1) that human body is affected by something (2) this affection produces a passion and then, (3) judgments based in that specific passion appears in order to offer an explanation about the cause of that affection. As it was mentioned above, Simmons states that those judgments can be classified as projective and constructive; the former is focused in showing possible similarities between affections and their causes, and the latter is focused in describing representations produced by intellect from those causes. In this sense, the grade of certainty reached by common experience is moral or even less, merely hypothetical.

Thus, the idea that laws of physics rules the world should be related with the idea that sensitive knowledge cannot be considered as always being false. Moral certainty, based on common experience, assumes an order in physics, which emerges from inductive reasoning. This order (later reviewed by intellect) should be considered the starting point of further experiments based in ordinary observations. According to this, common experience supposes (a) the idea that intellect is able to receive information about facts; and (b) the ability to judge about those facts. Thus, experiments should be based on common experience; otherwise, they cannot lead to an accurate explanation about phenomena. For those reasons, it can be said that knowledge by effects<sup>22</sup> is based in common experience, i.e., in sensation.

However, in spite of the effort of showing the relationship between Descartes’ common experience and his notion of sensation (reviewed in the *Sixth Replies*), Simmons’ distinction between projective and constructive judgments deserves further analysis that cannot be fairly dealt with in this essay. Nevertheless, the distinction between these types of judgment allows us to understand the third grade of certainty implied in common experience.

### III. Relation between reason and experience in Descartes’ philosophy of science

In the sixth part of the *Discourse*, Descartes summarizes his view about scientific reasoning saying that:

First I tried to discover in general the principles of first causes of everything that exists or can exist in the world. To this end I considered nothing but God alone, who created the world; and I derive these principles only from certain seeds of truth which are naturally in our souls. Next I examine the first and the most ordinary effects deducible from these causes. In this way, it seems to me, I discovered

<sup>19</sup> Simmons, A. “Descartes on the Cognitive Structure of Sensory Experience”, *Op. Cit.*, p.553

<sup>20</sup> *Ibid.* 554

<sup>21</sup> *Ibid.*

<sup>22</sup> In this context, ‘knowledge by effects’ is synonymous of ‘knowledge by empirical observation’ as Descartes states in the *Discourse*. CSM I: 144; AT VI: 64.

the heavens, the stars, and the earth; and, on the earth, water, air, fire, minerals, and other such things which, being the most common of all and the simplest, are consequently the easiest to know<sup>23</sup>.

The first part of the passage is mainly focused on justifying an aprioristic model of science grounded in intellect perceptions. That is, a model that explains phenomena, starting with clear and distinct perception and finishing with a general description about phenomena, based only on intellectual considerations. On the contrary, the second part states that particular phenomena are knowable by means of intellect perceptions. In this sense, Descartes sets the idea that intellect knows the effects from their causes only (regardless of its relation with experience), meaning that his view can be categorized as deductive. According to this, intellect knows natural phenomena through the laws of physics, previously grasped by intellect. This way of reasoning, featured by Clarke as aprioristic<sup>24</sup>, is mainly focused in showing that natural science cannot be developed regardless of clear and distinct perceptions. According to that view, Descartes seems to be convinced that natural science cannot be based in observation or experimentation only. In contrast, Descartes additionally says, in the sixth part of the *Discourse*, “Consequently I thought the only way of making these bodies useful to us was to progress to the causes by way of the effects and to make use of many special observations”<sup>25</sup>; this means that particular features of natural phenomena can be described considering experimentation; that is, considering experience.

Thus, Descartes’ view shows that, on the one hand, scientific knowledge should be grounded in principles previously perceived by intellect and, on the other hand, that scientific knowledge cannot avoid common experience knowledge. According to this, Clarke (1982, 1992), Garber (2001) and Williams (2005) agree with the thesis that Descartes is convinced that the role of experience in natural science is critical.

Despite the fact that laws of physics explain every natural phenomenon from a general standpoint, these commentators accept the idea that Descartes is convinced that experiments can be useful in order to explain particularities of natural phenomena or even to confirm scientific hypotheses. According to this, Descartes’ natural science attempts to combine an aprioristic view (mostly based in merely intellectual perceptions) with experimental observations (based on common experiences). For this reason in the sixth part of the *Discourse*, Descartes says:

Reviewing in my mind all the objects that have ever been present to my senses, I venture to say that I have never noticed anything in them which I could not explain quite easily by the principles I had discovered. But I must also admit that the power of nature is so ample and so vast, and these principles so simple and so general, that I noticed hardly any particular effect of which I do not know at once that I can deduce from the principles in many different ways; and my greatest difficulty is usually to discover in which of these ways it depended of them. I know no other

<sup>23</sup> CSM I: 143,144; AT VI: 63, 64.

<sup>24</sup> See Clarke, D. *Descartes’ Philosophy of science, Op. Cit.*, p.8

<sup>25</sup> CSM I: 144; AT VI: 64.



means to discover this than by seeking further observations whose outcomes vary according to which of these ways provides the correct explanation<sup>26</sup>.

Descartes insists in the idea that his conception of science is not divorced from experience. Moreover, as the author suggests: in order to know the way in which principles can be related with particular phenomena, specific explanations (grounded in experience) are needed. Thus, before proving a hypothesis, several hypotheses that aim to explain a particular phenomenon should be considered as possible. In this sense, the paragraph quoted above remarks the need of hypothesis in the natural science, which add a new reason to support the idea that the role of experience in Descartes' scientific reasoning is not secondary, it is rather essential, as it was mentioned paragraphs above. Hence, considering the amount of phenomena (as Descartes stated before), experimentation will be the only way to know the correct explanation about given natural phenomenon. In this sense, before proving which hypotheses fit into the laws of physics, several of them should be taken as valid in natural philosophy.

Clarke says that natural science should be based in common experience. Thus, experiments must be developed in order to choose among different possibilities<sup>27</sup>. In this sense, experimentation can be featured as a complementary stage in Descartes' natural philosophy, which fixes confrontations between rival hypotheses, comparing experimental results with general considerations about phenomena (such as the laws of physic), previously perceived by intellect.

The discussion between rival hypotheses arises when experience is considered as a proper way to reach an explanation about given phenomenon; that is, when the idea that Descartes' natural philosophy is aprioristic is rejected. Different solutions to a given problem in natural philosophy can be considered possible, whereas their relationship with metaphysical certainties, expressed through laws of physics, has not been proven yet.

Nevertheless, despite Descartes' effort to support the idea that experimentation is necessary in natural philosophy, We must agree with Hatfield in saying that it is difficult to admit that Descartes' philosophy can be seen as empiricist<sup>28</sup>. Even Garber admits this difficulty when he states that "when the extent of Descartes' dependence on experiment and observation is recognized, there is a temptation simple to think that Descartes must have been placed in the wrong slot, and conclude that he must really be some sort of empiricist"<sup>29</sup>.

In this sense, despite of the experiments' success, the role of intellectual perception cannot be avoided in Descartes' physics, because experience is not able to judge, it can only perceive through senses; intellect decides ultimately between rival hypotheses. According to this, Descartes' natural philosophy starts with merely intellectual perceptions, and ends regarding experimental observations that fit with the former. Therefore, according to Descartes' natural philosophy, to know the truth relies on the possibility of matching empirical certainties (also called 'moral') that arise from experiments with merely intellectual contents. The role of hypothesis in Cartesian natural philosophy reveals the meaning of the phrase 'to explain the caus-

<sup>26</sup> CSM I: 144; AT VI: 64, 65.

<sup>27</sup> See Clarke, D. *Descartes' Philosophy of science. Op. Cit.*, p.189

<sup>28</sup> Hatfield, G. "Science, Certainty, and Descartes", *Op. Cit.*, p. 249

<sup>29</sup> Garber, D. *Descartes Embodied, Op. Cit.*, p.110

es from their effects'; which means to show empirical implications of intellectual perceptions. *Explaining the causes from their effects* means to develop experiments in order to know particular details about *res extensa* (e.g., to know *what the distribution of motions in the world actually is*<sup>30</sup>). Furthermore, in the second part of the *Principles*, Descartes regards the role of experience in natural science by saying that:

The principles which we have so far discovered are so vast and so fertile, that their consequences are far more numerous than the entire observed contents of the visible world; indeed, they are so numerous that we could never—in a lifetime—make a complete survey of them in our thought. But I shall now put forward for scrutiny a brief account of the principal phenomena of nature whose causes we must now examine. Our purpose is not to use these phenomena as the basis for proving anything, for we aim to deduce an account of effects from their causes, not to deduce an account of causes from their effects. The intention is simply to direct our mind to a consideration of some effects rather than others from among the countless effects which we take to be producible from the selfsame cause<sup>31</sup>.

To *explain causes from their effects* does not mean that those causes (laws of physics and its metaphysical implications) can be rejected from experience alone; since those causes are perceived as clear and distinct by intellect, they cannot be considered as being false. Hence, to explain a cause from its effects consist in determining, within a wide range of possibilities, which is the experience that expresses accurately what physical principles show. This determination cannot be done following aprioristic considerations only, but by considering sensitive experience, i.e., the results of experimentation. Additionally, in order to explain the implications of the term *deduce*, used by Descartes in the quotation above, Williams says:

It is important to see here that to 'deduce' an effect from the laws of nature does not mean to arrive at a statement of that effect from the laws of nature alone by purely logical reasoning (which is what the modern meaning of the word might lead one to expect) (...) What Descartes means here by 'deducing' an effect is the process of postulating a mechanism for it within the constraints set by the concepts and laws of his physical theory<sup>32</sup>.

According to Williams, Descartes is not trying to prove that experience opposes reason; on the contrary, experience cannot surpass reason. Descartes openly insists in that the idea that knowledge derives from experience is essential to natural philosophy, because their principles cannot be threatened in any way. Moreover, Clarke assets that Descartes' natural science was developed regarding two different kinds of certainties: moral, and 'clear and distinct'. The aim of the former will be to decide between opposite hypothesis regarding experiment's results, and the aim of the latter

<sup>30</sup> Williams, B. *Descartes: The project of Pure Enquiry, Op. Cit.*, p. 256

<sup>31</sup> CSM I: 249; AT VIII A: 82 (*Principles* III: 4).

<sup>32</sup> Williams, B. *Descartes: The project of Pure Enquiry, Op. Cit.*, 249



will be to reach an intellectual view about reality as a whole. Moreover, Clarke states that:

The relevant point here is that, having decided which variables to attribute to matter, we cannot determine by similar arguments the values of these variables; we cannot decide a priori the number, size, or speed of the various small parts of matter which underpin the whole edifice of Cartesian physics. (That means, appeal to another mean as sensibility is required to grasp the value of matter)<sup>33</sup>.

In relation to this, in paragraph 46 of the third part of the *Principles*, Descartes expresses the need of developing experiments (i.e., explain causes from their effects) by saying:

We cannot determine by reason alone how big these pieces of matter are, or how fast their move, or what kinds of circle they describe. Since there are countless different configurations which God may have instituted here, experience alone must teach us which configuration he actually selected in preference to the rest. We are thus free to make any assumption on these matters with the sole proviso that all the consequences of our assumption must agree with our experience<sup>34</sup>.

In his works, Descartes does not mention experience in order to complement his scientific research in natural philosophy; he mentions it to show that natural philosophy must always consider probabilistic knowledge. In this sense, according to Descartes' view, to reach an adequate and accurate explanation about natural phenomena, appealing to reason only, is simply impossible.

Thus, Descartes asserts that causes explain natural phenomena from a general point of view regarding indubitable truths, and that effects explain natural phenomena from a particular point of view regarding moral certainties. So, to *explain causes from their effects* means that a general standpoint, established by laws of physics (perceived regardless experience), can be described as appealing to experiments grounded in common experience. Hence, Descartes suggests, in the *Principles*, that explanations about particular phenomena must be developed in order to describe what the implications of these laws are in the different areas of natural science (such as geology, astronomy and even medicine).

In this regard, scientific explanation in Descartes' philosophy cannot be featured as aprioristic, at least in a strong way. This view is supported by the role of experimentation and hypothesis in his natural philosophy. According to Descartes, previous knowledge about the causes of phenomena are needed in order to have an idea about how the world is ordered, but hypothesis and experiments are also needed in order to know which specific effects can be deduced from those causes.

Nevertheless, despite of his interest to settle natural science in intellectual perceptions, and his effort for include experience in natural philosophy; the question about how those different types of explanations (from the causes to their effects, and from

<sup>33</sup> Clarke, D. "Descartes' philosophy of science and the scientific revolution", *Op. Cit.*, p.263.

<sup>34</sup> CSM I: 100,101; AT VIII A: 256, 257 (*Principles* III: 46).

the effects to their causes) can be related still remains. Now, we must attend to how these two sorts of explanation can be related.

#### IV. Is Descartes' scientific explanation circular?

According to what has been explained in the paragraphs above, it seems that Descartes is accepting that both types of explanation, *from the causes to the effects* and *from the effects to the causes*, are possible. However, Jean Baptiste Morin, the mathematician and famous critic of Descartes, argued that this idea is contradictory. Objection to which Descartes replies by saying that:

You say also that there is a vicious circle in proving effects from a cause, and then proving the cause by the same effects. I agree: but I do not agree that it is a circular to explain effects by a cause, and then prove the cause by the effects; because there is a big difference between proving an explaining. I should add that the word 'demonstrate' can be used to signify either, if it is used according to common usage and not in the technical philosophical sense. I should add also that there is nothing circular in proving a cause by several effects which are independently known, and then proving certain other effects from this cause<sup>35</sup>.

In order to argue against Morin's objection, Descartes introduces a distinction between 'proving' and 'explaining'. Descartes says that 'to demonstrate' could either mean 'to prove' or 'to explain', depending on the context in which the term 'demonstrate' is used. The objection of circularity arises when 'demonstration' is considered a synonymous of 'proving', when it must mean 'explaining', or when 'demonstration' is considered a synonymous of 'explaining', when it must mean 'proving'. In this sense, Descartes accepts that maybe he is responsible for that confusion, because he does not warn his reader about the ambivalence of the term 'demonstration.'

Based on the assumption that, depending on the context, it is possible to demonstrate (in the sense of 'to explain') causes from their effects and demonstrate (in the sense of 'to prove') effects from their causes, Descartes says that "my last conclusions are demonstrated by the first, which are their causes, so the first may in turn be demonstrated from the last which are their effects"<sup>36</sup>. Incorporating Descartes' semantic distinction explicitly, the passage can be rephrased as follows: the last conclusions are *proven* by the first, which are their causes, and the first may be *explained* from the last, which are their effects. On the one hand, when Descartes attempts to demonstrate effects from their causes, the term 'demonstration' must be taken as synonymous of 'to prove.' In this sense, scientific explanation could be described as deductive, and the role of experience must be considered as complementary. On the other hand, when Descartes attempts to 'demonstrate' causes from their effects, the term 'demonstration' must be taken as synonymous of 'to explain'. This means that scientific explanation should be considered as hypothetical-deductive, rather than deductive, and, therefore, the role of experience should be considered as necessary.

<sup>35</sup> CSMK: 106; AT II: 197-198.

<sup>36</sup> *Ibid.*

Furthermore, Descartes states that “experience renders most of these effects quite certain and so the causes from which I deduce them serve *not so much to prove them as to explain them*— indeed it is the causes which are proved by the effects”<sup>37</sup>.

*To explain causes from their effects* does not mean that effects will prove causes, because, according to Descartes, experimental reasoning cannot reach clear and distinct perception. From this view, Descartes’ natural philosophy cannot be grounded in inductive reasoning, and the claim for including experience in scientific explanation is necessary to support the idea that natural philosophy must constantly decide among various hypotheses. This must be taken in to account, considering weak certainties, given that causes (grounded in clear and distinct certainties) only explain natural phenomena from a general point of view.

In the letter quoted above, Descartes rejects Morin’s objection of circularity on the basis of distinguishing the words ‘proving’ and ‘explaining’. Descartes is also convinced that natural philosophy has to face the challenge of proving hypotheses regarding experiments and matching the results of those experiments with physical laws. In this sense, based on the idea of *explaining causes from their effects*, Clarke says that rather than formulating different possible explanations, a proper scientific explanation must be able to show the specific mechanism that displays how a given effect can be deduced from a specific cause<sup>38</sup>.

Therefore, Descartes scientific explanation implies two different kinds of explanation working simultaneously. In both cases, the connection between experience and merely intellectual perceptions is necessary. Reducing Descartes’ scientific explanation to the radical ‘apriorism’ developed in the First and Second Meditation (or even in the fourth part of the *Discourse*) is inaccurate and ultimately inconsistent with Descartes scientific goal: to explain particular phenomena. Nonetheless, it would also be inadequate to describe Descartes’ natural philosophy as merely empirical, in spite of Descartes’ avowed interest in experimentation. Maybe Clarke is right in saying that Descartes is trying to justify that probabilistic reasoning is necessary, in order to develop his physics. However, his effort to read Descartes as being an empiricist<sup>39</sup> is far from convincing contemporary readers that Descartes is focused in founding science in non-intellectual perceptions. To analyze Descartes’ scientific explanation and his natural philosophy, following a hypothetical-deductive methodology, is arguably the only way to find a balance between intellectual and experimental explanations.

## VI. Conclusion

The term ‘experience’ in Descartes’ philosophy is mostly used to explain the role of experimentation and common experience in natural philosophy. In early works, such as the *Regulae*, Descartes is interested in discovering the truth regardless from experience, but, as we have seen, it is impossible to remove experience from Descartes’ main concerns in his mature works. However, after the sixth part of the *Discourse*, his interest in experience results from his concern about experiments and scientific

<sup>37</sup> *Ibid.*

<sup>38</sup> Clarke, D. *Descartes’ Philosophy of science, Op. Cit.*, p.113.

<sup>39</sup> *Ibid.*, p.2

explanation. Hence, the analysis proposed here was focused in showing the role of experience in Descartes philosophy, starting from the *Discourse* and finishing with the *Principles*. Thus, it is impossible to remove experience from Descartes' main concerns, at least in his mature works.

Considering Descartes' reply to Morin in particular, it can be said that Descartes is trying to combine hypothetical-deductive reasoning with merely deductive considerations regarding experiment results. However, Descartes does not explain how deductive reasoning (developed regardless experience) can be related to hypothetical reasoning (based on experimental observations). Clarke says that, despite of several similarities with the scholastic view (such as his agreement with the role of common experience in natural science), Descartes' standpoint is oriented towards justifying probabilistic, non-metaphysical, reasoning in natural philosophy<sup>40</sup>. We can agree with Clarke up to this point, but that does not force us to follow him in his attempt, inspired by Laporte<sup>41</sup>, to qualify Descartes's reasoning as inductive; given that Descartes does not move away from his intellectual claims, even in physics. So, it seems preferable to locate Descartes' natural philosophy as a transition from a scholastic standpoint to a probabilistic-based point of view. For this reason, to characterize Descartes' philosophy as rationalist or empiricist, based on the importance of intellectual perception and experience, can be inaccurate and even misleading. Thus, the use of these terms (commonly used to describe not only Descartes' philosophy but also early modern Western philosophy) will be useful in order to show the problematic relationship between experience and reason in Descartes' works.

## BIBLIOGRAPHY

- ADAM, C., TANNERY, P. (eds.), *Ouvres de Descartes*, revised ed., 12 vols. Paris: Vrin/CNRS, 1964-76.
- CLARKE, D. (1992), 'Descartes' philosophy of science and the scientific revolution', in J. Cottingham (ed.), *The Cambridge Companion to Descartes* (New York: Cambridge University Press).
- CLARKE, D. (1982), *Descartes' Philosophy of science* (Manchester: Manchester University Press).
- COTTINGHAM, J.; STOOHOFF, R.; MURDOCH, D. (eds.), *The Philosophical Writings of Descartes*, 2 vols. (Cambridge University Press, 1985); Volume three of the preceding, by the same translators and Anthony Kenny (Cambridge University Press, 1991).
- GARBER, D. (2001), *Descartes Embodied* (New York: Cambridge University Press).
- HATFIELD, G. (1988), 'Science, Certainty, and Descartes', *Proceedings of the Biennial Meeting of the Philosophy of Science Association*, Vol. 1988, Volume Two: Symposia and Invited Papers, pp. 249-262.
- SIMMONS, A. (2003), 'Descartes on the Cognitive Structure of Sensory Experience', *Philosophy and Phenomenological Research*, Vol. 67, No. 3, pp. 549-579.
- WILLIAMS, B. (2005), *Descartes: The project of Pure Enquiry* (New York: Routledge).

<sup>40</sup> Clarke, D. "Descartes' philosophy of science and the scientific revolution", *Op. Cit.*, p.279

<sup>41</sup> Clarke, D. *Descartes' Philosophy of science*, *Op. Cit.*, p.2