The Role of Sensory Experience in Descartes' Method[1]**.**

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I. -Introduction

The majority of 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 conception of science is rarely undertaken, and by all means it is not part of the general receive view on his thoughts. In fact, Descartes' works, such as the *Principles*, the *Discourse* or the *Dioptric*, are plenty of reference about the role of experience in natural science. However, the author does not give a full explanation about how experience and clear and distinct perceptions are related. In this sense, regarding the problem of this relation, Clarke says that Descartes' effort is mainly focused in support the idea that science requires another kind of certainties different from those that metaphysics can offer[3]. Moreover, Garber draws attention to the fact that Cartesian philosophy is not incidentally concerned about experience[4] but it is just one of his main concerns.

In this essay I shall argue that the role of experience in Descartes' philosophy cannot be considered independently of his claims of pure intellectual knowledge. I will begin reviewing some passages of Descartes' works in which the importance of experimentation is highlighted. Secondly, I will briefly analyze the role of common experience in scientific explanation as well as the relationship between experience and reason.

II. – The role of experimentation in Cartesian philosophy

The role of experimentation in Descartes' philosophy is mainly analyzed in the sixth part of the *Discourse*[5] and characterized as an important resource in

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[3] See Desmond Clarke "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by John Cottingham, (New York: Cambridge University Press 1992) 263

[4] Daniel, Garber, *Descartes Embodied*, (New York: Cambridge University Press 2001) 110

[5] AT VI 63- 65. References for Descartes works are abbreviated as follows: 'CSM' stands for *The Philosophical Writings of Descartes*, vols. 1-2. Trans. J. Cottingham, R. Stoothoff, and D. Murdoch (Cambridge: Cambridge University Press, 1985). 'CSMK' stands for *The Philosophical Writings of Descartes*, vol, 3, trans. J. Cottingham, R. Stoothhoff, D. Murdoch, and A. Kenny (Cambridge: Cambridge University Press, 1991). 'AT' stands for Adam and Tannery's edition of Descarte's Works (Paris: Vrin / C.N.R.S., 1964-76) Roman numeral refers to volume and Arabic for page. When I refer to the *Principles of Philosophy*, I shall sometimes give part and article number. Thus '*Principles* III: 46' refers to article 46 of the third part of the *Principles*. The titles of Descartes'

scientific explanation in some paragraph of the *Principles*[6]. In those works the author regards the importance of experimentation in natural philosophy in order to have a proper idea about phenomena[7]. 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" [8]. Hatfield backed Clarke's observation saying that Descartes considers "lowered certainty"[9] in his natural philosophy. In this regard, laws of nature (remarked in *Le Monde*[10] and the second part of the *Principles*[11]) should be related to experiments based in common experience mainly qualified as merely probable.

In this sense, 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[12].

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

> 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

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works are abbreviated as follows: *Discourse* for *The Discourse of Method*, *Principles* for *Principles of Philosophy* and *Meditations* for Meditations of *First Philosophy*.

[6] CSM I, 187-189, 256; AT IX B 16-20, 101

[7] CSM I, 189-190; AT IX B 20

[8] Desmond Clarke, "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by John Cottingham, (New York: Cambridge University Press 1992), 282

[9] Gary Hatfield "Science, Certainty, and Descartes" in *Proceedings of the Biennal Meeting of the Philosophy of Science Association,* Vol.1988, Volume Two: Symposia and Invited Papers (1988), 250

[10] CSM I, 92-97; AT XI 36-48

[11] CSM I, 240-243; AT VIII A 62-66; *Principles* II: 37, 39, 40,41,42

[12] Daniel Garber, *Descartes Embodied* (New York: Cambridge Univesity Press 2001) 85

> experiment and observation as essential to the enterprise of knowledge?[13]

According to the puzzle mentioned above, Descartes is also interested in acquiring intellectual contents as well as vividly interested in experimental knowledge. Thus, experiments are designed to describe a particular mechanism in physics, while intellectual contents lie down of foundations of his natural philosophy. Likewise, according to Garber's view, to qualify Descartes' philosophy as rationalist, or even to characterize his philosophy 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 grounded in clear and distinct perceptions it is developed using hypotheses that are to be experimentally confirmed[14]

III. - Common experience and sensation.

Descartes' scientific explanation attempts to explain physical phenomena in their most general shape according to natural laws previously conceived by intellect[15]. According to this, experience is responsible of specifying phenomena which are covered by general laws. 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 regards in the sixth part of the *Discourse*[16].

Hence, Descartes' natural science develops regarding different kinds of certainties; (moral and clear and distinct), and doing so, the author shows that science should work considering principled as well as probabilistic knowledge (which is, at the end, the main feature of moral certainties). In this sense,

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[13]Garber (2001) 85

[14] In his 1978, Williams regarded the ambivalence between reason and experience in Cartesian philosophy (pointed out by Garber in his 2001) 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. (New York: Routledge 2005), 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 intervention of body. It is not our goal to solve this puzzle in this paper. However, I would like to discuss several difficulties related to the possibility of solving it.

[15]CSM I, 240-243; AT VIII A 62-66; *Principles* II: 37, 39, 40,41,42

[16] See CSM I, 143; AT VI 63

intellect cannot grasp undoubtable but probable knowledge from common experience.

Thus, Descartes clearly attempts to show that science cannot be developed using intellectual certainties only, because probable and hypothetical reasoning (also called moral) is needed in natural science as well as clear and distinct knowledge. In this sense, according to Clarke's view, Descartes attempts to introduce a new perspective in natural science opposed to scholastics standpoint[17].

In this regard, considering Descartes' view about the role of common experience in experimentation in natural science, Williams says 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[18].

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

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 experience can 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 characteristics of matter. So, it can be said that experience is based on Descartes' concept of sensation ultimately. In this regard, in order to answer the question pointed out above, it will be necessary to focus on Descartes'

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[17] See Desmond Clarke, "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by John Cottingham, (New York: Cambridge University Press 1992), 275

[18] Bernard Williams, *Descartes: The project of Pure Enquiry* (New York: Routledge 2005) 248,249

concept of sensation developed mostly in sixth replies to the *Meditations*. There, Descartes distinguishes three different grades of certainties related to sensation[19]: (1) sensation as a capacity to affect our body; (2) sensation as a particular and a differentiable mean such as pain, hungry (or any other) that make reference to the union between mind and body, and (3), sensation as the target of the judgments done by intellect in respect to what it was perceived previously by senses.

Regarding the third grade of sensation, Simmons [20] introduces a distinction between projective judgments and constructive judgments, saying that 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 sensations"[21] and the latter are those that "help to construct of the phenomenological representation of particular qualities in he first place"[22]. 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"[23].

According to this, common experience implies these different grades of sensations given that common experience presupposes (1) that human body is affected by something. In consequence (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 rule the world, should be related with he idea that sensitive knowledge cannot be considered as being always false. In this sense, moral certainty, based on common experience, assume an order in physics that emerges from inductive reasoning. This order (reviewed by intellect later) should be considered the starting point of further experiments based in ordinary observations. According to this, common experience supposes (1) the idea that intellect is able to receive information about facts and (2) the ability to judge about those facts. Thus, experiments should be based on common

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[19] CSM II, 294, 295; AT VII 436-438

[20] See Alison Simmons "Descartes on the Cognitive Structure of Sensory Experience" in the *Philosophy and Phenomenological Research*, Vol. LXVII, No. 3. November (2003)

[21] Simmons "Descartes on the Cognitive Structure of Sensory Experience", 553

[22] Simmons (2003) 554

[23] Simmons (2003) 554

experience; otherwise, they cannot lead to an accurate explanation about phenomena. For those reasons, it can be said that knowledge by effects[24] is based in common experience, that is, in sensation.

However, in spite of the effort of showing the relationship between Descartes' common experience and his notion of sensation (reviewed in *Sixth Replies)*, Simmons' distinction between projective and constructive judgments deserves further analysis that cannot be developed in the space allotted here. Nevertheless, the distinction pointed out by her between these judgments allows us to understand the third grade of certainty implied in common experience.

IV. - 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 create 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 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[25]

The first part of the quotation 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 effects from their causes only, (this is regardless its relation with experience), meaning that his view can be categorized as deductive. According to this, intellect knows natural phenomena through physic laws previously grasped by intellect. This way of reasoning, featured by Clarke as aprioristic[26], is mainly focused in showing that natural

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[24] 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

[25] CSM I, 143,144; AT VI, 63, 64.

[26] See Desmond Clarke, *Descartes' Philosophy of science* (Manchester: Manchester University Press, 1982) 8

science cannot be developed regardless 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;"[27] this means that particular features of natural phenomena can be described considering experimentation; that is, considering experience.

Thus, Descartes' view shows, on the one hand, that 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 in his (1982, 1992), Garber (2001) and Williams (2005) agree with the thesis that Descartes is convinced that the role of experience in natural science is crucial rather than non-essential.

In this regard, despite the fact that laws of physics explain every natural phenomena from a general standpoint, those commenters accept the idea that Descartes is convinced that experiments can be useful in order to explain particularities of natural phenomena or even to confirm hypothesis. 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 same 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 be 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 means to discover this than by seeking further observations whose outcomes vary according to which of these ways provides the correct explanation[28]

Descartes insists in the idea that his conception of science is not divorced of experience. Moreover, as the author mentioned before, in order to know the

[27] CSM I, 144; AT VI 64
[28] CSM I, 144; AT VI 64,65

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 hypotheses in natural science, which add a new reason to support the idea that the role of experience in Descartes' scientific reasoning is not secondary rather than crucial 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, natural philosophy should accept as valid different hypotheses before proving which of them fits into laws of physics.

Thus, regarding the role of hypothesis in Descartes' natural science, Clarke says that according to Descartes, natural science should be based in common experience but regarding further discussion between rival hypothesis. Therefore experiments must be developed in order to choose among different possibilities[29]

In this sense, experimentation can be featured as a complementary stage in Descartes' natural philosophy, which sorts out discussions among rival hypothesis, comparing experimental results with general considerations about phenomena (such as laws of physic) previously perceived by intellect.

In this regard, 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 yet been proved.

Nevertheless, despite of Descartes' effort to support the idea that experimentation in natural philosophy is necessary, I agree with Hatfield when he said that it is difficult to admit that Descartes' philosophy can be featured as empiricist[30]. Even Garber admits this difficult 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*[31].

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[29] See Desmond Clarke, *Descartes' Philosophy of science* (Manchester: Manchester University Press, 1982) 189

[30] Gary Hatfield "Science, Certainty, and Descartes" in *Proceedings of the Biennal Meeting of the Philosophy of Science Association,* Vol.1988, Volume Two: Symposia and Invited Papers (1988), 249

[31] Daniel Garber, *Descartes Embodied* (New York: Cambridge Univesity Press 2001)110

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 but perceive through senses only; 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 formers. Therefore, according to Descartes' natural philosophy, to know the truth relies on the possibility of matching empirical certainties (also called morals) that arise from experiments with merely intellectual contents. In this regard, role of hypotheses in Descartes' natural philosophy reveals the meaning of the phrase *explain the causes from their effects*. This means showing empirical implications of intellectual perceptions.

Thus, *explaining causes from their effects* means to develop experiments in order to know particular details about *res extensa* (as for instance to know *what the distribution of motions in the world actually is*[32]). Furthermore, in the second part of the *Principles*, Descartes regards the role of experience in natural science by saying:

> 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[33]

Regarding the quotation above, to *explain causes from their effects* does not mean that those causes (laws of physics and its metaphysical implications) can be rejected from experience because 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 effect consist in determining, among a wide range of possibilities, which is the experience that expresses accurately what physical principles show. This determination cannot be done following aprioristic

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[32] Bernard Williams, *Descartes: The project of Pure Enquiry* (New York: Routledge 2005) 256
[33] CSMI I, 249; AT VIII A 82; *Principles* III: 4

consideration only but by considering sensitive experience; that is, regarding the experiment's results.

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[34].

According to Williams, Descartes is not trying to prove that experience opposes reason; on the contrary, experience cannot surpass reason in any way. In this way, Descartes openly insists in the idea that knowledge derive from experience is essential in natural philosophy because their principles cannot be threatened anyway. 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 experiments results, and the aim of the latter 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)[35]

In this sense, in paragraph 46 of the third part of the *Principles*, Descartes expresses the need of developing experiments (that is 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

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[34] Bernard Williams, *Descartes: The project of Pure Enquiry* (New York: Routledge 2005) 249

[35] Desmond Clarke, "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by John Cottingham, (New York: Cambridge University Press 1992), 263

> 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.[36]

Descartes does not mention experience in his work in order to complement his scientific research in natural philosophy but 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' states that causes explain natural phenomena from a general point of view regarding undoubtable truths, and effects explain natural phenomena from a particular point of view regarding moral certainties. So, *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 are the implications of these laws 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 regarding 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 ruled, 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 still remains about how those different types of explanations (that begin from causes to effects and the another that starts from effects to causes) can be related. So, let's review how both kinds of explanations can be related.

V. – Is Descartes' scientific explanation circular?

According to what I have explained the in paragraphs above, it seems that Descartes is accepting that both explaining *causes from their effects* and *explain*

[36] CSMI, 100,101; AT VIII A 256,257; *Principles* III: 46

effects from their causes are possible. However, Jean Baptiste Morin, the mathematician and famous critic of Descartes, argued that this idea is contradictory. In his reply to Morin, Descartes addresses the objection thus:

> 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[37].

Descartes introduces a distinction between 'proving' and 'explaining' in order to argue against Morin's objection. Descartes says that '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 synonymous of 'proving' when it must mean 'explaining', or when 'demonstration' is considered 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 readers about the ambivalence of the term 'demonstration.'

Therefore, based on the assumption that depending on the context it is possible to demonstrate (in this 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"[38]. Incorporating Descartes' semantical distinction explicitly, the quote can be rephrased in this way: 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 synominous of 'to prove.' In this sense, scientific explanation could be described as deductive and the role of the experience must be considered as complementary only. 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-

[37]CSMK, 106; AT II, 197-198
[38]CSMK, 106; AT II, 197-198

deductive rather than deductive, and the role of experience should be considered as necessary. 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"[39]

Thus, *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 'proving' from '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 shows how a given effect can be deduced from a specific cause[40].

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, which is 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 (1992) is right when says that Descartes is justifying that probabilistic reasoning was necessary in order to develop his physics. However his effort to read Descartes as being an empiricist (1982)[41] is far from convincing contemporary readers that Descartes is focused in founding science in non-intellectual perceptions. To analyze Descartes'

[39] CSMK,106; AT II 198

[40] See Desmond Clarke, *Descartes' Philosophy of science* (Manchester: Manchester University Press, 1982) 113.

[41] Desmond Clarke, *Descartes' Philosophy of science* (Manchester: Manchester University Press, 1982) 2

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 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 arises a result of his concerns about experiments and scientific explanation. Hence, our analysis was focus in showing the role of experience in Descartes philosophy starting from the *Discourse* and finishing with the *Principles*. Thus, according to what was previously analyzed in this paper, 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 (1992) 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 not metaphysical reasoning in natural philosophy. I agree with Clarke up to this point, but I do not follow him in his attempt (inspired by Laporte as he states in his 1982) to qualify Descartes reasoning as inductive given that Descartes does not move away from his intellectual claims even in physics. So, I prefer 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.

References

Alison Simmons "Descartes on the Cognitive Structure of Sensory Experience" in the *Philosophy and Phenomenological Research*, Vol. LXVII, No. 3. November (2003)

Bernard Williams, *Descartes: The project of Pure Enquiry* (New York: Routledge 2005)

Daniel, Garber, *Descartes Embodied*, (New York: Cambridge University Press 2001)

Descarte's Ouvres (Paris: Vrin / C.N.R.S., 1964-76) Edited by Charles Adam and Paul Tannery

Desmond Clarke, "Descartes' philosophy of science and the scientific revolution" in *The Cambridge Companion to Descartes*, edited by John Cottingham, (New York: Cambridge University Press 1992)

_____, *Descartes' Philosophy of science* (Manchester: Manchester University Press, 1982)

Gary Hatfield "Science, Certainty, and Descartes" in *Proceedings of the Biennal Meeting of the Philosophy of Science Association,* Vol.1988, Volume Two: Symposia and Invited Papers (1988)

J. Cottingham, R. Stoothhoff, D. Murdoch, and A. Kenny *The Philosophical Writings of Descartes*, vol, 3. (Cambridge: Cambridge University Press, 1991).

J. Cottingham, R. Stoothoff, and D. Murdoch *The Philosophical Writings of Descartes*, vols. 1-2. (Cambridge: Cambridge University Press, 1985)