PHILOSOPHICAL THOUGHT EXPERIMENTS VERSUS SCIENTIFIC ONES

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ABSTRACT

Thought experiments are very often defined primarily as a virtual tool for scientific activity however philosophical thought experiments are considered as a secondary and doubtful version of it. This paper tends to show that, it is possible to see all thought experiments as part of the philosophical inquiry about phenomena and scientific thought experiments as philosophical inquiries about nature, which are performed by scientists. If we can accept philosophy as having critical, investigative, analytical, elucidative, speculative characteristics which are bound to the rules of logic, why wouldn't it be possible to formulate the question as "what is philosophical about thought experiments in general?"

Key words: Philosophical thought experiments, scientific thought experiments, representation, imagination, theoretical activity, speculation.

ÖZET

Düşünce deneyleri öncelikli olarak bilimsel etkinliğin sanal araçlarından biri olarak tanımlanmasına karşın, felsefi düşünce deneyleri, ikincil ve muğlak bir seviyeye indirgenerek tartışılmaktadır. Düşünce deneyleri hakkındaki bu genel kanıya karşın, bu yazı tüm düşünce deneylerinin felsefi soruşturma kapsamında ele alınabileceği ve bu bağlamda bilimsel düşünce deneylerinin de, bilim adamlarının doğa ile ilgili yürüttükleri felsefi bir soruşturma tarzı olarak görülebileceği önerisini işler. Felsefenin mantık kurallarına bağlı eleştirel, analitik, açıklayıcı ve spekülatif bir etkinlik olduğunda uzlaşılırsa, bilimsel olsun ya da olmasın, tüm düşünce deneyleri hakkındaki soruyu "genel olarak düşünce deneylerinde felsefi olan nedir?" şeklinde sunmak mümkün olabilir mi?

Anahtar sözcükler: Felsefi düşünce deneyleri, bilimsel düşünce deneyleri, tasarım, hayal etme, teorik etkinlik, spekülasyon

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I. INTRODUCTION

Thought experiments are very often defined primarily as a virtual tool for scientific activity however philosophical thought experiments are considered as a secondary and doubtful version of it. At first glimpse, there are many reasons which seem to justify this tendency. For the best examples of thought experiments, such as; Galileo's free fall and inclined plane, Einstein's elevator, Newton's bucket etc., served as successful instruments to test the coherency of a theory or to elucidate an existing theory and some of them even played a heuristic role. It is beyond doubt that these functions belong to the very aim of scientific activity. Although these examples yield the same positive results, they were held in the imaginary level instead of a laboratory. Therefore, I would like to stress two main points in the grasp of "thought experiment". First; they are experimental procedures as well as their outcomes or possible outcomes i.e. with same purposes and functions as the ones carried out physically. (Janis, 1991, p. 113) Secondly they are performed in imagination although not as a mental rehearsal or mental anticipation of a possible physical experiment. (Mohanty, 1991, p. 269)

Having considered these two emphases related to the content of thought experimentation, I will take J. N. Mohanty's statement as a guiding definition; "a genuine thought experiment has to be an imaginative reconstruction of experience, of imaginative "transformation" of realities into fictional possibilities, in order to test hypothesis". (Mohanty, 1991, p. 269) Therefore, thought experimentation is an intellectual exercise through the representation of the phenomenon in mind where it is re-produced virtually in order to analyze its construction and components which can not be repeated in physical practice. And this exercise is to substitute the functions and the aims of the real experiment which are to test the coherency of a theory, prove or disprove it. In the course of this paper, I will try to show that philosophical thought experiments, as much as scientific ones, comply with the requisites in accordance with the explanation above.

In order to understand the notion of thought experiment, Mohanty draws our attention to the close relation between imagining and thinking, which they both refer to re-presenting of the phenomenon

in mind. I would like to elaborate this idea for the discussion about the differences between philosophical or scientific thought experiments and attempt to correct the general approach to philosophical thought experiments as failures or inefficiencies compared to scientific ones. Moving from the relation between imagination and representation, I will argue whether or not all thought experiments have a common character. Furthermore, through the consideration of philosophy as the primary theoretical activity which is carried out via imagination, thinking and re-presenting, I will quest, whether it is possible to see all thought experiments as part of the philosophical inquiry about phenomena and scientific thought experiments as philosophical inquiries about nature performed by scientists. If we can accept philosophy as having critical, investigative, analytical, elucidative, speculative characteristics which are bound to the rules of logic, why wouldn't it be possible to formulate the question as "what is philosophical about thought experiments in general?"

II. AMBIGUOUS BORDERS BETWEEN PHILOSOPHY AND SCIENCE

In order to exhibit the attitude of subordinating philosophical thought experiments to scientific ones, I would like to take Roy Sorensen's remarks as an example. Sorensen follows the Quinean meta-philosophy which views philosophy and science as disciplines of the same kind and the difference between them as a matter of degree. It should be noted that, Sorensen views the relation between science and philosophy from the scientific stand point and according to scientific criterions. He indicates that he tries to understand philosophical thought experiments by working out their resemblances with the scientific ones. He also claims that scientific and philosophical thought experiments can look more similar when scientific activity is assumed in the paradigm of rationality. And he mentions one of the roles of thought experiments to make us more rational. (Sorensen, 1992, p. 4-11) In this case, the view is that when science is considered to have a rationalist character, then the uses of thought experiments seem to be favorable. But on the other hand there is the claim that philosophical thought experiments do not work as efficiently as the scientific ones do. Or they can only be justified when they reveal a similar structure with the scientific ones. I think this way of reasoning is problematic for it ignores the fact that science owes the rationalist paradigm to the philosophical inquiry, in other words tendency towards rationality for science is a philosophical attitude.

Thus, I suggest that, if the rationalist character that science should have, is to be praised, then conditioning philosophical thought experiments according to scientific ones should be reconsidered. One other remark by Sorensen reads: "the puzzlement about thought experiment can be placed within the traditional debate between rationalists and empiricists." (Sorensen, 1992, p. 15) This, in fact, reveals all philosophical character of this tool of reasoning. Likewise, the debate between J. Norton and J. Brown views thought experiments from the empiricist and rationalist paradigms but these two conflicting approaches apply two existing ways of interpreting the outside reality to the notion of thought experiment.

R. Cooper states that the non-empirical nature of thought experiments makes philosophical and scientific examples of it fall between each other's borders. (Cooper, 2005, p. 329) Having taken thought experimentation primarily as a philosophical method, then the problem reveals itself more clearly as the difficulty of conciliation of speculative character of philosophy and science's

enforced resort to a speculative, non-empirical method. In other words, as we shall see in the example of a epistemological thought experiment, non-empirical or mere conceptual matters can easily be elaborated in thought experiments but representation of factual matters cause a conflict for the nature of facts and the forms of thinking do not fit each other. We could probably assume that if the real experiments were providing enough satisfactory outcomes for science, then the real experiments would be counted as the only reliable source of new knowledge and perhaps thought experiments would be avoided by scientists and the notion of thought experiments would be reserved for ascribing philosophy a scientific character.

III. AN ATTEMPT TO REVERSE SCIENTIFIC CONSIDERATIONS ABOUT THOUGHT EXPERIMENTS

Even taken from the rationalist paradigm, Sorensen distinguishes many disanalogies between scientific and philosophical thought experiments. He states firstly, philosophical thought experiments are always more controversial; secondly, contrary to scientific ones, they are generally evaluative; that is to say, they conclude how things ought to be rather than how things are. Finally he considers philosophical thought experiments as failures since, in his opinion, they seek conventions (especially in ethics and aesthetics) about phenomena, whereas scientific thought experiments describe the phenomena in nature. (Sorensen, 1992, p. 11-14)

Let's consider Rescher's remark on the characteristics of philosophical thought experiments. Rescher says: "What makes a thought experiment philosophical is certainly not just the theme of its supposition nor even of the conclusion that we derive from it." (Rescher, 2005, p. 47) In order to understand the differences or similarities between scientific and philosophical thought experiments and asses their success or failures, we first have to be aware of the differences and similarities of these two enterprises. It is crucial to consider that the theme of the philosophical thought experiments range over a wider realm than scientific ones due to philosophical activity's very nature. Science as well (with regard to philosophy of science) is considered to be one of philosophy's themes. Therefore, having several subfields, philosophy carries out a critical, elucidative, evaluative and/or theory building activity with respect to the phenomena in question. Rescher also points out that "there is no end to the uses to which the thought experimentation can be put: explanation, clarification, elucidation, illustration and so on." (Rescher, 2005, p. 47) However, it is understandable how science benefits the advantage of having clearer account of the uses of thought experiments because of its theme and methods of inquiry which is limited and adequately specified with respect to philosophy. But I don't see why the wide range of themes requiring different sorts of uses of thought experiments must be a failure for philosophy and why not considered as richness in possibilities.

On the other hand another question to be raised is; why does philosophy have to comply itself with the scientific method and principles in order to use thought experiments? This question targets explicit scientific considerations over philosophical thought experiments. Although Sorensen's

argument seems coherent, it should be obvious that, he determines the similarities and the differences between them, from the perspective of science. He states it clearly as follows; "Philosophy differs from science in degree, not kind. Understand science, understand the parameters to be varied and you understand philosophy." (Sorensen, 1992, p. 3) In that case, for the sake of the argument, we might attempt to reverse the link between science and philosophy, then scientific activity might possibly be seen as a specific degree of philosophical inquiry.

With respect to philosophy, it is possible to view science as an activity which is based on our conventional principles in order to reach somewhat an explanation about the natural occurrences. For us, it would be less controversial to compromise on those principles, with the fact that we are the outside observers of the natural phenomena. For this counter perspective Hobbes' words can give us a better insight.

> "The science of every subject is derived from a precognition of the causes, generation, and construction of the same; and consequently where the causes are known, there is place for demonstration, but not where the causes are to seek for. Geometry therefore is demonstrable, for the lines and figures from which we reason are drawn and described by ourselves; and civil philosophy is demonstrable, because we make the commonwealth ourselves. But because of natural bodies we know not the construction, but seek it from the effects, there lies no demonstration of what the causes be we seek for, but only of what they may be." (Hobbes, 1656, p. 184)

Following the reasoning of Hobbes, although one might think that, natural bodies are available to be taken as objects of scientific inquiry and re-presented in a thought experiment, this comfort is, in fact, provided by the probabilistic character of the knowledge we have about the natural bodies. It can even be said that the probabilistic character of the scientific knowledge is taken for granted or misinterpreted in order to serve the seeking for certitude about the nature that we are surrounded. On the other hand, fields like civil philosophy or geometry, which are produced only within the capacities of human and related to what and the how of human being, are more difficult to be objectified and studied from outside. However with the help of Hobbes' insight, we come to understand that we have a more solid ground to demonstrate the construction of these fields. The reason for that is identification of phenomena in these fields is related to how we experience

ourselves but nothing outside of us. Thus, we are well aware of the variety and uniqueness of them. Therefore, philosophical thought experiments might seem apt to question a philosophical theory and even prove or disprove it. They enable us to introspect about the structure of our mental processing and thus extend our reasoning to generalizations concerning all humans with regard to the related phenomenon. Although I agree with the claim that, introspection is much more reliable way of acquiring knowledge than observation, it certainly has a margin of error but so does observation. Obviously we are closer to ourselves than the phenomena that we observe in the external world. This point will be exemplified by two cases -one epistemological and one ethical thought experimentation- as I proceed. But, in order to discuss the origins of scientific knowledge, I will begin with Kuhn's analysis about the function of thought experiments.

IV. THEORETICAL ORIGINS OF SCIENCE

Contrary to the search for certitude about the external world in science, Kuhn's striking analysis about how scientific progress depends on problem solving, might provide a skeptical perspective on the nature of the scientific activity and the scientists who utilize thought experiments. Kuhn indicates somewhat a selective attitude of the scientist in the process of testing his theories. This selective attitude is originated from what Kuhn calls "theory induced expectations" of the scientist. And it can be pictured as the tendency to pay attention to the variables that is likely to cause conflicts for the current success of the theory and neglecting other variables which don't require immediate attention of the scientist. When unassimilation of the neglected variables reaches to an intolerable level for the functioning of the theory, crisis occurs and then the theory gets revised by the aid of thought experiments. (Kuhn, 1964, p. 261-263)

Concerning the main claim of this paper, Kuhn's remark on "theory induced expectations" of the scientist needs special attention. Because, here again, we are confronted with the characteristic of the scientific research which is primarily theoretical and possess the implicit tendency of adjusting nature to the developed theory which fancies how the nature must behave. Another point here to be stressed particularly is that scientific research although primordially a theoretical activity, its results are expected to be experienced and/or observed. But in case of a failure, it is necessarily fixed again with a theoretical tool i.e. via scientific thought experiments. Thus, it has to fall back on the laws of mind. I view this as science's necessary return to its philosophical origins.

In addition to Kuhn's claim that thought experiments in science help us to conceptualize our world, I would like to add that philosophical thought experiments definitely serve for the same aim but with one difference. That is scientific thought experiments functions by the representation of external objects therefore they go through our provisional acceptances about them. On the other hand philosophical thought experiments functions by the concepts originating from the source of our intuitions and logical constructions. Therefore, philosophical ones are less mediated.

Another difference between scientific and philosophical thought experiments is the alleged inadequacy of the latter in describing the background conditions. In other words, scientific thought

experiment can be performed in an imagined ideal environment -even better then the artificial conditions created for a laboratory experiment- by ignoring some environmental conditions to reach the pure facts about the phenomena in question. Wilkies stresses the importance of adequate description of the background conditions. And she explains the reason for it to reach the goal of distinguishing the difference which some factors make by stabilizing other factors related to the phenomena (e.g. the frictionless plane and chains in the case of Stevin's thought experiment on perpetual motion). (Wilkies, 1988, p. 7) But I think that this attitude is overconfident. Can it ever be claimed that establishing phenomena in imagination can reach an exhaustive covering of entire aspects of it?

Before getting on with this suspicion I would like to pause for a while to take a look at some philosophical thought experiments on ethics, which can hardly achieve to consider the related phenomena in ideal conditions as such. And I claim that, concerning their theme, for which the specific phenomena can be described as social or cultural, individual or personal etc, this is not necessarily to be taken as a weakness. On the contrary, it is the most important aspect of the related phenomena for it is constituted by the contribution of external effects. In other words, these fields need to understand their subject matter in a full environment as much as possible, not as isolated. We need even more of thought experimentation in order to know more about this sort of phenomena.

Let us consider the issue of abortion studied within the sphere of ethics. Its moral justification can only be made by illustrating some scenarios which indicate its necessary or rightfully performance. It is rather a difficult and complicated task for it has to involve numerous situations and different circumstances. In thinking about an ethical problem such as abortion, let alone stabilizing the other background conditions for the sake of the experiment, there are probably only a few stable elements such as the pregnancy and the question of abortion itself. But it is possible to cover as many different variances as possible, by way of presenting the phenomena in a thought experiment. Here, we have a very impressive example of thought experimentation performed by J. J. Thomson, about the problem of abortion.

> "You wake up in the morning and find yourself back to back in bed with an unconscious violinist. A famous unconscious violinist. He has been found to

> have a fatal kidney ailment, and the Society of Music Lovers has canvassed all the available medical records and found that you alone have the right blood type to help. They have therefore kidnapped you, and last night the violinist's circulatory system was plugged into yours, so that your kidneys can be used to extract poisons from his blood as well as your own. The director of the hospital now tells you, "Look, we're sorry the Society of Music Lovers did this to you--we would never have permitted it if we had known. But still, they did it, and the violinist is now plugged into you. To unplug you would be to kill him. But never mind, it's only for nine months." (Thomson, 2002, p. 200)

It is important to point out that this thought experiment is constructed in a rational manner and achieves inasmuch success as a scientific thought experiment. Firstly she states the premises explicitly. She defends the mother's right to decide what happens in and to her body over the idea of the fetus has a right to live. She elaborates on three dimensions related to the issue: pregnancy as a result of rape, pregnancy threatening the life of the mother and the unwanted pregnancy in the cases of voluntary intercourse. And her argumentation proceeds step by step through the manipulation of the elements of the imagined scenario about the violinist. For instance, in one case she asks us to imagine that staying plugged to the violinist causes the kidney work over its capacity and therefore means the death of the person in a near future. Or in other case, we are asked to imagine that the violinist needs to stay plugged to the person for 9 years in order to be saved and only for an hour in the next case.[1] Above all, I suggest that the real success of this thought experiment lies on the diversification of the scenario with other possible situations that can be combined with the related question or even supporting it with additional scenarios. For it displays a significant difference with the strict aim of scientific thought experiments to stabilize the background conditions by aiming to include as many complications as possible. Actually, from a counter perspective, this also means that she achieves the adequate description of the background conditions by carefully considering the possible scenarios and ignoring the unrelated variables (e.g. the kidnapped person's passionate love for classical music, to discuss the problem of pregnancy as a result of rape). This is rendered possible by the conformity of introspection which a philosophical thought experiment can have. Because, by means of introspection it is less difficult to miss related possible situations then guessing the variables for a natural phenomena by means of observation.

[1] For instance, she supports the violinist scenario with the scenario of a burglary into a house which is protected with the best means that money can buy., Thomson, J. J, "A Defense of Abortion", p. 206.

Despite everything, establishing the phenomena in such a way, that it will provide us the knowledge about its pure state, is still quite unique to scientific concerns. Even put like this, there is still room for being skeptical about how establishing a natural phenomena environmentally isolated can confidently said to be successful. It should not be forgotten that, when a phenomenon is established in imagination, whit the claim to reach pure facts about it; it is a natural body that is re-presented in mind i.e. by speculation and other operations of mind. Then we should ask isn't it the case that, once the phenomena is represented in mind, then the mind operates not over the phenomenon itself but the concepts derived from the phenomenon? If we can answer this question with a 'yes', then, we inevitably find ourselves close to the argument which defends the role of conception through the logical laws in the thought experimentations. (Massey, 1991, p. 291)[2]

Philosophical thought experiments on epistemology already deal with concepts and forms of thinking.[3] In that case, executing a thought experiment can be considered much more efficient for the materials are directly formed in the mind. Additionally for this kind of thought experimentation, there is much less to worry about to describe the background conditions that might effect the outcome of the reasoning because their focus is on the nature of thinking. From this perspective, ethical and epistemological thought experiments display a difference. Ethical ones, although it is not completely possible, are concerned with controlling the variables. Whereas, epistemological ones only need to conduct logical mind operations with their all abstract materials. Let's have a look at Mohanty's interpretation of Kant's reasoning to reach the idea of space and time as pure intuitions.

> "Towards the beginning of the Transcendental Aesthetics of The Critic of Pure Reason, Kant asks us to remove from a given case of knowledge all that is due to understanding and its concepts -till we are left with nothing but an empirical intuition. Then he separates from this empirical intuition all that belongs to sensation, so that nothing remains but pure intuitions of (extension in) space and (duration in) time. These two then are due neither to thought nor to sensation. This separating and removing are not real separation and real removing but thought operations." (Mohanty, 1991, p. 261)

[2] This argument is supported by Humean reasoning, and tends to stress the creative power of the mind to manipulate the materials obtained from the senses and experiences, p. 291.
[3] Rescher also comes up with a definition of philosophical thought experiment, that they are generally concerned with concepts and ideas, with modes of thinking and talking. *What If?: Thought Experimentation in Philosophy,* p. 49.

Mohanty interprets the Kantian approach, about the impossibility of thinking/representing the absence of space but the possibility of thinking/representing the space without objects in it, as an invitation to perform a thought experiment, with which we are asked to represent the absence of something. (Mohanty, 1991, p. 262) Comparing with the ethical thought experiment about abortion, Kant's reasoning can be well described as a thought experiment but it is certainly difficult to claim that it is logically possible. Considering that the possibility is not a condition for a reasoning to be described as a thought experiment, this difference between two philosophical thought experiments show the variety of possible thought experimentations in philosophy. Additionally concerning their theme, epistemological thought experiments are one of the most efficient –perhaps the only and nevertheless the best- tools to elucidate a philosophical theory about the principles of thinking. Another difference which can be pointed out between these two thought experiments that the one about abortion is formed similar to a scientific thought experiment. Namely, the explicitly stated premises and counter arguments derived by a step by step reasoning, resembles the construction of a scientific thought experiment. Nevertheless, the example about Kant's reasoning is apt to be formulated as a thought experiment and thus fulfill necessary requirements even it is constructed in a different way.

V. CONCLUSION

I'd like to recall Mahonty's definition "a genuine thought experiment has to be an imaginative reconstruction of experience, of imaginative "transformation" of realities into fictional possibilities, in order to test hypothesis". While considering all the remarks made above, according to this definition, what is there to be pointed out that scientific thought experiment comply but philosophical ones don't? I simply don't see anything to be pointed out. The criterion of success for either of them is determined according to the different aims and the subject matters of these fields. For example, primary concern of the scientific thought experiments is reaching positive consequences. Whereas philosophy is generally not consequence oriented.[4] This should be accepted as a difference not as a criterion of success. However, additionally, science, similar to all other intellectual activities, has borrowed something from philosophy such as investigative, critical, questioning and theory building qualities. For that matter I view that seeking for definite laws and positive consequences sprung from the possibilities of philosophical inquiry and specialized as scientific inquiry. That is why science is still one of the most important themes of philosophy. Therefore I claim that what ever intellectual tool is used in scientific inquiry must be considered within the possibilities of philosophical inquiry.

[4] Rescher, also states that as "Philosophy's prime concern is conceptualization not observation". *What If?: Thought Experimentation in Philosophy*, p. 47.

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