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# Transcendent Philosophy

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**Qur'anic Statements and Protocol Sentences of Science  
Are “*Protocol Sentences*” of science and “*Core  
Statements*” of religion two mutually inconsistent  
foundations of the same worldview?**

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**Abstract**

In this paper I attempt to reconcile science and religion by appealing to the very foundation of knowledge in each. Through the analysis of protocol sentences in science and core statements in religion I attempt to show that we are not talking about two mutually inconsistent worldviews; indeed they are just different methods of structuring the same reality in two different languages because they share the same logic. While the language of science is legitimate in world (A) of physical reality, the religious language is legitimate for world (B) of the unseen realm of reality, as well as for physical reality.

An analysis of the epistemological nature of the “basic statements” and “protocol sentences” in the legacy of the Vienna circle: Moritz Schlick and Otto Neurath, shows that their ultimate constituents are not “basic.” The controversy over this issue is essential to contemporary philosophy, because the question of “how to justify the truth-value of certain scientific complex statements” is first of all a question about “truth” and “certainty,” and second, “truth” in science and philosophy is usually discussed within an ontological frame, i.e., it reveals the ontological contents of both science and philosophy. Thus, a “foundation” of knowledge is not only an epistemological issue, but also an ontological one. The title of Schlick’s famous article was “Uber das Fundament der Erkenntnis” (“The Foundation of Knowledge”).

Simultaneously and parallel to this I argue that religion has certain statements that I call “core statements” that constitute the foundation of the language of the non-physical realm of reality. These core statements of religion have an epistemological structure that is even more logically consistent than that of scientific knowledge. Proving this will, at least, show that the system of spirituality cannot be considered as less consistent or less reliable than that of science.

### I. Basic Statements

Scientific statements such as: “all metal expands by heat,” “there is an inverse relationship between the volume and pressure for an ideal gas” (Boyle’s law), and “for every action there is an opposite and equal reaction” (Newton’s third law), are somewhat complicated; they refer to “every” and “all” events at any given time in different places. Empirical sciences are based on inductive reasoning. Imperfect induction does not cover every case, but only a great number of them; to say, “all swans are white” does not necessarily mean that we have observed all swans, but that we have observed enough cases to formulate a general conclusion that refers to “all” of them. Later in time for example, a black swan may be observed. The main question is: how could science justify the truth-value of those statements about “all” and “every” future case?

Scientists usually appeal to their own method of inductive reasoning; since in the past all the cases observed had such and such a description, then in the future all these cases will have such and such a description. One well known problem in the methodology of science is the justification of induction. Therefore, philosophers of science attempted to justify complex statements and theories by reference to what are called “**basic statements.**” These are usually considered factual sentences that describe what is directly given such as “here now red;” thus they need no justification or verification.<sup>1</sup> These statements are based on immediate observation and are directly related to experience. The process of justifying the truth value (whether it be verification or falsification) regresses ultimately to these basic statements. These types of statements must be strong enough that they cannot be shown false (empirically speaking). If they were shown false by another statement, then the other statement is more basic. Also, if they can be proven false, then they are not eligible to be the foundation of knowledge. These statements are called protocol sentences<sup>2</sup> by Otto Neurath<sup>3</sup> and Carnap.<sup>4</sup> Otto Neurath defined protocol sentences by further elaboration:

Protocol sentences are factual sentences of the same form as the others, except that, in them, a personal noun always occurs several times in a specific association with other terms. A complete protocol sentence might,

for instance, read: "Otto's protocol at 3:17 o'clock: [At 3:16 o'clock Otto said to himself: (at 3:15 o'clock there was a table in the room perceived by Otto)]." This factual sentence is so constructed that, within each set of brackets, further factual sentences may be found.<sup>5</sup>

The importance of this protocol statement is derived from the ability to replace each term in it by a group of terms of an advanced scientific language. For example, a physical designation can be given to replace the term "Otto" and this system of designation can be defined by reference to the "position" of the name "Otto."

Moritz Schlick debated this issue with Otto Neurath.<sup>6</sup> Schlick discussed the need for *basic statements* (he called them *confirmations*) that operate as the ultimate unshakable foundation of knowledge. These statements will count as "a firm basis on which the uncertain structure of our knowledge could rest."<sup>7</sup> According to Schlick the search for the basis or foundation is, in other words, a search for the truth, a search, as he thinks "of affording a *true* description of the facts. For us it is self-evident that the problem of the basis of knowledge is nothing other than the question of the criterion of truth."<sup>8</sup> Schlick made the connection between the foundation of knowledge and truth because any description of facts can be proven true or false by reference to a criterion of truth-test. Schlick rejects Neurath's coherence criterion of truth. According to Neurath, the truth of a protocol sentence is determined based on its inner coherence (non-contradiction) with the system: "when a new sentence is presented to us we compare it with the system at our disposal, and determine whether or not it conflicts with that system. If the sentence does conflict with the system, we may discard it as useless (or false)."<sup>9</sup> Schlick argues that basic statements cannot be accepted due to the coherence that it shows with the system of empirical knowledge because the system itself is in question. In the coherence theory, the truth of any statement consists in the mutual agreement of the statements of the system itself, without being in agreement with facts or needing to be checked with facts.<sup>10</sup> The statement: "sharks live in the Euphrates River" is false because it does not cohere with the system of knowledge that sharks do not live in fresh water; they live in salt water (the Euphrates River in Iraq is a fresh water river). But the statement: "the sun revolves around the earth" is true in the ancient

theory of physics because it cohered with the system of knowledge that held which the earth is the center of the universe. But the whole system of knowledge was tested by the Copernican theory. Thus, the coherence criterion of truth allowed scientific and non-scientific statements to be true. Schlick said: "If one is to take coherence seriously as a general criterion of truth, then one must consider arbitrary fairy stories to be as true as a historical report, or as statements in a textbook of chemistry, provided the story is constructed in such a way that no contradiction ever arises."<sup>11</sup>

The absence of contradiction in the coherence test is not enough in the epistemological search of the ultimate *foundation* of scientific knowledge. If science and scientific theory is about the world, then we have to appeal to material facts as the ultimate justification of the truth; we have to search for the most unshakable and indubitable statements that constitute the basis of all knowledge. Schlick called these statements the *basic statements*. These statements are about personal experience; since in experience we describe and report events or objects, then these statements, according to Schlick, are no more than "*confirmations*". These are statements expressing "the immediately observed." For example, if the investigator makes a note such as: "Under such and such conditions the pointer stands at 10.5," then he knows that this means "two black lines coincide." These basic statements, according to Schlick, have the following characteristics:<sup>12</sup>

1. They are descriptive, spatial, and temporal statements. For example: "here now pain" referring, at present time, to the chest, or "here two red lines meet."

2. Their meaning is determined immediately without verification. Because these statements are references to "the immediately perceived" here and now, then the direct understanding of their meaning can stand as a valid verification for their truth.

3. Since they are spatial temporal demonstrations they cannot be written because what they are referring to is continuously changing. Logically speaking, nothing depends on them. They cannot be replaced by an indication of time and place; if we do this, then we substitute the observation statement by a protocol statement, which is very different in nature.<sup>13</sup> He says,

They are an absolute end. In them the task of cognition at this point is fulfilled. That a new task begins with the pleasure in which they culminate, and with the hypotheses that they leave behind does not concern them. Science does not rest upon them but leads to them, and they indicate that it has led correctly. They are really the absolute fixed points; it gives us joy to reach them, even if we can not stand upon them.<sup>14</sup>

4. They are empirical statements; neither hypotheses, nor hypothesized. Schlick thinks that these confirmations, in their individuality, “are the only synthetic statements that are not hypotheses.”<sup>15</sup>

5. These statements are not the factual data that a scientific theory starts from. Rather they are the means by which the scientific theory can be confirmed because the predictions of the theory have to end with what is taking place in specific space and time.

The issue of “basic statements” seems quite problematic because it deals with the perspective of the philosopher’s epistemology. Logical empiricists (Schlick, Neurath, and Carnap) were more concerned about verification of empirical knowledge. According to them, the complicated statements of scientific knowledge can be verified by reducing them to the meaning of the protocol sentences or basic statements. Their main questions were how to verify the predictions of a given scientific theory and how to achieve the testability by more confirmation. According to logical empiricism, the scientific theory is true if the predictions of it are true; the more of this empirical verification there is, then the more support the theory receives. This line of reasoning is logical and can be presented in the hypothetical or conditional form of syllogism, in which the conformation of the antecedent proves the validity of it. This form is called modus ponens, an example of which will be:

If the predictions are true, then the theory is true.	If P, then Q
The predictions were confirmed and verified as true.	P
Therefore, the theory is true.	
Therefore, Q	

Science uses the method of inductive reasoning to collect data and deal with facts. It also uses a hypothetical deductive method for forming theories and deriving or inferring statements related to facts. The more the applicability of the theory to facts is confirmed, the more support there is that the theory is true. The meaning of its statements is reduced to the meaning of the protocol sentences.

**Logical evaluation of the protocol sentences:**

The basic statements or protocol sentences in scientific knowledge do not seem to be basic; they are somehow complicated. Let us analyze a simple statement such as: “here now red.” This statement is more complicated than anyone can imagine; I will divide my analysis into two groups: the observed elements and the hidden elements.

The observed elements of “here now red” are *three*:

Spatial: here  
Temporal: now  
Quality: red

The hidden elements of “here now red” are many:

1. a hidden subject who observed “red” in space and time (the one who reports the observation of “here now so and so”)
2. a hidden object which is the “so and so” that has the color “red”
3. a hidden theory of universals and particulars stating that “red” does not exist by itself but exists as a quality of this particular “so and so”
4. a hidden comparison that “here now red” and “not” any other color (not green, not black, not. . .)
5. a hidden logical negation “not” that is not observational or part of observation
6. a hidden logical conjunction “and” in: “here ‘and’ now” which is not observational
7. a hidden experience of “other” things
8. a hidden ontological assumption about the existence of things and their qualities in general
9. a hidden theory of space that takes “here” as a relative concept



-----  
Therefore, the theory is not true.

-----  
Therefore, Not P

Notice that this form has a negation in the second premise, the negation also appears in the conclusion.

## II. Core Statements

In general, I will divide the statements of both science and religion into four kinds:

A. Statements about the world (or physical reality).

A.1. Statements about our own experience of the world.

B. Statements about the non-physical realm of reality.

B.1. Statements about our own experience of the non-physical realm of reality.

Our account for searching the very foundation of religious knowledge coincides with that of Moritz Schlick, namely it is about the ultimate constituents of knowledge and the truth-value of the statements in religion.

<p><b>physical realm of reality</b> (world of witness = '<i>alam al-shahada</i>) <b>A</b></p>	<p><b>non-physical realm of reality</b> (world of unseen = '<i>alam al-ghaib</i>) <b>B</b></p>
<p>scientific theories describe it</p>	<p>revelation expresses it linguistically</p>
<p>personal experience is expressed in language</p>	<p>personal experience is expressed in language</p>

Religion (I refer here to Islam) includes statements that are essential not only to B, but also to A, I will call these statements of religion: "**core statements.**" These are not religious statements; they are just statements from religion. These core statements have the following characteristics:

1. Each core statement of type B cannot be self-contradictory or self-canceling
2. Core statements of B do not contradict each other
3. A derived statement from B cannot be inconsistent or contradictory to the core statements of B

4. The core statements of B do not have an empty extension
5. Core statements of B can be true for the physical world (world A), and
6. Core statements of B (revelation) do not contradict the statements of A (reason)

It seems that the ultimate justification of the truth-value of world B (core statements of religion) is logic, i.e., the opposite of which is contradictory, in addition to observation. While the justification of the basic statements of A is immediate observation, according to Schlick. The following are some examples of the core statements of religion in world B:

- world A (physical world) is one of motion and continuous change
- world A has a cause
- the Lord of world A is one
- the Lord of world A is ever-living
- world A has a beginning in time
- world A has an end
- other statements . . .

The evidence of the truth-value of such core statements is both logical and observational. Let us take three examples from the Qur'an.

#### **First example of core statements**

“Or were they created by nothing, or were they the creators [of themselves]? Or did they create the heavens and the earth? Rather, they are not certain.” (Qur'an 52:35–36)

Let us go over some of these statements (verses) from the Qur'an. It is impossible for a “thing” to bring itself into existence, because it will be in existence prior to its existence which is impossible. Also it is impossible for a “thing” such as this world A to come into existence without a cause. Human beings can neither be the cause of their own existence, nor the cause of this world (heavens and earth). It is possible to put some of these statements in a logical form:

Either this world has a cause or it is uncaused

It is impossible to be uncaused (a physical world cannot be actually infinite)

-----  
Therefore, the world has a cause

This argument is a valid disjunctive syllogism that negates one of the disjuncts and has this valid form:

Either P or Q  
Not Q  
-----  
Therefore, P

### **Second example of core statements**

Let us take another core statement such as: “the Lord of this world is one” as expressed in the following Qur’anic statements (verses):

“Had there been therein (in the heavens and the earth) gods besides Allah, then verily, both would have been ruined. Glorified is Allah, the Lord of the Throne (High is He) above all that (evil) they associate with Him!” (Qur’an 21:22)

“Say: if there had been (other) gods with Him—as they say—behold, they would certainly have sought out a way to the Lord of the Throne!” (Qur’an 17:42)

“And your god is one God. There is no deity [worthy of worship] except Him.” (Qur’an 2: 163)

Embedded in the above core statements of world B is a very simple form of sound logical reasoning and immediate observation, which together give the core statements of religion a solid logical status similar to those basic statements of science that appeal to more immediate observation. Core religious statements in the above logical format have the syllogistic form:

If this world has more than one God, then it will collapse (from revelation)

The world has not collapsed (from observation)

-----  
Therefore, this world does not have more than one Lord

The argument has a valid conditional form that negates the consequence and affirms the antecedent in the conclusion:

If P, then Q  
 Not Q  
 -----  
 Not P

**Third example of core statements**

“Indeed, your God is One.” (Qur’an 37:4) This core statement has the least simple factual-logical structure because it affirms that there is only one God. This “One” is also the simplest structure because it is not compound and not dividable. In science the number “one” is the simplest mathematical entity; that the structure of the mathematical reality builds from. But number “one” in mathematics is an empty abstracted entity; there is no *necessity* that it has existence in reality outside the mind. While in religion, this “one” does have ontological content, “one” is *Necessary* in the sense that both its essence and its existence exist together. Also this “one” is necessary in the sense that the mathematical and physical realities are both contingent upon it. The above statement reduces the reality of the two worlds (A and B) to the simplest form of the “one” by the *affirmation* of the necessary being; other core statements reduce reality to “one” by *negating* the existence of all other possible contingent existents, as in the following statement:

“That is Allah, your Lord; there is no deity except Him, the Creator of all things, so worship Him. And He is Disposer of all things.” (Qur’an 6:102)

**Logical evaluation of the above core statements**

Each core statement in the above three examples passes the test of the logical requirements of the core statements that was set in section II. Each core statement is not self-contradictory. It does not contradict other core statements of world B, it cannot be inconsistent with statements of world B; however, their validity and truth-value is not based on internal coherence, but on observation and logical necessity that it is impossible to be otherwise. Each core statement does not have empty extension, and most importantly each core statement of world B

does not contradict observational statements of world A; in other words, there is no contradiction between Reason and Revelation.

### **III. A Comparison of Core Statements with Basic Statements**

Let me make some comparisons between the core statements of religion and the basic statements of science, as mentioned by Schlick and other philosophers of science:

1. Inasmuch as these basic statements are demonstrative confirmation statements dealing with personal experience, religious experience is also a personal utterance confirming–demonstrating experience with the non-temporal, non-spatial in terms of the here and now; “here now faith” as compared to “here now red.” Also “here now spiritual pleasure (from prayer for example)” as compared to “here now pain.”

2. The meaning of the basic statements (especially Schlick’s statements) is determined without verification because they relate to what is immediately perceived, while core religious statements have direct meaning based on logic and observation, i.e., the opposite of which is impossible, and based on observation.

3. Basic statements are inexpressible in writing because their object is continuously happening beyond space and time. Core religious statements in (B1) writing and describing religious experience are almost fiction. Religious experience in B1 is inexpressible, yet is livable. This is probably why some Sufi or saints did not want to express this experience in language.<sup>17</sup>

4. Basic statements are empirical statements; they are neither hypothesis nor hypothesized. Core statements in B1 are also empirical in the sense that they refer to things that are immediately observed; they are neither hypothesis nor hypothesized. Thus the core statements of B1 cannot be put together to make a system of belief that replaces B itself.

5. The basic statements according to Schlick cannot be considered the starting point of science, but they can be considered as means of confirmation. Core statements in B1 are not the actual beginning or making of religion, but they can be used to confirm religion because they are a direct report of the religious experience.

They are the end to which the practice of religion can lead. There is a joy in reaching them, even though one does not stand upon them.

6. In physical sciences not all basic statements have been tested; if all of them were tested and confirmed, then we would be certain about our empirical knowledge; if this were the case, then science would end. But science is contingent and has no end. Only some of its basic statements have been fully tested and can be accepted as non-contradictory.

With this in mind, in regard to the non-physical world, we can start from a theoretical system in which the core statements, at the least, do not contradict themselves, each other, and do not contradict empirical knowledge or observation.

7. The most important difference, if we follow Popper's reasoning, is that basic statements in scientific knowledge are contingent statements, their negation is possible without contradiction, and if their negation is true, then the basic statements can be proven false. Core statements in religion are neither contingent nor tautological. Their opposite is contradiction.

#### **IV. Objections and Reply**

Let us consider some of the objections that might be raised against this thesis.

The first objection (on solipsism): In regard to B1, religious experience is very personal and not transferable to others. The religious experience starts and ends within the person alone. Thus it is a clear form of solipsism. According to Schlick "here now so and so" and "here yellow borders on blue" both have demonstrative terms that have the sense of the present gesture; an experience points to something observed. In other words, someone somehow point to reality and by these statements confirms and compares them with facts.<sup>18</sup>

But Schlick's statements are also a clear form of solipsism, in which the person is reporting his/her experience in the frames of "here pain now," which no one else can verify, not only in terms of space-time reference, but also because what is reported is a purely personal observation.

Second objection (on confirmation and future predictions): The statements of spiritual experiences of B1 might be meaningful to the

person having the experience, but not to other people. Notice that Schlick's statements have only momental meaning during occurrence and as such cannot be used for future predictions. If they cannot be used for future predictions then scientific theory cannot use them for confirmation, thus defeating the purpose of scientific knowledge. But in B1 statements the spiritual experience can, at least, confirm something to the person himself, if this is achieved then the goal of religion is achieved too. Discovering the reality of the unseen is a goal that is a personal enterprise. Therefore it has no need for transferability, while scientific knowledge is communal. In religion, the message is for each individual to believe in the reality of the unseen; this goal can be achieved individually through personal experiences. There is no need for transferability of knowledge. Science depends on certain agreement on certain things, and the goal cannot be achieved without transferring individual experience and knowledge to others.

Third objection (on the complexity of core statements): The core statements of world B and B1 do not seem to be basic; they are somehow complicated. The answer is that basic statements or protocol sentences in scientific knowledge are also complicated. As we previously analyzed the basic statement "here now red" under the section of the logical evaluation of protocol sentences.

Fourth objection (on synthetic-a priori): When one says that core statements in religion are not contingent (their opposite is contradiction) and at the same time they are not tautological, it seems as if a theory is being promoted, similar to that of Kant, about statements that are synthetic-a priori.

The answer: All the statements of God about worlds A and B have an actual real content and at the same time they are absolutely certain. Thus on one hand they have the characteristics of a synthetic statement, but on the other hand they have those characteristics of a priori statements. All possible statements about worlds A and B have been said by God (before the existence of here and now) and preserved with Him in beyond "here" and "now" in a book called "The Preserved Tablet." All possible statements about worlds A1 and B1 are matters of rational and spiritual discovery that must undergo the "here" and "now" and be preserved in human knowledge. Thus, the reason that God's statements always have true content without being contingent is not due

to the fact that they are “true by definition,” indeed they are always true because God’s knowledge about his creation is comprehensive and beyond all “here” and all “now.” Second, the reason that God’s statements are absolutely certain is not because they are tautological, but because they are necessary and they cannot be proven false. The core statement: “This world must have a cause” is true in religion not because the principle of causality is presupposed by human experience, i.e., our observation is made possible by priory category that some events are causes and others are effects, but because, logically speaking, it cannot be otherwise. Those synthetic statements of God that exist a priori are the very principles of a scientific religious knowledge comparable to that of science, if not better.

The main difference between this account and that of Kant is that the focus of Kant’s metaphysics is innately epistemological and deals with the structure and principles of the human mind and pure reason that justifies and validates the principles of metaphysics. Since these synthetic-a priori principles exist in mathematics and pure natural science, therefore, Kant thinks, that they must be possible in metaphysics too. The role of the philosophers is to investigate them in the realm of pure reason itself, not in the external world.

God’s statements about A and B give philosophers and scientists the ability to deal with reality-in-itself or, simply, it focuses on external ontology rather than inner epistemology. This type of statement by God makes the philosophers and the scientists able to investigate reality without neglecting spirituality. Another difference is that Kant’s synthetic-a priori principles are necessary and a priori because the experience presupposes them, i.e., because of something else other than themselves. While in core statements of religion they are a priori because they cannot be otherwise logically speaking.<sup>19</sup>

## Endnotes

<sup>1</sup> In regards to verification, I should note here that there are some departing points between Carnap and Neurath on this issue: Neurath rejected Carnap’s thesis that protocol sentences are those which require no verification. See Neurath in A. J. Ayer, ed., *Logical Positivism* (New York: Free Press, 1959), p. 203. Neurath thinks

that Carnap was trying to introduce a concept of “atomic protocol” which might be understood in traditional academic philosophy in which the belief in “immediate experiences” coincides well with its ontology that “there are, indeed, certain *basic elements* out of which the world-picture is to be constructed.” Only in this traditional ontology, Neurath thinks, these sentences do not require verification. (Neurath, in Ayer, *Logical Positivism*, p. 204). Neurath probably left enough room for verifying protocol sentences in order to handle situations in which two conflicting protocol sentences appear in the system of unified science, since this system does not accept contradictory sentences, then one of the protocol sentences must be discarded, which means the other one is somehow verified. Carnap was trying to keep verification only to laws and non-protocol sentences, thus they can be discarded or excluded.

<sup>2</sup> See A. J. Ayer, ed. , 1959. *Logical Positivism*. (New York: Free Press, pp. 199–208.

<sup>3</sup> Otto Neurath, “Protocol Sentences,” trans. George Schick, in A. J. Ayer, ed. 1959. *Logical Positivism* New York: Free Press, p. 199.

<sup>4</sup> R. Carnap, , 1934. *The Unity of Science*, trans. Max Black, London. Also see his book *The Logical Syntax of Language*, trans. Amethe Smeaton, London, 1937.

<sup>5</sup> Neurath, “Protocol Sentences,” in Ayer, *Logical Positivism*, p. 202.

<sup>6</sup> The debate over the issue of protocol/basic statements was within the legacy and among the members of Vienna circle (M. Schlick, F. Waismann, Otto Neurath, R. Carnap, C. G. Hempel); however, some outside philosophers such as Russell, Wittgenstein, and Popper soon became involved in it. According to Russell, for example, the ultimate justification of the truth of such basic statements is the perception itself. See B. Russell, *The Analysis of Mind* (London, 1921), and his book *An Inquiry into Meaning and Truth* (London, 1940). Wittgenstein, in his *Tractatus Logico-Philosophicus*, thinks that if a proposition contains complex expressions, then its sense depends on the truth of more basic components or propositions that describe these expressions.

<sup>7</sup> M. Schlick, “The Foundation of Knowledge,” in Ayer, *Logical Positivism*, p. 209.

<sup>8</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, p. 213.

<sup>9</sup> Neurath, “Protocol Sentences,” in Ayer, *Logical Positivism*, p. 203.

<sup>10</sup> See an important paper by Lorenz B. Puntel, 1999. “On The Logical Positivists’ Theory of Truth: The Fundamental Problem and a New Perspective,” *Journal for General Philosophy of Science* 30 Netherlands: Kluwer Academic Publishers:101–130.

<sup>11</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, p. 215.

<sup>12</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, pp. 220–221.

<sup>13</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, p. 226.

<sup>14</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, p. 223.

<sup>15</sup> Schlick, “Foundation,” in Ayer, *Logical Positivism*, p. 227.

<sup>16</sup> K. Popper, 1959. *The Logic of Scientific Discovery*. London. Also see his book *Conjectures and Refutations* 1963, London.

<sup>17</sup> See al-Ghazali in his book *The Deliverance from Error*.

<sup>18</sup> According to C. G. Hempel, the comparison with "reality" or "facts" presupposes a "cleavage" between statements and reality; this is the result of a "redoubling metaphysics." It seems that the issue of comparing statements to facts is related to a pseudo-problem. (See his article "On the Logical Positivists' Theory of Truth," published in: *Analysis* 2, 1935, p. 51.) Facts, according to him, are not a scientist's choice of the language and its rules, rather they are more akin to essential ontological entities; "the imagination that the 'facts' with which propositions are to be confronted are substantial entities and do not depend upon the scientist's choice of syntax rules." (See his article "Some Remarks on 'Facts' and Propositions," published in: *Analysis* 2, 1935, p. 95.)

<sup>19</sup> According to Kant, there are four kinds of judgments: analytic, synthetic, a priori, and a posteriori: analytic a priori judgment, synthetic a posteriori judgment, analytic a posteriori judgments (impossible), and synthetic a priori (possible).