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Scepticism and Criterion of Truth[*]

1. A criterion is a characterizing mark or trait which enables us to recognize that something is the case. When speaking about criteria of truth, we usually have in mind properties of cognition which enable us to differentiate truth from falsity. The term "property" is understood here rather loosely, since the above condition has been claimed to be satisfied by such diverse entities as, e.g., clear and distinct apprehension, consensus, utility, coherence, being confirmed in practice, etc. – that is, historically proposed criteria of truth. The list is not exhaustive, as scholars or scientists often claim that positive results of tests or being justified in such-and-such way also perform the role of criteria of truth.

Problems of trustworthiness of criteria of truth are often regarded as central to epistemology. They are expressed by questions of the form "Is **C** a property of cognition which enables us to differentiate truth from falsity?" or by equivalent questions.

The philosophical tradition provides arguments in favour of irresolvability of such problems. Certain *tropes* of (ancient) sceptics are usually recalled in this context.

The claim of the sceptics is sometimes worded as follows: no problem of trustworthiness of a criterion of truth can be solved to the affirmative because any argumentation in favour of a positive solution commits either the *petitio principii* fallacy or the *regressus ad infinitum* fallacy.[1] Sometimes, instead of speaking of *petitio principii* and *regressus ad infinitum* separately, the claim in expressed more generally, by referring to different forms of *petitio principii*.[2] This interpretation seems more adequate. Let us quote the

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[1]This is how the claim is interpreted, e.g., by Dąmbska (1958), p. 11, and Tatarkiewicz (1958), p. 199.

[2]See Stępień (1966), pp. 94–95.

relevant passage of *Against the Logicians*:

> Those who profess to judge what is true ought to have a criterion of what is true. This criterion, then, either is not judged upon or has been judged upon. And if it is not judged upon, what is the source of its trustworthiness? For nothing that is disputed is trustworthy apart from a judgement. But if it has been judged upon, again the thing judging it either is not judged upon or has been judged upon. And if it is not judged upon, it is untrustworthy. But if it has been judged upon, again the thing judging upon it either has or has not been judged upon, and so on *ad infinitum*. Again, the criterion, being a disputed thing, is in need of some demonstration. But since some demonstrations are true and others are false, the demonstration that is employed toward the trustworthiness of the criterion also ought to be confirmed through some criterion, so that we fall into the reciprocal mode, where the criterion is waiting for the trustworthiness supplied through the demonstration, but the demonstration is waiting for the confirmation derived from the criterion, and neither of them can be made trustworthy by the other. And besides, the same thing becomes both trustworthy and untrustworthy. For the criterion is trustworthy because it judges the demonstration, and so is the demonstration, because it demonstrates the criterion. But the criterion is untrustworthy because it is demonstrated by the demonstration, and the demonstration because it is judged by the criterion.[3]

The sceptics also argued that the controversy concerning the existence of a criterion of truth is irresolvable. As Sextus Empiricus writes in the *Outlines of Pyrronism*:

> Of those who have considered the matter, some (...) have asserted that there is a criterion; others (...) have asserted that there is not; while we have suspended judgement as to whether there is or not. This dispute, then, they will either declare to be decidable or to be undecidable; if undecidable, they will be granting at once that judgement should be suspended; but if decidable, let them say with what it is to be decided, seeing that we do not have any agreed-upon criterion and do not know – indeed, are inquiring – whether one exists. And anyhow, in order to decide the dispute that has arisen about the criterion, we have need of an agreed-upon criterion by means of which we shall decide it; and in order to have an agreed-upon criterion it is necessary first to have decided the dispute about the criterion. Thus, with the reasoning falling into the circularity mode, finding a criterion becomes

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[3]Sextus Emipricus, *Against the Logicians*. Translated and edited by Richard Bett, Cambridge University Press, Cambridge 2005, pp. 66–67.

aporetic; for we do not allow them to adopt a criterion hypothetically, and if they wish to decide about the criterion by means of a criterion we force them into an infinite regress. Further, since proof requires a criterion that has been proved, while the criterion has need of what has been determined to be a proof, they land in circularity.[4]

The relevant claims of the sceptics will be interpreted here as follows:

(T.1)   Each argumentation in favour of trustworthiness of a criterion of truth commits the *petitio principii* fallacy.

(T.2)   Each argumentation in favour of the existence of a criterion of truth commits the *petitio principii* fallacy.

This essay is devoted to a critical analysis of the above statements.[5] We point out their ambiguity and show that they are true under a certain interpretation and false under another one. We also show that the issues arising in discussions concerning criteria of truth cannot be adequately described in terms of the inevitability of committing the *petitio principii* fallacy.

2. The analysis can be pursued in two ways. First, one can make an attempt to establish whether the reasonings by means of which (T.1) and (T.2) had been (as we have assumed) justified are logically correct. Attempts of this kind have already been made; in most cases some tacit but important premises were shown to be false.[6] Yet, complications arise out of the fact that the relevant premises involve concepts which are far from being clear and, moreover, whose meanings have changed historically. Thus, on the one hand, the logical value of a premise can be assessed only after interpreting the crucial terms in some way, but, on the other hand, diverse interpretations are always permitted.

However, there is a second option possible. In order to determine the

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[4]Book II, chapter 4: 18–20. English translation excerpted from: Sextus Empiricus *Outlines of Pyrronism*. Translated, with Introduction and Commentary, by Benson Mates, Oxford University Press, New York/Oxford 1996.

[5]Let us stress: we do not claim that (T.1) and (T.2) fully reflect the actual contents of the claims made by the sceptics. Yet, these statements imply that the issues of trustworthiness as well as of the existence of a criterion of truth are irresolvable for logical (in the wide sense of the word) reasons. This makes them interesting even if they do not adequately express the actual theses of the sceptics.

[6]See, e.g., Ajdukiewicz (1927), pp. 11–12, Ajdukiewicz (1949), pp. 32–36, Stępień (1966), pp. 94–96, Chwistek (1921), p. 39, Schlick (1924), p. 75, Wiegner (1925), pp. 62–64. Chwistek, Schlick and Wiegner analysed the version of argumentation provided by Leonard Nelson (see Nelson 1908, p. 32). For more recent discussions on different forms of scepticism see, e.g., Almeder (1973), Barnes (1973), Cargile (1972), Cavell (1979), Cornman (1980), Johnson (1978), Klein (1981), Lehrer (1971), Oakley (1976), Unger (1975).

validity (or lack of validity) of the analysed statements, we can also act as follows. At the beginning, we specify and make precise the meanings of the crucial terms involved. Then we treat the statements as hypotheses whose logical values are to be established irrespective of other considerations. A result obtained in this way remains valid on the condition that the relevant terms are construed exactly in the manner decided on here. Needless to say, this reservation becomes quite significant when, despite attempts made, the accepted interpretation does not agree with the basic intuitions of philosophers considering the subject matter.

In this essay we choose the second way of proceeding.

3. The concept of argumentation plays a crucial role in our considerations. We make use of the definition given by Seweryna Łuszczewska-Romahnowa in the paper *Z teorii racjonalnej dyskusji* (From the theory of rational discussion).[7] The concept defined is rather narrow, but it seems that the classical theory of logical fallacies presupposes a similar (if not identical) account of argumentation. The virtue of the definition proposed lies in its intuitiveness as well as in the fact that it employs only a few auxiliary concepts.

Generally speaking, an argumentation is a string of sentences, each of which is accompanied with an annotation stating that the sentence in question is asserted, or that the sentence is inferred from some specified sentence(s).

Let $t, s_1, s_2, \ldots$ represent sentences of a language $\mathcal{L}$. Let $\delta_1, \delta_2, \ldots$ stand for expressions of $\mathcal{L}$ stating that a sentence of the language is asserted, or that a sentence is derived from some specified sentences. (As for English, "it is well-known", "it is true that", "undoubtedly", "there are good reasons to believe that" are examples of phrases of the first kind; "because …", "since … and …", where the dots are filled with English sentences, provide examples of phrases of the second type.) Let us call these expressions *qualifiers*; the category comprises *assertion qualifiers* and *dependency qualifiers*.[8] We are now ready to introduce:

DEFINITION 1. *An* argumentation in favour of a thesis t *(in symbols:* Arg(t)*) is a finite sequence of pairs* $(s_1, \delta_1), \ldots, (s_n, \delta_n)$ *such that:*

1. $s_n = t$;

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[7]Cf. Łuszczewska-Romahnowa (1964). We borrow the concept of argumentation – but not its definition presented here – from the paper, and similarly for some auxiliary concepts (the notions of dependency excluded, as well as the definition *petitio principii* given below.) Since the paper of Łuszczewska-Romahnowa is written in Polish and has not been translated into English yet, some terminological decisions were necessary.

[8]The former state that a given sentence is asserted, while the latter claim that a sentence is inferred from some specified sentence(s).

2. *for each k, where $1 \leq k \leq n$: the qualifier δ_k that occurs in the k-th term of the sequence either states that the sentence s_k is asserted, or states that s_k is derived from some sentence or sentences that occur(s) in some term(s) of the sequence preceding the k-th term;*

3. *there is no subsequence of the sequence $(\mathsf{s}_1, \delta_1), \ldots, (\mathsf{s}_n, \delta_n)$ (resulting from it by deleting some term or terms) that fulfils the above clauses 1 and 2.*

By an *assumption* of an argumentation $\mathsf{Arg}(\mathsf{t})$ we mean any sentence that is accompanied in it with an assertion qualifier. By an *inference* of $\mathsf{Arg}(\mathsf{t})$ we mean any term/pair (s_i, δ_i) of it such that δ_i is a dependency qualifier, that is, states that the sentence s_i is derived from some earlier sentence(s) of $\mathsf{Arg}(\mathsf{t})$. When (s_i, δ_i) is an inference, s_i is called the *conclusion* of the inference, while each sentence referred to by the qualifier δ_i is a called a *premise* of the inference.

Let the pairs (s_i, δ_i), (s_j, δ_j) and (s_m, δ_m), where $1 < i, j, m \leq n$, be inferences of argumentation $\mathsf{Arg}(\mathsf{t})$. Inference (s_j, δ_j) is *directly dependent on* inference (s_i, δ_i) if, and only if, a premise of (s_j, δ_j) is just the conclusion of the inference (s_i, δ_i). We say that inference (s_m, δ_m) is *indirectly dependent on* inference (s_i, δ_i) if, and only if, (s_m, δ_m) is not directly dependent on (s_i, δ_i), but there exists a sequence $\mathfrak{S}$ such that:

(a) $\mathfrak{S}$ is a subsequence of $\mathsf{Arg}(\mathsf{t})$ and each term of $\mathfrak{S}$ is an inference,

(b) (s_i, δ_i) is the first term of $\mathfrak{S}$,

(c) (s_m, δ_m) is the last term of $\mathfrak{S}$,

(d) each inference different from (s_i, δ_i) that is a term of $\mathfrak{S}$ is directly dependent on the inference which immediately precedes it in $\mathfrak{S}$.

We use "dependent on" as a cover term for both "directly dependent on" and "indirectly dependent on".

Let s_d be an assumption of argumentation $\mathsf{Arg}(\mathsf{t})$. If s_d is a premise of a certain inference of $\mathsf{Arg}(\mathsf{t})$, then this inference and all the inferences of $\mathsf{Arg}(\mathsf{t})$ which are dependent on it are called *inferences dependent on* the assumption s_d.

4. Generally speaking, an argumentation commits the *petitio principii* fallacy if it is circular, or an infinite regress occurs in it, or the argumentation relies upon an assumption which is not justified at all or is not sufficiently justified. In this section we make an attempt to provide an explication of the concept "an argumentation commits the *petitio principii* fallacy", where the notion of argumentation is understood in the sense of Definition 1.

First, let us assume that problems expressed by the following questions:

(1) *What makes a sentence a legitimate assumption of an argumentation?*

(2) *What inferences are valid?*

have been resolved. Answers to the above questions will be called here *epistemic standards*, or briefly, *standards*. Assuming that standards are fixed, the concept of circularity in argumentation can be defined as follows:

DEFINITION 2. *An argumentation,* $\mathsf{Arg}(\mathsf{t})$, *in favour of a thesis* t *is circular if, and only if:*

1. *there exist: an assumption* s_i *of* $\mathsf{Arg}(\mathsf{t})$ *and an inference* (s_j, δ_j) *of* $\mathsf{Arg}(\mathsf{t})$ *such that:*

   1.1. s_i *is not a legitimate assumption,*

   1.2. s_i *is a premise of the inference* (s_j, δ_j),

   1.3. s_i *is the conclusion of* (s_j, δ_j) *or is the conclusion of a certain inference of* $\mathsf{Arg}(\mathsf{t})$ *which is dependent on* (s_j, δ_j)

   or

2. *there exists an assumption* s_i *of* $\mathsf{Arg}(\mathsf{t})$ *such that* s_i *is legitimate for the reason that* s_i *is a thesis of an argumentation which has* t *as an assumption*

   or

3. *there exists an inference* (s_j, δ_j) *of* $\mathsf{Arg}(\mathsf{t})$ *such that:*

   3.1. (s_j, δ_j) *is not valid, and*

   3.2. s_j *is a conclusion of a valid inference of an argumentation if, and only if the premises of the inference include:*

      3.2.1. *the conclusion of* (s_j, δ_j) *or*

      3.2.2. *the conclusion of an inference which is dependent on* (s_j, δ_j) *in* $\mathsf{Arg}(\mathsf{t})$

   or

4. *there exists an assumption* s_i *of* $\mathsf{Arg}(\mathsf{t})$ *such that:*

   4.1. s_i *is not legitimate,*

   4.2. s_i *becomes legitimate if, and only if it is a thesis of an argumentation having among its assumptions the conclusion of a certain inference dependent in* $\mathsf{Arg}(\mathsf{t})$ *on the assumption* s_i.

where $1 \leq i \leq n$ *and* $1 < j \leq n$.

By a *regressive sequence of argumentations* we mean an infinite sequence of argumentations the theses of which are pairwise distinct and each argumentation in the sequence has an assumption whose necessary condition of legitimacy is being a thesis of some argumentation; moreover, the assumption is the thesis of the next argumentation in the sequence.

Call an argumentation *admissible* if all the assumptions of the argumentation are legitimate and all its inferences are valid. We define the *regressus ad infinitum* fallacy as follows:

DEFINITION 3. *An argumentation,* Arg(t), *in favour of a thesis* t *commits the* "regressus ad infinitum" *fallacy if, and only if there exists at least one assumption of* Arg(t) *such that:*

1. *the necessary condition of legitimacy of the assumption is being a thesis of some argumentation,*

2. *the assumption is the thesis of the first term of some regressive sequence of argumentations, and*

3. *the assumption is not the thesis of any admissible argumentation.*

Let us now introduce the relevant concept of *petitio principii* fallacy.

DEFINITION 4. *An argumentation,* Arg(t), *in favour of a thesis* t *commits the* "petitio principii" *fallacy if, and only if:*

1. Arg(t) *is circular, or*

2. Arg(t) *commits the* regressus ad infinitum *fallacy, or*

3. *there exists an assumption* α *of* Arg(t) *which is not legitimate and:*

   3.1. α *is identical with* t *or*

   3.2. *the thesis* t *is the conclusion of an inference of* Arg(t) *that is dependent on* α *in* Arg(t).

Thus if an argumentation is not circular in the sense specified by clause (3) of Definition 2, and all the assumptions of the argumentation are legitimate and all its inferences valid, the argumentation does not commit the *petitio principii* fallacy. However, in order to assess the legitimacy of assumptions and validity of inferences we need answers to questions (1) and (2), that is, we have to make use of some (epistemic) standards. But questions (1) and (2) can be answered in different ways. Hence a given argumentation can be, under some standards, rightly accused of committing the *petitio principii* fallacy and, at the same time, from the point of view of other standards, rightly assessed as not committing the fallacy. In other words, an allegation of committing the *petitio principii* fallacy can be simultaneously justified and

non-justified: the verdict depends on accepted epistemic standards. At first sight this may seem paradoxical. However, let us note that a similar conclusion can be derived from Ajdukiewicz's characterization of the vicious circle fallacy:

> An argument is circular if a premiss, which is not yet a validly accepted statement, occurs also in the given or in a later step of the argument as a conclusion. Apart from such explicit vicious circles there are implicit ones. Whether or not an inference is implicitly circular depends on (1) what premises one is allowed to accept without a proof, (2) what types of argument are regarded as valid. Provided both these conditions are fixed, an argument is circular if – given the argument types regarded as valid – some of its steps would be valid only if its conclusion or the conclusion of some of the later steps were among the previously validated statements. So, for example, an enthymematic argument is circular if one of its suppressed premisses also occurs later as conclusion. Thirdly, an argument is implicitly circular if one accepts illegitimately a premiss without deriving it from other statements and if its legitimate derivation – given the types of argument regarded as valid – would involve an explicit circle.[9]

Let us add that an analogous conclusion can be drawn from Aristotle's description of *petitio principii* included in *Prior Analytics*:[10]

> Begging or assuming the point at issue consists (to take the expression in its widest sense) in failing to demonstrate the required proposition. But there are several ways in which this may happen: for example, if the argument has not taken syllogistic form at all, or if the premises are less well known or not better known than the point to be proved, or if the prior is proved by the posterior (...).

> Now some things are naturally knowable through themselves, and others through something else (for principles are knowable through themselves, while the examples which fall under the principles are knowable through something else); and when any one tries to prove by means of itself that which is not knowable by means of itself, then he is begging the point at issue.[11]

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[9]Kazimierz Ajdukiewicz *The Scientific World-Perspective and Other Essays, 1931–1963.* Edited and with an Introduction by Jerzy Giedymin, D. Reidel, Dordrecht/Boston 1978, p. 169. The quotation comes from the paper "Logic and Experience", first published in Polish in 1947.

[10]We take into consideration only the characterization included in *Prior Analytics*. This seems justified since, as Hamblin points out (see Hamblin 1970, p. 74), in *Topics* as well as in *On Sophistical Refutations* "petitio principii" is construed as a fallacy of a question-and-answer dialogue.

[11]Book II, Chapter 16. English translation taken from: Aristotle *The Categories. On In-*

The notions "less well known", "not better known", "prior" and "posterior" used above are understood in accordance with Aristotle's concept of science. Yet, assigning some non-Aristotelian meanings to them may result in an assessment change: an argumentation regarded by Aristotle as committing the fallacy may not commit it relative to some non-Aristotelian epistemic standards. In other words, what is "left without a proof" to Aristotle can be regarded as justified in view of some other standard(s).

5. The analysis of the *petitio principii* fallacy presented above leads to the conclusion that the previously formulated[12] statements (T.1) and (T.2) are equivocal. In particular, (T.1) can be understood either as:

(T.1.a)   For each argumentation in favour of trustworthiness of a criterion of truth there exist epistemic standards in view of which the argumentation commits the *petitio principii* fallacy.

or as:

(T.1.b)   Each argumentation in favour of trustworthiness of a criterion of truth commits the *petitio principii* fallacy in view of any epistemic standards.

Analogously, (T.2) splits into:

(T.2.a)   For each argumentation in favour of the existence of a criterion of truth there exist epistemic standards in view of which the argumentation commits the *petitio principii* fallacy.

(T.2.b)   Each argumentation in favour of the existence of of a criterion of truth commits the *petitio principii* fallacy in view of any epistemic standards.

Since for each argumentation one can select standards which make at least one of its assumptions illegitimate, the statements (T.1.a) and (T.2.a) are *true*. However, we will show that the statements (T.1.b) and (T.2.b) are false. Since falsity of (T.1.b) yields falsity of (T.2.b), we begin with the statement (T.1.b).

6. In order to show that the statement (T.1.b) is false it suffices to give examples of: epistemic standards and an argumentation in favour of trust-worthiness of a certain criterion of truth such that the argumentation does

terpretation. Prior Analytics, The Loeb Classical Library, William Heineman Ltd, London & Harvard University Press, Cambridge Mass. 1962, pp. 485–487.
    [12]See page 13.

not commit the *petitio principii* fallacy with respect to the standards.

Let us observe, first, that no argumentation of the analysed kind commits the fallacy in view of standards that accept any assumption as legitimate without grounding in any cognitive results, and which regard each inference as valid. There are, however, less artificial standards which enable us to prove our point.

Before we go on, let us introduce some terminological conventions. By "justified by empirical data of type $\mathbb{W}$" we mean that the relevant data are collected in a way described in the characterization of $\mathbb{W}$, and that this amounts to justification. For our purposes, however, there is no need to specify $\mathbb{W}$ in detail. Similarly, "indirectly justified by comparing contents with the relevant data of type $\mathbb{W}$" is left undefined, but also this, as we will see, produces no harm.

Assume that, for a given object-level language and its metalanguage, the following standards are binding:

(**S.1**)   A sentence is a legitimate assumption of an argumentation if:

    (a)   it is justified by empirical data of type $\mathbb{W}$, or

    (b)   it is indirectly justified by comparing its content with the relevant empirical data of type $\mathbb{W}$, or

    (c)   it is justified *a priori* by virtue of its content, or

    (d)   it is the conclusion of a deductive or inductive inference whose premises have the properties characterized by the conditions (a), (b) and (c) above.

(**S.2**)   An inference occurring in an argumentation is valid if:

    (a)   the inference is deductive, or

    (b)   the inference is inductive.

Again, there is no need to impose any specific conditions on the inductive inferences in question.

Let $p_1, \ldots, p_r$ (where $r \geq 4$) represent translations into the metalanguage of some selected object-level language sentences. Assume that each of the translations is equiform to and synonymous with the corresponding object-level language sentence. Let $\ulcorner p_1 \urcorner, \ldots, \ulcorner p_r \urcorner$ stand for metalanguage names of the sentences whose metalinguistic translations are $p_1, \ldots, p_r$, respectively. Let us now consider an argumentation in favour of the thesis of the form:

Being justified by empirical data of type $\mathbb{W}$ is a criterion of truth.

As assumptions of the argumentation we employ:

(A1) k sentences of the form "It is the case that p_i.",

(A2) m sentences of the form "It is not the case that p_j.",

(A3) k sentences of the form "Sentence $\ulcorner p_i \urcorner$ is justified by empirical data of type $\mathbb{W}$.",

(A4) m sentences of the form "Sentence $\ulcorner p_j \urcorner$ is not justified by empirical data of type $\mathbb{W}$",

(A5) $k + m$ sentences of the form "Sentence $\ulcorner p_t \urcorner$ is true if, and only if it is the case that p_t",

(A6) the following sentence: "If each sentence justified by empirical data of type $\mathbb{W}$ is true and each sentence that is not justified by empirical data of type $\mathbb{W}$ is not true, then being justified by empirical data of type $\mathbb{W}$ is a criterion of truth.".

where $k > 1$, $k + m = r$ and $1 \leq i \leq k$, $k + 1 \leq j \leq n$, $t = 1, \ldots, r$.

Now suppose that the assumptions specified by (A1) and (A2) are justified by empirical data of type $\mathbb{W}$. Suppose also that the assumptions characterized by (A3) and (A4) are justified by comparing the contents of the sentences involved with the relevant data of type $\mathbb{W}$. Moreover, suppose that the assumptions (A5) and (A6) are justified by virtues of their contents alone. The relevant inferences of the argumentation in question can be briefly displayed as follows:

> From the assumptions included in (A1), (A3) and (A5) we (deductively) conclude that the sentences $\ulcorner p_1 \urcorner$, …, $\ulcorner p_k \urcorner$ are both true and justified by empirical data of type $\mathbb{W}$. Hence, inductively, each sentence of the language which is justified by empirical data of type $\mathbb{W}$ is also true. From the assumptions specified by (A2), (A4) and (A5), in turn, we deductively conclude that $\ulcorner p_{k+1} \urcorner$, …, $\ulcorner p_r \urcorner$ are neither true nor justified by empirical data of type $\mathbb{W}$. Hence, by an inductive reasoning, each sentence of the language which is not justified by empirical data of type $\mathbb{W}$ is not true. Therefore, by (A6), being justified by empirical data of type $\mathbb{W}$ is a criterion of truth.

Observe that each assumption of an argumentation of the above kind is legitimate in view of the relevant standards, and that each inference involved in it is, again in the light of the standards, valid. Hence, taking into consideration the results obtained in the previous sections, we are justified in saying that an argumentation of the above sketched kind does not commit the *petitio principii* fallacy in view of the relevant standards.

7. A possible objection is: when arguing (in the way sketched above) for the thesis that being justified by empirical data of type $\mathbb{W}$ constitutes a criterion of truth, we accepted that the relevant standards are binding and thus we "assumed" the standards (**S.1**) and (**S.2**). On the other hand, no argumentation in favour of these standards has been presented. Hence the argumentation, as a matter of fact, commits the *petitio principii* fallacy.

However, the objection can be easily refuted. The standards (**S.1**) and (**S.2**) are not assumptions, in the technical sense of the word, of an argumentation. Moreover, the assumptions of the argumentation need not be augmented with the standards. We do not have to enrich the assumptions since all of them are already legitimate in view of the standards accepted. The standards (**S.1**) and (**S.2**) are not assumptions of the argumentation since, first, they do not belong to the language in which argumentation is pursued, but, generally speaking, refer to sentences of the language. Second, epistemic standards are "assumed" in argumentations only in the sense that they are obeyed or implemented – they are not premises of inferences. When arguing on the basis of assumptions we simply make use of the assumptions and there is no need to supplement them with higher-level language statements specifying the conditions of legitimacy of the assumptions and the validity of the inferences.

Let us add that since the standards implemented are not assumptions of an argumentation, a given argumentation need not commit the *petitio principii* fallacy even if argumentations in favour of the standards commit the fallacy.

The next possible objection can be formulated as follows. When arguing that being justified by empirical data of type $\mathbb{W}$ is a criterion of truth we made use of sentences which were legitimate assumptions due to being justified by empirical data of type $\mathbb{W}$. Is this not tantamount to committing the *petitio principii* fallacy?

This objection is also beside the point. The assumptions characterized by (A1) and (A2) were legitimate because (as we supposed) they were justified by empirical data of type $\mathbb{W}$, and not for the reason that they were conclusions of inferences dependent (in the argumentation) either on the assumptions or on the thesis of the argumentation. The assumptions are legitimate in view of the standards accepted and thus no further argumentation in favour of them is necessary in order to establish their legitimacy (again, legitimacy in view of the standards.)

8. The considerations presented above show that the statement (T.1.b) is false. It follows that the statement (T.2.b) is false as well. Let us stress, however, that, according to what has been said above, one can always find

standards in view of which argumentations that do not commit the *petitio principii* fallacy relative to some standards, do commit the fallacy from the point of view of the standards found. Thus, *although it is not the case that problems of trustworthiness and existence of criteria of truth are irresolvable for logical reasons, each solution of these problems can be contested for epistemological reasons.*

9. Since the legitimacy of the charge of committing *petitio principii* depends on epistemic standards, and a given argumentation can be viewed as committing the fallacy relative to some standards and not committing it in view of other standards, the question arises: what standards are the "right" ones? Without forejudging any answer to this question let us only observe that a conclusive discussion of the issue is possible only if argumentations in favour of standards obey some meta-standards. On the other hand, if some meta-standards are accepted, an opponent can always ask whether they are trustworthy, and if we present an argumentation in favour of the meta-standards, he or she can address an analogous question concerning the meta-meta-standards obeyed, and so forth. Since it is impossible to deliver an infinite number of argumentations, a "dogmatic" cessation of the discussion at some point is the only option. Let us observe, however, that since standards are not assumptions (in the technical sense) of argumentation, ceasing the discussion does not yield that we committed the *petitio principii* at previous steps – of course in view of the obeyed standards. Clearly, our hypothetical opponent can always select such standards that the argumentations presented to him/her commit the fallacy in view of the standards chosen. Yet, this allows us to ask whether the standards are trustworthy, and if he/she presents to us argumentations in favour of his/her standards, we can further ask whether the standards obeyed in the argumentation are trustworthy, etc. So the only option on the side of the opponent is to cease the discussion at some point. Again, this does not mean that the consecutive argumentations provided by the opponent commit the *petitio principii* fallacy in view of his/her standards. The situations of the proponent and the opponent are largely symmetric.

That being the case, the problem situations arising from considerations concerning the existence as well as the trustworthiness of criteria of truth cannot be adequately described in terms of inevitability of committing the *petitio principii*.

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