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Knowledge and Assertion



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Introduction

One is often bewitched by a word.
For example, by the word “know”

Wittgenstein
(1969, §435).

Since Plato’s *Theatetus*, propositional knowledge has been an enduring topic in philosophy. Even though the concept of knowledge and its analysis present such a long tradition, there is still the presence of “an extraordinary range of existing disagreements concerning conditions of knowing that should figure in an analysis of knowing” (Shope 2002, p. 25).

According to the Platonic ‘tripartite analysis of knowledge’, *knowledge is justified true belief*. In this definition, the term truth reminds us of a realistic concept, that is, a mind-independent concept, while the justification of a belief reminds us of a mind-dependent concept¹. The relation between mind and world is also a basic feature of the concept of assertion. This is so, since every

¹ A very fundamental distinction in epistemology (which I will not analyse further in the present work) corresponds with the dichotomy *a priori* and *a posteriori*. According to the *received view* in epistemology, a-priori knowledge is based on analytic judgements, while a-posteriori knowledge is based on synthetic judgments. In any case, Kant observes that synthetic a-priori judgements can exist and Kripke observes that a-posteriori analytic judgements can exist as well.

assertion is based on an internal act of judgement which is the acknowledgement of the truth of a proposition. The primary role of the act of assertion is to linguistically express our judgements about the external world. Hence, both knowledge and assertion regard the interplay between mind and world.

On the one hand, one could claim that knowledge and assertion are independent concepts, but I am very sceptical of this, since they are both propositional attitudes, belong to the same linguistic category. On the other hand, one could maintain that knowledge and assertion are concepts of the same linguistic category, a view that I agree with, since they both aim to the truth of determined propositions. The same propositions express our thoughts on the world, and they are analysed in terms of beliefs and judgements, which are mind-dependent concepts.

In the following sections I will try:

i) to clarify how knowledge can be analysed in a fallibilist and probabilistic setting so that it can be connected to the concept of assertion in order to overcome the counterexamples that any previous analysis of knowledge have presented, ii) to determine the constitutive rule(s) of the act of assertion iii) to establish the consequences of the concepts thus analysed of assertion and knowledge for the verificationist programs in (constructive) mathematics and theory of meaning (notably in the dispute between Dummett and Hintikka on the *correct* logic of verificationism).

Usually, the topic i) is mainly considered to belong to epistemology, the topic ii) to philosophy of language and iii) to constructive and/or epistemic logics. I hope that my unified view can open new horizons on these nested concepts.

Notice that, differently from the proposals of a descriptive (or naturalized) epistemology, the present work has been written having in mind a normative framework for epistemology, within

which it is possible to introduce criteria of justification in order to get a rational reconstruction about the concepts of knowledge and assertion. Namely, I am interested in presenting an *explication* of these concepts in order to make sense of the paradoxes that turn out to be connected with knowledge and assertion. Thus, I will not focus too much on the common use of these terms from a descriptive (and cognitive) point of view. Nevertheless, their rational reconstruction offers a proper linguistic treatment which can clarify the ambiguities (and paradoxes) of their use in natural language. Of course, different approaches to knowledge and assertion will determine a variety of interpretations and theories connected with these notions. Only after the assumption of a possible initial framework within which analysing a notion, one can apply a determined theory that turns out to be coherent with respect to the initial framework. In this sense, every theory implies some (partially hidden) philosophical and methodological assumptions, due also to external factors, that lead and determine the object of the research². If so, then there exists the problem of comparing different approaches towards similar phenomena. My proposal indicates that only a rational reconstruction of a notion can handle the minimal features that every interpretation of that notion requires. Once the rational reconstruction has been fixed as a criterion of material adequacy, one can apply a particular theory (with its philosophical and empirical assumptions) which saves the phenomena *explicated* in the rational reconstruction. Of course, there can exist cases in which there is no agreement on the minimal features of the rational reconstructions of a notion, so, only

² In Stokhof (2006) this issue is defined as the problem of the ‘choice of invariants’.

in this case the requirement of the rational reconstruction can be overcome.

Chapter 1 explores the problems of the analysis of knowledge and indicates my probabilistic treatment of the issue, while in Chapter 2 I show the validity and the limits of Williamson's account of assertion and I claim that assertions are governed by two rules of assertions, namely the *knowledge rule* and the *warrant rule*. Moreover, I show the connection between these two rules and two different tendencies in the verificationist program, that I have called *epistemic verificationism* and *pragmatic verificationism*. In case of mathematical knowledge these two tendencies require different formalisms, as it follows in the analysis of the Dummett-Hintikka dispute. In the *Conclusion*, I will be back to the dichotomy between normative and descriptive epistemology, in order to reconsider the initial claims of the present work concerning the analysis of knowledge and assertion.

Knowledge and Gettier Problems

1.1 Analysis of knowledge

According to the standard Platonic epistemology, we can define every “justified true belief” as “knowledge”. In 1963, Gettier showed some counterexamples for this standard tripartite analysis of knowledge. I propose a probabilistic reformulation of the standard definition of knowledge in which Gettier’s counterexamples do not hold anymore.

As I have already indicated, the tripartite definition of knowledge has the following structure:

Def. 1

The subject S knows φ iff

- (a) φ is true.
- (b) S believes that φ .
- (c) S is justified in believing that φ .

The big disagreement on what knowledge is does not facilitate a complete understanding of this concept and the many

counterexamples to the tripartite analysis that one can find in the literature have suggested to many philosophers to adopt one of the following ways to redefine knowledge: (i) strengthening the conditions of justification of the belief; (ii) adding a fourth condition to the analysis of knowledge; or (iii) refuting the paradigm of a possible analysis of knowledge by assuming knowledge as a primitive notion (as in Williamson 2000). For the most part, philosophers have assumed that the tripartite analysis is not sufficient to warrant knowledge, but it is necessary, hence there should be at least an extra condition (case ii). Notice that all the attempts to analyse knowledge have incurred some counterexamples, and ironically this is the only feature that all attempts to analyse knowledge have in common. But the fact that a correct analysis has not yet proposed does not imply that it is *in principle* impossible.

Some examples of analysis of knowledge (which I consider interesting because, although they turn out to be incorrect, they are on the good track) are:

- *causal theory of knowledge*. It states that there must exist a causal relation between the fact expressed by a proposition and the beliefs of a subject (Goldman 1967). But this analysis fails in handling mathematical knowledge, since causality does not play any role in logical and mathematical knowledge.

- *conclusive reason account of knowledge*. This view states that if a proposition is false, then a subject does not present conclusive reasons for believing the truth of the proposition (cf. Dretske 1971). Conversely, this means that if one has conclusive reasons for believing that p , then p is true. But

this fact is not materially adequate, since an act expressed by a sentence can be justified by different (conclusive) reasons, which might not conclude to the truth of the sentence. Thus, the concept of ‘reason’ needs to be *explicated* in a rigorous way, otherwise we end up analysing knowledge with a vaguer and more difficult concept to grasp than knowledge itself. (For some counterexamples to Dretske’s view see Pappas & Swain (1973)).

- *conditional account of knowledge*. This view states that if a proposition p were not true, the subject would not believe that p , while if p were true, the subject would believe that p (Nozick 1981). But Kripke presented a convincing counterexample to the conditional account of knowledge: “Peg is looking at a red barn, but not all barns are real. Nevertheless, red barns cannot be fake, while other colours can. According to Nozick analysis of knowledge, Peg knows that there is a red barn, but she does not know that there is a barn, since if there was no barn, Peg would not believe there was. She would believe of a white fake barn that it was a barn”. Even if one can claim that Nozick’s conditions are relativized to particular methods or reasons, then Nozick’s analysis turns out to be a sophisticated extension of Dretske’s account of knowledge, even if it puts knowledge in a more dynamic framework. Furthermore, if we try to formalize Nozick’s analysis of knowledge by classical logic, we get:

(i) $p \rightarrow Bp$ (B is the doxastic operator)

(ii) $\neg p \rightarrow \neg Bp$.

From (i) and (ii) it follows that $p \leftrightarrow Bp$, that is clearly absurd and rules out as redundant the condition (a) in the analysis of knowledge.

Maybe, Nozick's account of knowledge can be better grasped if one assumes a different logic¹.

In accounts of knowledge, words like “methods”, “reasons”, etc. occur. But these concepts cannot be easily *explicated* in a rigorous manner and new counterexamples to these analyses can be presented. I will show that the concepts of proof, verification and probability can provide a more rigorous definition of knowledge, which can overcome the epistemic counterexamples. Furthermore, these concepts connect knowing and asserting.

In continuation, I will introduce my analysis of knowledge. In my view, the key point in the tripartite definition of knowledge is the concept of “justification” in (c). I define the concept of justification of a belief as a *proof* of the truth of the propositional content of a belief². Thus, we can define (c) in Def.1 in the following way:

DEF. 2

(i) S is justified in believing that φ is true iff S is justified in asserting φ , namely $\vdash_s(\varphi)$ is justified.

¹ Most likely dynamic logical systems and conditional logical systems could handle in a more suitable way Nozick's definition of knowledge.

² Gödel's theorems do not pose a problem, since it is possible to state that there exists a *proof* that the *undecidable* sentence G is not *provable*.

(ii) $\vdash_s(\varphi)$ is justified iff S has a *conclusive* proof that φ is true³.

So, the subject S is justified in believing the truth of a proposition only if S has a proof of the truth of that proposition. The concept of proof requires a further analysis at this point. In fact, the concept of proof can be logical or empirical, conclusive or non-conclusive, direct or indirect and its nature depends on the particular discipline, e.g., a proof in law is not equivalent with a mathematical proof.

Logical proofs are always conclusive (with the possible exception of the family of the nonmonotonic logics), while empirical proofs can be either conclusive (verification) or non-conclusive (degrees of confirmation). A conclusive (certain) proof of φ provides the truth of φ , while a non-conclusive proof of φ is uncertain, allowing further revisions which do not conclude to the truth of the proposition, but rather presents a probabilistic basis (or confirmation degree) of φ with respect to the available evidence. Thus, a non-conclusive proof of φ is consistent with the falsity of φ .

We can distinguish two different types of justification based on proofs, notably: a *strong* justification, based on the conclusive notion of proof and a *weak* justification, based on the notion of the non-conclusive proof. There are good reasons to state that a belief can provide knowledge only if it is justified in the *strong* sense. In fact, this distinction handles the classical dichotomy between

³ “ \vdash_s ” means the assertion expressed by the subject S obtained by a proof. Notice that the concept of justification depends on the concept of proof in my framework. I distinguish an *externalist* justification of an assertion, and the internal justification of a judgment. Both Frege and Dummett assume that the internal counterpart of an act of assertion is a judgment, that is to say the acknowledgment of the truth of a proposition.

episteme and *doxa*. On the one hand, in the DEF. 2 I define the belief of φ in terms of the assertion of φ and this is a type of strong justification since the assertion of φ is justified on the basis of a conclusive proof of the truth of φ . On the other hand, there are also good reasons to state that the strong justification of a belief is undue and we can substitute it with the weak form of justification. In fact, apart from the analytical sentences and some synthetic phenomenal sentences (e.g. “I have a sensation of red here and now”), no synthetic sentence can be handled by a conclusive proof in an austere account of knowledge. The opposition between the holders of conclusive proofs and the holders of non-conclusive views in epistemology can respectively be traced back to Wittgenstein in (Waismann (1967)) and Carnap (1936).

According to Wittgenstein a proof can only be conclusive (verification), while according to Carnap no conclusive verification of synthetic sentences is possible, just a *degree of empirical confirmation*⁴. This raises another question though, if verification requires a conclusive proof of a proposition, then no (or hardly any) synthetic sentence can be verifiable. Thus, if one maintains a strong view on the epistemic justification, then no synthetic sentence can be verified in any case, i.e. no synthetic sentence might be known *in principle* and this is absurd. Moreover, if the concept of

⁴ Skorupski (1997) observes that Wittgenstein’s verificationism is “an operational kind of verificationism”, since Wittgenstein underlines the specific *method* adopted in the verification. Namely, the knowledge of the specific method determines the *sense* of the verified sentence (different methods will determine different senses), while the Neopositivist verificationism regards the acknowledgment of the existence of the logical (or empirical) verification, independently from the specific operation followed. Hence, Wittgenstein’s verificationism is connected to the knowledge of a particular verification procedure for the subject, while this is not the case for the Neopositivist verificationism.

justification involved in Def. (1) is the strong one, then the clause (a) turns out to be redundant since a conclusive proof of φ entails the truth of φ (assuming the soundness of the proof procedures). On the other hand, if one assumes that the justification of knowledge can be based on the non-conclusive proofs, then Gettier's counterexamples hold. *These counterexamples show that the notion of weak justification allows a justified true belief which is not knowledge.* This means that the conditions (a), (b) and (c) in Def. 1 are not jointly sufficient to convert a belief into knowledge.

The first of Gettier's counterexamples is the following one:

(1) Assume that Jones and Smith have applied for a job and Smith has high evidence that Jones will get the job. Assume also that Smith has a high level of evidence that Jones has ten coins in his pocket, then Smith believes that:

(d) Jones is the man who will get the job, and Jones has ten coins in his pocket.

But if Smith believes (d) he will also believe

(e) the man who will get the job has ten coins in his pocket.

But imagine, further, that not known to Smith, he himself, not Jones, will get the job and that Smith himself has ten coins in his pocket, but he does not know that. In this case, the following conditions hold for Smith.

(a) the sentence (e) is true

(b) Smith believes the sentence (e)

(c) Smith is justified in believing that the sentence (e) is true.

Note that (e) is true for Smith, while (d) – the sentence from which (e) is inferred is false – but Smith does not know that (e) is true in virtue of the number of coins in Smith's pocket, because Smith does not know how many coins there are in his pocket, and he bases his belief in (e) on the number of coins in Jones's pocket, whom he falsely believes to be the man who will get the job.

(2) the second of Gettier's counterexamples is the following. Assume that Smith has strong evidence that

(f) Jones owns a Ford.

From (f) Smith can infer the following statements even if he does not know where Brown is, notably:

(g) Either Jones owns a Ford, or Brown is in Boston

(h) Either Jones owns a Ford, or Brown is in Barcelona

(i) Either Jones owns a Ford, or Brown is in Brest-Litovsk.

Now, suppose that Jones drives a rented car and that by coincidence Brown is in Barcelona. Therefore, Smith does not know that (h) is true although

(a) the sentence (h) is true

(b) Smith does believe that the sentence (h) is true

(c) Smith is justified in believing that (h).

The structure of Gettier's counterexamples can be handled in the following way: assume that *S* is justified (in the weak sense) in

believing that φ , on the basis of the global available evidence E . Suppose that S can deduce ψ from φ . But if ψ has been deduced from φ and if S is justified in believing that φ , then S is justified in believing that ψ . Assume now that φ is false (and this is possible if one maintains the weak justification, i.e. one can be justified in believing a false proposition) and ψ is true. In this case S has a justified true belief in ψ which does not count as knowledge (Musgrave 1993, chapter I). Gettier's specific counterexamples have the above structure: counterexample 1 is obtained by substituting in the above argument φ with $P(t)$ and ψ with $\exists x P(x)$, while counterexample 2 is obtained by replacing ψ with $(\varphi \vee \psi)$.

Notice that Gettier's counterexamples make sense only if one assumes a weak sense of justification, since a conclusive proof of φ entails the truth of φ . Hence, if one holds a strong epistemic justification, then it is not possible that one can infer the falsity of φ from a conclusive proof of φ . But if one holds a weak epistemic justification, the probability of the conclusions of Gettier's cases turns out to be equal or greater than the probability of their premises.

The value of the tripartite analysis of knowledge also lies in the idea that skepticism attacks some (or all) constitutive elements of knowledge such as truth, belief, and justification that make knowledge impossible. Namely, one can be sceptical about the *source* of our *beliefs* (hypothesis of a dream, etc.), but the most important form of skepticism regards the *justification* of our beliefs

(academic skepticism)⁵, which can take place when some information is warranted (or defined) by even more primitive information. Nonetheless, such primitive meaningful data have to be explained and justified. Thus, there is a *regressus ad infinitum*, while every procedure of justification has to be a finite procedure. No infinite sequence of reasons in an argument can be considered to be a justification, since a justification is materially adequate if it can be controlled. Infinite sequences cannot be epistemically surveyable.

In an axiomatic system, the meaning of the primitive notions is explicated by a system of axioms which implicitly define them. If the axiomatic system is an empirical theory, then there will be some rules of correspondence between observation statements outside the theory and some expressions of the system, in order to partially interpret the system. Given this structure for empirical theories, in the case of empirical knowledge, it is more convenient to adhere to a *coherentist* and *probabilistic* view rather than to a foundationalist one, since the material adequacy of the theory with respect to the external world is obtained by the rules of correspondence.

1.2. Knowledge, probability and proofs

My attempt to solve Gettier's problem is based on the strong sense of justification and conclusive proof. As we just saw, a "classical" epistemology based only on a strong justification will end up placing all synthetic sentences outside the limit of knowledge. In contrast, what I suggest is a *probabilistic account of knowledge*

⁵ Another ancient version of skepticism is "Pyrrhonian Skepticism", which states that nobody can come to know anything, namely knowledge is an empty concept. This is an issue of *global* skepticism.