SOME WEAKNESSES OF A PRIORI WARRANTS

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Abstract

The paper discusses the understanding of the concept of apriority in the contemporary debate. Specifically, it argues the concept has been weakened, in different ways and by different authors, with the aim of escaping the Quinian attack on this notion. These weakening however often seem to lack independent motivations, and moreover the resulting concept sometimes threatens to be internally incoherent; or so I argue.

Introduction

The concept of apriority has enjoyed, in later years, a renewed attention in the philosophical debate, and a sort of re-evaluation, as to the relevance of its role in epistemology and philosophy generally. At the same time a strong debate developed about how exactly the concept has to be defined, and it lead to a substantial change in the understanding of the concept, or, in a more extreme interpretation, to the substitution of the concept traditionally indicated by the expression "a priori" with an altogether different one. The first aim of this paper is to clarify some aspects of this change, while casting some doubts on the motivations that have been given for it, and on its theoretical utility. I will also argue that there is a feature of a priori warrants, a priori rational unrevisability, which cannot be given up, if we need to work with a coherent concept.

Some preliminary clarification of terms is in order. The concept of a priori, as it has been discussed in recent literature, applies primarily to *epistemic* warrants, or justifications; for short we will avoid the adjective epistemic hereafter, as we are not going to talk about any other kind of warrants or justifications. We might use sometimes the expression "the a priori", referring, if it is not otherwise indicated, to a priori warrants. In other words we can say that apriority is a property of warrants, if it is possessed by something at all. A belief can be said a priori if it is justified by such a kind of warrant. A piece of knowledge can be said to be a priori if it consists of one or more such beliefs. Some complication might arise in defining what is an a priori proposition; we might want

to call a proposition a priori if it is believed, or known, a priori by at least some subject. Or we might call a priori a proposition that can be believed, or known, in such a way. For our purposes anyway I do not think there is a relevant difference, and we can decide to use the former sense of the expression, considering that a pure terminological choice. We have not yet defined the term epistemic "warrant", or "justification" (I take them here as synonymous). This is a really difficult task, since there is great disagreement among theorists about what constitutes a warrant. My best effort to give a neutral definition would be something like this: **DEF** if something is a warrant for a proposition P and a subject S, then, *ceteris paribus*, it is correct for S to believe that P.

If you accept a different definition of warrant you can take the content of **DEF** as a principle that, arguably, any definition is required to satisfy. This requirement is built into the minimal standard understanding of the expression, or so it seems to me. There is a further clarification that is going to be very relevant in the discussion to follow. We can distinguish between two readings of the concept of warrant, a normative reading and a descriptive reading. The definition is intended to capture the normative reading of the concept. In this sense, something is not a warrant if it is a (very) bad warrant, just like something is not a demonstration if it is a bad demonstration, and something is not a reason for believing or acting some way if it is a (very) bad reason. Nevertheless we understand the expressions "bad demonstration", "bad warrant" and so on, because we make use of the descriptive reading. In the latter sense, something is a warrant for a belief and for a subject if and only if the subject takes it to be a warrant for that belief.[1]

What then distinguishes a priori warrants from other kinds of warrant? The minimum, and central, requirement is that it must be a warrant independent of experience. Of course this leaves enormous space for different positions, depending on what you intend by "experience" and "independent of".

Other properties we will discuss are:

1) Infallibility. If a belief is a priori it is true 2) Rational unrevisability. A priori beliefs are rationally unrevisable.

Denying that infallibility and unrevisability are properties of a priori warrants is the central move toward a weak concept of apriority. Although it is reasonable *prima facie* to expect that either they are both properties of apriority or none of the two is, it must be noted that they are logically independent. It might be true that we can have a priori warrants for some false beliefs, but we can never revise those belief, maybe because they are built into our cognitive structure, and it is not contradictory to think that only true beliefs can be a priori warranted, but in epistemically unfavourable situations those beliefs can be rationally revised.

1. Examples of fallibility and fallible examples

Fallibility is the first kind of weakness advocated for a priori warrants we will consider, and probably the most important, both historically and conceptually. Laurence Bonjour, one of the most influential proponents of the fallibility of a priori, admits that there was "an almost exceptionless historical consensus"[2] on the opposite thesis. He then goes on admitting that he has no completely satisfying explanation of the force and wideness of this consensus, while he advances the hypothesis that it was related to the *necessity* attributed to the contents of a priori beliefs. On

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[1] The same distinction, or at least a very similar distinction, can apply to concepts of artefacts. Something is not an airplane if it is a very bad airplane, e.g. if it never succeeded to fly. At the same time we might talk about the "airplane" that Leonardo Da Vinci built (descriptive sense), although we want to say that the first airplane was built in the nineteenth century (normative sense).

[2] L. Bonjour, *In defence of pure reason*, Cambridge University Press, 1998, p.110. Others do not agree about the presence of this historical consensus. See e.g. George Rey (1993) and (1998) or Tyler Burge (1993) p.461. Anyway I think the disagreement is due to a misunderstanding on the notion of infallibility.

the latter point I do not agree, because it seems obvious to me that the main interest of a priori beliefs was just that of being *certain*, and certainty easily descended from infallibility. It is an epistemological common-place, but nonetheless true, that the quest for certainty has been the main concern of epistemology, at least since Descartes to the last century; and many philosophers hoped a priori beliefs could supply the needed foundation for this kind of epistemology. It is this role for a priori beliefs that goes lost in the passage to the weak conception. Philip Kitcher advanced similar considerations with regard to unrevisability[3].

In a nut-shell, Quine's well-known attack has shown there are no unrevisable beliefs, and therefore philosophers who were willing to claim we have a priori beliefs had to isolate another notion of apriority, one that did not imply unrevisability. This notion is that of "warranted independently of experience". The move of thus weakening the concept of apriority is successful if: 1) the new concept is coherent with fallibility and revisability; 2) the new concept has some philosophical role.

To establish the point of the coherence of the weak concept, with regard to fallibility, it would suffice giving a clear example of a belief that is, or has been, a priori warranted, and yet is false. Bonjour claims to have many examples of this kind. Those examples, he says, fall under three categories. Firstly there are very general principles of logics and mathematics, of which paradigmatic examples are provided by Euclidean geometry or Frege's naïve set theory. It seems unfair, it is claimed, to deny Euclid or Frege any kind of warrant for their theories, or the particular axioms that we know to be false. But if they had any warrant it was for sure an a priori warrant. The second kind of examples is provided by history of philosophy. The most distinguished thinkers of our tradition have often made incompatible metaphysical claims, claims that cannot be true at the same time, and could not be justified empirically. So we are in the dilemma; either we deny to some great thinker any warrant whatsoever for his theses, or we grant an a priori warrant for something false. The third and last class of examples is nearer to everyday experience. It consists of errors in calculation, proof and reasoning, errors inevitable, at times, even for the most competent people. It must be noted that those errors can occur even if the calculation, or the like, has been checked carefully, at least under any common standard we use for these procedures. In that case, again, if we exclude, almost *ex hypothesi*, the option of considering the belief completely unwarranted, we are forced to say there can be an a priori warranted false belief. My effort will be that of arguing that in every case it is open to us either denying that the considered belief has any warrant whatsoever (in most cases) or denying it is clearly false.

There is a little thought experiment that might work in pulling the intuitive force away from all the different kinds of situation. In every situation, admittedly, there is someone who has a false belief, sustained by reasons independent of experience. Let us suppose the believer comes to know that he is wrong. It is quite hard to imagine this in the case of metaphysical belief, because metaphysicians quite rarely change their mind; but it is very common in the case of everyday calculation errors, and in the remaining case we can think, dramatically, of Frege discovering the contradictions in his system. Now how will those subjects describe their situation? I think it would be natural for the subjects in question to say something like this: "I thought I had an a priori warrant for my belief, but I was wrong, as I now see". According to the fallibilist, however, they should say something like this: "I had an a priori warrant for my false belief, and so it was a reasonable belief to have, until the moment I discovered it is false, and I ceased to have a warrant". This last description, I think, is highly unnatural, and could only be a sign of a lack of intellectual honesty. Note that, given the nature of the examples, they will come to appreciate the

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[3] Philip Kitcher, "A Priori Knowledge Revisited" in P.Boghossian and C. Peacocke, eds., *New Essays on the A Priori*, Clarendon Press, Oxford, 2000, p.77.

wrongness of their former belief through *a priori* arguments, although it might be someone else to point out those arguments to them, and therefore the arguments were available to them since the start; since nothing in their father experience was necessary, they could have worked out the right conclusion through further and better reasoning.

These considerations of course are not conclusive, but I hope they gave an idea of the way we can treat Bonjour's examples. I would like to concentrate on the one Bonjour finds most compelling, and Goldman[4], commenting on it, agrees; it's the last kind of examples I cited, the errors in calculation. It seems to me, on the contrary, it is the easiest case to respond to. Suppose, at some point in a quite long and complex calculation, I compute $237 - 145 = 97$. Am I to be considered a priori warranted in believing this result, or some subsequent result depending on this? It seems clear to me that the result, being based on a trivial error, cannot be warranted at all, if not in a descriptive sense. Surely though the descriptive sense is not the one we are interested in. I might think, independently of experience, that the belief "tomorrow I will meet the president" is warranted by the other belief "two plus two equals four". In the descriptive sense, therefore, the latter belief is my a priori warrant for the former. In this sense it is trivially true that a priori warrants are fallible.

Now, it might be objected that I'm overlooking an aspect of Bonjour's example: the subject is supposed to be competent, and to have checked his calculation with sufficient care. These specifications however are completely irrelevant to the point we are discussing. If a very competent person makes a very trivial error, his error will not be warranted; and if someone makes a trivial error after a very careful reflection, this might influence our moral judgement on the person, but it does not warrant his error. The facts regarding the competence and the past performances of the subject surely are not devoid of epistemological weight, e.g. if someone else has to decide whether the opinion expressed is worth considering. In this case the warrant will be derived by the observation of past successes, and not on the effective a priori reasoning, and therefore it will not be a priori in any sense. If we consider the warrant itself, anyway, the only competence relevant is the competence shown in the particular case, and that is lacking, *ex hypothesi*.

A different defence of Bonjour's case could be based on the possibility of degrees of warrant. Committing one error, such as $237 - 145 = 97$, in a very long calculation is better than committing three different errors, or just one which is more evident and bigger. The result of the calculation will be, although not the right one, one not far from the truth. Saying that it is completely unwarranted would put the result on a par with completely wrong result, even with results obtained randomly. This last consequence would be undesirable, I must admit, but it follows only with the additional premise that warrant is the only epistemic value. If it is not so, different reasonings might have different epistemic evaluation although they are on a par in giving no warrant at all. At any rate, even you think that warrant is the only epistemic dimension of evaluation, it is not unproblematic accepting the idea of degrees of warrant. It seems to me that the idea is particularly counterintuitive with regard to mathematics and logic. I will try to explain why this is so exploring an analogy with perceptual warrant, a paradigm case of a fallible kind of warrant.

If I see a cat on my table, and my visual system is working fine, I have a perceptual warrant for my belief "there is a cat on the table"; the warrant however is not conclusive, it does not rule out such possibilities as my seeing an hologram, or a cat-like robot, and so on (although I've ruled out the possibilities of being a brain in a vat, and similar radical sceptical scenarios, since *ex hypothesi* my perceptual system is working properly). This case, I claim, is not analogous to the mathematical error, because I am able to explain why the subject has avoided any epistemic fault, although he has a false belief. A case analogous to the mathematical error must imply some kind of malfunction in our visual system, or an error on the subject's part in judging what he is seeing.

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[4] See e.g. Goldman, (2002).

In mathematics or logic, it seems that if a reasoning gives genuine support to a belief, it gives conclusive support. A mathematical calculation cannot be correct but not conclusive, it cannot give you a probable result (which is different of course from giving a probability as a result; a sure result). This is the kind of difference that has been envisaged, probably since Plato, between natural sciences and "exact sciences". The latter do not intuitively admit of degrees; if they give you an a priori warrant, you have a complete, hundred per cent warrant. This does not mean that whenever you make a mathematical calculation you can be sure to be right. It means that, whenever you make a mathematical calculation, you can be sure that, if your calculation did not imply any error, the result is right. The difference with an empirical warrant is evident; if you have a visual warrant, or an inductive warrant, you have a double risk, so to speak. It might be that there is some defect in your warrant, because your visual system is not working fine, or you are failing to consider some relevant information, but it might also be the case that there is no defect whatsoever in your warrant, and the conclusion is still false (if you are not convinced of that about the perceptual case, think of inductive warrants). We shall try to work on this intuition in next section, since it has to do with the unrevisability thesis as well.

Something specific must be said on the other examples presented. History of philosophy, in my opinion, does not provide clear cases of a priori warranted belief, and just for the reason that philosophers often make incompatible claims. Given that those claims are meaningful, some philosophers make false claims, supported by their a priori reasoning. Now, what reasons do we have for considering this reasoning as an effective warrant? We shouldn't take for granted the "authority" of philosophers just because they are considered among the greatest thinkers of their times, or because of a tradition; traditions sometimes are unwarranted as well, and it might be that on some metaphysical questions it is impossible to have warranted beliefs.

The case that presents more complications is surely the one regarding major examples of revisions in mathematics and logic. A complete discussion of these cases, even relatively to the point in question, is far beyond the aims of this paper, and the following remarks will only try to give an idea of how such a discussion could be developed.

It must be noted that the propositions I want to indicate as not warranted are axioms, and axioms are propositions that play a peculiar role in our belief systems. There are good reasons, it seems, to think that the warrant one can have for a belief in a proposition of this kind is of a peculiar kind itself. Their supposed warrant consists in their being self-evident, or in their theoretical utility, but never in a proof. Their truth, or falsity, too is sometimes considered to be of a peculiar kind. If the case for fallibility is to be based upon these examples only, it is not clearly successful, and I would be satisfied if I had shown that much. Coming to the two cases in question, in short, I would not say that Frege lacked any warrant for his set theory, but I think it is not very unreasonable to say that about axiom five of his naïve set theory; as I said before I think Frege could not disagree on this point. If we compare his situation with Euclid's case we find him in an unfavourable position. The defect in his theory was found while he was still alive, with pure theoretical tools, and most importantly it lead to a contradiction, while in Euclid's case that happened only after a great amount of time, and his system is anyhow coherent. Therefore the most problematic case is the latter. One strategy could be to deny that Euclid's warrant was really a priori, since it was defeated with a contribution of experience; anyway, it is not at all clear that this follows, as we shall see later (section 2.2). A more promising strategy, I think, could consist in inquiring if the fifth axiom (there must be something unlucky about fifth axioms) of Euclidean geometry is really false, in a complete sense of the word, as Bonjour does[5], although for quite different purposes. It might be thought that it is, partly at least, a conventional choice, what kind of geometry we

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[5] See Bonjour, cit. pp. 217-224.

should adopt. Euclidean geometry does not bring to any contradiction, like Frege's axiom does, and it is still used at some levels, both scientifically and practically. However, we must leave here the discussion of those specific cases, maintaining to have shown that the main examples given by Bonjour are all more or less problematic.

There is a last sort of examples we should consider, although Bonjour did not, which is not easy to discard, and it is the provided by the application of inductive methods to mathematical or logical problems.[6] The general form of this sort of examples is the following: you have some premises each of one is a priori warranted. Since those premises all give the same result in the same sort of situation, you then conclude that there is a regular connection between situation and result. A concrete example is given by Goldbach's conjecture. In that case we seem to have a very good inductive warrant; since every even number we know of is the sum of two prime numbers, it is reasonable to conclude that every even number is. It is conceivable however that the conclusion is false, and therefore it is conceivable that we have an a priori warrant for a false belief. Examples of this sort are not common but there a few other.

I have two answers to give to these counter-examples. The first answer is that induction applied to mathematical or logical problems does not give a complete warrant. The second answer is to claim that induction itself is not an a priori warranted method, or even that it is an a posteriori warranted method. The first answer might be argued through a comparison with empirical science. An hypothesis that have got the same amount of inductive confirmation as Goldbach's conjecture, in empirical science is considered something more than an hypothesis, it is a result. In mathematics Goldbach's conjecture will not be a result until someone finds a proof for it; until then, it is a conjecture. Where does this difference comes from? The difference is surely due to the fact that in the empirical case we van not expect a proof, and therefore it would make no sense to ask for someone to have a proof in order to believe something. In mathematics you can expect a proof, and therefore you should hold your belief until you find one. This is not to say that believing Goldbach's conjecture to be true is unreasonable; surely many mathematicians reasonably believe it; at the same time they probably feel their belief is not completely warranted. This clearly has to do with the deontological requirement of the attribution of a warrant for a belief. Inductive warrants, no matter how good in quantity, are felt to be qualitatively insufficient when applied to matters that admit deductive treatment, because they appear unjustifiably weak.

The second answer is based on much more disputable claims. The examples based on induction must assume that induction itself is either an a priori justified method or a somehow primitive inferential principle, that is not in need of justification. I believe both clams are wrong, and specifically I believe induction is itself an empirically justified method[7]. Quite clearly I can not defend this claim here. I would like however to make the general point that if an inferential method is empirically justified than its products will not be a priori justified even when the premises of the inference are. I will try to show this through an example. Suppose a student working on certain mathematical exercises observes the correct results of the exercises in his book always have some special feature, like being natural numbers, and when it seems they do not it is always because of an error on his part. Therefore he forms this heuristic rule: "when the result is not a natural number I made an error". The application of this rule does not seem to give a priori warrants, even if the only premise needed (x is a natural number) is easily a priori warranted.

I think we have to say of induction applied to mathematics of logic something similar to what

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[6] The relevance of this sort of cases was shown to me by Philip Percival; subsequently I found it briefly stated in Burge (1993).

[7] For similar positions see Hilary Kornblith Induction and Its Natural Ground MIT press 1993, or David Papineau, Philosophical Naturalism Blackwell Publishers 1993.

I already said about axioms; it seems a quite peculiar case, and it surely does not provide a *clear* example of a priori warranted false belief. I will leave the issue aside in the following section.

2. Rational unrevisability
2.1 Good warrants disbelieved

The discussion we have just presented and the one to follow, on the topic of unrevisability, might have a very similar structure. Some author presented putative examples of a priori beliefs lacking the relevant properties, and I will try to argue that those are not good examples. The most influent author, in this case, is Albert Casullo. However, I think here I have an advantage, which is given by the fact that Casullo works with a concept not as clear as infallibility, and I am in a position to argue that he uses a rather disputable version of the concept of "rational [un]revisability". At any rate defining that concept might not be as easy as one would expect. The difficult part of the definition would surely be clarifying the distinction between "rational" and "irrational" revision[8]. It would take more than an essay to clarify this distinction. There are cases, however, that clearly fall on one side of the distinction, as we have seen. We can also stipulate that, in a certain case, the reasoning that leads to the revision is not correct, and luckily enough, the best example proposed by Casullo is just of this kind, and therefore clearly falls on the side of irrational revision.

Casullo actually gives two examples; the first one, however, involves a starting situation of a false belief which is supposingly a priori warranted, and Casullo concedes that someone might not admit this possibility, as I would not. It is not unworthy describing it, because I think it reinforces my case about the lack of clear examples of fallible a priori warrants. Casullo considers a very inexperienced logic student, which, on a priori reasoning, comes to belief that "P → Q" implies "¬P → ¬Q"; lately, on a more accurate reflection, she revises this belief. My point of course is that this is a genuine case of rational revision of an apriori *un*warranted belief. If we concede there can be a priori warrants for even very clear logical errors, and we can always do it by stipulation, we completely avoid the distinction between normative and a descriptive sense of "warrant". In that case, the infallibility thesis would imply the absurd consequence that no one ever makes errors in mathematics, logic, and the like. No one of course, much the less Kant, has ever defended that thesis, and I don't need to do it here. My thesis is just that if you *don't* make errors in mathematics and logic then you get true conclusions.

In order to avoid this possible objection, Casullo proposes an example regarding a true a priori warranted belief. A difference with the previous cases is the fact here there is not an actual revision of the belief; but the example shows anyway that such a revision is possible, and that of course suffice to establish the belief is revisable. Here is how Casullo describes the case:

"Suppose Charlie believes that *p* entails *q* on the basis of a valid proof P. Since the proof is the result of a process of reflexive thought, Charlie's belief is justified nonexperientially. But now let us suppose that (a) there exists a pseudo-proof P', from p to ¬*q*; and (b) if this pseudo-proof were brought to Charlie's attention, he would not be able to detect any flaws in it or to discount it in any other manner."[9] The thesis this situation, if it is a possible situation, and we do not want to contend that, is purported to falsify is the following:

SUT "If S is justified in believing that p a priori then the statement that p is rationally unrevis-

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[8] The qualification of course can not be dropped. Suppose that a logician claims to have refuted some law of logic while he has assumed LSD. That would hardly count as a revision.

[9] A. Casullo, "Revisability, Reliabilism, and A Priori Knowledge", Philosophy and phenomenological research, 1988, vol. 49, n.2 p. 192.

able in light of any future evidence"[10]; let's call this thesis "Strong Unrevisability Thesis".

I've quoted Casullo at length, because I feared if I just stated the error I think he is committing I might have been accused of misinterpretation. It seems very clear that this example is completely oblivious of the rationality requirement. However liberally you think of rationality, it is not rational to abandon a belief in a valid proof because you are convinced by a pseudo-proof. Therefore this is a very good example or irrational revision of an a priori warranted belief. What has been shown is that an individual can stop believing a proposition for which he had an a priori warrant. What we want is a case where the subject has good reasons to do so; but here Charlie's reasons, *ex hypothesi*, are bad.

The two examples we have seen aim to the denial of SUT, but they leave open the possibility of a weaker thesis:

WUT "If S is justified in believing that p a priori then the statement that p is rationally unrevisable in light of any future *experiential* evidence"[11].

The two examples involved revisions of a priori beliefs based on a priori reasoning. There might be different reasons to think that if a belief is revisable on experiential, empirical grounds, it is not a priori warranted. Anyway we have refuted the examples so far, and, leaving open the problem of empirical revision, we are in the position to consider a different weak thesis:

WUT2 "If S is justified in believing that p a priori then the statement that p is rationally unrevisable in light of any future *a priori* evidence".

This thesis, although this may seem almost paradoxical, is more plausible than WUT. The reasons that support WUT2 are mainly linked to the intuitive difference we discussed, in the previous section, between empirical and a priori warrants. Since we have already cleared this ground we can try to state an argument for WUT2.

1) Suppose a subject S has a warranted belief P at time t, on the ground of the a priori warrant W, and at tx S comes to rationally revise his belief on a priori grounds.

2) At tx S therefore forms the belief that "not P", or "P is not warranted", on the ground of the a priori warrant Wx. If the revision is rational then Wx rationally prevails over W.

3) If Wx is a priori, then it was available for S at t.

4) If there was available for S at t a chain or reasoning rationally prevailing over W, then the belief P was not warranted for S at t. But this contradicts premise 1.

Let's briefly see what can be said on the premises. 1) is actually an assumption for *reductio*. 2) seems quite uncontroversial; it could be objected that we can revise a belief for reasons that are independent of the previous warrant, and therefore do not "refute" it. Anyway, those new reasons must be rationally judged to prevail over the older ones (if the old reasons, e.g., are just forgotten, I would not say there is a *rational* revision) and that is all that is needed for the argument. Premise 3) needs a deeper discussion, and we will come back to it in moment. About 4) I would like to notice that it does not need to rely on any special feature of a priori warrants to be justified; it would work even if W was a perceptual warrant; e.g., if I am in a situation in which a rational argument, involving only evidence I already possess, could bring me to the correct conclusion that there are holograms all around me, my visual warrants are disqualified. Similarly, my a priori warrant is disqualified if there is available a rational argument for the opposite conclusion, an argument that I would judge to prevail over my warrant, if I came to think about it. Premise 3) is the most disputable; its motivation lies in the fact that, if the reasoning is a priori, there can not be anything in the experience of S between t and the moment of the revision that made that reasoning possible. There is another possibility, however, that might defeat 3). S might have ac-

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[10] Ib. p. 190.
[11] Ib. p. 190.

quired some concepts that at t S did not possess, and are relevant for the a priori reasoning. I think this is a real possibility, although it is not very common, in adult age, to enlarge your conceptual repertoire in such a significant way. My rejoinder is the following: either those relevant concepts have been acquired through experience, or in other ways. If they have been acquired through experience, the revision is not a priori,[12] since experience played a decisive role. If they were not acquired through experience, since we can obviously discard the possibility that those concepts were innate, because the subject did not possess them at time t, they must be reducible to the concepts the subject already possessed at t. If they are reducible to concepts S already possessed, however, they were available to S at t, through some a priori reasoning.

The discussion on this point, I admit, might continue at length. Anyway if the reader is not wholly convinced, I think it is interesting a to consider even a weaker, but surer, premise:

3C) If Wx is a priori, *and the concepts involved in it were available to S at t*, then it was available for S at t.

and a corresponding weaker thesis:

WUTC "If S is a priori justified in believing that p then the statement that p is rationally unrevisable in light of any future a priori evidence, unless the rational revision depends on some concepts that are not now available to S".

Furthermore, even if my argument could establish only WUTC, we would be still lacking a decisive and clear counterexample to WUT2.

2.2 Empirical revisions of a priori beliefs

We have not yet considered WUT, the thesis that empirical rational revision of a priori beliefs is impossible, and the counter-example that has been offered by Casullo against it. I will adapt the example a little bit to avoid inessential disagreements. As usual, we consider a logician, in this case named Phil. Phil is an expert logician and has done much interesting research work, but, like all of us, he also makes some errors. Phil becomes the object of a neurological study; a machine is connected to his brain, and the machine is supposed to be able to discriminate certain patterns of brain activity that are linked to temporary cognitive deficiencies. Let us suppose, for the sake of the example, that there is a very solid scientific theory corroborating this hypothesis. Even on Phil the machine seems to work correctly. It does signal an error only when there is one, and it even helps Phil to discover some flaws in his past works that he had not noticed before. Now suppose that in one single occasion the machine detect an error pattern although there is no error in the proof Phil is considering. The machine is checked carefully, but it seems to work properly (we may suppose that this case constitutes an exception to the neurological theory underlying the machine functioning, an exception that no scientist would be able to explain). Therefore even if he cannot see what the error is, Phil abandons his belief in the proof. He has revised his valid a priori belief for empirical reasons.

However, there might be a way of accommodating this case without giving up the empirical unrevisability of a priori; it consists in treating it together with a class of counterexamples that seems easier to handle.

A possible kind of empirical source of revision is the opinion of experts. When confronted with an unfavourable opinion of one or more expert of a specific field, it might be rational to revise a belief, even an a priori belief, at least in the weak sense of revision we considered. Together with that we can consider the results obtained by computers and calculators. In both cases there

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[12] This is not to say that if the concepts in the *belief* are acquired empirically the belief cannot be a priori. The concepts we are talking about here are relevant in the *warrant* for the supposed a priori belief.

is a widespread feeling[13] that we are somehow missing the point, and that revisions based on this kind of evidence should somehow discarded as inessential. I share this feeling, although I must say that it is very hard to specify exactly how and why these cases are not relevant. One way of dealing with the cases of revision based on testimony and the like is the following: we might say that those revision, although they are *practically* rational, are not *epistemically* rational. Consider George Rey's example of someone believing

(A) 16+17+18+23+100 = 174

The person is told at the bank that this is wrong, and the result is 184. Therefore she revises her belief. The revision is supposed to be rational because what the bank says is usually a much more reliable source of arithmetic truths then the subject's own calculations. My answer, in this case is that it is surely rational in a practical sense to stop checking the calculation at some point, and trust what you are told. Your need for a correct result can be not so strong to justify the amount of time and intellectual effort you should spend to check again (although in this example it does not seem so, we can easily complicate it). But it cannot be rational in an epistemic sense to believe a falsehood when it is within your possibility to arrive to the correct conclusion!

It might seem here I am making a sort of *ad hoc* stipulation. That it is not so is shown by the fact that it does not work in Casullo's example, since it is not within the subject's possibility to discard the neurological evidence.

Another possible strategy is suggested, although not completely developed, by Hartry Field[14], and it rests on a distinction between two kinds of evidence we can get against an a priori belief. We can have evidence undermining "the non-empirical basis we had for making the claim"; or evidence "showing that we did not after all have the non-empirical basis we thought we had for the claim". The former evidence we may call *primary*, and the latter *secondary*. The thesis of empirical unrevisability would be that a priori beliefs cannot have empirical evidence against them. It is interesting that this distinction, if it works, undermines Casullo's example as well. Neurological evidence seems to be clearly secondary; it relates merely to my cognitive state, not to the specific content of the belief.

It might again be objected that this is a sort of *ad hoc* solution, as far as we don't specify what the relation between the belief-content and the evidence should be for primary evidence. This is surely very hard. An indirect answer could be the following; direct evidence for a priori beliefs is the evidence for an idealized subject. An idealized subject is a subject with unlimited computational capacities, and immune from error. For an idealized subject, mathematical and logical truths are supposed to be unproblematic and, strictly speaking, what logicians think, and how their brains work, is no evidence at all for or against a certain logical theorem or argument, just as the operations of a calculator are no evidence for or against a mathematical result.

There is a deeper objection, however, that this solution has to face, and it is related to confirmation holism. One way to state the content of the latter doctrine is that what counts as a warrant for what is not itself an priori decidable matter. If this is so, it is not a priori that empirical evidence about my brain is not direct evidence for or against truths of logic. I don't think we have to discuss this doctrine here. As far as we can distinguish, roughly at least, between empirical evidence and a priori evidence, we could identify a class of statement that until now have been immune from empirical revision. Precisely, we could say that no statement that had a warrant dependent on a priori evidence has ever been directly affected by empirical evidence, and we cannot think

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[13] Not a universal feeling anyway. Kitcher (1983) and Rey (1993) consider the opinion of others and the result of a calculator, respectively, as relevant sources of empirical revision.

[14] See Hartry Field "The Aprioricity of Logic", *Proceedings of the Aristotelian Society*, 1996, v. 96. See also his "Apriority as an evaluative notion", in Boghossian and Peacocke, cit., p. 118.

of any hypothetical way in which this might happen. If we can affirm that much, we can set aside the theoretical possibility of empirical evidence one day becoming relevant, and still say we have an interesting claim.

There are anyway different sorts of possible examples of rational revision of a priori belief. History of science is a field one might look to. An historical example of this kind is not easy for me to find, because I maintain that if a belief is now known to be false, it was not genuinely a priori warranted. Under the weak version of rational revisability, however, we may say that Euclid's fifth axiom has been revised, although it is not straightforwardly false. Just because of that we may say that it had a genuine a priori warrant. Just like in the discussion of infallibility, having excluded the trivial examples, the weakening of a priori seems to rely on examples of revisions of extremely theoretical claims. Anyway, since Euclid's case seems particularly unclear in this context, I can construct a hypothetical example that makes use of history of philosophy and science. Consider the belief that empty space cannot exist. This belief has been prevalent in the history of western thought since Parmenide to Descartes. It is probably a very good example of bad use of a priori reasoning, since it was defended on purely a priori grounds while its content is something that, to us, clearly falls in the field of investigation of empirical science. Nevertheless, we can suppose that Descartes had a warrant for it[15]. His warrant derived from the fact that he defined the concept of material substance as "extended" (in space), so that something is extended if and only if it is a material substance, and empty space would be something extended in space that is not a material substance. Given Descartes use of the concepts, it is analytical that empty space cannot exist. The belief could surely be rationally revised, with a decisive contribution of empirical research. Now we can easily imagine that Descartes comes to appreciate the importance of experiments by Torricelli, Pascal, and so forth, and rationally revises his beliefs on the subject matter, on these empirical grounds. For sure, the revision had to pass through a change in his understanding of some of the concepts employed in his reasoning. But it is not at all implausible to think that someone might abandon the definition of some scientific concept because of empirical evidence.

Now, let us just concede we have a few plausible candidate examples of rational revision of a priori beliefs on empirical grounds. A possible general reaction is the following: If a belief is empirically revisable then its warrant is not independent of experience. It depends on the fact that in the believer past experience were not present those features of his subsequent experience that lead to rationally revise the belief. Therefore it was not an a priori belief. This would rule out the possibility of empirical revision by definition. It would also support the Quinian claim that, if those we took to be paradigmatic examples of a priori beliefs are empirically revisable, then there are no a priori warranted beliefs.

Of course we are not forced to this conclusion, if we refute the assumption that an a priori belief cannot be empirically revised. This assumption was the core the traditional concept of apriority, but this is not itself a good reason to maintain it. Philip Kitcher has tried to defend it, aiming at a conclusion not so far from the one we supposed could be drawn from the Quinian complete refutation of the existence of a priori warranted beliefs. But Kitcher recently came to accept that his arguments were not conclusive, and that there is a reasonably clear sense in which our logical or mathematical belief are independent of experience, although testimony, neurological evidence, or other kinds of experiences could bring us to revise those beliefs. That would be contradictory

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[15] Most of the people I discuss in the paper should have no problem with the claim that Descartes actually had such a warrant. I can just suppose that in the future it will be discovered that after all empty space does not exist, and just for the reasons Descartes thought so. This does not seem impossible.

only if we admit the general principle that Casullo stated as follows:

"If evidence of kind A can defeat the justification conferred on S's belief that p by evidence of kind B, then S's belief that p is justified by evidence of kind A."

This principle however is not very plausible. As Casullo points out, if you are justified in holding some belief on the basis of introspective evidence, there will be the possibility, quite often, if not always, that medical or neurological evidence defeat our justification. Anyway this does not show that our belief is based on something else than introspection. The situation of a priori beliefs might be described in the same way: you can be justified in holding a belief on evidence that is independent of past and present experience, without excluding the logical possibility of future experience that defeats your justification. One might object that, although such a justification does not depend on any specific experience you had, it depends on the totality of our experiences, in that the latter do not include unfavourable neurological evidence, and so on; but that is not completely true, because my experiences could be completely different, and presumably in many, perhaps in infinite ways, although not in *every* way. Counterfactual considerations however, are not taken to be always relevant for warrant; e.g. the counterfactual possibility of radically sceptical scenarios might threaten the status of our warranted beliefs as knowledge, not their being warranted[16].

Now, if we summarize the discussion on empirical revisability of a priori beliefs, we must say that this weakening of a priori beliefs is better off than the former ones, fallibility and a priori revisability. About fallibility, although we do not have general arguments to show that a priori fallible beliefs are not possible, we have not found any convincing example of such a possibility. About a priori revisability we do not have convincing examples and we also have a general argument to the effect that there cannot be such examples. In the present case, the prospects are not so doomed. We were not able to find a convincing argument that shows a priori belief cannot be empirically revised. We have considered two sorts of examples of such a possibility, that we may call the "trivial" and the "theoretical" examples. The trivial examples can be ruled out, but this is not itself a trivial task; it is harder and more controversial than in the case of counterexamples to infallibility based on trivial errors. The theoretical examples are even harder to rule out; I cannot think of any way to do that.

We should now draw some conclusion from this discussion, and evaluate the overall prospects for a weak concept of a priori.

3. Conclusions. The weakness of which apriority?

We have addressed two possible features of a priori warrants, infallibility and unrevisability. The latter is probably better understood as the combination of two kinds of unrevisability, the a priori and the empirical. A traditional conception of a priori warrants included all of the former features, while nowadays it seems to prevail the idea that none of them is essential to a correct understanding of apriority; the core of this concept is simply independence from experience. Although I have argued against the motivations that have been advanced in favour of this change, I admit, at least about infallibility and empirical unrevisability, that the concept of a priori warrants, devoid of these properties, is still coherent (although counterintuitive). Conceding that, one might ask what is the role of this concept for epistemology and philosophy. Such a warrant does not meet the central requirement of the traditional concept of a priori, which, I submit, is

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[16] We are here considering the mere possibility of sceptical scenarios being compatible with our evidence, while in 2.1 we said that a belief is not warranted if a sound argument that makes use of our evidence positively suggests or forces the conclusion that such a scenario obtains.

empirical unrevisability. It was analytically true (indeed, it was a priori) that a priori beliefs are not empirically revisable. As Kant put it; "when you are outside the sphere of experience, you are sure not to be refuted by experience".[17] The discussion we have followed seems to concentrate on mathematical and logical reasoning as paradigmatic examples of areas of possible a priori knowledge. We have not considered examples of knowledge of "meaning relationships", which seem therefore to be perceived as less paradigmatic. Needless to say, it is an area of great philosophical interest, and proponents of weak apriority might want to concentrate on it. It is not implausible that the warrants we have for our beliefs on the meaning of our concepts and the warrants we have for our mathematical beliefs, although both in some sense independent of experience, might belong to epistemologically different kinds.

As Philip Kitcher notices, "we could - and we do - distinguish knowledge obtained through testimony from knowledge we acquire for ourselves, knowledge based on current perception from knowledge through memory, knowledge deriving from the use of our eyes from knowledge obtained by using our ears. Dividing items of knowledge (...) might be useful for a number of philosophical and psychological purposes, but none of the divisions I've mentioned attributes any special role to a kind of knowledge, a unique function that it can fulfil in our activity as knowers."[18] Of course, most theorists nowadays could accept that a priori warrants have no unique function; e.g. that there is not a category of truths, or propositions, that can be warranted only a priori. Just because the traditional role of a priori warrants is abandoned, anyway, it can not be given for granted that a new role is there to be occupied, or that there is some work to do for the concept of weak a priori.

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