



What Logical Evidence Could not be

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Abstract

By playing a crucial role in settling open issues in the philosophical debate about logical consequence, logical evidence has become the holy grail of inquirers investigating the domain of logic. However, despite its indispensable role in this endeavor, logical evidence has retained an aura of mystery. Indeed, there seems to be a great disharmony in conceiving the correct nature and scope of logical evidence among philosophers. In this paper, I examine four widespread conceptions of logical evidence to argue that all should be reconsidered. First, I argue that logical apriorists are more tolerant of logical evidence than empiricists. Second, I argue that evidence for logic should not be read out of natural language. Third, I argue that if logical intuitions are to count as logical evidence, then their evidential content must not be propositional. Finally, I argue that the empiricist proposal of treating experts' judgments as evidence suffers from the same problems as the rationalist conception.

Keywords Logical evidence · Apriorism · Empiricism · Linguistic evidence · Logical intuitions · Experts' judgments

1 The Problem of Logical Evidence

Nowadays, the philosophical debate about logic is dominated by all kinds of views: the *monist* and the *pluralist* debate as to whether the correct logic is 'one or many'¹; the *exceptionalists* and the *anti-exceptionalists* argue as to whether logic has a privileged status²; finally, the *factualists* and the *non-factualists* dispute as to whether

¹ For a discussion, see Varzi (2002); Beall & Restall (2006); Field (2009); Hjortland (2013); Shapiro (2014); Sereni & Sforza Fogliani (2020); Caret (2021); Ferrari & Orlandelli (2021).

² For a discussion, see Maddy (2002); Russell (2015); Priest (2016); Williamson (2017); da Costa & Arenhart (2018); Read (2019); Martin & Hjortland (2022).

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logic can have a descriptive or normative status.³ Moreover, as one might expect, most of these views can be intertwined in various ways.

For the sake of argument, let us suppose that an inquirer rationally believes that some logical theory (or more than one) is correct.⁴ Suppose further that our inquirer rationally believes that one (or more than one) of the above philosophical views is correct. For instance, our inquirer might believe that classical logic is the only true logic, and that logic (in general) is a non-exceptional and descriptive endeavor. In this case, we should be able to see that our agent's beliefs must be well-supported to be epistemically warranted.⁵ Therefore, in order to be considered rational, an accurate, logical belief must be formed based on an intelligible epistemic intermediary that adequately represents logical facts.

Evidence can be broadly conceived as the set of experiences and 'considerations that epistemically count in favor or against you having certain beliefs' (Chudnoff, 2014, 13).^{6,7} In other words, evidence represents the epistemic basis for our (propositional) knowledge of reality. Hence, everything we allegedly know about logic also depends (partly) on evidence.

Much has been said about logical evidence. Despite this, it is still unclear what its exact nature is. In the hope of providing clarity, in what follows, I will try to convince the reader of what logical evidence could not be.

Before proceeding, however, a disclaimer is necessary. The topic of logical evidence is undoubtedly vast. At least since the emergence of the first logical

³ For a discussion, see Resnik (1999); Shapiro (2000); Wright (2018).

⁴ In the rest of the article, in discussing correctness, I will assume the conception of logical correctness proposed by Haack (1978, 221).

⁵ For the sake of accuracy, in the rest of the paper I will use the term "warrant" to speak about what many epistemologists call by the term "justification." For a discussion on this point, see Burge (2003a, 2003b, 2020); Graham (2012, 2020). Also, by the term "warrant" I will mean *doxastic warrant*. For a discussion on this point, see Melis (2018); De Toffoli (forthcoming).

⁶ Usually, evidence is conceived as having a propositional nature (cf. Davidson, 1990; Williamson, 2000). However, the conception I have adopted above seems to go well beyond this standard view. In my opinion, evidence can also be non-propositional (for a critical discussion, see Sellars, 1956; McDowell, 1994; O'Shea, 2021). This is because I believe that beliefs are not rationally supported only by other propositional states. For instance, in its raw form, perceptual evidence can be considered non-propositional (cf. Burge, 2020, 55–60). Yet, it would be a mistake not to count it as evidence (cf. Alston, 1989; Audi, 1992; Burge, 2003a, 2003b). Moreover, by mirroring this proposal, even supporters of the a priori have argued that a priori warrant can depend on non-propositional evidence (cf. Moretti, 2020; De Toffoli, 2021; BonJour, forthcoming). In section §3 I will present some arguments in favor of the non-propositional conception of evidence.

⁷ Although this conception of evidence is broad enough to include non-propositional evidence, the term "considerations" should not imply that arguments à la Wright (2004) or Boghossian (2003) – i.e., arguments concerning the constitutive nature of logical concepts for our rational life – could count as evidence. Although the *considerations* these authors present might support the belief that, say, *P* is a valid logical principle, what they actually do is show that some claims can be non-evidentially supported. Therefore, I believe that considerations of this kind should be considered meta-epistemic rather than epistemic. I wish to thank Elia Zardini for raising this issue.

Moreover, since it has often been objected that non-evidentialist approaches may offer at most pragmatic warrant for the claims to which they apply (see especially Graham & Pedersen, 2020), in the remainder of the paper I will focus on evidentialist strategies.

anti-exceptionalist accounts (or *AEL* for short), we can witness an increase in articles about logical evidence. Because of this, the present article will not address many things that have been said so far. Therefore, my analysis will be partly negative: I will try to remove some unpalatable accounts of logical evidence from the current picture. In doing so, I hope to delineate an account of logical evidence that can explain how we can form accurate, logical beliefs.

Here is the plan for the rest of the paper. In §2, I will introduce the reader to the debate between apriorists and logical empiricists. Here, I will argue that apriorists are more tolerant than empiricists in evidence matters. In §3, I will argue that linguistic evidence alone cannot account for the epistemology of logic. In so doing, I will rely on some considerations that have recently been presented in the literature. Finally, in §4 and §5, I will argue that the way apriorists and empiricists currently conceive logical evidence cannot account for logical knowledge.

2 Apriorism and Aposteriorism About Evidence

I think it will be useful to put forward the two main epistemic stances in the debate from the beginning. Hence, we will start by looking at what apriorism and logical aposteriorism (empiricism) could not be.

For starters, take Martin (2020). In presenting the two main apriorist stances in the literature – i.e., *rationalism* and *semanticism* – he writes:

Take first logical rationalism. According to logical rationalism, we gain justification for our logical beliefs directly from intuitions regarding a particular proposition. We simply see that the proposition p is true or false (...). *Indeed, for the logical rationalist there is nothing else the logician can appeal to.* If another party disagrees with us, all we can do is suggest that our interlocutor is not having the right kinds of intuitions, and that they should look a bit harder.

Furthermore, on logical semanticism, he writes:

The logical semanticist is in a similar position. According to her, we gain justification for our logical beliefs directly by grasping the meaning of logical propositions. *Again, there is nothing other than the meaning of the propositions for the logician to appeal to.* If one's interlocutor fails to assent to the same propositions as us, we are committed to saying this is simply because she has misunderstood its content, and is talking about a different matter than we are. (Martin, 2020, §3, emphasis added)

Rationalism and logical semanticism are the two main apriorist stances in the epistemology logic. According to these views, logic is exceptional because its claims can be a priori warranted via non-experiential evidence. However, although these views have the same goal – explaining the apriority of logic – they differ in the way they attempt to accomplish this task. While rationalism postulates the existence of a mental faculty capable of granting us direct access to facts of a non-empirical nature (cf. Bengson, 2015a; Chudnoff, 2013), semanticism is the thesis that logical claims

can be warranted based on linguistic (conceptual) understanding alone (cf. Ayer, 1936; Boghossian & Williamson, 2020; Horvath, 2020).⁸ Therefore, due to these non-experiential sources, rationalism and semanticism represent the main alternatives to the empiricist stances in the epistemology of logic.

Vice versa, logical empiricism is the thesis that logical knowledge is a posteriori. Although Quine's works have breathed new life into logical empiricism, his followers would take many of his teachings cautiously today. Indeed, many Neo-Quineans (*AEL* advocates) have proposed new empiricist theories of logical epistemology in which they attempt to distance themselves from the traditional tenets advanced by their mentor.⁹

Traditionally, empiricism and apriorism have been conceived as opposite foundational projects. However, the debate between these two epistemological stances has been revised due to at least two developments in the way these views are now conceived. First, although empiricism has often preserved the idea that the epistemic status of claims that fall within a domain of inquiry can only be a posteriori, this view has also moved towards a less foundational conception of the structure of warrant (or knowledge) (cf. Haack, 1993; Maddy, 2007; Sher, 2016). On the contrary, while maintaining a (moderate) foundational spirit, apriorism has opened to a conception of the nature of warrant (or knowledge) in which the 'boundary stones set in an eternal foundation' (Frege, 1983/2013, XVI) can be supported by various kinds of evidence (cf. Casullo, 2003, 2005).

Interestingly, even some proponents of logical empiricism seem to embrace this new hallmark of apriorism (cf. fn. 9). For example, Williamson (2013) has argued against the idea that there is a sharp distinction in the type of knowledge of necessary and contingent truths.

One may know p both a priori and a posteriori, if one knows it in several ways, some a priori, some a posteriori. Tradition excluded that case on the grounds that only necessities [...] are known a priori whereas only contingencies [...] are known a posteriori. But that was a mistake. (Williamson, 2013, 292)

Similarly, Martin & Hjortland (2022) have argued that moderate empiricist stances can embrace the idea that logic *can* be warranted a priori.

⁸ Semanticism is an apriorist thesis that hinges on the distinction between *enabling* and *evidential* experiences. While enabling experiences are those necessary to acquire a concept, evidential experiences serve to epistemically support a belief. Since a priori warrant is compatible only with experiences of the former type, then the a priori warrant is a type of epistemic support that does not depend on experience in an evidential manner. Therefore, since the semanticist usually argues that the experiences that are needed to gain linguistic (conceptual) competence are enabling, then in some cases grasping these meanings (contents) is enough to form a warranted belief about certain propositions (usually considered to be analytical).

⁹ One of Quine's teachings still present in *AEL* accounts is the idea that evidence warrants logical theories in a holistic spirit (more on this below). However, moderate views of *AEL* (cf. Martin & Hjortland, 2022, §3.2) would not follow Quine in saying that all evidence for logic is empirical. On the contrary, many now would admit that evidence for logic is a priori.

Admittedly, then, one can coherently maintain that logic's method of theory choice is not extraordinary (thereby calling into question its foundationalism), while maintaining that logic has its own peculiar sources of a priori evidence (thereby continuing to maintain logic's apriority). (Martin & Hjortland, 2022, 148)

Martin & Hjortland and Williamson thus seem to admit that logical claims can be warranted both a posteriori and a priori via empirical and non-empirical evidence. Hence, it will be important to consider whether empiricists can account for what Casullo (2005) calls *epistemic overdetermination*, that is, the phenomenon by which multiple epistemic sources can sufficiently warrant a single claim, including both a priori and a posteriori sources of evidence.¹⁰

The second fundamental revision to the way apriorism and empiricism are conceived nowadays concerns the link between foundational knowledge and certainty. Many authors today reject the idea that foundational knowledge implies certainty. Indeed, this assumption should appear clear to anyone familiar with Quine's teachings about the unlimited scope of rational revisability (cf. Teixeira, 2018). But it should be noted that this assumption is also germane to all those apriorist accounts that allow for a notion of fallible non-experiential warrant (cf. Summerfield, 1991; Bealer, 1998; BonJour, 1998; Casullo, 2003). Therefore, in the following, in discussing the apriorist and empiricist views, I will rely on these updated conceptions of apriorism and empiricism to be consistent with the current debate.

In general, then, one way in which empiricism can be characterized is as follows:

(E) Given a domain of inquiry D and a set S of claims about D , all the evidence e supporting the elements of S is ultimately experiential.

From E , it follows that knowledge of the elements of S can only be a posteriori. Since only experiential evidence is allowed for E , and since this evidence only ensures a posteriori knowledge, knowledge will necessarily be a posteriori for empiricism.

¹⁰ At this point someone might object that since Williamson (2013) denies the naturalness of the a priori-a posteriori distinction, he may also deny that there is epistemic overdetermination. To dispel any doubts in this regard, let us proceed carefully by considering two points. First, Williamson does not deny that there are no instances of a priori knowledge. He only denies that the distinction in question is natural (cf. Williamson, 2013, 169). Second, the arguments Williamson proposes against the a priori-a posteriori distinction are based on two crucial assumptions: first, knowledge of modal truths is reducible to knowledge of counterfactuals; second, knowledge of counterfactuals *normally* requires the use of imagination (an epistemic source that depends on experience in a more than merely enabling, but less than strictly evidential way – cf. fn. 8). Therefore, according to Williamson, since we normally employ a source that does not sit well with the a priori-a posteriori distinction, we should deny the naturalness of this distinction. Now, even granting Williamson his first assumption, can we really say that we *normally* use only one source of evidence to gain knowledge about the truths that comprise a domain of inquiry? Williamson is not very clear on this point. Still, this assumption remains somewhat controversial. For it is one thing to say that we have isolated a source that does not sit well with the a priori-a posteriori distinction. It is another thing to say that the distinction is not epistemically relevant or natural. Williamson's account thus seems unstable.

However, earlier, we saw that moderate empiricist accounts – e.g., *AEL* – have begun to include a priori evidence in their accounts of logical epistemology (cf. fn. 9) (cf. Russell, 2015; Martin, 2020; Martin & Hjortland, 2022). Despite this change of heart, even these moderate views allow the general spirit of *E* to be preserved. Indeed, as much as moderate empiricists have been open to more liberal epistemological views, they can (and must) concede that when a priori evidence is holistically mixed with empirical evidence, the evidential basis by which logic is warranted turns out to be empirical. In other words, despite the admittance of a priori evidence, knowledge of the elements of *S* would still be considered empirical since it is held that what is known based on mixed evidence is ultimately a posteriori (cf. Kripke, 1971, 153).

To better appreciate this last point, consider the following. Two points characterize the epistemology of logic of *AEL*. First, repurposing a famous motto of Williamson (2000), (i) many advocates of *AEL* would accept a *theory-first* epistemology of logic. That is, logical evidence does not support single claims taken in isolation but entire logical theories (cf. Russell, 2015, §2; Priest, 2016, §2; Williamson, 2017, §2; Martin & Hjortland, 2022, §4.1; Ferrari, Martin & Sforza Fogliani, 2023, §2.3). Second, for *AEL* advocates, the warrant (or knowledge) of logical theories is *indirect* (inferential), that is, (ii) the epistemic support of a theory depends on non-deductive inferences (cf. fn. 11).

Now, suppose that *S* in *E* above represents a logical theory. In this case, from (i), it follows that *S* is warranted before its elements. Therefore, the elements of *S* receive the same kind of epistemic support that the whole theory receives. Furthermore, suppose the warranting of *S* is indispensable to warrant the elements of *S*. In this case, the elements of *S* cannot be warranted individually in a direct way. Therefore, the elements of *S* receive only one kind of warrant, namely, the one provided to *S*.

On the other hand, we saw that *AEL* admits that the evidence supporting *S* can be both experiential and non-experiential. However, since the warrant for *S* is explained using non-deductive inferences whose evidential basis consists of empirical evidence, *S*'s overall warrant (or knowledge) will be a posteriori via (ii). Therefore, according to *AEL*, there is only one way to warrant (or know) *S*: an inferential method that is ultimately based on empirical evidence.¹¹

¹¹ Biggs and Wilson (2022, §5) argue that *AEL* offers an epistemological theory of logic that is conditional in nature. In other words, for *AEL* advocates, the warrant of a logical theory is a priori only if the *inferential method* and the *evidence* are a priori. Although the explanation proposed by these authors is limited to *logical abductivism* (cf. Priest, 2016; Williamson, 2017), their account easily extends to *logical predictivism* (cf. Martin & Hjortland, 2021). That is, a logical theory is warranted a priori only if both the *hypothetical-deductive method* and the *evidence* are a priori. However, in my view, it follows from this generalization, that logic cannot be a priori warranted for *AEL*. Let us consider abductivism first. Even assuming that the abductive method is a priori – as Biggs and Wilson have argued elsewhere (see Biggs & Wilson, 2017) – some of the evidence used to carry out this inference is empirical. For example, let us consider the fruitfulness criterion on which abductive inference is (partly) based. The evidence by which we establish that one theory is more fruitful than others is empirical. In other words, only after applying a logic to a scientific theory and deducing its conditional hypotheses can we determine which hypotheses are confirmed. Therefore, some of the evidence on which abduction is based is empirical. A similar argument can be made for the simplicity criterion (cf. Hjortland, 2017, fn. 23). Let us now consider logical predictivism. As before, let us grant that the method is a priori for the sake of argument. Despite this, predictivism is based on *expert epistemology* (more on this in §4). That is, the

By contrast, apriorism for some domain of inquiry D is usually conceived as negating E .¹²

(A) Given a domain of inquiry D and a set S of claims about D , not all the evidence e supporting the elements of S is ultimately experiential.¹³

According to this view, evidence has a twofold nature. It follows from A that the evidence supporting the elements of S can be either experiential or non-experiential. Therefore, from A , it follows that apriorists can naturally adopt a sort of *evidential pluralism*. Moreover, since this pluralism can be tolerated, different types of evidence can warrant S 's elements. Thus, contrary to E , the elements of S could be warranted heterogeneously.¹⁴ More importantly, it also follows from A that apriorism can account for epistemic overdetermination. Indeed, if A tolerates evidential pluralism, then, in principle, the single elements of S can be warranted in both an a priori and an a posteriori way; if something can be supported by experiential evidence, then it can also be supported by non-experiential evidence.

These considerations are essential for two reasons. First, as it has been conceived above, E cannot account for the phenomenon of epistemic overdetermination. We have seen that it follows from E that no non-experiential evidence can warrant the elements of S . Yet, again above, we saw that (moderate) empiricists seem to embrace the idea that there can be overdetermination for logic. Consequently, for the moderate view to have teeth, the advocate of E must either deny the relevance of overdetermination or argue against the a priori-a posteriori distinction. Attempts have been undertaken to pursue both strategies. Still, the positive outcomes of these efforts remain uncertain. On the one hand, overdetermination seems to be a well-established phenomenon among epistemic agents. On the other hand, attempts to argue against the a priori-a posteriori distinction have been forcefully

Footnote 11 (continued)

evidence from which a theory is constructed and tested is based on experts' judgments (cf. Martin & Hjortland, 2021). However, suppose this evidence is transmitted by testimony from an expert to a predictivist inquirer, as these authors suggest. In that case, the evidence on which the predictivist method is based is empirical, *pace* Burge (1993).

¹² For example, with due caution, we might say that this is the conception of apriorism that has developed since Plato (see *Phaedo* – 72a-82a – and the *Meno* – 82a-85b). For a discussion, see also Casullo (2003, §4) and Dodd & Zardini (forthcoming).

¹³ Undoubtedly there is an arbitrary component in the demarcation between E and A since the boundaries of terms such as "empiricism" and "apriorism" are not sharp. However, to admit this is not to admit that a proper distinction cannot be made between the tenets of these views.

¹⁴ This is a desirable result. If S is a logical theory and its claims can be warranted in isolation, this fact would explain why different logical claims often receive different kinds of warrant. For example, it could be argued that *modus ponens* (MP) – i.e., $\varphi \rightarrow \psi, \varphi \vDash \psi$ – is intuitively valid, i.e., non-inferentially, a priori warranted. Alternatively, the rule of contraposition – i.e., $\varphi \rightarrow \psi \vDash \sim \psi \rightarrow \sim \varphi$ – is typically inferentially warranted. However, this latter warrant could be of two kinds: a priori (proof) or a posteriori (testimony/imagination). Similar considerations can be extended beyond the warrant of logical rules. For example, Oms (2019, 196–97), argues with Priest that at least two families of paradoxes (Self-Reference and Sorites) can be treated by grasping the apparent *inclosure scheme* underlying these paradoxes. Thus, by grasping the pattern underlying these paradoxes in a direct (apparent) way, we could unravel these paradoxes by making the right adjustments to our logical theories.

challenged (cf. fn. 10) (see also Casullo, [forthcoming](#); Melis & Wright, [forthcoming](#); Schechter, [forthcoming](#)).¹⁵

Second, the quotations from Martin (2020) we saw earlier give an inaccurate account of apriorism. His conception of apriorism suggests that *A* can only tolerate non-experimental evidence to warrant the elements of *S*. However, as we have seen above, this is exactly the opposite of what proponents of apriorism would claim. Since empirical evidence is tolerated in the apriorist framework, apriorists would argue that logical claims can be a posteriori warranted. However, by virtue of the epistemic overdetermination, they would add that a priori evidence can also warrant logical claims in a non-experiential way. In the ensuing picture, logic receives two kinds of epistemic support: experiential support from a posteriori evidence and non-experiential support from a priori evidence. Therefore, logical apriorist are actually more tolerant than moderate empiricists. In *E*, overdetermination is precluded; thus, logic cannot be a priori warranted.

The first moral that can be drawn from this discussion comes with a new methodological principle that I will call the *maxim of evidence maximization*: an inquirer should retain as much evidence as possible in every field of inquiry.¹⁶ Let us then

¹⁵ Now, it could be argued that epistemic overdetermination and epistemic holism presuppose two different conceptions of the structure of warrant. To wit, while overdetermination needs a linear (foundational) structure of warrant to hold, epistemic holism requires a coherentist framework. However, coherentism faces a straightforward challenge in explaining how warrant and truth are linked. For instance, in principle, one can believe a set of false beliefs which are nevertheless coherent. Yet, clearly, one would not be warranted in doing this, for in that case, this warrant would preclude one from having knowledge (cf. Burge, 2020, 39). To solve this problem, advocates of coherentism usually attribute a special role to the claims that stand in the periphery of the belief system, and which are known to be true (cf. Sober, 2000). Specifically, these beliefs are immediately warranted in a way that is independent of the overall coherence of the belief system (cf. Lewis, 1946; Rescher, 1973; BonJour, 1985). Coherentist views that allow this modification can be seen as allowing a moderate version of foundationalism to hold (cf. Olsson, 2021). Still, if claims that are in the belief system can be directly warranted in isolation, then nothing prevents these claims from being overdetermined. Thus, epistemic overdetermination would be consistent within a coherentist framework.

Moreover, the fact that the coherentist must admit independently warranted beliefs amplifies the possibility of these beliefs being *a priori* warranted. For example, suppose a logical rule is independently warranted as described above (cf. Sober, 1981, 2000, §XI). In this case, since coherentism links the notion of circularity very closely to that of warrant, nothing would rule out the possibility that such a rule could be independently warranted via a rule circular argument. In this way, the logical rule's warrant would count as a priori (cf. fn.14). I want to thank an anonymous referee for making me elaborate on this point.

¹⁶ Some may argue that this principle is overly inclusive, as it could potentially permit the acceptance of unacceptable evidence, such as that which originates from a magical sphere. I believe that this objection can be addressed by considering the following points. Generally, suppose we assume that the warrant of a claim *p* is at least partially dependent on the quality of the supporting evidence. In that case, the evidence supporting *p* must be competently produced. It is important to note that this does not necessarily rule out the existence of misleading evidence. However, it is worth acknowledging that the concept of what constitutes good evidence is not rigidly defined and can vary in different circumstances. What qualifies as evidence for *p* may change depending on the context. For instance, in mathematics, a diagrammatic proof might suffice to establish the truth of *p* when a more formal proof is unavailable (cf. De Toffoli, 2022). In any case, it appears that for something to be considered evidence (and, by extension, to provide warrant), it must meet the criteria of being good evidence, which implies that it was competently produced. Thus, the reliability of the source generating the evidence play a crucial role in its acceptance (cf. Goldman, 2011, §16.2). Nonetheless, what is considered reliable in one set of circumstances may not hold the same status in another (cf. Graham, 2016). Therefore, if the evidence for *p* is reliable in the current context, it may not be regarded as reliable in a different context. Consequently, in order to determine

take this maxim to evaluate empiricism and logical apriorism. As we have seen earlier, both views accept that a priori evidence is indispensable for warranting logic. However, we also noted that only apriorism can coherently fit non-experimental evidence into its framework. Conversely, empiricism violates the above maxim in that it cannot allow logic to be warranted a priori via non-experimental evidence; thus, in light of this maxim, we should reject *E* or consider it incomplete.

Besides, considering the maxim proposed above and the considerations made so far, if (moderate) empiricists were to stick to their guns and allow some non-experiential evidence to support the warrant (or knowledge) of logical claims, they would be proposing an epistemology of logic consistent with the apriorist views. Therefore, contrary to their Quinean heritage, their view would be considered a special case of logical apriorism.

A related – though different – question might be: “Can there be fundamental evidence for a certain domain *D*? Specifically, should we discard evidence when we possess fundamental evidence for *D*?” I am sure that some members of both stances would be tempted to say that there is fundamental evidence for some domain *D*, i.e., only a priori evidence or only a posteriori evidence supports the elements of *S*. To this end, they would argue that the opponent’s evidence should be considered superfluous. Therefore, *S* would be warranted only by one type of evidence.

I think the above evidential stance is not free of problems. One consequence of this view is that the resulting conception of *D*’s epistemology would be excessively narrow. Indeed, the role of epistemology is not to isolate the most limited set of evidential sources that can account for all the epistemic support of the elements of *S*. In keeping with the updated conceptions of apriorism and empiricism proposed above, the epistemological enterprise is much more of an ecumenical project that addresses the problem of explaining how old and new evidential sources can ensure the epistemic support needed to explain how beliefs are warranted and known. Reason: let us consider the phenomenon of epistemic overdetermination. Suppose we were to admit only one type of (fundamental) evidence to warrant the elements of *S*. In this case, we would have to admit that there is a *normal* source that allows us to warrant our beliefs (cf. fn. 10). However, it would follow from this that an epistemic agent would necessarily have to resort to this source to warrant the elements of *S* since this is now the only source that can ensure warranted beliefs by providing fundamental evidence. Yet this conclusion undermines the feasibility of having overdetermination (cf. Casullo, [forthcoming](#)). Since many epistemologists would be reluctant to argue that an agent cannot rely on a good-standing epistemic source to warrant a belief that *p* only because she must lean on normal sources, giving up on epistemic overdetermination would be too demanding a move. Therefore, if considering the above argument the fundamentalist conception of evidence appears too hasty, we should reject any view that clings to these evidential standards.

Footnote 16 (continued)

which evidence is pertinent for warranting *p*, it is necessary to consider which epistemic sources are deemed good in those specific circumstances. Failure to do so could lead to making unwarranted epistemic assumptions (cf. Jeshion, 2011, 126-27). I believe this clarification sheds light on the distinction between evidence and data. In this sense, the aforementioned maxim only accommodates evidence for *p* and does not extend to rhapsodic data. I would like to express my gratitude to an anonymous referee for prompting me to expand on this point.

Before concluding, there is one final point I would like to address. One might object that the point I have tried to argue in this section is purely verbal since it stems from my understanding of apriorism. Therefore, if one were to reject *A*, my point would be blocked. However, I believe there are good reasons to stick to *A*.

First, we can distinguish at least two conceptions of apriorism in the literature: strong and weak *A* (since weak *A* coincides with my conception of *A*, I will refer to weak *A* as *A* to avoid misunderstandings). Strong *A* holds that the warrant (or knowledge) of the elements of *S* is a priori and cannot be a posteriori (one can think of Wittgenstein's *Tractarian* conceptions of logical knowledge). In contrast, *A* holds that the warrant (or knowledge) of the elements of *S* can be a priori, e.g., 'Something may belong in the realm of such statements that can be known a priori but still may be known by particular people on the basis of experience' (Kripke, 1980, 5). Both conceptions face substantial problems. While strong *A* is a robust – yet possibly false – epistemological view (if we allow warrant by testimony, every element of *S* can be a posteriori *warranted*), *A* is, as might be expected, a weak stance. Yet suppose the debate between empiricists and apriorists is to be taken seriously. In that case, we cannot but admit *A* since a strong *A* would be a non-starter.

Second, *A* is an epistemological stance that a naturalist could easily accept. Take, for example, the case of Kitcher (1983). In his account of mathematical knowledge, he writes: 'A clearheaded apriorist should admit that people can have empirical knowledge of propositions which can be known a priori' (Kitcher, 1983, 22). Now, note how well this naturalistic conception accords with *A*. Hence, if *A* is naturalistically adequate, *A* should be accepted by an advocate of empiricism. Since *A* is compatible with Kitcher's naturalistic proposal, the empiricist should easily accept *A* (for a case concerning logic, see also Maddy, 2018, 20).

Finally, since we made the case that *A* is naturalistically adequate for any *D*, *a fortiori* *A* should be naturalistically adequate for logic. Therefore, I believe the debate between apriorists and empiricists should be framed in these terms. Nevertheless, I am aware that some traditional apriorists would disagree with this conclusion (cf. fn. 13). Still, the arguments I have offered here provide good reasons to support this revised account.

3 Logic and Language, Language and Logic. On the Linguistic Conception of Logical Evidence

The second misconception regarding logical evidence pertains to the relationship between natural language and logic. Numerous distinguished authors in the field of the philosophy of logic contend that logical evidence originates from natural language (cf. Ayer, 1936; Montague, 1970; Beall & van Fraassen, 2003; Priest, 2006). In what follows, we will assess the cogency of this evidential proposal.

However, before proceeding, I would like to dismiss one possible doubt. The following arguments are not intended to establish that natural language can *never* be used as evidence for logic. At most, in the wake of the arguments I propose in this section, I will argue that natural language must be *honed* to be considered logical evidence. In other words, I will argue that language per se cannot be regarded as

evidence for logic. Furthermore, from the discussion in this section, the need for theoretical resources that can circumscribe natural language will emerge. Although, for reasons of space, I will not be able to dwell on this latter issue, I will suggest what I think is a suitable asset to fulfill this task in a few passages in this section.

I think it is reasonable to say that the linguistic conception of logical evidence is based on the idea held by some philosophers – usually logical monists – regarding the ultimate goal of logical inquiry. As Commandeur (2022, 46) argues, a form of *telic monism* is often assumed to apply to logical theorizing. That is, ‘there is only one philosophically primary goal or canonical application of logic’. Let us consider some examples.

[I]f logical pluralism is to be a substantial and controversial thesis, something more must be intended. That something more is the notion of logical consequence – that is, a logic is "correct", or "acceptable", etc., if and only if it is a correct [...] codification of logical consequence. The idea that the philosophically primary (but not only) goal of logical theorizing is to provide a formal codification of logical consequence in natural language traces back (at least) to the work of Alfred Tarski, who also provides us with a useful first approximation of what logical consequence amounts to. (Cook, 2010, 495)

And just as with geometries, pure logics have a canonical application: (deductive) reasoning. A logic with its canonical application delivers an account of ordinary reasoning. One should note that ordinary reasoning, even in science and mathematics, is not carried out in a formal language, but in the vernacular; no doubt the vernacular augmented by many technical terms, but the vernacular none the less. [...] In other words, a pure logic with its canonical application is a theory of the validity of ordinary arguments: what follows (deductively) from what. (Priest, 2014, 215- 16)

What do logics represent? It is clear from the various uses of *applied* logic, they can represent many different sorts of phenomena. But for the purpose of traditional logic, though, theories of consequence are frequently taken to represent *natural language inference*. (Cotnoir, 2018, 302)

The point made in these quotations should not come as a surprise to us. Indeed, we often read in logic textbooks that logic is the discipline that studies correct reasoning or good arguments. Now, since it could be argued that an argument is always presented in some language, it would be natural to assume that the focus of logic concerns the intrinsic features of the (*vernacular*) language in which these arguments are presented (cf. Iacona, 2018, §4.3).

Despite its intuitive pull, this conception of logical evidence has come under attack in recent literature. In the rest of this section, we will see why we should resist this evidential proposal.

The first reason to resist the linguistic conception of logical evidence comes from Glanzberg (2015, 2021). In his work, Glanzberg challenges the view of the superiority of natural language for theorizing logic. In other words, he challenges the idea that what we find in natural language is somehow akin to a logical consequence relation. Indeed, according to proponents of the linguistic conception, a correct account of logical consequence would be nothing more than the formal regimentation (or a

model) of what we find informally present in natural language – ‘A natural language, as a structure with a syntax and semantics, thus determines a relation of logical consequentality’ (Glanzberg, 2015, 75). Against this conception, Glanzberg (2015, 83) argues that we cannot hope to use linguistic evidence for logical theorizing unless we abstract or strongly idealize this evidence.

It is important to stress that Glanzberg (2015, 115) admits that we can talk about a logic in natural language. Nevertheless, he also argues that this is not the same as saying that language contains a logic (Glanzberg, 2015, fn. 2). For these reasons, more recently, he argued that:

I have urged caution in these matters. I have argued for a real but limited role for model theory in semantics of natural language, and I have likewise argued for limited connections between natural language and logic proper. (Glanzberg, 2021, 209)

Despite these clarifications on the necessary precautions, his basic point remains that ‘the two sets of facts are fundamentally autonomous’ (Glanzberg, 2015, 72).

For example, he argues that semantic analysis of natural language and logic differ (cf. Glanzberg, 2015, §3.3.1-2). While the former analysis explains how words obtain their meaning, the latter focuses on formal inferential links between logical consequence bearers. Therefore, the second type of analysis is concerned with evaluating inferential connections independently of the meaning of non-logical terms. In this sense, if logical evidence were linguistic, this evidence would provide qualitatively different epistemic support than that required for a formal analysis of logical terms. In light of this, linguistic evidence seems to be a misleading source if our goal is to understand the notion of logical consequence through a semantic analysis of logical terms.¹⁷

Similarly, Dicher (2021, § 6) argues that the threat of logical nihilism (cf. Cotnoir, 2018; Russell, 2018) seems invited by the continuity relation that seems to hold between the generality thesis and the privileged application of logic to natural language.¹⁸ The generality thesis states that a valid logical principle applies without restriction in all circumstances (cf. Williamson, 2017, *ms.*). Thus, depending on which concept of validity one adopts, an argument is deemed valid if and only if, in every case in which the premises have a designated value, so does the conclusion. Therefore, it does not matter whether one is working in truth theory, differential

¹⁷ Beall & Restall (2006) defend the idea that one of the three core features of logic is necessity (the truth of the premises of a logically valid argument necessitates the truth of the conclusion). One way to explain this necessity is through the meaning of logical terms (cf. Martin & Hjortland, 2022, 9). A conclusion follows logically from the premises because of the meaning of the logical terms. This amounts to a kind of metaphysical analyticity. Therefore, if Glanzberg’s arguments were sound, language per se could not explain the necessary character of logic.

¹⁸ It is worth specifying that Dicher does not deny that linguistic evidence can serve for logical theorizing. Dicher (2022, 183) assumes that logical theorization involves extracting logical form from natural language. However, as we shall see shortly, he also argues that natural language must be honed to serve as evidence for logic.

topology, or ethnography, a valid rule of inference will preserve truth from premises to the conclusion in all circumstances.

Dicher (2021, 7088) argues that given the breadth and nuances of language, we could, in principle, always find a way to invalidate logical principles that are deemed valid. Below are a couple of examples that I think will help to understand.

The first example concerns the counterexamples to *MP* proposed by McGee (1985) (fn. 14). His argument proceeds by showing that by implementing the meta-variables of *MP* with some peculiar claims, one would be warranted to hold the premises without thereby holding the conclusion.¹⁹ According to McGee, this (linguistic) evidence is sufficient to prove that *MP* is not valid.

As mentioned in the penultimate sentence above, one interpretation of this logical failure can be attributed to the peculiar features of the sentences McGee uses to instantiate *MP*. Indeed, if we consider the conditional premise of McGee's arguments, we can notice that the consequent of this premise is also a conditional claim. Still, there is reason to doubt another hidden assumption of this argument: the "if... then..." expression of natural language always behaves as a material conditional. In other words, if we assume that validity constitutively depends on the intrinsic features of natural language, it follows that any instantiation of the meta-variables of *MP* should be evidence of the logicity of this principle.

But as a matter of fact, there seem to be good reasons to question both these assumptions. First, studies on indicative conditionals have shown that these expressions do not always behave in a true functional way (cf. Priest, 2008, §1.6; Florio, Shapiro, & Snyder ms.). Second, the idea that every substitution of the meta-variable can be used as (counter)evidence for the validity of a logical principle is also suspicious. As Dicher argues, this assumption depends on the idea that one cannot have a preliminary "tidying up" of relevant cases that count as (counter)evidence for the validity of a logical principle (cf. Dicher, 2021, 7088). Still, this assumption clashes with logical practice. Citing Frege's metaphor of the eye and the microscope, Dicher contends that:

Details aside, the overarching idea is precisely that of containing the multitude of phenomena that occur in natural language to a sufficient degree to make possible the study of the general laws of thought. It is relative to this purged medium that the generality of logic is predicated. (Dicher, 2021, 7089)

¹⁹ McGee's most famous counterexample to *MP* goes as follows:

'Opinion polls taken just before the 1980 election showed the Republican Ronald Reagan decisively ahead of the Democrat Jimmy Carter, with the other Republican in the race, John Anderson, a distant third. Those apprised of the poll results believed, with good reason:

[1] If a Republican wins the election, then if it's not Reagan who wins it will be Anderson.

[2] A Republican will win the election.

Yet they did not have reason to believe:

[3] If it's not Reagan who wins, it will be Anderson'. (McGee 1985, 462).

Following Frege, then, Dicher invites us to reconsider the sense of generality with which logical principles apply to language and better consider the evidential relationship between language and logic.^{20, 21}

The second example concerns the relation between natural language and substructural logic. If natural language were the only source of logical evidence, then we would have to conclude that the correct logic is one of the many substructural logics, i.e., a family of logics that denies the validity of structural principles (principles concerning *reflexivity*, *transitivity*, *idempotence*, *commutativity*, *monotonicity* and *associativity* of logical consequences). To see why this conclusion holds, just think of monotonicity and idempotency. From linguistic evidence, we should be able to see that logical consequence is non-monotonic since adding a new premise to an argument does not always assure us that the previously inferred conclusion remains true (cf. Priest, 2016 §2.5). Likewise, again considering linguistic evidence, we could not save the contraction principle either, since in some cases, we would deny that the conjunction of two instances of the same premise is weaker than a single instance (which, according to widespread opinion, is equivalent to the failure of contraction) (cf. Zardini, 2019, fn. 2).

Now, there is no denying that these logics have assumed a very important role in the logical endeavor. Still, the above conclusions would clash with the idea that logical inquiry models general language phenomena. Indeed, rather than modeling general features of the language, substructural logics generally lend themselves to regiment niche phenomena of language, such as paradoxes. Of course, paradoxes are also a very important phenomenon in our language. However, I do not believe that everyone would be inclined to base the choice of the correct logical theory only on the glitches present in the vernacular language (especially if they do not allow us to save the generality of logic) (cf. Williamson, 2017).

Given this, if natural language is to be used as evidence for logic, we must remember two things. On the one hand, as Glanzberg argues, language must be idealized and abstracted in order not to compromise our investigation into logical consequence. On the other hand, as Dicher maintains, linguistic evidence must be tidied up to reduce cases of erroneous (counter)evidence. Ultimately, I believe that the work of these authors supports the thesis I proposed at the beginning of this

²⁰ In the same section, Dicher also references a passage from Beall & Restall (2006, 9), in which the authors discuss the type of language that logical theorizing should address. Much like Dicher (2022), as previously noted in fn.18 of this article, Beall & Restall use the concept of logical form to explain how natural language can be constrained. Consequently, it is reasonable to interpret all these authors as proponents of the idea that natural language must be refined to be regarded as logical evidence, and that the key approach is to consider the logical form we aim to derive from it.

²¹ These considerations generally pertain to the conditional concept that our logical theories aim to encapsulate. As Zardini (forthcoming, fn.59) reminds us: ‘Frege [...] might have been right that the laws of logic are norms of thought [...], but he overlooked the fact that norms are there to be broken. The tremendous power of negativity pushes our thought to displace its “boundary stones” to make room for the possibility of entertaining nontrivial hypotheses about their failure. This cognitive ability is manifested in our use of counterlogical conditionals. It should then not be surprising that conditionals do not unrestrictedly obey any principle: arguably, if they did, they could not be vectors of our boundlessly free hypotheses concerning failures of logical principles’.

section: language per se is not sufficient, from an evidential point of view, to determine which is the correct notion of logical consequence.

Finally, the idea that logic has a privileged (canonical) application in natural language appears to be faltering.²² Several authors have argued that we may have a genuine plurality of purposes in mind when it comes to logical theorizing (cf. Eklund, 2020; Hlobil, 2020; Commandeur, 2022). For instance, Eklund argues that at least three independent linguistic projects could motivate logical theorizing in a pluralistic setting. The first project is the *mapping project*, which involves identifying the expressive limitations of various possible languages. Hence, in the case of logic, this project would determine how the notion of validity would behave in different languages. The second project is the *actual language project*, which involves figuring out how our natural language behaves with respect to what we are investigating. In our case, proponents of different logics would embark on the challenge of proposing a logical theory that correctly captures the notion of logical consequence in natural language. Finally, the last project is the *normative project*, which aims to determine the best language. Hence, applying this latter project again to our case would mean we should figure out what the best notion of logical consequence is.

Eklund argues that all three of these projects are relevant for logical theorizing. Therefore, if we focused only on linguistic evidence and argued that logic somehow flows from it, we would have to agree that all three of these projects are equally interesting from a theoretical point of view. Yet, we should also recognize that the projects are also independent of each other. Therefore, if we cannot explain why one of these projects is more relevant, then appealing to linguistic evidence would not be enough to explain knowledge of logical facts.²³

²² The idea that logic has a ‘canonical application’ in natural language is unusual. Yet, authors such as Priest adopt this unusual sense of this expression (see especially his quotation located at the beginning of §3). In an attempt to understand this use of the expression “canonical application”, let us consider the distinction between pure and applied logic. The former differs from the latter in that it is essentially a formal calculus with its adequacy conditions, i.e., non-triviality. We call these adequacy conditions “internal” since they can be shown to hold formally. In contrast, applied logic has “external” adequacy conditions since, in order to be correct, a logic must also take into account the phenomenon one wants to capture with its canonical application. Therefore, following Priest’s ideas, the expression “canonical application” refers to the main source of evidence in logic, namely, natural language.

²³ At this point, it could be argued that we should be interested in the second project, since it clearly has greater importance over the others. Eklund (2020, 4), however, argues that there is no reason to think that what is presented in natural language is normatively or ontologically more interesting than what is shown in the other projects (see also Eklund, 2020, 3).

Besides, one point concerning the second project seems particularly worrying for the proponent of the linguistic conception of logical evidence. In his article on the limits of logical abductivism, Hlobil (2020) argues that abductive methodology is not a neutral method for choosing which logical theory is correct. *In nuce*, he argues that since different logics explain different data, proponents of these logics cannot agree on the evidence to carry out the abductive inference. Hlobil’s conclusions raise other important issues. For example, let us consider the debate between monists and logical pluralists. Assume that the linguistic conception applies. In this case, I think comparing these views would be problematic and lead to unpalatable results. First, monism would have no chance of success. Since language clearly shows us that many terms (logical and otherwise) are ambiguous or polysemic, we would have to immediately conclude that more than one logic is correct. Yet, with Glanzberg, we have seen that this is the opposite of what many authors would argue: there is a correct logic in natural language. Second, since we are considering linguistic meaning to explain which notion of logical consequence is correct (cf. fn. 17), we

In this section, I have argued that depending solely on one of the traditional sources of logical evidence is insufficient to elucidate our understanding of logical consequences. This conclusion holds significant importance, as it encourages us to scrutinize the means upon which we rely for refining natural language (cf. fn. 20). In the forthcoming sections, I will evaluate other conventional sources of logical evidence closely associated with natural language.

4 Intuiting (Propositional) Evidence

Another type of misconception regarding logical evidence concerns proposals such as Chudnoff's (2011).²⁴ Therefore, the focus of our analysis in this section will be the role of intuitions in logic.

In presenting his account of intuitions, Chudnoff argues that:

Here are some propositions one might unreflectively intuit: if $2 > 1$, then $2 > 1$; $2 > 1$ Here, now, is a worry. When we have an intuition experience whose content is one of these propositions it gives us *prima facie* justification for believing it. But our intuition experience seems too minimal to have presentational phenomenology. If it does not have a presentational phenomenology, then something else must account for its epistemic properties [...] All you have to do is entertain the proposition and hold it in mind – whereupon it will intuitively strike you as being true. Still, I claim, your intuition experience has presentational phenomenology. What item do you seem to be intellectually aware of? Plausibly, it is the proposition itself, or one of its intrinsic properties such as its form. (Chudnoff, 2011, §6)

To put this quotation in context, Chudnoff is considering the phenomenon of *unreflective intuitions*. Unreflective intuitions represent an interesting epistemological phenomenon, as these intuitions seem to be rational experiences that grant us immediate access to facts regarding basic logical principles (cf. Carlson, 2022). For example, if we consider the principle of non-contradiction – $\sim(\varphi \& \sim \varphi)$ – and its negation – $(\varphi \& \sim \varphi)$ – the former principle, but not the latter, immediately appears

Footnote 23 (continued)

cannot prescind from the various meanings of logical vocabulary. Therefore, if we cannot exclude these meanings, neither can we exclude the different logics that regiment them. Yet it seems that this way of conceiving logical evidence generates meaning-variant pluralism rather than meaning-invariant pluralism (cf. Dicher, 2016; Ferrari & Orlandelli, 2021). That is, as Quine has put it, 'change of logic, change of subject'. Still, if this were the case, pluralism would be susceptible to the criticism that different logical theories are not discussing the same notion of validity but rather different version of it (cf. Hlobil, 2020, 334). I want to thank an anonymous referee for making me elaborate on this point.

²⁴ In this section, I consider Chudnoff's account because of its distinctive features and applications to the debate in the epistemology of logic. However, the reader should not think of this discussion merely as an internal critique of this account. Much of the following could apply to other accounts that employ intuitions as epistemic sources. For example, the idea that by merely reflecting on a proposition, one can be warranted to form an intuitive belief can be found in many authors (cf. Bealer 1998; Bengson 2015a; Boghossian & Williamson, 2020; BonJour, 1998; Sosa, 2007). Therefore, if the idea proposed by Chudnoff is widespread in the literature, it is worth considering its effectiveness by taking a closer look.

true when we consider it (considering this principle, we seem to have an impression of *felt veridicality*). In this case, Chudnoff would argue that we had a non-reflective intuition, which warrants us to believe $\sim (\varphi \& \sim \varphi)$. However, according to Chudnoff, unreflective intuitions seem to be problematic because they do not instantiate the phenomenological property that explains how we can have warrant for intuitional beliefs, i.e., *presentational phenomenology*. Chudnoff argues that intuitions are *sui generis* epistemic sources because they instantiate the same kind of phenomenological properties as perceptual sources to warrant beliefs. That is, ‘an intuition experience possesses presentational phenomenology when in it you both seem to fact-intuit that p and seem to be intellectually item-aware of an item that makes it the case that p ’ (Chudnoff, 2011, §4). The problematic nature of unreflective intuitions concerns the second conjunct of this analysis. Epistemic agents seem unaware of anything when subjected to unreflective intuitions, as the transition from these unreflective states to beliefs is very rapid. But then, if unreflective intuitions lack the factor that warrants intuitional beliefs, how can these sources warrant (logical) beliefs? Chudnoff (2011, §6) argues that to satisfy this *desideratum*, the agent subjected to these intuitions must be aware either of the proposition that the intuited content expresses or of an intrinsic feature of it, e.g., its form.²⁵

Let us now apply this account to logic. Although I am sympathetic to the idea that logical principles can be warranted by appealing to (logical) form, I believe that propositions cannot count as logical evidence. Here are some reasons in favor of this view.

First, let us assume with Chudnoff (2011, §5) that (unreflective) intuitions are non-inferential epistemic sources. In this case, we would expect intuitions to produce non-inferentially warranted (logical) beliefs. Yet, Chudnoff’s account fails to account for this *desideratum*. If, in the case of unreflective intuitions, what warrants us to believe that p is propositional in nature, we should consider this warranting evidence a *reason* to believe that p . Traditionally, in epistemology, reasons are considered propositions used to ground reasoning (cf. Alston, 1989, 176). For example, Burge (2003a) has examined this point at length in connection with the discussion about perceptual content and its epistemic role in belief formation.

I certainly agree with Sellars that reasons must be propositional. Perceptual beliefs are not normally reason based. The normative transition from perception to belief is not a piece of reasoning. If perceptual representations were reasons for perceptual beliefs, such transitions should count as reasoning. But they do not. (Burge, 2003a, 528)

²⁵ The referent of the term “form” used in the quotation above is not clarified by Chudnoff. Most likely, by “form”, Chudnoff means “logical form”. In any case, the examples he uses in his article suggest that he uses this term ambiguously. Indeed, we can distinguish between a use of “logical form” for perfect languages and a use that concerns the deep structure of natural language (cf. Davidson, 1980, 137). Both senses of this term have their limitations (cf. Sainsbury, 2020). In the following, I will remain neutral with respect to this distinction by avoiding further interpretation of Chudnoff’s work. For now, it is enough for us to know that awareness of forms is non-propositional evidence since it involves awareness of schemata. I thank an anonymous referee for inviting me to clarify this point.

It follows from this quotation that if we were to endure with Chudnoff's firm analogy with perception, then the intuitive content that warrants the (unreflective) belief that p should be considered a reason. Hence, the transition from (unreflective) intuitions to beliefs should be viewed as a piece of reasoning. Yet this conclusion would clash with our initial assumption: intuitions are non-inferential sources.²⁶

Besides, this conclusion also clashes with the phenomenological features that, in Chudnoff's account, motivate the distinction between reflective and unreflective intuitions. If unreflective intuitions allow us to grasp the truth of a proposition immediately, then we would expect these sources to have non-inferential phenomenology. But since these sources require propositional awareness, we should classify the phenomenology of unreflective intuitions as inferential in light of the above argument.

Second, if unreflective intuitions require that there be awareness of a proposition, one may wonder how this awareness can alone warrant a belief. A natural reaction to this proposal would require that intuitional warrant stems from understanding the proposition in question (cf. Goldman, 2007; Sosa, 2007). Yet among the proponents of the *sui generis* conception of intuitions, few would admit that intuitive warrant depends on understanding, including Chudnoff himself (see especially Chudnoff, 2012).²⁷ Thus, if understanding is not required for intuitional warrant in Chudnoff's account, *a fortiori* it should not be required for unreflective intuitional warrant either (cf. fn. 26).

But if understanding is not suitable to have intuitional warrant, what warrants the belief that p via unreflective intuitions? Indeed, the idea that one can rationally believe that p by considering only its (propositional) content is controversial. By assumption, if what we rationally believe depends (partly) on the type of source

²⁶ Some might argue that self-evident claims (logical truths or axioms) are reasons in themselves (cf. Burge, 2003b). Therefore, an advocate of unreflective intuitions might argue that because we are aware of the propositions these claims express, we have a direct warrant for these claim (no reasoning would be necessary). To reply to this objection, we need to keep a couple of things in mind. First, this line of reasoning seems to assume a notion of *metaphysical analyticity*, a notion widely rejected nowadays (let us remember that, in this account of intuitions, propositions are doing all the heavy lifting; awareness only allows us to see something that is already there, that is, the truth of the proposition). Moreover, it is not clear whether self-evidence and analyticity (metaphysical or epistemological) are co-extensional concepts. Therefore, some may already doubt the effectiveness of this proposal. This latter remark leads us to consider a second aspect (I will set aside for now the issues about the complicated relationship between understanding and intuition – for a discussion, see fn.27). If we were really to turn to the notion of analyticity to save this line of argument, we would have to use an *epistemic* notion of analyticity: understanding *and* meaning warrant the belief that p (cf. Teixeira, 2023). Now, the introduction of understanding complicates things a bit. Since it is no longer just the propositional content that warrants the belief that p , but the combination of meaning and understanding, we cannot rule out reasoning (cf. Bengson, 2015b, §4). Therefore, if reasoning cannot be ruled out for warranting beliefs involving self-evident truths, reasoning cannot be ruled out for the case of unreflective intuitions (more on this in §5).

Besides, if we can assume that propositions are conceived of as *abstracta* by Chudnoff, his internalist account of intuitions fails (cf. Chudnoff 2011, §2), as the mind-and-language independent nature of *abstracta* clashes with the internalist tenet of considering only the internal features of our psychology to explain warrant (cf. Pollock & Cruz, 1999, 25).

²⁷ Bengson (2015a, 740) has convincingly argued that understanding is neither necessary nor sufficient to have intuitional warrant. Reason: understanding is not sufficient for intuitions because it is possible to understand that p without having the intuition that p (see the case of the principle of non-contradiction and its negation above; we can understand both claims, but only intuit the principle of non-contradiction).

we use to produce warranted beliefs, then Chudnoff's account cannot distinguish between beliefs produced by an agent with an impaired cognitive system and one with a normal cognitive system. The reason is that, on this account, the evidence produced by unreflective intuitions would not be sensitive to the types of sources of evidence. To wit, suppose an agent's impaired cognitive system produces true (unreflective) intuitions about complex logical-mathematical propositions by sheer luck. Furthermore, suppose the agent considers Fermat's last theorem before discovering Wiles' proof. According to Chudnoff, if the impaired agent were aware of the proposition and intuited its truth by sheer luck, this would warrant her belief. However, this would be 'a great leap in thought' (cf. Schechter, 2019) since we would normally consider (unreflective) intuitions unable to warrant these kinds of beliefs (cf. Boghossian, 2003). More importantly, in this scenario, the phenomenological properties instantiated by the impaired agent would be qualitatively identical to those of a normal epistemic agent. Therefore, contrary to what one might hope, there would be no qualitative difference in terms of competence and reliability regarding the evidence warranting the intuitive belief that p in this case.

Likewise, in principle, using the same (unreflective) sources, our impaired agent could have non-experiential warrant for beliefs we would normally deem empirical. After all, if it is enough to have propositional awareness of p to be warranted, then by slightly extending the effects of her cognitive condition, any proposition could be warranted non-experientially. Yet, this seems highly unsatisfactory. Therefore, Chudnoff's account must be considered inadequate because it yields results about intuitional warrant that contrast with findings concerning both the normal functioning of epistemic sources and the kind of warrant produced by intuitions (cf. Plantinga, 1993; Graham, 2012).

Finally, consider a more technical point advanced by Zardini (2014). The problem that Zardini highlights concerns identifying the bearers of the logical consequence relation.

First, in certain phenomena of context-dependence like reference failure of demonstratives, it is doubtful that any proposition is expressed, but it is not doubtful that there could still be valid or not valid arguments to be made, like, taking for example a case in which one is hallucinating a dagger, the argument from 'That dagger is on the table' to 'That dagger is on something'. Second, even in those cases in which propositions are expressed, they seem anyways ill-suited to tracking entailments generated by context-dependence like the one from 'Actually, snow is white' to 'Snow is white': it is implausible to think that the proposition that, in @, snow is white entails the proposition that snow is white, since things could have been such that the former proposition is true while the latter false. Third, on many views of propositions [...], the proposition expressed in c^{FE} by 'Tomorrow, it'll

Footnote 27 (continued)

tion). Moreover, understanding is not necessary for intuitions because it is possible to intuit that p without understanding that p . For example, Bengson takes up the case of Weierstrass reported in Frege's posthumous writings. In this case, Frege argued that Weierstrass had correct intuitions about the properties of numbers even though he did not fully understand the concept *number*.

be sunny' is the same as the proposition expressed in c^{FE} by 'Today, it's sunny', and so, on such views, even if the Fregean Entailment were somehow tracked at the level of propositions taking propositions as logical-consequence bearers would implausibly turn that entailment into the trivial entailment from a proposition to itself. (Zardini, 2014, 3478-9)

The purpose of this extended quotation concerns a point already mentioned at the beginning (cf. fn. 6). Although evidence is normally considered propositional, logical evidence might be non-propositional. As we saw in the quotation above, if someone intuiting that p had awareness of p , her evidence for believing that p would not be fine-grained enough to capture basic features about logical consequence like reflexiveness. To wit, if intuiting propositions were enough to be warranted in believing facts about validity, we would not be able to grasp that "that dagger is on the table" logically follows from "that dagger is on the table" in that reference failure would not allow the agent to have awareness of any proposition (*mutatis mutandis*, similar considerations could also be made for other structural features of the logical consequence). Yet, as we saw above, we would consider this argument valid even though we have no awareness of any (complete) proposition.

Given all of this, one of these two following considerations should hold. Either intuitions do not count as sources of logical evidence because of the propositional nature of their content, or they count as evidence because they present something other than propositions to epistemic agents.

Although propositions might not count as evidence for accounting for the truth of logical claims, there is a suggestion in Chudnoff's initial quote that is worth highlighting: 'Plausibly, it is the proposition itself, or one of its intrinsic properties such as its form'. I think it is worth making two remarks about this passage. First, suppose that intuiting forms or structures does not count as having propositional evidence (cf. fn. 25). In this case, there seems to be a good reason to regard the second disjunct as true. Second, if intuiting forms is a sound option, then intuitions can satisfy the evidential profile we have outlined so far. Indeed, we should now be able to see that intuitional evidence would align well with the idea that the sources of logical evidence are neither dependent on linguistic (conceptual) competence (cf. fn. 27) nor have propositional outputs.

Furthermore, since it has not yet been ruled out that intuiting forms counts as either experiential or non-experiential evidence (or both), the fact that there are reasons to consider intuitions sources of evidence seems consistent with intuitions being a priori and/or a posteriori sources of evidence. Therefore, this conclusion also aligns well with the apriorist proposal we advanced in §2.

5 Judgments as Evidence

The profile of logical evidence I have outlined so far yields an unusual conception of the epistemological grounds of logic. To recap, let me review some crucial passages.

First, logical apriorism is more tolerant than moderate empiricist views – i.e., *AEL*. Since epistemic overdetermination is precluded for *AEL*, we cannot employ non-experiential evidence to warrant logical claims. Secondly, many authors have argued that a logical theory is correct only if it captures the notion of logical consequence underlying natural language. However, we have seen that it would be strange, to say the least, to claim that linguistic evidence can, per se, provide an account of logical knowledge. Third, logical evidence can be non-propositional. There are two reasons for this latter point. On the one hand, propositional evidence is too coarse to capture facts about logical consequence in cases lacking complete propositions. On the other hand, for a piece of evidence to be considered epistemically adequate to support a belief, the source producing this evidence must be truth conducive (the agent must use the source competently) (cf. Sosa, 2007). We have seen that accounts such as Chudnoff's neglect this epistemological feature. Yet by leaving out this detail, we risk admitting evidence that we would otherwise consider unacceptable (cf. fn. 16). Let me pause for a moment on this last remark.

Given the importance of truth conducive evidence, some might argue that we should appeal to experts to ensure this kind of evidence. For example, some proponents of *AEL* argue that the evidential basis by which we construe and test the correctness of a logical theory consists of experts' *judgments* regarding matters of logical (in)validity (cf. Martin & Hjortland, 2021, 2022). According to these authors, using only this kind of evidence, we would have a way of warranting our logical beliefs.^{28, 29}

However, I have some reasons to doubt this latter point. To put it in Frege's terms, the act of judging is the consequence of grasping a thought (cf. May, 2018, §3). Slightly readapting this idea, we could say that judging something as true presupposes that the content of what we are judging has a conceptual nature; judgment

²⁸ Specifically, these authors seem to argue that experts' judgments count as evidence regardless of how they form such judgments. For example, if an expert judges that "X is a valid logical principle", then this judgment is part of the evidence by which we can warrant a logical theory. Still, whether this judgment is made from linguistic skills, intuitions, or empirical observations makes no difference in this account. One reason to support this latter precisification stems from these authors failure to explain experts' reliability (competence). Indeed, in both of their articles (Martin & Hjortland 2021, 298; Martin & Hjortland 2022, fn. 25), these authors must *assume* that experts are reliable (competent) in making (logical) judgements in order to count these judgements as evidence. However, since the reliability of experts' judgments could be easily explained by considering the reliability of the sources they use (or their competence in using these sources), and since Martin & Hjortland fail to do so, it would be natural to interpret their account as ruling out an epistemic role for sources of evidence.

Besides, I would like to point out that this remark was discussed in a private meeting with Ole Hjortland.

²⁹ My point below is not directly about whether experts' judgments can be considered evidence. I see no major problem in arguing for this claim (except perhaps for the point I will make later about the factiousness of such evidence). The problem I want to emphasize here is that the evidential standards of this *AEL* proposal undermine the possibility of using experts' judgments to warrant logic. Foreshadowing my strategy a bit, the point is that if we talk about logical evidence, we cannot ignore its sources (cf. fn. 16). Although sources of evidence are not, de facto, evidence for logic, sources play a crucial role in the evidential relations that are instantiated when we warrant a belief (logical or whatever). Indeed, if we were not committed to the sources by which evidence is produced, we could not explain why we rely on experts and their judgments. After all, the fact that logical evidence is what an expert judges to be true is not enough to make a logical judgment a "good piece of evidence" since nothing precludes that such

presupposes predication. However, to my knowledge, the only way to judge something as true without employing epistemic sources is to assume the controversial notion of self-evidence (cf. fn. 28) (for a discussion about self-evidence, see Jeshion, 2001). For example, we could judge a claim as true if its content had elements in some obvious relation.³⁰

However, two details must be carefully considered when buying into this account. First, although it is reasonable to assume that we can judge something that has obvious content to be self-evidently true, we must still allow sources of evidence to come into play. Indeed, to grasp the obvious relations between the elements that constitute the content of what we are judging, we must first *understand* these relations. Now, a problem with the epistemic concept of *understanding* is that the literature on this topic is unclear on whether understanding should be considered an *epistemic source* (cf. Horvath, 2020) or an *epistemic good* (cf. Burge, 2020). Be that as it may, suppose we consider understanding in the first sense. In this case, epistemic sources would blatantly come into play when we judge an obvious claim as true. Conversely, suppose we consider understanding as an epistemic good. In this case, sources would be needed to produce this epistemic good, as has been argued by several authors (cf. Bengson, 2015b; Sliwa, 2015). Therefore, it should already seem unclear how it is possible to separate epistemic sources from judgments coherently.^{31, 32}

Second, for the sake of argument, consider the following borderline case. Even if someone were to argue that judgments concerning self-evident truths can be made independently of epistemic sources (perhaps by recognizing that understanding is necessary but not sufficient for making them), this would still require that something

Footnote 29 (continued)

judgment may be incompetently produced. I thank an anonymous referee for inviting me to clarify this point.

³⁰ Although for authors such as Frege, obviousness is neither necessary nor sufficient for self-evidence, the subsequent literature on this topic has pointed out that it would be fair to say that in most cases obviousness is at least a safe guide to self-evidence (cf. Jeshion, 2001).

³¹ The importance of epistemic sources for making judgments was well understood by Frege. Consider the following passage: ‘A sense-impression is not in itself a judgment, but becomes important in that it is the occasion for our making a judgment’ (Frege, 1979, 267). In other words, sources of evidence make possible the formation of judgments by enabling the conceptualization of content, that is, by enabling predication (cf. Burge, 2010, 30–8).

³² Interestingly, in a couple of passages of his work, Frege seems to discuss the role of sources in grasping and judging the basic laws of logic. Take for instance what he writes in a footnote of his 1897 unpublished *Logic*: ‘I should say that this question is still far from being grasped in all its difficulty. People are usually quite content to smuggle thought in through a back door in the imagination, so that they don’t themselves know how it really got in’ (Frege, 1897/1979, 145). Although this passage merely represents a note in his discussion of how we grasp thoughts about the basic laws, in the wider context in which this passage is located Frege sticks to his guns and warns us about the irrelevancy and the perils of the psychological intrusions. Yet, despite these admonitions, he still seems to conceive the problem of grasping a law ‘as a question in its own right’, while remaining convinced that ‘it is not the holding something to be true that concerns us but the laws of truth’.

Moreover, consider a second passage ‘The question why and with what right we acknowledge a law of logic to be true, logic can answer only by reducing it to another law of logic. Where that is not possible, logic can give no answer. If we step away from logic, we may say: we are compelled to make judgments by our own nature and by external circumstances; and if we do so, we cannot reject this law – of Identity, for example; we must acknowledge it unless we wish to reduce our thought to confusion and finally renounce all judgments whatever. I shall neither dispute nor support this view; I shall merely remark that

else – over and above understanding – should act as an *explanans* for making such judgments. However, one might rightly ask: "What could this missing component be?" Now, if something can be self-evident in the way described above, then the only way to make sense of this view would be to hold that the content is somehow special (cf. Teixeira, 2023). In particular, it should be assumed that the semantic features of the content are structured to prevent what is being judged from being false. Yet, the attentive reader should have noticed that this view presupposes that something near metaphysical analyticity should hold in this case. Since we have allowed for the existence of claims that can be judged true regardless of the sources we employ to make such judgments, the truth of such claims must depend on some intrinsic feature of their content. However, this conclusion does not seem to fit well with the empiricist tenets of *AEL*. Since many *AEL* advocates would be skeptical towards metaphysical analyticity, we should agree that this strategy is unpalatable. Therefore, it seems that even empiricists who admit that evidence for logic consists of experts' judgments must commit themselves to sources of evidence.

Let me make the same point, but from a different angle. Suppose that logical evidence consists of experts' judgments and that these judgments are independent of sources (cf. fn. 28). In this case, at least three complications would follow from this account. First, even if we restricted logical evidence to experts' judgments, nothing would assure us that such evidence is truth conducive (competently produced). Since, in such cases, what matters for warranting logical claims are only experts' outputs (judgments), nothing can prevent these outputs from being produced deviantly or through epistemically uninteresting methods. Yet, we would not want this kind of evidence to support a theory (logical or whatever).

Second, if we dispensed sources of evidence from the epistemological picture, we could not explain why we rely on experts' judgments in the first place. Since what makes experts such is their competence, and since competence is explained in terms of reliability (competent use of reliable sources), how could we say that an expert is competent (makes reliable judgments) without considering the sources she uses to make such judgments? In the ensuing picture, I think we would have to give away both experts' judgments and their logical competence.

Third, the idea that experts' judgments can count as logical evidence is rather problematic on its own. For instance, wouldn't an expert be inclined to judge as valid only what her preferred logical theory deems to be so (cf. MacFarlane, 2004, 2)? In other words, leaving aside the sources by which she makes such judgments, wouldn't this evidence be cognitively penetrated by her own logical convictions? I strongly believe that an inevitable problem with this empiricist view is that experts'

Footnote 32 (continued)

what we have here is not a logical consequence' (Frege, 1884/1968, XVII). In this passage, the question for Frege has changed. As matter of fact, in this second quotation, Frege is not interested anymore in the problem of explaining how thoughts about basic laws can be grasped. Specifically, he is now concerned with knowing whether these could be judged as being true. Even in this case, knowledge of basic laws is problematic for we cannot appeal to logical proof. Although it is difficult to pin down exactly what Frege had really in mind here, one interpretation could be that one *could* acknowledge these truths via sources other than logic. Again, although the sources he mentions do not pertain to the prerogatives of logic, these are deemed, to some extent, as being relevant for judging something as being true.

judgments are constitutively biased. Still, we may wonder whether we should rest the warrant for logic on more neutral grounds if such evidence were available.³³ Therefore, I think an account that places so much value on expert judgments should be seriously concerned about this biased effect on evidence if its goal is to provide a neutral method for warranting (or knowing) logical theories (cf. Hlobil, 2020).

I have argued in this section that the problems of apriorists and empiricists are very much alike. Both views provide evidential accounts that do not consider the way evidence is formed. This omission makes these strategies vulnerable to the same kind of criticism. Indeed, both views preclude themselves from explaining why warrant can (partially) ensure, via evidence, that the beliefs we form are reliable and thus can amount to knowledge.

6 Why Nothing Works

I started this paper by assuming that what we allegedly know about logic depends (partly) on facts regarding evidence. Yet, from the discussion presented in the previous sections, nothing seems to work. However, I believe we should not give up. Although we are left with few options, I still believe that an account of logical evidence consistent with the above results can be fully developed. Still, initially, I made it clear that my intention in this article was to offer an account of what logical evidence could not be. Therefore, I have refrained from offering a positive account of what logical evidence is.

Nevertheless, I think it is fair to draw some conclusions that might help offer insights into the debate on the epistemology of logic. In the above discussion, I argued that logical evidence should not be conceived as merely linguistic or propositional. The main reason for this conclusion is that this type of evidence is not subtle enough to capture facts about logical consequence. Furthermore, since I argued that experiential and non-experiential evidence can support logical claims, logical epistemology is based on an evidential duality, i.e., evidential pluralism. In this regard, I argued that we should be apriorists regarding logical evidence since, in most cases, moderate empiricists cannot account for epistemic overdetermination. Although the results presented in this paper introduce some novelties into the notion of logical evidence, I think my account is fit enough for resolving most issues surrounding discussions of logical consequence. Therefore, in order to draw up a logical account that agrees with the available data, I believe we should proceed with our inquiry with this narrow, workable starting point.

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³³ For example, in this case, what I have in mind is the evidence Maddy (2007, §3.5) talks about for the case of logic and mathematics. Maddy indeed pays much attention to the logical evidence provided by infants in the preverbal stage of development.

Declarations

Conflict of Interest The author declares that they have no conflict of interest.

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