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FREGE AND KANT ON A PRIORI KNOWLEDGE

Is Frege solely a mathematician or is he also a philosopher? Is he motivated by purely mathematical concerns or is he moved by the philosophical questions that the philosophical tradition handed down to him as well? What sort of answers does he give to the philosphical or mathematical questions with which he is concerned? Are these answers philosophical? If so, are they Kantian?

Paul Benacerraf, in 'The Last Logicist',[1] has claimed that Frege's motivations are those of a mathematician. Frege wishes to provide proofs of basic arithmetical propositions that are in need of rigorous proof. His philosophical preoccupations, if any, do not play any interesting role in Frege's project. In particular, according to Benacerraf, Frege does not have an epistemology at all since he is solely concerned with mathematical problems to which he gives exclusively logico-mathematical solutions. Philip Kitcher, in 'Frege's Epistemology',[2] has argued that Frege assumes that there is one main philosophical tradition which has already answered all the epistemological questions that concern him, namely the Kantian tradition. According to Kitcher, this is the reason Frege does not discuss explicitly some philosophical (in particular epistemological) issues central to his enterprise. Some other discussions of Frege's work have also emphasized Frege's philosophical debt to the Kantian tradition – Hans Sluga's[3] most notably.

I shall argue that there is a grain of truth in each of these two apparently opposite lines of interpretation. Frege is motivated by both philosophical and mathematical concerns. He is a mathematician who, like many of the mathematicians of the nineteenth century, asks philosophical questions about his discipline. Moreover, the philosophical tone of his questions is Kantian. The answers he gives to his philosophical questions are not entirely Kantian, however. This is not merely because Frege attempts to show that arithmetic is analytic, contrary to Kant's view that it is synthetic a priori. More important, Frege's way of answering the philosophical questions he poses is radically different from Kant's way of answering philosophical ques-

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tions. Frege constructs a logical system, and gives definitions and proofs to demonstrate the analyticity, apriority and objectivity of arithmetic. By engaging in a particular science – mathematical logic – he answers his fundamental philosophical questions about arithmetic. He does not adopt, as Kant does, a philosophical vantage point above or outside his science in order to answer philosophical questions about that science.

To explore to what extent the views of Benacerraf and Kitcher might be correct, and to argue for my claim that there is some truth in each of them, I shall concentrate my discussion on the treatment of the analytic a priori in Frege.

1.

Frege, like Kant, sharply separates the origin or cause of a belief from its justification. In a piece called 'Logic' (between 1879 and 1891), Frege writes:

> The grounds on which we make a judgment may justify our recognizing it as true; they may, however, merely give rise to our making a judgment, or make up our minds for us, without containing a justification for our judgment. Although each judgment we make is causally conditioned, it is nevertheless not the case that all these causes are grounds that afford a justification. There is an empirical tendency in philosophy which does not take sufficient heed of this distinction, and so, because our thinking takes its rise from experience, philosophy ends up by declaring all our knowledge to be empirical. (*Posthumous Writings*,[4] p. 2)

Thus, for Frege, the distinction between the cause and the justification of a belief allows one to recognize that all knowledge starts with experience without thereby concluding that all knowledge is empirical.[5] Kant also stresses the importance of this distinction in rejecting the view that all knowledge is empirical:

> There can be no doubt that all our knowledge begins with [*anfangen mit*] experience .... In the order of time, therefore, we have no knowledge antecedent to experience, and with experience all our knowledge begins.
>
> But though all our knowledge begins with experience, it does not follow that it all arises out of [*entspringen aus*] experience. For it may well be that even our empirical knowledge is made up of what we receive through impressions and of what our own faculty of knowledge (sensible impressions serving merely as the occasion) supplies from itself ....
>
> This, then, is a question which at least calls for closer examination, and does not allow of any off-hand answer: – whether there is any knowledge that is thus independent

[*unabhangiges*] of experience and even of all impressions of the senses. Such knowledge is entitled *a priori*, and distinguished from the *empirical*, which has its sources [*Quellen*] *a posteriori*, that is, in experience.[6]

A priori knowledge is for Kant that in whose justification there is no appeal to experience.[7] This amounts to interpreting "arises out of" as "is justified on the basis of", "independent of" as short for "justified independently of", and sometimes "sources" as "justifying grounds". Interpreted this way, at *Critique* B1 Kant is distinguishing between the origin or cause of knowledge and its basis or justification. Thus, when Kant says that a priori knowledge is knowledge independent of experience he is referring to epistemological independence rather than to genetic independence. Evidence that Kant believes that the distinguishing feature of a priori knowledge is its type of justification is provided in the Introduction to the *Critique* where he defines a priori knowledge. There Kant frequently uses expressions that suggest the support, basis, or justification of knowledge:

Experience teaches [*lehren*] us that a thing is so and so, but not that it cannot be otherwise. First, then if we have a proposition which in being thought is thought as *necessary*, it is an *a priori* judgement.... Secondly, experience never confers [*geben*] on its judgments true or strict, but only assumed and comparative *universality*, through induction. (B 3)

If, then, a judgment is thought with strict universality, that is, in such manner that no exception is allowed as possible, it is not derived [*abgeleitet*] from experience, but is valid absolutely *a priori*. (B 4)

...the very concept of a cause so manifestly contains the concept of a necessity of connection with an effect and of the strict universality of the rule, that the concept would be altogether lost if we attempted to derive [*ableiten*] it, as Hume has done, from a repeated association.... For whence could experience derive [*hernehmen*] its certainty, if all the rules, according to which it proceeds, were always themselves empirical, and therefore contingent? (B 5)

In the Introduction to the *Critique* Kant also discusses the analytic/synthetic distinction. While the a priori/a posteriori distinction concerns the manner in which propositions can be justified, the analytic/synthetic distinction concerns their "content":

In all judgments in which the relation of a subject to the predicate is thought..., this relation is possible in two different ways. Either the predicate B belongs to the subject A, as something which is (covertly) contained [*enthalten*] in this concept A; or B lies outside the concept A, although it does indeed stand in connection with it. In the one case I entitle the judgment analytic, in the other synthetic. (A 6/B 10–A 7)

Kant claims to have been the first to present clearly the analytic/synthetic distinction, whereas recognizing that the a priori/a posteriori distinction has already been accepted especially since Locke. The classical text for this is his response to Eberhard.[8]

Frege prefaces his own characterizations of the Kantian a priori/a posteriori and analytic/synthetic distinctions by saying that these distinctions do not concern the *content* of a judgment but the *justification* for making the judgment. Frege's separation of the content and the justification of a judgment, in the context of giving his definitions of the four Kantian notions, aims to leave out the conditions which make it possible to particular subjects to arrive at a content or entertain a content:

It not uncommonly happens that we first discover the content of a proposition, and only later give the rigorous proof of it, on other and more difficult lines; and often this same proof also reveals more precisely the conditions restricting the validity of the original proposition. In general, therefore, the question of how we arrive at the content of a judgment should be kept distinct from the other question, Whence do we derive the justification for its assertion?

Now these distinctions between a priori and a posteriori, synthetic and analytic, concern, as I see it, not the content of the judgment but the justification for making the judgment. Where there is no such justification, the possibility of drawing the distinctions vanishes. An a priori error is thus as complete a nonsense as, say, a blue concept. When a proposition is called a posteriori or analytic in my sense, this is not a judgment about the conditions, psychological, physiological and physical, which have made it possible to form the content of the proposition in our consciousness; nor is it a judgment about the way in which some other man has come, perhaps erroneously, to believe it true; rather, it is a judgment about the ultimate grounds upon which rests the justification for holding it to be true. (*Grundlagen*, p. 3)

Frege's emphasis on justification seems to contradict Kant regarding the characterization of analytic judgments, for Kant explicitly makes the analytic/synthetic distinction in terms of the content of the terms in a judgment. Kant leaves the notion of containment of one concept in another obscure enough to prevent us from being definite here about the extent of his divergence from Frege. The distinction between the "subjective psychological" conditions under which thinking takes place and the "objective" contents of thinking is included in Kant's distinction between the *quid juris* (question of right) and the *quid facti* (question of fact), and in his criticism of Locke's "physiology" of the understanding (A 84/B 116–A 95/B 129). This distinction is central to Kant's views, in particular, to the project of the

Transcendental Deduction.[9] In characterizing analytic judgments in terms of containment of concepts, Kant does not explicitly say that "what is thought in the concept" is objective in the sense of being shared by all of us – and not merely what particular subjects happen to associate with the concept words. Nevertheless, Kant would likely regard the proper relations of containment as those among contents of representations which are common to all of us: what Frege would regard as "objective" contents. Moreover, the aspects of a content that Frege wants to leave out – the "subjective psychological" conditions for entertaining a proposition or arriving at it – would have been left out by Kant as well. This is further supported by the fact that Kant also characterizes analytic judgments in logical terms: they are reducible to (justifiable via) the principle of identity, or non-contradiction (A 7/B 10). This latter characterization is close to Frege's for whom analytic judgments are reducible to (justifiable by) logical truths. The main difference here is that Kant's (Aristotelian) logic is much weaker than Frege's.

The notion of justification is central to Frege's definitions of analytic/synthetic and a priori/a posteriori. Except for the "ultimate truths", the justification will always consist in a *proof* (*Beweis*) of the proposition from some other truths. On page 4 of the *Grundlagen*, Frege gives the definitions of the above four notions in terms of the sort of proof they have. A truth is analytic if its proof makes use only of definitions and general *logical* laws. If the truths from which a proposition is proven are not general logical laws but belong to some special science, the proposition is synthetic. (This latter definition is intended to cover the case of the "special science" of geometry).

Frege's distinction between a priori and a posteriori propositions also appeals to the type of proof which must justify the proposition in question. The difference is that the a priori/a posteriori distinction does not draw the contrast between being proved from general *logical* laws as opposed to being proved from propositions that belong to some "special science". The a priori/a posteriori distinction is between those propositions whose proof involves only general laws which "neither need nor admit of proof" (a priori truths), and those propositions whose proof appeals "to facts, i.e., to truths which cannot be proved and are not general, since they contain assertions about particular objects" (a posteriori truths).[10]

Here we have a divergence between Kant and Frege regarding the scope of the a priori. For Kant, arithmetic is a priori but does not rest on "general laws". "$7+5=12$" and the like are particular judgments, and there are no axioms in arithmetic for Kant precisely because there are no general (synthetic) arithmetical laws (like our Peano Axioms).[11]

With respect to geometry, whether Frege's conception diverges from Kant's is a difficult question whose answer depends on how we interpret their respective views on intuition in geometry.[12] I shall leave the comparison of these views for another occasion.

As I pointed out above, Frege distinguishes between the "subjective psychological" conditions under which thinking takes place and the "objective" contents of thinking. The distinction between the subjective and the objective is repeated again and again in Frege's writings and is summed up in one of the principles he enunciates on page x of the *Grundlagen*: "always to separate sharply the psychological from the logical, the subjective from the objective".

According to Frege, the content of a judgment like "$5+7=12$" is exactly the same for anyone who understands it. The content of the judgment is "objective", that is, it is not the product of the mind of this or that person. Even if subjective elements of the process of thinking or arriving at a content are necessary to explain the grasping of that content, they should not be included in what is called "true". To uncover the justification for a truth is, for Frege, to uncover the proper "objective" grounds for recognizing a judgment as true.[13] These "objective" grounds are to be discovered in providing logical proofs of arithmetical and logical judgments. In the case of non-logical truths, their justification is found in the special science which deals with that type of truth.

These Fregean ideas can be related to Kantian views. Kant makes the contrast between judgments with "objective validity" and associations which have merely "subjective validity". According to some of Kant's writings, the objective validity (*Gültigkeit*) of a judgment is not its truth (for instance, A 760/B 788); it is, rather, the "capacity" of a judgment for being true or false.[14] For Kant, the unity of consciousness according to the categories is presupposed in any judgment. This accordance with the categories is the judgment's objective validity; consequently, every judgment has objective validity. This notion of objective validity concerns the general formal conditions of the possibility of judgments; thus it is a notion used from the transcendental standpoint.[15] On the other hand, there are Kantian texts which suggest that the objective validity of a judgment consists in the justifying (objectively sufficient = *objektiv hinreichend*) grounds which would support universal acceptance of the judgment. By contrast, the subjective validity of a judgment is the "holding of a thing to be true" (*Das Fürwarhrhalten*) by particular individuals, which rests on psychological causes. (See *Critique*, A 820/B 848-A 823/B 851). This suggests a contrast like Frege's between the subjective psychological conditions under which thinking takes place and the objective grounds of judgments.[16]

In Frege, there is the idea that there is an objective justification – not this or that person's justification – for any scientific truth. This objective justification is provided by the objective relationships of dependence of the scientific truth with other truths and with the basic laws of the corresponding science. Moreover, for arithmetic Frege is interested in a justification which is not only objective but also the *ultimate* justification. This will turn out to be the derivation of arithmetical truths from basic logical laws. In other words, the objective (logical) relationships of dependence are the route to the "ultimate ground[s] upon which rests the justification for holding [a given arithmetical proposition] to be true". These ultimate grounds are the primitive logical laws.

2.

For Kant, if there are necessary truths then there is a priori knowledge (B 3). Kant attempts to prove that there are necessary conditions of the possibility of objective experience and knowledge. His proof is given by means of a transcendental argument and the doctrine of transcendental idealism. Does Frege attempt to prove that there is a priori knowledge, or more specifically, that arithmetic is a priori? It is clear that he attempts to prove that arithmetic is analytic; that is, that it governs all thought and is independent of intuition. For Frege, to demonstrate the latter is to show that in the derivation of arithmetic from other truths only general logical laws are used. This in turn demonstrates that arithmetic is a priori, since it is exclusively derived from general laws which "neither need nor admit of proof". Moreover, in Frege, the project of demonstrating the analyticity and apriority of arithmetic is wedded to the project of showing its objectivity. In this section I will begin the discussion of this project by exploring the relationships between Frege's logicist program and his philosophically motivated interest in exhibiting the analyticity (hence, apriority) and objectivity of arithmetic.

Frege is explicit in the *Grundlagen* about his concern with the state of the mathematics of his time. His concern is not with specific technical problems in mathematics, but with what he sees as a vulnerable condition of the subject as a whole. The mathematics of his time is, according to Frege, vulnerable to doubts. The methods of mathematicians are such that they allow for hidden contradictions, or at least for doubts with respect to whether contradictions may arise. So, mathematics is in need of a secure foundation which will restore to it the certainty that it should rightfully have. This is the motivation behind his attempt to construct a perfect language and to provide proper definitions for the proper expression of the statements of arithmetic.

> This much everyone would allow, that any enquiry into the cogency of a proof or the justification of a definition must be a matter of logic. But such enquiries simply cannot be eliminated from mathematics, for it is only through answering them that we can attain to the necessary certainty.
>
> ... Yet it must still be borne in mind that the rigour of the proof remains an illusion, even though no link be missing in the chain of our deductions, so long as the definitions are justified only as an afterthought, by our failing to come across any contradiction. By these methods we shall, at bottom, never have achieved more than an empirical certainty, and we must really face the possibility that we may still in the end encounter a contradiction which brings the whole edifice down in ruins. For this reason I have felt bound to go back rather further into the general logical foundations of our science than perhaps most mathematicians will consider necessary. (*Grundlagen*, p. IX)

A proper language and rigorous proofs are needed to exhibit the certainty of arithmetic. To exhibit its certainty consists in showing that arithmetic is a priori – that it is derived solely from general laws which are not themselves provable. Since Frege believes that intuition is foreign to arithmetic and that there are only three sources of knowledge – the logical source, sense perception, and geometrical intuition[17] – the general laws from which arithmetic is derived must be logical laws. The question of the certainty of arithmetic and the question of its objectivity are answerable in Frege by the same project: the reduction of arithmetic to logic. In other words, in showing the objective relationships of dependence between arithmetical truths and maximally general truths that are not in need of proof (logical truths), the certainty of arithmetic is thereby shown.[18]

This aim can be achieved by providing an apparatus which determines how arithmetic should proceed and what its grounds are. When engaged in this project Frege tries to give answers to questions such as: What is the proper language to use in order to show that arithmetic can proceed by means of logical inferences alone and that mathematical axioms are logically provable? (*Begriffsschrift*) What are the natural numbers? What are the proper definitions for mathematical objects? (*Grundlagen*) How is it possible to provide proper tools to show that we are able and justified in recognizing numbers as logical objects, and how can we bring them under review? (*Grundgesetze*).

The construction of the perfect logical language (the *Begriffsschrift*) permits one to exhibit or represent objective conceptual contents and their objective relationships of dependence. This representation leads to the logical components of the statement (*Satz*). The logical category of such components is determined by the role they play, not in isolated statements, but in sets of statements connected by logical relations. The adequate logical justification of arithmetical statements shows that every arithmetical statement has a determinate truth value, and thus that every component has meaning. In particular it shows that any numerical sign has a meaning, that numerical signs name numbers.[19] If this can be shown, the formalist conception of arithmetic can be defeated: arithmetical formulas would be shown not to be empty symbols. The psychologist conception would also be defeated: arithmetical formulas would be shown not to describe psychological laws of our actual ways of thinking. In this way, arithmetic would be shown to be objective.[20]

The question of the meaning of numerical signs is posed in the *Grundlagen*, and the answer is provided by the definition of number. This definition shows that numerical signs name a special kind of objects: extensions of certain concepts. Therefore, the *Grundlagen* has achieved part of the task of establishing the objectivity of arithmetic: showing that numerical signs have a meaning and that they name logical objects. The other part of the task consists in rigorously proving arithmetical statements from a few basic truths which are not themselves in need of proof (*Grundgesetze*).

To show that arithmetic is justifiable from logical laws is, for Frege, to show the objective relationships of dependence between arithmetic and basic logical laws. This seems to be a necessary but not a sufficient condition of the objectivity (objective truth) of arithmetic. Exhibiting the objective relationships of dependence between arithmetic and basic logical laws would not yet show the objectivity of arithmetic if the basic logical laws were not themselves known to be true. However, this is not an issue for Frege since he believes the primitive laws are true and it must be evident that they are true. If they were not evident then we would demand a proof of them:

In arithmetic it just will not do to make any assertion you like without proof or with a sham proof, and then wait and see if anybody succeeds in proving its falsity; on the contrary, it must be demanded that every assertion that is not completely self-evident should have a real proof; ... (*Grundgesetze*, Vol. II, Section 60, in *Translations from the Philosophical Writings of Gottlob Frege*, p. 164)

After Russell discovered the paradox to which Frege's Axiom V gives rise, Frege writes:

I have never concealed from myself its lack of self-evidence [of Basic Law (V)] which the others possess, and which must properly be demanded of a law of logic, ... (*Grundgesetze*, Vol. II, Appendix, in *The Basic Laws of Arithmetic*, p. 127)

Frege accepts that the notion of being primitive or being an axiom is relative to a system (*Posthumous Writings*, p. 205), yet he demands that axioms be true and be known to be true. In this respect, Frege's conception is radically different from contemporary mathematical conceptions of an axiomatic proof. In contemporary mathematics one may explore the consequences of a particular axiom system without ever raising the question of the truth of the axioms.[21] Frege does not accept this liberalized notion of axiom:

The *axioms* are truths as are the theorems, but they are truths for which no proof can be given in our system, and for which no proof is needed. It follows from this that there are no false axioms, and that we cannot accept a thought as an axiom if we are in doubt about its truth; for it is either false and hence not an axiom, or it *is* true but stands in need of proof and hence is not an axiom. (*Posthumous Writings*, p. 205)

Frege allows that there are several routes for proving a theorem from certain axioms:

Frequently several routes for a proof are open; I have not tried to travel them all, and thus it is possible – even probable – that I have not invariably chosen the shortest. (*Grundgesetze*, Introduction, p. 3)

These routes may be different, but what is distinctive of a proof are the axioms and rules it uses. Frege is interested in those proofs that use exclusively logical axioms.[22] Only the latter give the ultimate proofs. For this reason, even though proofs from the Peano Axioms would exhibit objective relationships of dependence between the rest of arithmetic and these axioms – and thus would give some sort of justification for arithmetic – these proofs would not give the sort of justification Frege is interested in: ultimate justification. For Frege, only by providing its ultimate justification can one exhibit the objectivity of arithmetic.

Any arithmetical proposition has ultimate grounds for its justification, and the discovery of these grounds constitutes the discovery of its preferred or ideal justification. However, how do we determine which axioms constitute the ultimate grounds of an arithmetical proposition? We know that for Frege they are logical axioms, what he calls "Basic Laws". According to him, we can decide whether a proposition that we take as basic is in fact basic by trying to analyze the concepts that occur in it or by trying to reduce the proposition to one or more of greater generality. If we cannot succeed, the proposition is basic or ultimate. Is it possible to succeed in such a task? For Frege it is. The Peano Axioms are not general enough since they contain non-logical constants. Logical laws are characterized in terms of *maximal generality* for Frege. That is, they contain no non-logical constants, only variables (the predicate letters are also quantified). Moreover, they are not subject to different interpretations. In other words, there cannot be changes of the universe of discourse. The ranges of the quantifiers are fixed: the logical laws are about *the* universe, they are about all the objects and functions that there are.[23]

To sum up, it is likely that Frege thinks that if the objectivity of arithmetic is established in the way he says it should be established then, at the same time, it would be shown that we can and do have a priori knowledge. The way to achieve this is to provide for the appropriate definitions, the appropriate rules, and the appropriate primitive or basic truths. However, why is our knowledge of the primitive truths of logic a priori? The truth of the Basic Laws constitutes the ultimate justification of arithmetical truths. Yet Frege does not give an account of our purported knowledge of the basic logical laws. Furthermore, he believes that such an account cannot be given within his project. This leaves his purported demonstration of the apriority and objectivity of arithmetic incomplete.

3.

The primitive truths or Basic Laws have an enormous importance in Frege's program, since the whole edifice of arithmetic rests on them:

> Science demands that we prove whatever is susceptible of proof and that we do not rest until we come up against something unprovable. It must endeavour to make the circle of unprovable *primitive truths* as small as possible, for the whole of mathematics is contained in these primitive truths as kernel. The essence of mathematics has to be defined by this kernel of truths, and until we have learnt what these primitive truths are, we cannot be clear about the nature of mathematics. (*Posthumous Writings*, pp. 204–05)

Frege tells us that the primitive truths have to be self-evidently true. Yet, how can we tell whether we are not misled by what may be only an appearance of truth? Why is the way in which we come to believe the Basic Laws reliable? No direct answers are given to these questions in Frege's writings. Frege's antipsychologism prevents him from giving one sort of answer, namely, that which would involve a reference to the way particular subjects justify their beliefs in logical truths.[24] Furthermore, Frege also avoids any general, theoretical, or philosophical account of our justification in believing logical truths because of his novel conception of logic's role in thinking and judging.

I will argue that Frege does not have an answer to these epistemological questions regarding logic – not, however, because he is a mathematician unconcerned with philosophical questions, nor because he implicitly endorses a Kantian or other inherited philosophical view on these issues. Rather, Frege's view of the role of logic in his project and of the ultimate generality of logic forces him to silence.

Late in his life, Frege talks explicitly about three sources of knowledge: sense perception, the logical, and the geometrical sources of knowledge. Frege discusses the reliability of these in 'Sources of Knowledge of Mathematics and the Mathematical Natural Sciences' (1924/25). A source of knowledge is for Frege what affords the justification of a belief. Unfortunately, Frege does not say why each source of knowledge is such and, except for sense perception, the characterization of each source consists in saying what it is not. He does not say what is peculiar to our "logical disposition" which enables us to justifiably recognize – independently of experience – a thought to be true, nor does he say which characteristics differentiate the logical source of knowledge from sense perception. Thus, it would seem plausible to draw the following conclusion. The distinction between the logical source of knowledge and sense perception is not founded on the sort of source or capacity they are, but on the peculiarity of the type of objects to which the logical source has access: thoughts which are non-sensible, mind-independent entities.

So the result seems to be: thoughts are neither things in the external world nor ideas.
A third realm must be recognized. Anything belonging to this realm has it in common with ideas that it cannot be perceived by the senses, but has it in common with things that it does not need an owner so as to belong to the contents of his consciousness. Thus for example the thought we have expressed in the Pythagorean theorem is timelessly true, true independently of whether anyone takes it to be true. It needs no owner. It is not true only from the time when it is discovered; just as a planet, even before anyone saw it, was in interaction with other planets. ('Thoughts' in *Collected Papers on Mathematics, Logic, and Philosophy*, p. 363)

The admission of this third realm of entities (which are neither actual entities – in space and time – nor ideas in human minds) may suggest that Frege is an "ontological platonist". This amounts to attributing to Frege a certain view on the nature of the entities or of the truths of logic and mathematics. According to this interpretation the mind-independent existence of abstract objects explains how our mathematical or logical statements are determinately true or false independently of our making or understanding them. Thus, Michael Dummett attributes to Frege the doctrine of "platonism" in the philosophy of mathematics.[25] The latter view may be taken to lead, in turn, to "epistemological platonism". Epistemological platonism is, put crudely, the view that we have access to the special entities of the "third realm" via a mental capacity akin to sense perception. This capacity enables us to be in direct acquaintance with mathematical or logical objects.[26] In fact, the view does not seem to have more content than this metaphor or simile with the direct acquaintance with physical objects by means of sense perception.[27] However, Frege does not explicitly embrace this simile, and his discussions of objectivity and arithmetical (logical) objects in the *Grundlagen* seem to suggest that logical objects and thoughts are in a special way dependent on reason. This dependence does not square with the metaphor of a direct acquaintance akin to sense perception:

It is in this way that I understand objective to mean what is independent of our sensation, intuition and imagination, and of all construction of mental pictures out of memories of earlier sensations, but not what is independent of the reason, – for what are things independent of the reason? To answer that would be as much as to judge without judging, or to wash the fur without wetting it. (*Grundlagen*, p. 36)

Weird and wonderful, as we see, are the results of taking seriously the suggestion that number is an idea. And we are driven to the conclusion that number is neither spatial and physical, like Mill's piles of pebbles and gingersnaps, nor yet subjective like ideas, but non-sensible and objective. Now objectivity cannot, of course, be based on any sense impression, which as an affection of our mind is entirely subjective, but only, so far as I can see, on the reason. (*Grundlagen*, p. 38)

On this view of numbers the charm of work on arithmetic and analysis is, it seems to me, easily accounted for. We might say, indeed, almost in the well-known words: the reason's proper study is itself. In arithmetic we are not concerned with objects which we come to know as something alien from without through the medium of the senses, but with objects given directly to our reason and, as its nearest kin, utterly transparent to it.

And yet, or rather for that very reason, these objects are not subjective fantasies. There is nothing more objective than the laws of arithmetic. (*Grundlagen*, p. 115)

These words suggest that direct acquaintance with objects that are "alien" to reason is not the epistemological position in which we are when coming to know arithmetic. If there is no more content to epistemological platonism than the metaphor of direct acquaintance akin to sense perception with objects which are completely mind-independent, then Frege is not an epistemological platonist.[28]

Two of the above passages from *Grundlagen* suggest to Hans Sluga (in *Gottlob Frege*, p. 120) that Frege is not an ontological platonist and that his notion of objectivity has affinities with Lotze's.[29] The passages can also be read as Kantian. Indeed, these texts suggest that logical objects, although objective, are mind-dependent. Such mind-dependence can be given a Kantian interpretation: logical objects are the nearest kin of reason, utterly transparent to it, because they are in a way the "product" of or are "constituted" by reason. Thus, it is plausible to think that Frege would have (although not necessarily explicitly present) a Kantian conception of how and why the logical source of knowledge in fact produces a priori knowledge. According to this conception, through the logical source of knowledge we come to know objects that are "constituted" – made possible – by that source; the a priori ingredients that are the condition of the possibility of knowing such objects are provided by that source.[30]

Of course, this conception does not resemble anything Kant would say about what he calls "general logic", since for Kant general logic concerns only the form of thought, and it abstracts completely from any relation of the understanding to objects (A 50/B 74–A 55/B 79).

However, the characterization of the relation between a priori sources of knowledge and the object of knowledge would be distinctively Kantian: the a priori sources of knowledge make possible their objects. This is a plausible attribution to Frege of a weak form of transcendentalism, namely, the view that objects of thought (objects for us) are in some sense made possible by the logical laws of thought. Furthermore, this attribution is reinforced by a certain interpretation of the *Begriffsschrift* to be discussed below. However, to conceive logical objects as mind-dependent in this distinctively Kantian way does not commit Frege to a full-blooded Kantian epistemology, although it does exclude the crude version of epistemological platonism alluded to above. A truly Kantian epistemology involves a notion of object and objectivity that requires a necessary relation between two faculties: understanding and sensibility; even more strongly, it requires that all objects of knowledge be "constituted" by the forms of intuition (space and time). It also involves a stronger form of transcendentalism: the adoption of a transcendental standpoint. These aspects of Kantian epistemology are central to Kant's transcendental idealism and thus to his explanation of the objectivity and apriority of knowledge.

Evidence in favor of attributing a weak form of transcendentalism to Frege can be found in the texts quoted below. These texts support the view that for Frege the acceptance of logic is a condition of the intelligibility of any thinking. Thus, in the Introduction to *Grundgesetze* Frege talks about the "unconditional and eternal validity" of the laws of logic and, in arguing against the idea that logical laws are the expression of psychological laws, he says:

> But what if beings were even found whose laws of thought flatly contradicted ours and therefore frequently led to contrary results even in practice? The psychological logician could only acknowledge the fact and say simply: those laws hold for them, these laws hold for us. I should say: we have here a hitherto unknown type of madness. (p. 14)

> ... this impossibility of our rejecting the law in question [the law of identity] hinders us not at all in supposing beings who do reject it; where it hinders us is in supposing that these beings are right in so doing, it hinders us in having doubts whether we or they are right. At least this is true of myself. If other persons presume to acknowledge and doubt a law in the same breath, it seems to me an attempt to jump out of one's own skin against which I can do no more than urgently warn them. (p. 15)

And in the *Grundlagen*, end of Section 14, he says:

> For purposes of conceptual thought we can always assume the contrary of some one or

other of the geometrical axioms, without involving ourselves in any self-contradictions when we proceed to our deductions.... Can the same be said of the fundamental propositions of the science of number? Here, we have only to try denying any one of them, and complete confusion ensues. Even to think at all seems no longer possible... The truths of arithmetic govern all that is numerable. This is the widest domain of all; for to it belongs not only the actual, not only the intuitable, but everything thinkable. (pp. 20–21)

Although the conception of logic as being presupposed by or being a condition of the intelligibility of any thinking is a form of transcendentalism, it does not involve in Frege the stronger form of transcendentalism distinctive of Kant. It is only a conception of the nature and role of logic, but it does not include a complete account of the necessary conditions of the possibility of any objective thinking or judging. Moreover, it does not amount to an epistemological view of logic: it is a conception regarding the role of logic in thinking, in judging; not an explanation of why or how we are justified in believing the laws of logic.

The strategy adopted by Kant in the *Critique* to prove the apriority and objectivity of the categories and the Principles consists in appealing to their *necessity*. A *transcendental argument* for their necessity issues in a justification of their apriority. Might Frege be proceeding in the same way with respect to logic? The above quotations might be taken as suggesting that not only are the laws of logic necessary but the reason they are necessary is that they are the condition of the intelligibility of any thinking. This way of rendering Frege's supposed argument for the necessity of the laws of logic turns it into a transcendental argument: such and such is necessary because it is the condition of the possibility or intelligibility of so and so. Furthermore, this argument might be taken as accounting for the unprovability of the Basic Laws, thus for the apriority of all laws of logic.[31] However, there are difficulties with this interpretation.

The obvious difficulty with attributing to Frege an appeal to the necessity of the laws of logic is that where Frege characterizes the nature of logical laws he does not mention that they are necessary. The last text quoted from *Grundlagen* might be taken as claiming that the denial of the laws of arithmetic, and thus of the laws of logic, is impossible. This in turn might be taken as saying that they are necessary. This is the case if one defines necessary truths in terms of negation and impossibility, which is unilluminating or circular. Frege does say that the primitive laws from which arithmetic is derived are self-evident. But, of course, to say that they are self-evident is not to say anything about their necessity, since there are self-evident contingent truths ('I am here now').[32]

Such a transcendental argument for the unprovability of the primitive laws, and thus the apriority of all laws of logic, would appear to be a successful one. With regard to the unprovability of the primitive laws, the argument would be as follows: either the laws of logic can be reduced to some other logical laws or they cannot be proved at all. There have to be primitive logical truths which cannot be proved, since any attempt to carry out a proof of the primitive truths would need logical rules and other primitive truths which in turn would remain unproven. In accordance with Frege's definition of apriority in *Grundlagen*, from the unprovability and the maximal generality of the Basic Laws it follows that all laws derived exclusively from them – all logical laws – are a priori. However, a transcendental argument to the effect that some laws of logic are unprovable because they are presupposed by all logical reasoning does not show as yet that logic is a priori in Kant's sense – that is, justified independently of experience. A truth might be presupposed by all logical reasoning, and yet our believing it may be justified in experience. In Frege this possibility is open if we assume that he believes throughout his life in the distinction between three independent sources of justification which he explicitly presents around 1924. In the Kantian system, on the other hand, transcendental idealism secures that the principles that govern our experience are known a priori, if they are known at all. For Kant the a priori contributions of the mind "constitute" experience; in other words, what we contribute is part of (the form of) appearances – of the objects to which we have access. Any appeal to experience in our justification of our beliefs in the principles or the categories would presuppose them.

In our zeal to find Kantian arguments in Frege we might argue that in the *Grundlagen* Frege draws a similar conclusion for the laws of logic: any attempt to justify the primitive laws of logic by appealing to facts would presuppose the laws of logic:

> If we recognize the existence of general truths at all, we must also admit the existence of such primitive laws, since from mere individual facts nothing follows, unless it be on the strength of a law. Induction itself depends on the general proposition that the inductive method can establish the truth of a law, or at least some probability for it. If we deny

this, induction becomes nothing more than a psychological phenomenon, a procedure which induces men to believe in the truth of a proposition, without affording the slightest justification for so believing. (footnote to p. 4).

Thus, if we were to justify the laws of logic by appealing to "facts", we would use induction. Yet, a proof by means of induction is also an inference or reasoning and as such it would presuppose the truth of the laws of logic, since any reasoning, to be intelligible, requires that we grant the validity of the laws of logic. This would show, after all, that Frege has arguments for logic's being a priori in Kant's sense. Nevertheless, Frege's and Kant's strategies with respect to a priori knowledge remain distinct. Kant's characterization of apriority requires neither the generality nor the unprovability of some primitive truths. Moreover, in Kant there is an explicit discussion of why we are (transcendentally) justified in believing the Principles or the validity of the categories. No such analogous discussion with respect to logic appears in Frege.

Further, this supposedly Fregean strategy without Kantian transcendental idealism fails to show the objectivity (objective truth) of logic.[33] Because of their maximal generality, logical laws in Frege are supposed to be true of all objects. The argument attributed to Frege above does not succeed in securing that the logical laws apply to all objects, since it does not include a specification of the way logic governs any thinking of objects. It still remains doubtful whether the laws which are the condition of the intelligibility of our thinking are not just merely the laws that we have to follow given our constitution, goals, practical needs, ways of operating in the world, and so forth. This remains doubtful unless Frege adds a proof, as Kant attempts to, of the *objectivity* of whatever is a condition of the possibility of our thinking and experiencing. That is in Kant the proof that the categories together with intuition "constitute" nature. Kant's argument for such objectivity is, of course, controversial. However, Kant makes an attempt, while Frege makes none, to strengthen an otherwise incomplete argument.

A more specific and sophisticated version of the claim that logic is the condition of the intelligibility of any thinking may seem to avoid the charge that this form of argument fails to secure the objectivity of the logical laws. This version relies on a certain interpretation of the *Begriffsschrift*. Frege, like Kant, contrasts inner psychological states with the objectivity of thoughts, and the expression of inner psychological states with making judgments whose linguistic expression are assertions. To make a judgment is to recognize a thought to be true, and what is recognized is an objective content shared by all of us. Because the content is objective and not private we can engage in rational communication, we can contradict each other and give reasons for our judgments. Moreover, there are objective relationships of dependence among the objective contents of judgments and they are depicted by logic. The *Begriffsschrift* provides such a depiction, and it alone exhibits them. Thus, Frege characterizes the *Begriffsschrift* as a *lingua characterica* in the Leibnizian sense, that is, a language written with special symbols for "pure thought".[34] Moreover, as noted above, logic is maximally general or universal for Frege: the universe of discourse is *the* universe. It is fixed and encompasses all that there is. This makes Frege's logic a universal language.[35]

A weak form of transcendentalism can be read in this conception of logic as language: logic as language not only depicts the structure of thoughts and their relationships, but moreover it constitutes thoughts as objective contents. In other words, logic as language makes the objectivity of thoughts possible. The *Begriffsschrift* is a language with a logically segmented structure; and, since the *Begriffsschrift* depicts the structure of thoughts, if something is to satisfy a necessary condition for being a thought – namely, have an objective content – it must have one of the logically segmented structures that the *Begriffsschrift* depicts. Furthermore, since the *Begriffsschrift* depicts the objective logical relationships among thoughts, any objective inference must follow the inferential patterns of the *Begriffsschrift*. To think of objects is to have thoughts with a certain structure: to use a name with a predicate or a first level quantified variable with a predicate; this is shown and made possible by the language of the *Begriffsschrift*. There are no other structures of thoughts or inferential patterns outside the ones made perspicuous by this universal language. These structures and inferential patterns make possible the objectivity[36] of thought and judgment.[37]

This notion of objectivity is not properly Kantian, since the conception of logic as a universal language which underlies such a notion is explicitly designed to avoid the need for intuition in fully objective thought. According to Frege, arithmetic is objective and also applicable to everything thinkable; but intuition is foreign to it. In Kant, intuition plays a central role in the notions of objectivity and mind-dependence of objects. For Kant "all thought must, directly or indirectly ... relate ultimately to intuitions ... because in no other way can an object be given to us" (A 19). "Thought is knowledge by means of concepts" (A 69/B 94). And "the only use which the understanding can make of these concepts is to judge by means of them" (A 68/B 93). It is only through judgments that concepts are applied to intuitions. Intuitions are in immediate relation to objects, but concepts are not. "Judgment is therefore the mediate knowledge of an object, that is, the representation of a representation of it. In every judgment there is a concept which holds of many representations, and among them of a given representation that is immediately related to an object" (ibid). In the Second Edition version of the Transcendental Deduction, Section 19, Kant explicitly connects the notion of judgment with the notion of "objective validity" (*objektiv Gültigkeit*). There it is claimed that every judgment involves the cognition of an object (*Objekt*) and, thus, it has "objective validity". The relation of representations in a judgment is characterized as being an "objective unity" (*objektiv Einheit*), unlike the relation among representations according to the laws of association of reproductive imagination which possesses only subjective validity: "I find that a judgment is nothing but the manner in which given modes of knowledge are brought to the objective unity of apperception" (B 141). The objective unity of the judgment is equated with the objective or transcendental unity of apperception (transcendental self-consciousness) which is in turn defined as "that unity through which all the manifold given in an intuition is united in a concept of the object (*Begriff vom Objekt*)" (B 139). Therefore, the objective validity of a judgment is equivalent to the objective unity it brings to representations, and this objective unity consists in the unity of representations in the object. In view of Kant's claim that there are no objects for us but the objects given through our intuition, Kant's talk of a "concept of the object" must be understood as referring to the notion of an object of intuition in general.

The conception of logic "constituting" or making possible the objectivity of thoughts and judgments that can be read in the *Begriffsschrift* may not be strong enough to avoid the skeptical challenge mentioned above, namely, the challenge that our logical laws might be merely the laws that we have to follow given our constitution, goals, and so forth. This would depend on whether the skeptical challenge is accompanied by a conception of objectivity different from that of the *Begriffsschrift*. In the *Begriffsschrift*, there are no objects which fall outside the scope of logic; this is precisely what the universality of logic amounts to. Hence, our *thinking* of geometrical objects or actual objects "constitutes" or makes possible the objectivity of these objects. Nevertheless, if a conception of objectivity includes or requires different sources of knowledge with their corresponding objects, the skeptical challenge arises again: what guarantees that logic applies to the objects given by sources other than the logical source? For Kant, there are two faculties or sources of knowledge, understanding and intuition, and both are necessarily required for judgment and knowledge. The Kantian transcendental deduction, which Frege is not in a position to attempt, consists precisely in showing that the two independent faculties stand in necessary relation. Moreover, Fregean writings after the *Begriffsschrift* may plausibly be interpreted as suggesting that other independent sources of knowledge – sense perception and geometrical intuition – have their own objects. If this is so, Frege is vulnerable to the skeptical challenge after all.

The other central difference between Kant and Frege lies in the fact that for Frege there is no standpoint external to the discipline he is investigating. It is precisely the universality of logic in the *Begriffsschrift* that prevents Frege from having a standpoint external to logic: any thinking must conform to the laws of logic; hence any thinking about logic itself must take place within logic. This does not, however, rule out an inquiry into logic that conforms to logic but that does not rely solely on logical truths as premises – in arguments to show, say, the objectivity or apriority of logic. The explicit consideration of questions concerning the objectivity of the logical laws or our justification for believing them would be external to logic and would amount to giving an epistemology for logic. Such consideration is strongly resisted by Frege:

> 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 judgment whatever. I shall neither dispute nor support this view; I shall merely remark that what we have here is

not a logical consequence. What is given is not a reason for something's being true, but for our taking it to be true. (*Grundgesetze*, Introduction, p. 15)

For Kant, the philosopher can give an epistemological account – from a vantage point (transcendental philosophy) – of all knowledge, including a priori knowledge. The epistemological account is in Kant transcendental: a form of inquiry through which the critical philosopher gives an explanation and a justification of knowledge by means of an investigation into the conditions of the possibility and limits of knowledge and objectivity. Hence, the transcendental standpoint or inquiry into knowledge is external to inquiries as undertaken in science or common sense, that is, as undertaken from the empirical standpoint.[38] That the conditions of knowledge and objectivity uncovered are presupposed by the very theoretical activity of the philosopher does not prevent the philosopher from being entitled to uncover them.

Although Kant does not explicitly attempt to justify logic transcendentally, to conceive logic's legitimacy as in need of a transcendental justification is consistent with Kant's project. Henry Allison, in *Kant's Transcendental Idealism*, argues that there is an implicit general line of argument in the Metaphysical Deduction of the *Critique* for the following thesis: very general concepts such as entity, property, individual, class, and totality are necessarily involved in all judgments as conditions of the very possibility of the activity of judging. According to Kant's theory of judgment, every judgment involves an act of conceptualization. Thus, it is plausible that Kant thinks that corresponding to each of the forms or functions of judgment there is a specific way of conceptualizing representations. That is, to judge under a specific form *is* to conceptualize given representations in a specific way. Therefore, the possession of the appropriate concept is a necessary condition of the possibility of judging under a certain form, and only a subject that judges under a certain form can have the corresponding concept.[39] I take this interpretation of the Metaphysical Deduction as showing that Kant is in a position to give a transcendental explanation of (general) logic: there is an explanation of the correctness of the logician's depicting the forms of judgments she does. The explanation would be in terms of the pure concepts by means of which the understanding necessarily operates.

Kant's project allows for reflecting on a doctrine or a discipline while at the same time operating according to it. To reflect on the legitimacy of logic would be to adopt a standpoint external to logic as a discipline or science. This standpoint would be one in which our reflections would legitimately operate in conformity with the principles of logic. This does not imply that in the course of such reflections the doctrine or the truths of the discipline in question must be used as premises in a proof of their legitimacy. That is, circularity is not unavoidable in such reflections. For instance, while providing an explanation of the possibility (or an argument for the legitimacy) of the forms of judgment depicted by the logician, one might be making judgments with those forms; but this does not imply that one is appealing to the premise that these – and only these – are the forms of judgment. Therefore, even though logic is concerned with the basic laws of thinking, I believe that there can be a standpoint external to logic in Kant. Again, this possibility is not explicitly entertained by Kant, but the very admission of a transcendental standpoint leaves room for a meta-reflection on logic.

Since Frege lacks a standpoint outside logic, he lacks the resources of transcendental idealism to give a proof of the objectivity[40] and unprovability of the primitive laws of logic, thus of the apriority of all logical laws. Frege's fear of psychologism gives additional support to the view that he does not attempt any proof of the truth and unprovability of the primitive logical laws, that he accepts the objectivity of the laws of logic as a basic fact which is not in need of explanation or proof. Thus, the *Begriffsschrift* at most *exhibits* the objectivity and apriority of logic, and the remarks which suggest that the laws of logic are the condition of the intelligibility of any thinking are only hints in that direction. They do not constitute explicit attempts at explaining or proving the objectivity or apriority of logic.

To sum up, according to Frege, there is a method to demonstrate the objectivity of arithmetic, that is, the method of constucting the perfect (logical) language and providing the adequate definitions and (logical) proofs for arithmetical statements. This method is supposed to show, at the same time, that arithmetic is a priori. Yet Frege does not believe that there is any such method to demonstrate the truth and apriority of all logical laws. Logic cannot carry this method for every part of itself.

4.

Although Kant's characterization of apriority is different from Frege's there are similarities between the two projects regarding the role of the a priori in knowledge. Kant and Frege share the idea that there is a fundamental cleavage between two radically different types of knowledge: a priori and a posteriori. Both hold that not all knowledge is empirical. For both, proving that not all knowledge is empirical is crucial, since only such a proof secures the validity of modes of knowledge which may be otherwise subject to doubt. For Kant, the very possibility of empirical knowledge rests on our possession of a priori knowledge. For Frege, arithmetic can be shown to be certain only if it can be proved that it is a priori. Kant attempts to show the legitimacy of the whole body of knowledge, Frege of arithmetic. Both believe that what guarantees the truth in each case is itself a piece of a priori knowledge: transcendental philosophy for Kant, logic for Frege. However, there are also sharp differences between them regarding the role of the a priori.

First, there is a difference in the relationship between what is legitimized and what provides the legitimization. Unlike Frege's, Kant's project is not reductivist. It does not consist in uncovering statements that are to provide the foundational support for the piece of knowledge to be legitimized, and whose knowledge is supposed to be certain. In Kant, the philosophical transcendental claims are not the foundation from which the whole body of knowledge is to be logically derivable. Furthermore, for Kant, the meaning of the sentences in the body of knowledge is not given in transcendental terms. On the contrary, the very same form of words can have very different implications from the empirical and from the transcendental standpoints. This is true even though the transcendental claims are the condition of the intelligibility and truth of the empirical ones. The Kantian relationship between what provides the legitimization and what is legitimized is the very complex relationship between the transcendental and the non-transcendental, the philosophical and the empirical standpoints. I shall not discuss it here.

For Frege, logic plays a non-Kantian role with respect to arithmetic: it is the set of truths against which and via whose definitions, laws, and rules it is possible to test the objective nature of arithmetical entities and the objectivity and certainty of arithmetical statements. The test consists in the reduction of arithmetic to logic.

There are the other more central differences for which I have argued above. Kant regards the a priori contributions of the mind (space, time, and the pure concepts of the understanding) as "constituting" all objects of knowledge. Kant, unlike Frege, gives to intuition a necessary role in all a priori objective knowledge: the faculty of intuition furnishes a priori ingredients necessarily involved in all objective knowledge. The argument for the constitution of the object of knowledge is a transcendental argument proving that the a priori contributions are necessary for objectivity. As I discussed above, there are serious difficulties with attributing to Frege Kantian transcendentalism with respect to logic. Moreover, precisely because we must leave aside intuition, the weak form of transcendentalism that might be attributed to Frege cannot secure the objectivity of logic.

Finally, although both thinkers attempt to show the legitimacy of a portion of knowledge (arithmetic in Frege) or of the whole of knowledge (Kant), there is a fundamental difference between what they believe can actually legitimize, respectively, arithmetic and the whole of knowledge. Both ask philosophical questions about the portion of knowledge in which they are interested: is it a priori or a posteriori, synthetic or analytic? How is it possible to show that it is objective and that we are justified in believing it? Kant offers a philosophical answer which is the result of searching for the conditions of the possibility of all knowledge. Frege gives technical – logico-mathematical – answers to the philosophical questions he poses in the *Grundlagen* regarding arithmetic. Frege's answers are given entirely within the framework of his logical work. Constructing the perfect language, isolating the basic laws, rules, and definitions of the logical system are the technical tools that Frege employs to prove that arithmetic is objective and analytic a priori. Frege's answers to the philosophical questions he poses for arithmetic are not fully Kantian: they do not concern the explanation of the possibility and intelligibility of the piece of knowledge in question – an explanation which, in turn, is supposed to be part of the general explanation of the possibility and intelligibility of the body of knowledge as a whole. Kant's answers, unlike Frege's, are given from the transcendental standpoint – from a standpoint external to the knowledge with which he is concerned.

Logic itself is part of our body of knowledge. However, Frege leaves our knowledge of logic and its objectivity without justification. He does not attempt to explain what guarantees that *our* laws of logic are *the* laws of truth, nor does he attempt to give a proof that we are justified in believing them. It is clear that he thinks that his enterprise should not or cannot include the explicit consideration of these questions. This is because logic itself cannot give the answers, and there is no vantage point outside logic from which logic might be justified.

Logic is not conceived by Frege as if it were philosophy or the subject-matter of philosophical inquiry. Frege treats it as a piece of accepted knowledge that has to be internally improved or reinvented (in conceiving logic this way, Frege invents modern logic). For Frege, to develop or reinvent logic is sufficient for his project. There is, then, some truth in Benacerraf's view of Frege as a mathematician unconcerned with epistemological questions. This is true for logic, though not for arithmetic. Moreover, it is not due to a philosophical oversight on Frege's part, but to the absence in Frege's project of a standpoint external to logic.

However, as I suggested earlier, there are Kantian ingredients in Frege's enterprise. Yet to suggest, as Kitcher does, that Frege does not touch directly some epistemological issues because he is a covert Kantian is to oversimplify the relation between Kant and Frege.

If we rely on what is said and done explicitly by Frege, we can conclude that he believes that no philosophical doctrine is needed or possible to explain how and with what right we acknowledge the objectivity of logic. To avoid providing an epistemology for logic is not only consistent with Frege's fear of the invasion of logic by psychology, but also consistent with his view that logic has the utmost generality:

> Anyone who has once acknowledged a law of truth has by the same token acknowledged a law that prescribes the way in which one ought to judge, no matter where, or when, or by whom the judgment is made. (*Grundgesetze*, p. 15)

If logic embodies the conditions underlying any thinking at all, there is no vantage point outside logic from which we can assess logic. If this is Frege's view, Frege leaves us with the difficult question of whether he is right: is it possible or legitimate to adopt a philosophical standpoint outside logic?[41] The question can be raised more generally: how is any external philosophical standpoint possible or justified?[42]

NOTES

[1] Paul Benacerraf: 1981, 'Frege: The Last Logicist', in P. French et al. (eds.), *Midwest Studies in Philosophy VI*, Univ. of Minnesota, Press, Minneapolis.
[2] Philip Kitcher: 1979, 'Frege's Epistemology', *The Philosophical Review* **88**, 235–62.
[3] Hans Sluga: 1980, *Gottlob Frege*, Routledge and Kegan Paul, London.
[4] Gottlob Frege: 1979, *Posthumous Writings*, in H. Hermes et al. (eds.), tr. by P. Long and R. White of selections from v. 1 of *Nachgelassene Schriften und Wissenschaftlicher Briefwechsel*, Blackwell, Oxford. Future references to Frege's works will be also from the following: *Conceptual Notation and Related Articles*, tr. and ed. by T. W. Bynum of *Begriffsschrift* (Clarendon Press, Oxford, 1972); *The Foundations of Arithmetic*, tr. by J. L. Austin of *Die Grundlagen der Arithmetik* (Blackwell, Oxford, 1959); *The Basic Laws of Arithmetic*, tr. and ed. by Montgomery Furth of selections from *Grundgesetze der Arithmetik* (U of CA Press, Berkeley and Los Angeles, 1964); *Philosophical and Mathematical Correspondence*, ed. by G. Gabriel et al., abridged by B. McGuinness, tr. by H. Kaal of selections from v. 2 of *Nachgelassene Schriften und Wissenschaftlicher Briefwechsel* (Blackwell, Oxford, 1980); *Collected Papers on Mathematics, Logic, and Philosophy*, ed. by B. McGuinness, tr. by M. Black et al. of most of *Kleine Schriften* (Blackwell, Oxford, 1984); *Translations from the Philosophical Writings of Gottlob Frege*, ed. by P. Geach and M. Black, tr. by P. Geach, M. Black et al. (Blackwell, Oxford, 1952); 'Der Gedanke: Eine logische Untersuchung', *Beitrage zur Philosophie des deutschen Idealismus*, 1 (1918), tr. in *Collected Papers* under the title 'Thoughts'. In the text and quotations I will refer to some works by an abbreviation of the German title.
[5] These ideas are expressed in many of Frege's writings. See, for instance, the beginning of the Preface to the *Begriffsschrift* in T. W. Bynum, (ed.), *Conceptual Notation and Related Articles*, p. 103.
[6] *Critique of Pure Reason*, B1–B2 (Introduction). All references to this work will be from Norman Kemp Smith's translation: 1961, *Immanuel Kant's Critique of Pure Reason*, St. Martin's Press, New York, and to the standard numbering of the A (First) or B (Second) editions.
[7] In my 1987, 'Kant and Innatism', *Pacific Philosophical Quarterly* **68**, 285–305, I attempt to support the thesis that the notion of justification is central to Kant's characterization of a priori knowledge.
[8] See Henry E. Allison: 1973, *Kant-Eberhard Controversy*, John Hopkins Univ. Press, Baltimore, pp. 141–156.
[9] See Henry E. Allison: 1983, *Kant's Transcendental Idealism: An Interpretation and Defense*, Yale Univ. Press, New Haven, especially Chapter 1 and Chapter 7.
[10] The appeal to the notion of general laws which "neither need nor admit of proof" in the definition of apriority raises the following problem: what is the status of basic physical laws for Frege? If we were to suppose that the basic laws of physics, although general, are ultimately justified by appeal to "facts", then in this sense, according to Frege's definitions and against Kant, they would not be a priori. For Kant the basic laws of physics are synthetic a priori (see, for instance, *Critique* B 17–18). Unfortunately, Frege does not explicitly discuss whether basic physical laws are a priori or a posteriori. In 'The Law of Inertia' Frege says: "Only the whole of the fundamental laws of dynamics – considered as a single hypothesis – can be compared with experience and confirmed by it". (*Collected Papers*, p. 127). To say that the laws of dynamics constitute an hypothesis is to say that they are not known to be true, unlike truths known a priori.

Moreover, to say that they are compared with and confirmed by experience suggests that they are justified by appeal to facts.

[11] See, for instance, *Critique* B 204–206. For Kant's conception of arithmetic, see Charles Parsons: 1982, 'Kant's Philosophy of Arithmetic', in Ralph Walker (ed.), *Kant on Pure Reason*, Oxford Univ. Press, Oxford.

[12] In the *Grundlagen*, Frege says of Kant that: "in calling the truths of geometry synthetic a priori, he revealed their true nature" (pp. 101–02). Both philosophers share the belief that the "source" of knowledge of geometry is intuition, in other words, that the justification of geometry rests on intuition. Yet, do they mean the same by "intuition"? If so, does the agreement go further? Michael Dummett in his 1982, 'Frege and Kant on Geometry', *Inquiry*, **25**, No. 2, pp. 233–54, argues that the notion of intuition with which Frege operates up to 1885, and thus the one used in the *Grundlagen*, is as follows. An intuition is a direct presentation, after some sensory mode, of objects. Intuition occurs in sense-perception but also when we form mental pictures; hence, it need not be the apprehension of any actual object. However, intuition must be of what can be immediately recognized. Dummett argues that the disappearance of the word "intuition" from texts dated after 1885 until 1924 suggests that, after 1885, Frege became dissatisfied with this notion. Dummett says also that Frege's conception of geometry as synthetic a priori up to 1885, even though in some respects Kantian, does not commit Frege to Kant's transcendental idealism. I agree that nothing Frege says in the *Grundlagen* commits Frege to transcendental idealism. However, I should add that the notion of intuition that, according to Dummett, Frege uses until 1885 is not the notion of intuition relevant to Kant's theory of geometry. For the notion of *construction* in pure intuition is missing from Dummett's characterization. In fact, throughout Dummett's paper, the latter notion is ignored.

In the *Grundlagen* Frege characterizes the generality of geometry and its relation to intuition as follows: "One geometrical point, considered by itself, cannot be distinguished in any way from any other; the same applies to lines and planes. Only when several points, or lines or planes, are included together in a single intuition, do we distinguish them. In geometry, therefore, it is quite intelligible that general propositions should be derived from intuitions; the points or lines or planes which we intuit are not really particular at all, which is what enables them to stand as representatives of the whole of their kind" (pp. 19–20). According to some interpretations of Kant, this is very much like Kant's conception of the relationship between particular geometrical entities (that is, particular geometrical examples given in empirical intuition) and the general character of geometry as a science: the particular examples serve as representatives of entities of their kind, and thus, when taken as part of the science of geometry, they are not particular after all. But, how can a particular representative of a kind be general? This seems to be Phillip Kitcher's interpretation in his 1975, 'Kant and the Foundations of Mathematics', *The Philosophical Review*, **84**, pp. 23–50. There Kitcher raises the generality problem as a refutation of Kant. The main problem with this interpretation of Kant is that it does not account for Kant's emphasis on construction in pure intuition nor for his claim that intuitions are not general (they are not concepts). For interpretations which emphasize the importance of the idea of construction in pure intuition in Kant's conception of geometry, see G. Buchdahl: 1969, *Metaphysics and the Philosophy of Science*, MIT Press, Cambridge, and also J. Hintikka: 1965, 'Kant's "new method of thought" and His Theory of Mathematics', *Ajatus* **27** and 1967, 'Kant on the

Mathematical Method', *The Monist* **51**. More recently, Michael Friedman: 1985, 'Kant's Theory of Geometry', *The Philosophical Review* **94**, No. 4, pp. 455–506, has developed an interpretation of Kant's conception in which construction in pure intuition is central to Kantian mathematical proof or inference. Friedman argues that the intuition involved is not a quasi-perceptual intuition by which we "read off" the properties of all triangles, say, from particular triangles.

[13] In characterizing Frege's views on objectivity, I shall refer to three closely related notions: (a) the notion that a sentence expresses a thought (i.e., has objective content); (b) the notion that a sentence is an objective truth; (c) the notion that a sentence has an objective justification. These three notions are related as follows. For a sentence to have an objective content is, on Frege's view, for it to be understood in the same way by different people – to be something that can be made public. Thoughts are the objective contents of sentences that can be true or false (assertions), unlike mere expressions of emotions. For Frege, in asserting something we recognize a thought to be true; in other words, we make a judgment. Obviously, not all thoughts are true or are objectively justified. Nonetheless, in virtue of being objective contents, thoughts can be recognized as true or false. Furthermore, we can give objective reasons or grounds for our recognizing a thought as true or false – reasons that do not amount merely to a psychological-causal history of how we arrive at the thought. In other words, we can attempt to give an epistemological justification for making a judgment. In sum, in virtue of being objective, thoughts or their negations can be true and can be objectively justified. Whenever the context does not make it clear, I shall specify between parentheses to which of these three notions of objectivity I am referring.

[14] See Allison, *Kant's Transcendental Idealism*, especially Chapters 4 and 7. See also Gerold Prauss: 1971, *Erscheinung bei Kant*, de Gruyter, Berlin.

[15] I discuss aspects of the Kantian distinction between the transcendental and the empirical forms of inquiries in pp. 306–308 and footnote 38.

[16] All judgments, according to Kant, have objective relationships of dependence with other judgments which do not result from the different ways in which particular subjects happen to relate or associate them. I take it that in Kant, from the empirical (non-transcendental) standpoint, to find the objective relationships of dependence which a judgment has with others is to find what I call its "objective justification" in the empirical (non-transcendental) sense. This is provided by the particular science which deals with the judgments under consideration. Objective justification in this sense should be contrasted with the actual reasons or justification particular subjects may have to believe or accept judgments. Consequently, there are in Kant two levels of objective justification. At one level, there are the justifying objective grounds of specific judgments according to the science which is concerned with those judgments (empirical, non-transcendental justification). At another level, there is the justification of the objectivity of any judgment, namely, its grounding in the transcendental conditions of the synthetic unity of self-consciousness according to the categories (transcendental justification). I shall argue for this interpretation on another occasion.

[17] See page 296 of this paper.

[18] Presumably, Frege thinks that geometry is objective too. Yet a reduction to logic is not demanded for geometry. This is because the geometrical source of knowledge for Frege is intuition.

[19] For arguments in favor of the priority of logical categories over ontological ones in

Frege, see Thomas Ricketts: 1987, 'Objectivity and Objecthood: Frege's Metaphysics of Judgment', Section III, in L. Haaparanta and J. Hintikka (eds.), *Synthesizing Frege*, Kluwer, Dordrecht.

[20] Against formalism, see for instance the correspondence with Hilbert (1895–1900), in *Philosophical and Mathematical Correspondence*, and 1885, 'On Formal Theories of Arithmetic' in *Collected Papers*. Against psychologism, see the *Grundlagen*, the Introduction to *Grundgesetze*, correspondence with Husserl (1891–1906), Frege's Review of Husserl's *Philosophie der Arithmetik*, in *Collected Papers*, and so on. For the relation between Frege's attack on psychologism and his conception of the objectivity of judgment, see Thomas Ricketts 1987 Section 1.

[21] This contemporary view ("if-thenism") does not contribute to explaining the truth or apriority of the axioms of mathematics. At most it shows that the conditional with the axioms as antecedent and the theorems as consequent is a priori.

[22] Even after the discovery of the paradox by Russell, when Frege gave up Axiom V, Frege looked for a substitute (V′) which he regarded as a logical axiom – even though not as self-evident. See *The Basic Laws of Arithmetic*, Appendix II.

[23] See Jean van Heijenoort: 1967, 'Logic as Calculus and Logic as Language', *Synthese* **17**. See also Warren Goldfarb: 1979, 'Logic in the Twenties: the Nature of the Quantifier', *The Journal of Symbolic Logic*, **44**, No. 3, and Thomas Ricketts, 1987.

[24] In trying to avoid entirely the invasion of logic by psychology, Frege neglects questions which, even though not relevant to deciding the objectivity of arithmetical or logical knowledge in the sense explained in the previous section, may well be relevant to deciding whether a particular subject has good grounds to believe an arithmetical or logical proposition. A particular subject may possess good grounds though not necessarily the ideal or preferred type of grounds which according to Frege can alone justify arithmetical truths. Questions concerning what grounds particular subjects have for supporting their beliefs arise in connection with a "subjective" notion of justification whose treatment would be regarded by Frege as belonging to psychology. Frege explicitly distinguishes between objective thoughts (the content of judgments) and ideas in our minds (for instance, in "Der Gedanke"), and rejects the treatment of the latter. Epistemological questions concerning how particular individuals justify their beliefs would be for Frege questions about ideas in our minds and thus would require the use of psychologistic language and categories. For Frege the question of the objectivity of the content of judgments is determined by Logic, but the question of the subjective grounds which particular individuals may have to hold judgments true goes beyond Logic.

The different aspects of justification that are put together and neglected by Frege as psychological, non-logical are, at least, the following: (I) Psychological-subjective aspects that do not make any contribution to the justification of a belief; that is, apparent reasons to believe something which do not have any connection with the truth of what is believed. Except for some type of psychologism that Frege attacks in his writings and that sacrifices the idea that mathematical propositions are true, most philosophers (including Kant) and mathematicians would agree with Frege in eliminating these aspects when trying to determine whether a proposition is justified or a particular subject is justified in believing it. (II) Frege would regard the following questions as belonging also to psychology: what is the nature of the process that takes place when a mathematician follows or constructs a proof and qualifies her as someone who is justified in believing a theorem, while not going through such a process but reconstructing the sequence of propositions in the inference by chance, disqualifies a neophyte as a knower of the same theorem? What is the *right* way of coming to know the primitive truths or coming to know or produce a proof? Is the way in which a particular belief came about such that we can regard the belief as justified? Are the connections that a person actually establishes among propositions the ones that make the sequence a proof? What are the connections that people must establish (if any) in order to know a priori a proof? It is possible to say that according to the mental procpsses people go through, some people may be justified a priori and others be justified a posteriori in believing the same proposition?

For Kant these questions are empirical (non-transcendental), and the only important problem is whether subjective grounds are also objective grounds. Whether they are objective or not, in the empirical sense, is dictated by science and intersubjective agreement. See, for instance, *Critique*, The Canon of Pure Reason, Section 3, A 820/B 848–A 823/B 851, and *Prolegomena to Any Future Metaphysics*, trans. by L. W. Beck (Indianapolis, 1950), Section 19, p. 46. On the other hand, there is for Kant a transcendental justification of the objectivity of the grounds of any judgment. Compare Philip Kitcher's claim in his 1983, 'Frege's Epistemology', in *The Nature of Mathematical Knowledge*, Chapter 1, Oxford University Press, Oxford, and in 'Frege, Dedekind, and the Philosophy of Mathematics', in L. Haaparanta and J. Hintikka (eds.), 1987, pp. 301–02, that Frege and Kant have a "psychologistic" approach to mathematical knowledge.

[25] See Michael Dummett: 1981, *Frege: Philosophy of Language*, Second Edition, Harvard University Press, Cambridge, Mass., pp. 505–11, 540–41, 631, 663, also 1978, 'Realism', p. 147, and 'Platonism', p. 202, in *Truth and Other Enigmas*, Harvard University Press, Cambridge, Mass., and 1981, *The Interpretation of Frege's Philosophy*, Harvard University Press, Cambridge, Mass., Chapter 20, p. 502, and so on. Dummett distinguishes between two forms of realism or "platonism" in the philosophy of mathematics: one characterized in terms of the mind-independence of the entities referred to by mathematical signs and another in terms of the way the meaning of mathematical statements is determined. According to this second form of "platonism" or realism, such statements are given meaning by a specification of their truth-conditions, and they are determined as true or false by the reality to which they relate independently of our knowing, understanding or proving them. Dummett attributes to Frege the last form of "platonism": see, for instance, *Frege: Philosophy of Language*, p. 508, and *The Interpretation of Frege's Philosophy*, p. 441.

[26] This is roughly Paul Benacerraf's interpretation of K. Gödel's views, see for instance his 1973, 'Mathematical Truth', *Journal of Philosophy* **70**. Compare with K. Gödel: 1964, 'What is Cantor's Continuum Problem?' in P. Benacerraf and H. Putnam (eds.), *Philosophy of Mathematics*, Prentice-Hall, Englewood Cliffs, N.J.

[27] I exclude here a sophisticated version of epistemological platonism offered by Penelope Maddy: 1980, 'Perception and Mathematical Intuition', *The Philosophical Review* **89**, No. 2, pp. 163–96. This version includes a *causal* conception of the cognitive relation between people and mathematical entities which we cannot attribute to Frege. Frege distinguishes between actual entities and objective entities. We can be in a causal relation with the former since they are in space and time. Numbers and thoughts are objective, and – unlike actual things – they are not in space or time. In 'Der Gedanke', thoughts are not wholly unactual, but their actuality is quite different

from the actuality of things: thoughts act by being grasped and taken to be true; hence their action is brought about by a performance of the thinker (see 'Thoughts', in *Collected Papers*, pp. 370–71).

[28] M. Dummett seems inclined to say that Frege is not an epistemological platonist in the sense I discuss here: "There seems no doubt that he was an ontological platonist in Resnik's sense. He was also an epistemological platonist in Sluga's sense, since he certainly believed that we have knowledge concerning logical objects. Whether he was one in Resnik's sense is more obscure, since Resnik demands 'direct acquaintance' with numbers and classes. Certainly Frege credits us with no special faculty of mathematical intuition whereby we apprehend, say, the natural numbers; for him, the faculty whereby we know of them is our reason, in accordance with their being *logical* objects." (*The Interpretation of Frege's Philosophy*, p. 552).

[29] Although Sluga finds a Kantian-sounding passage in 'Der Gedanke' also, in *Gottlob Frege*, p. 121, most of 'Der Gedanke' falls short of supporting even the weak Kantian interpretation I give below to Frege's notion of objectivity and the role of the laws of logic in our thinking. Furthermore, as I will argue below, none of Frege's writings support the attribution of a properly Kantian epistemology to Frege which Sluga, Kitcher and others attempt to make.

[30] Leila Haaparanta: 1986, 'On Frege's Concept of Being', in *The Logic of Being*, S. Knuuttila and J. Hintikka (eds.), Kluwer, Dordrecht, argues that for Frege "objects exist for us only as subsumed under concepts, which means that we can know an object only by knowing some thought or some thoughts concerning the object" (p. 279). She further argues that what the Fregean distinction between objects and concepts "... seems to bring about is a chasm between objects in themselves and objects as falling under the concepts that we are able to harness" (p. 282), "Frege did not regard it as possible to find out what objects really are in themselves. He relies on the distinction between what is accessible to human knowledge and what is beyond our cognitive capacities. He wants to contrast objects as metaphysical entities with objects as we know them through a finite number of concepts, and therefore he also stresses the sharp distinction between objects and concepts" (p. 284). These are certainly Kantian-sounding doctrines. However, even if they can be attributed to Frege, the fact that for Frege we can talk of objective entities that are neither perceived by the senses nor mere ideas in our minds makes these views very different from Kant's. As Haaparanta seems to acknowledge (pp. 284–85), our epistemological access to objects (individuals) in Kant necessarily involves intuition. Furthermore, Kant has the much stronger doctrine that objects are necessarily "constituted" by the forms of intuition (space and time) as well as by the pure concepts of understanding. (See below my discussion of Kant's notion of objectivity and transcendental idealism).

[31] A proof that the primitive logical laws "neither need nor admit of proof" together with Frege's assumption that these laws are maximally general would secure, according to the *Grundlagen*'s characterization of apriority, that all logical laws are a priori.

[32] In the *Begriffsschrift*, Section 4, Frege says that necessity – he talks about apodicticity – does not characterize the conceptual content of a judgment, thus "the apodictic form of judgment has for us no significance" (Terrell W. Bynum, ed., *Conceptual Notation and Related Articles*, p. 114). This is to say that necessity characterizes the kind of judgment. Necessity is not a logical operator, but operates on the judgment stroke.

[33] Peter Strawson: 1959, *Individuals*, Methuen, London, uses transcendental argument

for the claim that there are necessary conditions of the way we think of the world, of our conceptual scheme, and draws anti-skeptical arguments from that claim. In spite of being transcendental in character, Strawson's arguments are not fully Kantian since they do not include intuition or transcendental idealism. In his 1966 study of Kant's thought, *The Bounds of Sense: an Essay on Kant's Critique of Pure Reason*, Methuen, London, Strawson attempts to make sense of Kant's doctrines without transcendental idealism. For a criticism of Strawson's attempt to answer skepticism with his weak form of transcendentalism, see Barry Stroud: 1968, 'Transcendental Arguments', *The Journal of Philosophy* **65**, pp. 241–56. For a criticism of Strawson's interpretation of Kant, see Henry Allison, *Kant's Transcendental Idealism*.

[34] See the Preface to the *Begriffsschrift* and the answer to Schröder's review of the *Begriffsschrift* in 'Über den Zweck der Begriffsschrift' translated in Terrell W. Bynum, (ed.), *Conceptual Notation and Related Articles*, p. 90.

[35] See Jean van Heijenoort, 1967.

[36] In saying that the *Begriffsschrift* as a language of thought makes possible the objectivity of judgments, I do not mean that every judgment expressible in *Begriffsschrift* can be justified or proved to be true by logic alone. Obviously, not every judgment we make is true. Moreover, most of our true judgments are not objectively justified by logic alone. The point here is that an utterance or mental representation has an objective content only if it is expressible in *Begriffsschrift*; and an utterance or mental representation can be true or proved to be true only if it has an objective content. Therefore, an utterance or mental representation can be true or proved to be true only if it is expressible in *Begriffsschrift*. (See note 13 of this paper.)

[37] This interpretation of the *Begriffsschrift* has been inspired by Thomas Rickett's views (1987). An anonymous referee has pointed out to me some central difficulties with this approach. First, this interpretation depends on assuming that Frege's thoughts have a "structure" that is analogous to the syntactic structure of sentences. In 'Negation' (*Collected Papers*) Frege seems to suggest that thoughts have such a structure. However, Frege's examples of sentences that express the same thought suggest that thoughts have no stucture, rather they are the values of functions defined over the realm of sense. Peter Geach adopts the latter interpretation in, for instance, 1975, 'Names and Identity', in Samuel Guttenplan (ed.), *Mind and Language*, Clarendon Press, Oxford, Michael Dummett challenges Geach's position on this issue in Chapter 15 of his *The Interpretation of Frege's Philosophy*. Another difficulty with attributing to Frege the view that logic as language constitutes thoughts as objective is that even if a structure can be attributed to thoughts, the question remains whether each thought has to have a structure that is isomorphic to a *Begriffsschrift* formula and each valid inference a structure that is isomorphic to a *Begriffsschrift* derivation. Frege is aware that he has made some arbitrary choices in constructing his formalism (see, for instance, *Posthumous Writings*, p. 32, *The Basic Laws*, p. 3, and 'Compound Thoughts' in *Collected Papers*). Furthermore, the talk of logic's constituting objectivity remains obscure in so far as there is no criteria for distinguishing an objectivity-constituting formalism from alternative weaker formalisms. I do not have space here to explore this interpretation or its difficulties further.

[38] See, for instance, *Critique* A 11/B 25-A 12/B 26, B 40, A 55/B 80-A57/B 81, A 84/B 117-A 86/B 118, A 97, A 237/B 296-A 239/B 298, A 260/B 316-A 261/B 317, *Prolegomena*, Section 21a, and many more. The distinction between the empirical and

the transcendental standpoints is best appreciated in relation to Kant's claim that he is both an empirical realist and a transcendental idealist. According to Kant, only from the empirical standpoint do we regard objects as mind independent. From the empirical standpoint we can draw the distinction between our own representations and objects in space. Such an empirical distinction explains, for instance, sensory illusions, dreams, and so on. It is from the empirical standpoint that objects are treated as things in themselves, namely, as independent of conditions imposed by the subject. Thus, Kant's empirical realism amounts to the claim, from the empirical standpoint, that there are intersubjectively accessible, public, spatiotemporally ordered, law governed objects of human experience.

However, when the critical philosopher reflects on the conditions of the possibility of knowledge of objects, the latter are regarded as appearances, not as things in themselves. Transcendental investigation of the conditions of the possibility of such objects of knowledge discovers that the subject imposes formal conditions on the object of knowledge. That is, there exist certain general conditions under which alone objects can be thought or experienced by us. Hence, objects are not, from the transcendental standpoint, mind independent. They cannot be regarded as things in themselves, that is, independently of the conditions which make them objects for us. From the transcendental standpoint, Kant is a transcendental idealist: space, time, and the categories are the universal, necessary, and, thus, a priori conditions of the possibility of knowledge provided by the mind. Objects as they are in themselves, independently of these conditions, are unknown to us – and, indeed, necessarily unknowable by us.

Thus, transcendental idealism is the doctrine that the same public objects of the empirical standpoint have formal features contributed by the human mind. Space, for instance, is a contribution of the subject: it is transcendentally ideal. Yet, it is this very same space that confers objectivity on all objects found within it. The appearance of paradox is dispelled by making the distinction between two uses of "subjective" or "ideal". To use "subjective" in the empirical sense is to refer to the distinction between the way things "seem" to be from a private, personal perspective (which may lead to mistaken perceptual judgments, illusions, hallucinations, and so on), and the way things in space "really are" from a public, interpersonal perspective. However, to say that space is "subjective" or "ideal" in the transcendental sense is to say that it is not itself an object of experience, but rather a formal condition under which alone anything can be an object of experience for us. Nonetheless, from the empirical standpoint, space – unlike our own representations or ideas – is neither subjective nor private. It is important to emphasize that in the context of the distinction between the empirical and transcendental forms of inquiry, "empirical" does not mean "a posteriori". From the empirical standpoint, knowledge is considered in relation to its objects. This includes science. The latter in fact includes a priori knowledge. I take it that B 80-81 confirms this interpretation since Kant says there that geometry when directed to the objects of sense is empirical, and yet geometry is a priori. For discussions which emphasize the centrality of the distinction between the transcendental and empirical standpoints in Kant, see Graham Bird: 1962, *Kant's Theory of Knowledge*, Routledge and Kegan Paul, London; Henry Allison, *Kant's Transcendental Idealism*: Gerold Prauss, *Erscheinung bei Kant*; and Ralf Meerbote: 1972, 'The Unknowability of Things in Themselves', in L. W. Beck (ed.), *Proceedings of the Third International Kant Congress*, Dordrecht-Holland. In this paper, Meerbote discusses the distinction between the empirical and transcendental uses of the terms "thing in itself" and "appearance" in Kant. More recently, Barry Stroud in his 1984, *The Significance of Philosophical Scepticism*, Clarendon Press, Oxford, has emphasized the importance of the distinction between the two standpoints for a proper understanding of Kant's answer to skepticism, and in general for assessing any treatment of skepticism.

[39] See Henry Allison, *Kant's Transcendental Idealism*, p. 118, and footnote 8 to the paragraph where these ideas are discussed, p. 348. Allison does not discuss the question of whether Kant's doctrines are compatible with a meta-perspective on logic, and probably he would not endorse my views on this topic.

[40] In Kant, a proof of the *objectivity* of logic would seem to be appropriate only for transcendental logic. Transcendental logic, unlike general logic, does "not abstract from the entire content of knowledge" (A 55/B 80). Transcendental logic is "a science of the knowledge which belongs to pure understanding and reason, whereby we think objects entirely *a priori*. Such a science, which should determine the origin, the scope, and the objective validity of such knowledge, would have to be called *transcendental logic* . . ." (A 57/B 81). Since general logic abstracts from the relation of judgments to objects, no clear sense can be given in Kant to the question of proving the objectivity of general logic. However, although general logic taken in isolation is not objective for Kant, he could perhaps be read as suggesting that there is a proof of the objectivity of general logic when taken in conjunction with transcendental logic (B 131, end of Section 15, and B 134, footnote, last two sentences). Manley Thompson has suggested to me the following answer to the question of what "the objectivity of general logic" would be in this context. It would not be that general logic produces objective assertions. If general logic were regarded as providing objective assertions, it would be illegitimately employed as an *organon*: "General logic, when thus treated as an organon, is called *dialectic* . . . [and] is always a logic of illusion, . . ." (A 61/B 85-86). Thus, the question whether general logic can be proved to be "objective" would not concern the production of objective assertions, but rather of rules or principles that are independent of all subjective (psychological) conditions and hold for all discursive intellects. But, we can also ask whether transcendental logic can be proved to be "objective" in this sense. According to B 131 and B 134n. the answer is the same as for general logic: the "synthetic unity of apperception" is the ground of any employment of the understanding in the "whole of logic", general and transcendental. Kant has the distinction *in logic* between the analytic and the synthetic unity of apperception, and the latter is the ground of the former.

[41] Here two questions are involved: (a) whether a general justification of logic can be given from outside logic, and (b) whether it is possible to justify from outside logic the choice of the principles of logic.

[42] I am indebted to Michael Friedman for very illuminating discussions and helpful advice. I wish to thank also Henry Allison, Hans Sluga, Manley Thompson, and anonymous referees for their valuable comments. In forming the first ideas on this topic I benefited from discussions with George Myro, Jack Silver, and Barry Stroud.

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