Frege on the Relations between Logic and Thought

Simon J. Evnine

Frege's diatribes against psychologism in logic are well-known. They make it natural to assume that Frege advocated the complete independence of logic and thought, as if neither had anything to do with the other.[1] This is suggested by the first of his famous principles from the *Grundlagen*: "always to separate sharply the psychological from the logical, the subjective from the objective" (1884, x). Recent discussions of Frege, and of the relations between logic and thought, have given the same impression. For example, in one taxonomy of positions, Susan Haack attributes to Frege a view she calls anti-psychologism, the view that "logic has nothing to do with mental processes" (1978, 238). As part of a renewed interest in psychologism in recent years, Frege has even been criticized for making such a radical separation of logic and thought, as when one recent commentator writes: "Frege's extreme anti-psychologism so effectively banishes the mind from... logic that it becomes virtually impossible to understand how logical propositions can ever actually take on direct relations to logical thinkers" (Hanna 1993, 253).

I believe that the description of Frege as effecting a complete separation of logic from thought is mistaken, and the criticisms of Frege based on it therefore misdirected. I shall argue, to the contrary, that we can find in Frege a view according to which there is a strong relation between logic and thought. In fact, I believe Frege holds both of the views which Haack contrasts with the anti-psychologism that she attributes to him. These views she calls weak and strong psychologism, and they state, respectively, that logic is prescriptive and descriptive of mental processes. Since both of these are weaker than psychologism as I shall characterize it, my position is consistent with continuing to see Frege as an opponent of psychologism. And indeed, nothing in my interpretation will impugn in the slightest a thoroughly realist, Platonist reading of Frege on logic and mathematics. Nevertheless, while Frege's view is not a form of psychologism, it shares one important feature with it, the claim that logic is, at least to some extent, descriptive of thought, that it can tell us something about what people actually think. I shall

[1] By 'thought' with a lower-case 't' I shall always mean a psychological state involved in the psychological phenomenon of thinking, what Frege calls '*das Denken*.' I shall use the upper-case 'T' for Thought as a translation of '*Gedanke*', which for Frege is not something psychological but the sense of a sentence.

call this alternative to psychologism "psycho-logicism." This rather cumbrous name reminds us of two things: the similarity between Frege's view and psychologism; and Frege's logicism in mathematics, which like psycho-logicism, seeks to make logic foundational for something that might appear to be independent of it.[2] I begin by saying something about what I take psychologism to be, what psycho-logicism is, and how the two views are related. Then, in sections II and III, I shall present the evidence for attributing psycho-logicism to Frege.

I

'Psychologism' is probably one of the most promiscuous words in the philosophical lexicon. It has served as a name for countless different views; varieties and sub-varieties have been distinguished by author after author. Nor is this a recent phenomenon. Martin Kusch (1995) shows that around the time of Frege, the term was used in an equally bewildering variety of ways. Frege's own complaints against the 'psychological logicians' of his day encompass several disparate issues. I shall mean by 'psychologism' the view that logic has (human) thought as its subject matter, and that the theorems of logic should really be interpreted as generalities about how humans think.[3] This is clearly one of the sins that Frege took the psychological logicians to be committing. In one of his more extended treatments of psychologism, in the Preface to the *Grundgesetze*, he contrasts his own way of understanding logic as the laws of thought (according to which they have normative force) with the mistaken way of understanding them into which we are easily seduced, according to which:

> these laws govern thinking in the same way as laws of nature govern events in the external world. In that case they can be nothing but laws of psychology… And if logic were concerned with these psychological laws it would be a part of psychology; it is in fact viewed in just this way. (1893, 12-3)

[2] Colin McGinn (1992) describes a similar view to psycho-logicism and calls it "logicism with respect to thought".
[3] I believe this is the variety of psychologism called metaphysical by Elliot Sober (1978).

He later gives an example. Speaking of the Principle of Identity, he asks how is it really to be read? Presumably this means that both Frege and the psychological logicians can agree on its formulation as, in modern notation, "∀x(x=x)." But they differ in their understandings of what this really says. According to Frege, it is to be read "Every object is identical with itself," whereas according to psychologists, it should be read "It is impossible for people in the year 1893 to acknowledge an object as being different from itself" (1893, 14). Frege's account of how the psychological logician must really understand the Principle is unnecessarily restrictive. The fact that the evidence for the putative psychological law does not extend beyond a given date does not mean the content of the laws must be so restricted. A scientist studying gold would not really mean by the 'theorem' that gold is malleable that gold upto a certain date is malleable, even if her evidence for the claim all came from before that date. But this is a small point, and what Frege is criticizing here, and what I shall mean by 'psychologism' in this paper, should be fairly clear.

It is a (in a sense) trivial consequence of psychologism that there is a necessary relation between logic and thought. This is because, in general, it is necessarily the case that if a scientific theory is true, then its subject matter is (more or less) as that theory describes.[4] Thus, according to psychologism, logic, along with empirical input about someone's state of mind, is capable of telling us something else about what that person actually thinks, just as physics, along with empirical input, is capable of telling us how material things actually behave. The reason why logic can do this, according to psychologism, is that thought determines the content of logic, in the sense that any subject matter determines the empirical theory that governs it. To sum up, there is a necessary relation between logic and thought that obtains because of the determination of logic by thought. As a consequence, logic has a descriptive relation to thought.

Frege's arguments against psychologism are well-known and I shall not review them here.[5] But I do wish to comment on their purpose, which is primarily to protect the autonomy of logic (and mathematics) from the psychological. Logic is thought to be autonomous by Frege in at least two senses: it is objective in that its truths are not made true in any way by our taking them to be true; and it describes a world of abstract, logical objects that exist independently of human thought. (The second of these senses entails

[4] Like any empirical theory, psychological logic should be granted a certain degree of idealization; and like any non-basic theory, its laws may come with *ceteris paribus* clauses. (See Ellis (1979) for a defense of psychologism that highlights the role of idealization.) This observation should put to rest the argument against psychologism (made by, among others, Koehler (1971, 191), and Haack (1978, 241)) that it would entail the absurdity that people never make logical mistakes.

the first, but not *vice versa*.) The autonomy of logic is obviously inconsistent with the psychologistic view that thought determines the content of logic, or that logic is about thought. It would also be inconsistent with the view that logic has a descriptive relation to thought, if the only way in which that descriptive relation could obtain were through the determination of logic by thought. It is because it has been overlooked that there might be other ways in which logic could be descriptive of thought than by being an empiricial theory of it that it has been assumed that Frege's anti-psychologism must lead him to reject that logic has a descriptive relation to thought.

Psycho-logicism is proposed as just such another way in which logic can be descriptive of thought. The view resolves itself into a conjunction of three claims, of which two constitute an argument for the third:

1) Logic is normative for thought;

2) Thought is such that it cannot exist except in (at least partial) conformity with its norms;

So, 3) Thought is necessarily (somewhat) logical.

3) could be rephrased by saying that logic has a descriptive relation to thought and it is this claim that psycho-logicism shares with psychologism. But the nature of the descriptive relation posited by psycho-logicism, and the reason why it obtains, is inconsistent with psychologism and perfectly consistent with the autonomy of logic. Thus the attribution of psycho-logicism to Frege is consistent with seeing him as an anti-psychologistic Platonist.[6] The way in which logic becomes determinative for thought, according to psycho-logicism, is through its normative force. It is this, together with the idea that thought is the kind of thing that only exists when it is in at least sufficient conformity with its norms, that yields the descriptive relation. We can contrast the two views thus: psychologism holds that there is a descriptive relation of

---

[5] See Kusch (1995, 30-41) and Cohen (1998) for a conspectus of the arguments.

[6] It should be noted that to claim that logic has a role in determining thought does not, by itself, preclude that thought may simultaneously play some role in determining logic. Psycho-logicism as such, therefore, does not commit one to Platonism about logic or rule out a more complicated, perhaps Kantian view about the mind's relation to logic. I do also subscribe to the traditional interpretation of Frege as a Platonist, but that is independent of my position here. See Burge (1992) for a good critique of Kantian inspired interpretations of Frege.

logic to thought, because thought determines logic (in the way that any subject matter determines the empirical theory that governs it); psycho-logicism holds that there is a descriptive relation of logic to thought because logic determines thought through its normative relation to it. Thus, one might say that psychologism secures a relation between thought and logic on the basis of a view about the nature of logic (that it is the empirical science of thought), while psycho-logicism effects the same (or a similar) relation but on the basis of a view about the nature of thought.[7]

I turn now to Frege. I contend that one can find a commitment in his work to both of the premises and the conclusion of psycho-logicism.

II

Frege definitely holds that logic has a normative relation to thought: "From the laws of truth [i.e. logic] there follow prescriptions about asserting, thinking, judging, inferring" (1918, 1).[8] He goes on to allow that in this normative sense, the laws of truth might also be referred to as laws of thought, although he immediately warns of the danger of confusion with psychologism engendered by the phrase "laws of thought."[9] But while Frege's adherence to the normativity of logic for thought is uncontroversial, his account of how it is normative is not. I shall suggest that we can find, in Frege's work, parts of two different accounts of the way in which logic is normative for thought. One I call official since it reflects some explicit pronouncements about the nature of logic's normativity; the other I call implicit since it is implied by some things Frege says, but is not explicitly stated. The accounts are not necessarily inconsistent (at least in their positive claims), but they do reflect two different conceptions of the scope of logic.

Beginning with the official story, according to Frege, it is owing to logic's relation to truth that it acquires normative significance for thought. This is encapsulated by Frege's tendency to call logic "the laws of

---

[7] I take the work of Donald Davidson to provide a good, contemporary example of psycho-logicism. See [author's book] for an interpretation of Davidson along these lines.

[8] MacFarlane (2002, 35-8) gives an interesting discussion of Frege's views on the nature of logic's normativity which is broadly consistent with the view I take here. His discussion, however, is weakened by the fact that it does not address Frege's claim that logic is normative for thought if one wants to think the truth.

truth." But how exactly does logic relate to truth? In one place, Frege says that logic's relation to the predicate "is true" is "analogous to that in which physics has to do with the predicates 'heavy' and 'warm' or chemistry with the predicates 'acid' and 'alkaline'" (1897, 128). In other words, truth is, in some sense, the subject matter of logic. There will indeed follow norms for thinking from this relation between logic and truth but, as Frege says, they will be entirely of the same kind as follow from the principles or laws of any science. If you want to think the truth about physics, accept the laws of physics. If you want to think the truth about truth, accept the laws of truth. But Frege also suggests another way in which logic is related to truth, one that is brought out by his repeated comparison of logic to ethics and aesthetics.[10] Logic is related to the true as ethics is to the good and aesthetics to the beautiful. Truth forms the goal of (or "points the way for") logic, in the way that beauty does for aesthetics, and goodness for ethics (1897, 128; 1918, 1). Now of course, one might argue that ethics studies the good in the same way that physics studies the heavy and the warm, so that Frege is here simply re-iterating the point made by the comparison of logic with physics and chemistry. But it would be a very odd way to make that point, a point that is much more clearly made by the invocation of physics and chemistry than ethics and aesthetics. For there is a much more salient way in which ethics and aesthetics relate to the good and the beautiful. Ethics tells us how to behave in order to achieve the good, or to be good. Aesthetics tells us how to make things that are beautiful. The good and the beautiful form the goals, or *teloi*, of ethics and aesthetics. Thus, it seems that one of the main things Frege wants to say about the relation of logic to truth is that logic tells how to think if we want the truth. "Like ethics, logic can also be called a normative science. How must I think in order to reach the goal, truth?" (1879, 128).[11]

This account of the normative significance of logic for thought is problematic. A natural response to it is that thinking logically only helps us to think truly if we start with true beliefs from which we logically derive others. So how can logic as such help us to achieve the goal of thinking truly? Would it not make more sense to hold that logic is normative for our thought if we want to think consistently, or rationally, or

---

[9] Cf. "In one sense a law asserts what is; in the other it prescribes what ought to be. Only in the latter sense can the laws of logic be called 'laws of thought'" (Frege 1893, 12).

[10] See my [author's unpublished paper 1] for an examination of all those places where Frege makes this comparison. Each of the comparisons actually makes a distinct point. The point discussed in the text is, I think, the main reason why Frege makes such comparisons, even when he interprets them differently.

[11] Cf. also "It will be granted by all at the outset that the laws of logic ought to be guiding principles of thought *in the attainment of truth*" (1893, 12; emphasis mine).

coherently?[12] To keep some verbal connection to truth, we might call logic "the laws of truth-preservation" rather than "the laws of truth."[13] Surely it is something like this that the vast majority of those who have held that logic is normative for thought have had in mind. Why, then, does Frege insist so forcefully on the idea that it is truth that points the way for logic?

The answer, such as it is, is complicated and begins with Frege's odd conception of inference. It is plausible to say, and Frege did indeed hold, that logic has some normative impact on thought through the notion of inference. As he writes in a letter to Dingler: "When we infer we recognize a truth on the basis of other previously recognized truths *according to a logical law*" (1917a, 17; emphasis mine). But, as is well known, Frege had a very distinctive theory of inference. He held that inferences can only be made on the basis of things *known* to be true.[14] He expresses this view frequently, including a passage immediately prior to the previous quotation: "We can infer something only from true propositions. Thus if a group of propositions contains a proposition *whose truth is not yet known*, or which is certainly false, then this proposition cannot be used for making inferences" (emphasis mine).

Frege does allow that if we "arbitrarily form" certain propositions, without knowing whether they are true, then we can "derive... from them in a purely formal way" certain consequences (*ibid*.). Thus, initially, we might diagnose the situation like this. Frege accepts a distinction between a logical notion of formal derivation and a richer, at least partially psychological notion of inference, which is a mental process in which we come to accept something as true on the basis of the fact that it follows from other things we know to be true. Inference is not really a logical notion at all, or at least, not a purely logical notion. But the distinction between the logical notion of formal derivation and the psychological activity of inference is easily blurred, especially since they are both likely to use such terms as premise, conclusion, argument,

---

[12] 1) It is beside the point that notions such as consistency or logical consequence might nevertheless be defined in terms of truth. A means of preserving consistency or of deriving consequences would not, as such, ensure the truth of anything achieved by its means. 2) I use 'coherence' as a fudge notion. It implies consistency but also, arguably, some degree of closure in a person's beliefs. Coherence will be violated, for example, if someone believes *p and q*, but does not believe *p*. See my [author's unpublished paper 2] for what might be included in such a notion of coherence.

[13] In fact, truth-preservation may be what Frege is getting at in the very expression translated as "laws of truth." The German is "*die Gesetze des Wahrseins*", literally "the laws of being true." (I owe this observation to Risto Hilpinen.) A law of being true might naturally be thought to say something about conditional relations between propositions, such as that if *p and q* is true then *p* is true, rather than anything categorical about truth.

[14] Stoothoff (1963) argues that Frege means only that one cannot infer from what one takes to be false. But I cannot see any argument for this in his paper.

and so on, though with different meanings. Indeed, Frege, in a letter following the one we have been examining, seems to raise essentially this last point. He claims that before the issue about inference can be dealt with, "we must first come to an understanding about the expressions 'proposition' and 'premise'" (1917b, 19-20). He argues that logicians use the term "proposition" to refer to the outward expression of a content. By extrapolation, a premise would then be a proposition recognized as true and used in an inference, which is in fact how Frege often uses the word. In that case, "proposition" and "premise" are not genuinely, or at least purely, logical terms and ought only to occur in the description of inferences, while formal derivations should be described in terms of contents, or what he elsewhere calls Thoughts.

If we accept the above picture of what is going on, then we can say that, insofar as the view that logic's normative relation to thought is in terms of truth rests on his theory of inference, Frege was simply mistaken to say that it is *logic* that helps us to think truly. Logic is concerned with formal derivation, not inference. But formal derivation has to do with truth-preservation, or relations between propositions, and not truth. Hence logic, as such, does not help us think truly. It helps us think coherently. This, I believe, is the unofficial, implicit position, and I shall return to it below with another source of evidence for thinking that Frege has some tendency to accept it. But the 'official' position cannot be abandoned so easily. One of the reasons why we cannot simply 'tidy up' Frege by cutting inference free from logic, and leaving logic in charge of no more than truth-preservation is that Frege connects inference with his equally troubling views on assertion, and through this, takes special pains to insist that both are indeed part of the province of logic; in other words, that they should not be separated in the way mooted above.

Assertion, or its corresponding interior act, judgment, are prominent in Frege's logic from its inception.[15] In the *Begriffschrift*, he introduces the judgment stroke (*Urtheilstrich*) into his logical symbolism and thereafter affirms its propriety even in the face of encouragement to remove it from the province of logic.[16]

---

[15] By pairing assertion and judgment throughout this discussion I am opposing Dummett's interpretation of Frege's views on inference. For Dummett, what is essentially at issue is a distinction between internal and external. Frege, on Dummett's account, is recasting inference as a kind of speech-act, and the study of it as a concern for "the conventions governing the utterance of a sequence of sentences as a deductive argument, and, in particular, the use of the word 'therefore'" (1981, 313). Frege's point about inference needing premises known to be true would amount to the claim that we misdescribe some activity as inference if its premises are not asserted as true. Inference, *per se*, however, is not concerned with interior mental acts, even acts of judging (i.e. advancing from a thought to a truth-value).

[16] The significance of both the judgment stroke (*Urtheilstrich*) and content stroke (*Inhaltstrich*) undoubtedly undergoes significant change in Frege's work. See Bell (1979, chapter III) and Burge (1986) for good discussions of this issue.

In the draft of a letter to Jourdain (unfortunately, this part of the draft was not written up in the final letter), Frege writes:

> What is to serve as the premise of an inference must be true. Accordingly, in presenting an inference, one must utter the premise with assertoric force, for the truth of the premises is essential to the correctness of the inference. If in representing an inference in my conceptual notation one were to leave out the judgment strokes before the premised propositions, something essential would be missing... [W]hat is essential to an inference must be counted as part of logic. (Undated, 79)

If something must be part of logic because it is essential to inference, that can only be because inference itself is part of logic. But what has led Frege to this affirmation that inference and assertion (or judgment) must be counted as part of logic?

Frege is responding to a question from Jourdain, who in the letter to which Frege's comments are part of the draft of a reply, asks "whether you now regard assertion (⊢) as merely psychological" (Jourdain, 78). Jourdain, in turn, is, I believe, implicitly passing on a question from Wittgenstein. In September 1913, just four months before Jourdain's letter, Wittgenstein's conversations with Russell, which form the basis of the work now called "Notes on Logic" (Wittgenstein 1961) were taken down by Jourdain's secretary (see Monk 1990, 92). Jourdain was evidently also in direct contact with Wittgenstein around this time, as his letters to Frege indicate. It is therefore almost inconceivable that Jourdain should not have known of the contents of the "Notes on Logic". In that work, Wittgenstein writes:

> The assertion sign is logically quite without significance... Assertion is merely psychological. There are only unasserted propositions... What interests logic are only the unasserted propositions. (1961, 96)

Frege's affirmation of the logical status of assertion is therefore part of a mediated exchange with Wittgenstein on the topic. Wittgenstein is offering Frege the position of detaching assertion (and with it

inference) from logic, leaving logic to deal with “unasserted propositions” (i.e. Thoughts) and truth-preservation but not truth as such. Frege resolutely refuses the offer. Inference and assertion are indeed logical notions, and not merely psychological ones. Part of the reason that Frege does refuse the offer is because, as we have been seeing, his official position is that logic helps us to think truly, not merely coherently. He repeatedly castigates the psychological logicians for thinking that logic has to do with taking to be true, and not with truth. He must have thought that if assertion and inference were to be jettisoned from logic, then he would end up precisely with psychologism. (Needless to say, the worry was groundless. For the sense in which psychologism is concerned with taking to be true, that it presents laws that determine what people take to be true given information about what other things they take to be true, is quite different from that in which a logic concerned with validity deals with taking to be true, which has to do with the notion of a condition, or supposition.)

But now a further problem must be addressed. If the goal of truth is what drives Frege to include assertion (or judgment) within the province of logic, how does he account for the fact that, apparently, one can assert, or judge, what is nonetheless false? Russell, in a somewhat tortured account of Frege’s views, tried distinguishing between a logical and psychological sense of assertion. Russell thought that Frege mistakenly adhered to a psychological sense of assertion, but should have thought only in terms of the logical sense, according to which one cannot assert something false.

> Psychologically, any proposition, whether true or false, may be merely thought of, or may be actually asserted: but for this possibility, error would be impossible. But logically, true propositions only are asserted... Thus assertion has a definite place among logical notions, though there is a psychological notion of assertion to which nothing corresponds.... It is also impossible, at least to me, to divorce assertion from truth, as Frege does. An asserted proposition, it would seem, must the same as a true proposition. (Russell 1903, 503-4)

Frege's notion of assertion is so shot through with difficulties that I think no consistent account of everything he says about it can be given.[17] But at least some of what Frege says *does* support the idea that only true propositions can be asserted, and that he therefore does not, as Russell thought, divorce assertion from truth.[18]

First, note that when talking about inference, the premises of which must be asserted, Frege fudges the issue of whether what is important is the assertor's commitment to the truth of the premise, or the premise's truth itself, by sometimes saying that inference must proceed from premises "known to be true" (1917a, 17).[19] Unlike the everyday concept of assertion (or judgment), knowledge combines commitment to truth with truth. So the problem described, the tendency for the psychological and the logical to drift apart, remains hidden thanks to the hybrid nature of knowledge.

But there is more direct evidence that Frege may take assertion to go hand in hand with truth. In the draft of the letter to Jourdain, part of which was examined above, Frege says:

> Whoever understands a proposition uttered with assertoric force adds to it his recognition of the truth. If a proposition uttered with assertoric force expresses a false thought, then it is logically useless and cannot strictly speaking be understood. (Undated, 79)

[17] This is not the place to detail the problems with Frege's views on assertion. But a good example to see the problems at work is the discussion of assertion in "*Der Gedanke*" (1918, 7-8). Frege's fundamental mistake is to treat assertion as something that affects (or is part of) sentences rather than statements. Given this, the problem arises of how to link assertion and sentence. Frege seems to have two, incompatible ways of conceiving of this relation. He sometimes talks of the sentence containing assertion, along with its thought-content. But since he recognizes that there is, in ordinary language, no sign for assertion, he also relates assertion to the sentence by talking of the latter's assertoric form. Of course, there is no such form. Frege suggests that it is something grammatical, since he contrasts assertions with interrogative sentences. But the mere expression of a thought-content, without its assertion, has the same grammatical form as its corresponding assertion. Finally, the doctrine is muddied even further by his reaching for an as-yet undeveloped speech-act theory when he claims that sentences with assertoric form, for example in poetry, are not necessarily assertions. What is required for assertion is a "requisite seriousness" (8). A good discussion of Frege's views, that succeeds in sorting out various issues, can be found in Bell (1979, chapter III).

[18] Anscombe (1963, 114) takes the same view of Frege's notion of assertion, though less qualifiedly

[19] Elsewhere (for example, 1923, 72) he uses "recognize" (*anerkennen*), which, like "know," is a success verb.

Not surprisingly, these words have troubled commentators.[20] But they do not stand alone in Frege's work. Substantially the same view is given in a published essay:

> Let 'O' be a sentence which expresses a particular instance of a logical law, but which is not presented as true. Then it is easy for 'not O' to seem senseless, but only because it is thought of as uttered assertively. The assertion of a thought which contradicts a logical law can indeed appear, if not senseless, then at least absurd. (1923, 76)

There are two principal differences between the two passages. 1) In the second, Frege pulls back a bit from the view that the assertion of a false sentence is senseless, or cannot be understood, and hedges with "if not senseless, then at least absurd". 2) In the second passage, Frege restricts the view to the assertion of the negation of a logical law. The first of these differences is not important, but the second is crucial. In the light of the second passage, I suggest that the first should also be read as applying to logical sentences only. So understood, it is less troubling than if it is taken to apply to false sentences without restriction. But, apart from the similarity with the second passage, is there any philosophical reason for thinking that Frege is talking only about assertions of logical sentences in the draft letter to Jourdain? I think there is, and we must now approach the same ground from a different angle.

Let us go back to our starting point - Frege's view that logic tells us how to think if we want to think truly. An obvious question to put to Frege is this. If logic helps us think the truth, then truth about what? Frege explicitly, and most plausibly, denies that logic might help us with the truth about, for example, physics: "We do not demand of [logic] that it should go into what is peculiar to each branch of knowledge and its subject-matter" (1897, 128). So, if logic has any normative role to play in thought about physics, it can only be one of truth-preservation or coherence. It seems that the only discipline for which we should demand of logic that it should go into what is peculiar about its subject matter is - logic. (And, of course, mathematics, if, like Frege, one is a logicist.) Logic will somehow help us to think the truth about logic. This is not by any means tautological or trivial. Since logic's descriptive content, for Frege, concerns a

[20] Currie calls them "astonishing" and argues that they can be ignored on the grounds that they are part of a draft, and were not re-written in the final copy (66); Dummett calls them "curious" (314).

platonic realm of abstracta, there would be no *a priori* reason to expect the theory of these abstracta to (speaking figuratively) help make itself known to human cognizers.

There is some famous evidence, from the preface to the *Grundgesetze*, that Frege denies that logic helps us know the truth about logic. He writes:

> 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. (1893, 15)

Frege is contrasting the case of acknowledging a derived logical law with that of acknowledging a primitive logical law. In the first case, the derivation appears to be able to answer two questions: why do we acknowledge the derived law, and with what right do we acknowledge it. This appears to be a strange coupling of the logical and the psychological, but it is not psychologistic. It seems rather to be a gesture at what I have called psycho-logicism. For we are not answering a logical question in terms of psychology, but rather answering a psychological question - why do we acknowledge the derived law - in terms of logic. It may be objected that Frege was careless in saying that the derivation of some logical law from logical axioms answers the question of why we acknowledge that derived law. All that he should have said was that it justifies us in acknowledging it. But the context makes it clear that Frege was not being careless. For he immediately goes on to consider, as an alternative to the theory that our belief is explained and justified by the derivation, a theory applicable to primitive laws which is clearly about the explanation of our believing them. The alternative theory is that we are "compelled... by our own nature and by external circumstances" to acknowledge their truth. Frege's response to this theory is that it may or may not be correct but that in any case, unlike the theory about logical derivations, it fails also to justify the beliefs whose existence it explains. So I conclude that in the case of the derived law, logic both explains and justifies our belief.[21] Frege seems, then, to be denying that logic can justify us in believing

[21] This seems to go further than, but also perhaps to help us understand what Frege says at the beginning of "*Der Gedanke*": "A derivation from [psychological] laws, an explanation of a mental process that ends in taking something to be true, can never take the place of proving what is taken to be true. But may not logical laws also have played a part in this mental process? I do not want to dispute this" (1918, 2). How exactly could logical laws play a part in a mental process? Why would not the explanation of why

the primitive axioms of logic. Hence even in the areas of logic and mathematics, logic itself can help us derive one thought from another, but cannot, ultimately, help ensure that we begin with true thoughts in the first place.

But elsewhere, though less forcefully, Frege also expresses a view according to which our acceptance of primitive logical laws would be both justified and explained by logic. The view is that in the case of primitive logical laws, the justification for believing them is contained in themselves: “the truth of a logical law [I assume he means here a primitive logical law] is immediately evident of itself, from the sense of its expression” (1923, 76). So it would seem that anyone who understood the expression of such a law would be justified in believing it. And asserting its negation would be, if not senseless, then at least absurd. Although there is no derivation of the law from other logical laws, it would seem odd to deny that, since the law itself is a logical law, the justification for believing it is provided by logic alone (though not, of course, logic in its role merely as a system of formal derivation). Furthermore, the case for coupling the logical and psychological is even stronger in the case of such self-evident laws than it is in the case of derived laws: the justification lies in their self-evidence, and that self-evidence is obviously a good explanation of why we accept them. When dealing with primitive logical laws, their self-evidence means that one cannot meaningfully assert their negations.

Bringing together the strands of discussion so far, we can align three sets of contrasting considerations. In the case of inference there was the official doctrine that inference is a logical notion, but must be from premises known to be true. This contrasts with a pressure to see logic as concerned with formal derivation, and to consign what Frege calls inference to psychology (or perhaps speech-act theory). In the case of assertion, there is a thick view of assertion, applying particularly (or perhaps exclusively) to primitive logical propositions, according to which something asserted is something known to be true, and such that one cannot meaningfully assert its negation. On the other side, there is a merely psychological conception of assertion, not part of logic at all, and on which one can obviously assert falsehoods. And finally, there is a contrast between the view that primitive logical laws are self-evident, and hence that

---

we take something to be true always be a purely psychological explanation? The passage quoted in the text above is a limiting case in which Frege seems to hold that the logical laws completely explain our taking something to be true.

logic, in some sense, testifies to its own truth, and the view that all that logic can do by way of explaining and justifying our acceptance of logical truths is to derive them from other logical truths.

Putting together all the first members of these contrasts, we get what I call the official view about the normative force of logic on thought. Logic tells us how we must "think in order to reach the goal, truth" (1897, 128). This is because some logical laws are self-evident and hence can be known to be true. These provide us with basic logical assertions, things known to be true and such that their negations cannot be meaningfully asserted. On the basis of these assertions, inference enables us to grasp further logical (and mathematical) truths. Putting together the second members of the contrasts provides the unofficial view, which is, I believe, a more commonly held view about logic's normative relation to thought. Logic is normative for thought through the notion of truth-preservation (and its cousins, consistency and coherence). As such, logic cannot provide a justification for believing any *categorical* truths. All it can do is enable us to derive one thing from another through formal derivations. Of course, if we believe the premises of such a derivation to be true, we can, in the normal sense, assert them, and we will make what a non-Fregean would call inferences. But this is psychological icing on the logical cake, which concerns merely "unasserted propositions" and their logical relations to each other.

Perhaps one could say that Frege, in being torn between these two views, the official and the implicit, is feeling the pull between the axiomatic method in logic that he actually employs, and a natural deduction approach that was not developed until the work of Jaskowski and Gentzen in the twenties and thirties. For the axiomatic method, the basis of logic lies in the axioms, which are logical truths. Logical derivations, therefore, even of purely logical theorems require a basis of (logical) truths to function as premises. Natural deduction proofs of logical theorems, however, do not require premises, but make ample use of suppositions, both in *reductio*-style and conditional proofs.[22] The axiomatic method, then, makes it seem as if logic is really about logical truth. Natural deduction, by contrast, makes logic appear to be about argument or derivation. It seems to me quite natural to suppose that an advocate of the official view on assertion, inference and knowledge of logical truth would think of logic axiomatically, while someone taking the implicit view about those matters would be drawn to natural deduction systems.

[22] Frege was, to put it mildly, ambivalent about both these kinds of proofs. A full treatment of his views on them would be highly interesting at this point, but would exceded the scope of this paper.

Before we leave the issue of Frege's views on logic's normative relation to thought, we should note, in passing, his account of the way in which psychologism understands the normative force of logic. It is, indeed, problematic whether psychologism can assign any normative dimension to logic at all. According to psychologism, logic is the empirical science of thought. But we do not usually credit empirical sciences with placing any obligations on their subject matter. We do not think that gasses ought to obey the gas laws.[23] Why then should an upholder of psychologism hold that one ought to obey the laws of logic in one's thought? Indeed, what would obeying the laws of logic mean? These laws, recall, say such things as "It is impossible for people to acknowledge an object as being different from itself." There is nothing to obey. Frege suggests, surely tongue-in-cheek, that, according to psychologism, the "laws of thought can... be regarded as guiding principles in the sense that they give an average... Then one can only say: men's taking something to be true conforms on the average to these laws, at present and relative to our knowledge of men; thus if one wishes to correspond with the average one will conform to these" (1893, 13). A similar line is taken elsewhere. According to psychologism:

> The laws in accordance with which judgements are made are set up as a norm for how judgements are to be made. But why do we need to do this? Don't we automatically judge in accordance with these laws? No! *Not* automatically; normally yes, but not always!... On this view we shall have to exercise every care not to stray from the path taken by the solid majority. (1897, 147)

III

It is clear, then, that Frege takes logic to be normative for thought, though what this amounts to is more controversial. There is no case to be made for seeing in Frege any general commitment to the second

[23] Such assertions as "the litmus paper *ought* to turn blue" manifest an epistemic sense of "ought" and should not be taken as normative. I do not mean to imply in the text that no natural law can give rise to a normative principle, that no "ought" can be derived from any "is." From the natural 'law' that pulling cats' tails causes them pain, one might extract the normative principle that one ought not to pull cats' tails. The

premise of psycho-logicism, as distinct from its application to the case of norms of thought provided by logic. Thus, one cannot separate the evidence for attribution to him of the second premise from that for attribution of the conclusion. Accordingly, I conjoin them to yield the claim that there can be no thought that does not conform (at least partially) to the norms for it that arise from logic. Since this also implies that logic is normative for thought, I shall refer to this claim simply as psycho-logicism. We are now in a position to see that its interpretation depends on how we understand the normativity of logic. If logic is normative for thought by way of truth, then presumably, to say that thought cannot exist except in conformity with this norm will be to say that any thinker must accept certain truths. On the other hand, if logic is normative by way of truth-preservation, then joined to our second premise this will imply that any thinker's thoughts must exhibit a certain degree and kind of consistency and coherence.

Frege claims that the "task [of mathematics and logic] could perhaps be represented... as the investigation of *the* mind; of *the* mind, not of minds" (1918, 25). It is clear why Frege, given his anti-psychologism, should reject the claim that logic and mathematics are concerned with minds. But if Frege thought there were no (non-normative) link between logic and thought, it would be mysterious why he should nonetheless be prepared to describe logic and mathematics as concerned with the study of *the* mind. This would be a totally uncalled for concession. But what is the sense in which logic can be represented as the investigation of *the* mind? As far as I know this kind of language is unique in Frege's output, and perhaps for that reason, one should not lay too much weight on it. But I believe that the following interpretation may be borne out by other evidence. By talking of "*the* mind," as opposed to "minds," Frege means to allude to some set of conditions necessary for anything to be a mind. So if the task of logic is the investigation of the mind, Frege may mean that there can be no human cognition without a sufficient degree of logicality. Conformity to (at least some basic parts of) logic is thus a necessary condition for anything to be a mind. If logic provides a norm for thought, which is the activity of a mind, then thought cannot exist unless it conforms (at least partially) to this norm.

In the preface to the *Grundgesetze*, Frege speculates about the assumption that the laws governing our mental life are the laws of logic:

---

normative claims that psychologism is alleged to be unable to ground are specifically those that would

> 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: these laws hold for them, these laws hold for us. I should say: we have here a hitherto unknown type of madness. (1893, 14)

The conjectured response of the psychological logician is a consequence of the difficulty, noted at the end of the previous section, that psychologism has in accounting for the normative force of logic. The psychologist, in identifying the laws that govern our thinking, has no basis for criticizing the thinking of others. But the point of real interest here is Frege's own response. A fully explicit commitment to psycho-logicism would have Frege saying something like: "I should say: they do not think at all" or "I should say: such a case is not possible." In saying that we would have here a kind of madness, Frege does not go so far as to suggest that these beings, whose thought would be, by hypothesis, illogical, would not really have thought at all.[24]

However, although Frege does not go all the way to psycho-logicism here, Tyler Burge interprets these remarks as inclining in its direction. For later in the same work, Frege writes that "we must acknowledge [the laws of logic] unless we wish to reduce our thought to confusion and *finally renounce all judgment whatever*" (15; emphasis mine). Frege is here envisaging a line of argument, to support the view that our mental activity, our judgments, are necessarily subject to the laws of logic, and he says of this line of argument that he neither endorses nor rejects it. (It is, after all, not relevant to his main claim that a reason why we judge something can never be a substitute for a reason for the truth of that which we judge.) But Burge thinks that Frege, in the italicized part, is actually representing his own view, on the grounds that he says something similar in the *Grundlagen*: "we have only to try denying any one of [the laws of arithmetic[25]], and complete confusion ensues. Even to think at all seems no longer possible" (1884, 21). Thus Burge attributes to Frege the view that "to put it crudely, reason and judgment - indeed mind - are partly defined in terms of acknowledging the basic laws of truth" (Burge 1992, 649).

---

require our thoughts to be in conformity with the laws of logic.

[24] Though see my [author's published paper] for a treatment of madness which sees it as having as a limiting case the dissolution of thought itself due to illogicality.

[25] Of course, for Frege, these are reducible to logical laws. And if they are less primitive than the logical laws to which they reduce, the point made about them ought to hold *a fortiori* for those primitive logical

Another piece of evidence that bears out Burge's reading of the disputed remark in the preface to the *Grundgesetze* comes earlier in that very work. Frege insists, as we have seen, that the laws of truth can only be called the laws of thought in the sense that they prescribe how one ought to think if one wishes to achieve truth. But in this sense, he says, any law is a law of thought; to get the truth about physics we must make our thought about physics consonant with the laws of physics.[26] But Frege goes on to say that there is this difference between the laws of logic and all other laws, with respect to their relations to thought: the former "are the most general laws, which prescribe universally the way in which one ought to think *if one is to think at all*" (12, emphasis mine). Thinking in conformity to the laws of logic is a precondition of thinking at all.

I noted at the beginning of this section that what psycho-logicism actually amounts to will depend on the nature of the norms that logic provides. We have seen that this is a complex issue. If we take seriously the official version, in which logic aims at truth, then it appears as if the norms offered by it involve various logical truths, the self-evident, primitive ones that can be asserted and thus used as the premises of inferences to less self-evident logical truths. In that case, we get what I call content-based psycho-logicism, according to which to be a thinker at all, one must accept certain basic logical laws. One must believe, for example, the laws of non-contradiction, excluded middle, identity, and so on.[27] That Frege does accept something like this view is supported by one of the quotations already looked at. It is the law of identity of which he conjectures that "we must acknowledge it unless we wish to reduce our thought to confusion and finally renounce all judgment whatever" (1893, 15).

If we think, however, that logic directs us towards coherence and consistency, rather than categorical truth, a different kind of psycho-logicism, which we might call form-based, emerges according to which the

---

laws.

[26] MacFarlane (36-7) interprets this in a weaker sense as saying that all thought about physics is subject to assessment in the light of the laws of physics. This implies a correspondingly weaker interpretation of the following point about logic. According to MacFarlane, Frege is saying that thought, to be thought at all, must be assessable in the light of logic. This reading has the virtue of preserving better than mine the parallel Frege draws between physics and logic. But I don't believe it is the right way to understand the point about physics. Hence the parallelism gives no grounds for his weaker reading of the point about logic. Frege says we must think "*im Einklange*" with, say, laws of physics. "*Einklang*" is "consonance," which seems stronger than MacFarlane's "assessable in the light of." Frege is saying that physical laws, as it were, demand to be believed. But unlike the case of logic, no penalty (other than falsehood or ignorance) attaches to failure to comply.

[27] What believing, or accepting, or acknowledging such laws amounts to, whether it must be explicit or might be implicit, and so on, are further questions I will not explore here.

thoughts of any thinker must be (relatively) consistent and coherent. Such a view can also be seen in Frege and in discerning it, we can add a final twist to the discussion of normativity in the previous section. Frege writes:

> 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. (1893, 15)

I think it is clear from the context that Frege means that in acknowledging a logical law, we thereby recognize its prescriptive force for us. Its prescriptive force concerns the way in which one ought to judge. Since it is already given that we have acknowledged the law itself, this can only refer to the way in which the law, as it were, governs the relations between our thoughts. If we acknowledge the law "*not (p and not p)*", for example, we thereby acknowledge that we ought not to have contradictory beliefs.[28] Thus, the official account of the normativity of logic implies all the positive content of the implicit account. (It does not, of course, imply the negative part, that logic itself cannot justify the belief in any categorical truths.)

Still, it may be objected that we have not yet arrived at full form-based psycho-logicism since one may accept primitive laws of logic, accept the obligations they place on the relations among one's beliefs, and yet fail to live up to those obligations. One might acknowledge the law of non-contradiction, see that it requires one not to have contradictory beliefs, and yet have such beliefs, perhaps even frequently and consciously, thereby displaying a high degree of illogicality in one's thoughts. In that case, content-based psycho-logicism would not entail form-based psycho-logicism. Yet I think we can see even form-based psycho-logicism implicit in Frege. The case for attributing it to him rests on the reason he gives for any form of psycho-logicism. We must acknowledge the laws of logic and accept their normative force "if we are to think at all" or on pain of "reducing our thought to confusion and finally renouncing all judgment whatever." Yet why should merely acknowledging the normativity of the laws of logic save our thought

[28] For logical laws whose main operator was not the negation sign, Frege's point would need to be complicated to allow for the fact that logical norms may be permissive as well as prescriptive. This is a large topic, and Frege has clearly not seen to the bottom of it. See my [author's unpublished paper 2] for an attempt to establish some prescriptive logical norms that do not derive from negations, while not going so far as to demand full logical closure of belief.

from confusion, or even non-existence, if we did not at the same time actually adhere to those norms to a large extent? What confusion-saving qualities could be possessed by the mere acknowledgement of the laws and their normative force, if at the same time we flouted them entirely by having highly illogical patterns of thought?

IV

If the foregoing interpretations of Frege are correct, then it is clear that so far from holding a view in which logic and psychology (thought) have nothing to do with each other, he actually takes them to be intimately connected. The very existence of thought depends on its conformity to logic. Frege was concerned to preserve the autonomy of logic with respect to psychology (and with respect to generalizations about the material world, for which one can see the remarks in *Grundlagen* §7-§11 against Mill on arithmetic). But the autonomy of logic with respect to psychology does not imply the autonomy of psychology with respect to logic. It is clear that Frege takes logic to have a normative relation to thought. Exactly how Frege thinks logic is normative for thought is, however, controversial. Examining Frege's views on this suggests that he held two different conceptions about the nature of logic, according to one of which it is concerned with logical truths, and according to the other of which it is concerned with derivation and consistency. There is also evidence that Frege thought that one could not think at all unless one's thought is at least partially in conformity with the norms provided by logic. Given the first, official conception of normativity, this means that one must recognize certain logical truths if one is to think at all. Given the second, implicit version, it means that one's thought must be more or less coherent if one is to think at all. But in addition, Frege holds that if one accepts a logical law, in accordance with logic's normativity in the official sense, one must also recognize it as having normative force for the relations between one's thought, and hence that one must also satisfy those norms that the implicit conception of normativity present us with. Thus recognition of logical truth implies coherence in one's thoughts. Both at the level of content (what is believed) and at the level of form (the relations among one's beliefs), logic has, in addition to a normative relation to thought, a descriptive relation as well.

We have not addressed the details of this view. Just which laws must one recognize, and hence in which ways must one's thought be coherent? Frege's own views on this must be extracted from the details of his logical practice in the *Begriffschrift* and the *Grundgesetze*, something that must await another occasion. Obviously one could agree with the basic thesis of psycho-logicism and yet not follow Frege in the details.[29] But the fact remains that Frege does not, as is often alleged, separate logic from psychology at all. As he says: "In the form in which thinking naturally develops the logical and the psychological are bound up together" (1879-91, 5). I have tried to explain what might be meant by this.

Anscombe, G.E.M. (1963) *An Introduction to Wittgenstein's* Tractatus, 2nd edition. (New York: Harper and Row.)

Bell, David. (1979) *Frege's Theory of Judgement*. (Oxford: Clarendon Press.)

Burge, Tyler. (1986) "Frege on Truth," in *Frege Synthesized*, ed. L. Haaparanta and J. Hintikka. (Dordrecth, Reidel.)

Burge, Tyler (1992) "Frege on Knowing the Third Realm," *Mind* 101, 633-49.

Cohen, Jonathan. (1998) "Frege and Psychologism," *Philosophical Papers* 27, 45-67.

Currie, Gregory. (1987) "Remarks on Frege's Conception of Inference," *Notre Dame Journal of Formal Logic* 28, 55-68.

Dummett, Michael. (1981) *Frege: Philosophy of Language*, 2nd edition. (London: Duckworth.)

[29] I have attempted to do some of this, independently of Frege, in [author's published paper 2] and

Ellis, Brian. (1979) *Rational Belief Systems*. (Oxford: Blackwell.)

Frege, Gottlob. (1879-91) “Logic,” in Frege (1979).

Frege, Gottlob. (1884) *The Foundations of Arithmetic*, trans. J.L. Austin, 2nd edition. (Oxford: Blackwell, 1978).

Frege, Gottlob. (1892) “On Sense and Reference,” in Frege (1980a).

Frege, Gottlob. (1893) *The Basic Laws of Arithmetic*, trans. M. Furth. (Berkeley: University of California Press, 1967).

Frege, Gottlob. (1897) “Logic,” in Frege (1979).

Frege, Gottlob. (1910) Notes for Jourdain. See Frege (1980b).

Frege, Gottlob. (1917a) Letter to Dingler, 31st January 1917. See Frege (1980b).

Frege, Gottlob. (1917b) Letter to Dingler, 2nd February 1917. See Frege (1980b).

Frege, Gottlob. (1918) “The Thought.” See Frege (1977).

Frege, Gottlob. (1923) “Compound Thoughts.” See Frege (1977).

Frege, Gottlob. (1977) *Logical Investigations*, ed. Peter Geach. (New Haven: Yale University Press.)

Frege, Gottlob. (1979) *Posthumous Writings*, trans. Peter Long and Roger White. (Oxford: Blackwell.)

[author’s unpublished paper 2].

Frege, Gottlob. (1980a) *Translations from the Philosophical Writings of Gottlob Frege*, ed. Peter Geach and Max Black, 3rd edition. (Oxford: Blackwell.)

Frege, Gottlob. (1980b) *Philosophical and Mathematical Correspondence*, trans. Hans Kaal. (Oxford: Blackwell.)

Frege, Gottlob. (Undated) Draft of letter to Jourdain (approximately January 1914). See Frege (1980b).

Haack, Susan. (1978) *Philosophy of Logics*. (Cambridge: Cambridge University Press.)

Hanna, Robert. (1993) "Logical Cognition: Husserl's Prologomena and the Truth in Psychologism," *Philosophy and Phenomenological Research* 53, 251-75.

Jourdain, P.E.B. (1914) Letter to Frege. See Frege (1980b).

Koehler, Wolfgang. (1971) "On Logic and Psychology," in *The Selected Papers of Wolfgang Koehler*, ed. Mary Henle. (New York: Liveright.)

Kusch, Martin. (1995) *Psychologism. A Case Study in the Sociology of Philosophical Knowledge*. (London: Routledge.)

MacFarlane, John. (2002) "Frege, Kant, and the Logic in Logicism," *Philosophical Review* 111, 25-65.

McGinn, Colin. (1992) "Logic, Mind and Mathematics," in *Dennet and His Critics*, ed. Bo Dahlbom. (Oxford: Blackwell.)

Monk, Ray. (1990) *Ludwig Wittgenstein: The Duty of Genius*. (Harmondsworth: Penguin Books.)

Russell, Bertrand. (1903) *The Principles of Mathematics*. (London: Routledge, 1992.)

Sober, Elliot. (1978) “Psychologism,” *Journal of the Theory of Social Behaviour* 8, 165-91.

Stoothoff, R.H. (1963) “Note on a Doctrine of Frege,” *Mind* 72, 406-8.

Wittgenstein, Ludwig. (1961) *Notebooks 1914-1916*, trans. G.E.M. Anscombe. (Oxford: Blackwell.)