Why Philosophy Needs Logical Psychologism

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ABSTRACT: In this paper, I argue that social psychologism is the most philosophically appealing form of psychologism. I present two arguments in support of social psychologism. The first is that this form of psychologism allows philosophers to justify normative claims about human reasoning. In the second part of this paper I argue that social psychologism ameliorates historical concerns with psychologism in general. The conclusion I draw from this discussion is that a need to outline and justify a normative system for deductive reasoning requires some discussion of how formal systems and human minds connect to one another.

RÉSUMÉ : Je soutiens dans cet article que le psychologisme social est la forme la plus attrayante de psychologisme. Ma défense du psychologisme social se développe en deux temps. Premièrement, je démontre que cette forme de psychologisme permet aux philosophes de justifier leurs revendications normatives au sujet du raisonnement humain. Je montre ensuite, dans la seconde partie de mon raisonnement, comment le psychologisme social assouplit les préoccupations de nature historique du psychologisme en général. Je conclus en soulignant que la nécessité d'encadrer et de justifier un système normatif pour les raisonnements déductifs exige des discussions approfondies sur les façons dont les systèmes formels et les esprits humains entrent en contact les uns avec les autres.

The question of whether the philosophy of logic could be enriched by making use of empirical data and psychological studies on human reasoning has been raised recently by a significant yet relatively small number of philosophers of logic. The idea that an empirical philosophy of logic should be developed—in much the same way that philosophers working in ethics,

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philosophy of language, and so on, have made use of the methods of experimental psychology—has been discussed but has not gained much broad approval. This is likely due in part to the perception that formal logic is an entirely *a priori* discipline upon which empirical facts have no bearing, and likely in part due to famous historical arguments against psychologism—most notably by Frege. I argue that a form of psychologism and a detailed examination of experimental data from psychologists studying human reasoning has much to offer the philosopher of logic. The basis of this argument comes from an interest in how we apply formal languages to reasoning in natural language; for example, the question that I am addressing in this paper is 'how could we justify the acceptance or rejection of certain inference forms in natural language?' I argue that this question cannot be answered without a closer and more interdisciplinary examination of the meanings of certain terms as used in natural language and that this requires a form of psychologism. This is because we cannot argue that modus ponens is truth-preserving in natural languages simply because it preserves truth in our chosen formal language without more closely examining the meaning of 'if . . . then . . . ' in natural language. For example, what sort of truth conditions does 'if . . . then . . .' have in natural language? Under what conditions do natural language users take sentences of this form to be true? I remain agnostic about the metaphysical status of logic throughout this paper, though I think I can fairly uncontroversially assume that there is something in the world, our bodies, our way of life, or our brains that constrains our choices. The project of examining logical reasoning in a more interdisciplinary way has the added benefit that it can help us to answer metaphysical questions about logic as well. For example, if the locus of logic is in brains then an examination of pathologies in patients with brain injuries should tell us something about the structures that logical competence relies upon. If the locus of logic is something about the world in general or the platonic realm then we should see similar logical proficiency across different cultures and language groups.

In this paper, I discuss some different types of psychologism outlined by Pelletier, Elio, and Hanson in "Is Logic all in Our Heads?" I argue that social psychologism, a position similar to the psychological descriptivism outlined by Pelletier et al., is the most philosophically appealing form of psychologism. Social psychologism is the idea that our claims about correct forms of inference are justified by appeal to observable performances such as speech acts, and the outcome of experiments on reasoning. It differs from the psychological descriptivism outlined by Pelletier et al. since it is the observable performances themselves and not the mental acts presumably behind these performances that give logical terms their meanings. Thus, social psychologism can be seen as a subset of psychological descriptivism. In this paper, I present two arguments in support of social psychologism. The first is that this form of psychologism allows philosophers to justify normative claims about human reasoning. Specifically, I argue that normative claims about human reasoning cannot be justified

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without reliance on social psychologism. In the second part of this paper, I argue that social psychologism is not as subject to the historical criticisms against psychologism in general. In defence of this second claim, I outline and respond to arguments from Frege seen primarily in the *Grundgesetze der Arithmetic*. The ultimate conclusion I draw from this discussion is that criticisms of psychologism were based upon a different understanding of what the purposes of formal logic are or could be. Recent developments in logic have challenged the notion that there is one certain, true and unchanging logic. This plurality opens up questions about which logic to apply in which contexts. Also, a need to outline and justify a normative system for deductive reasoning requires some discussion of how formal systems and human minds connect to one another, i.e., psychologism of some form. Thus, I argue that there is good motivation for accepting a new brand of psychologism.

Historically, psychologism was characterized as the idea that what is logically true is what we accept as true, or the claim that we have some mental logic in our minds that corresponds to the one normatively correct formal system.[1] Generally, advocates of psychologism argue that logical truth or the privileged normative system(s) of logic are either determined by facts about human cognition or behaviour, or are justified by facts about human cognition or behaviour. While these two aims sometimes come together, I want to make clear that these two aims are not one and the same. Claims about where the locus of logic is or what causes logical competence do not automatically give us justification of certain inference forms as valid (or good). I will elaborate more on this point later as the problem with some of the forms of psychologism outlined by Pelletier et al. (specifically the cognitive architectures type) is this confusion between the locus of logic and the justification of logic.

A Brief Taxonomy of Logical Psychologism

Pelletier et al. outline four different forms of psychologism in order to make clear what the historical arguments against psychologism are, and to argue that these historical arguments are not legitimate criticisms of all of the modern forms of psychologism. The first form that they outline is individual psychologism, which posits that logic comes out of peoples' individual psychological states or cognitive processes. This is the form of psychologism that people like Frege and Husserl seemed to have in mind when they wrote their famous anti-psychologistic arguments. Since, according to this type of psychologism, the foundations of logic are individual mental states or cognitive processes, logic becomes interpersonally relative in a way that prohibits any division between being truly true and being regarded as true. Further, any discussion about logical terms breaks down since different people could have entirely different logical norms.

The next form of psychologism that Pelletier et al. outline is the cognitive architectures form. The cognitive architectures form of psychologism has many modern advocates in the psychology of human reasoning. It is the view

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that the foundation of logic is some sort of "faculty" or "module" within human brains that is shared. Those who argue that there is some evolutionary basis for particular inference forms[2] are one instance of this form of psychologism. This form of psychologism sidesteps many of the criticisms outlined against individual psychologism since the shared nature of the architecture makes logical truth relative to all beings who share the architecture rather than relative to individuals. In other words, we can have logical truth and falsity and discussions about logic since the foundations of logic are shared. Cognitive architectures psychologism is unsatisfactory partly because it runs the risk of making too much of the competence/performance distinction, i.e., extra-logical explanations for "error" are given far too much weight. The problem is that the link between logical performances and the module in the brain that causes the performances is so indirect that any and all responses can be explained away as errors.

More importantly, these researchers are answering a different question than the one I wish to answer. They are attempting to discover a biological or evolutionary explanation of why people engage in logical reasoning, whereas I am concerned with the justification of our use of logic in philosophy. It is possible, and even likely, that logic has roots in our brain and perhaps even perception, but I doubt that this exhausts the foundations of logic. Further, and more importantly, a study of brain states or an evolutionary "just-so" story cannot be taken as justification for particular inference rules. In other words, the fact that a particular inference rule has an evolutionary basis does not do the work necessary to prove such a rule is a good one. It could very well be the case that there is an evolutionary advantage to the acceptance of certain inference forms. This would not, however, make such rules correct in the way that logical rules are supposed to be correct. For example, there is a clear evolutionary advantage for social communicative creatures like humans to understand what breaking a promise entails. This may aid people in acceptance or understanding of *modus tollens,* but it does not *justify* our acceptance of *modus tollens*. If I say to you 'If you give me a dollar then I will buy you an ice cream' you may understand easily that if I don't buy you an ice cream, then you haven't given me a dollar—or else I was lying. Such examples may explain why we come to have rules like *modus tollens,* but they do not explain the abstract nature of these rules, i.e., why such rules hold or are supposed to hold regardless of content. *Modus tollens* is taken to be correct even in situations where the speaker is not making a promise or outlining a rule. Appealing to the possible evolutionary basis of *modus tollens* does not do anything to explain the correctness of this rule outside of these very particular contexts.

The third form of psychologism outlined by Pelletier et al. is the ideal cognizer form. The ideal cognizer form of psychologism is the idea that we can justify or discover inference forms by outlining what the ideal cognizer would do. It seems to me that this type of psychologism is the most common among philosophers of logic and that often when we are speaking of intuitions, what

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we mean are "intuitions of the ideal cognizer." The problem with this view is that there exists no such ideal cognizer. What this means is that the theory becomes circular in the sense that, without having outlined a normative theory, there is no way to assess the possible actions of an ideal cognizer. So, for example, in a debate about whether indicative and subjunctive conditionals admit of different analyses, each side clearly has different ideas about what the ideal cognizer would hold, and further, these differences run so deep that this form of psychologism cannot mediate between them.

The form of psychologism that I favour is the form Pelletier et al. call psychological descriptivism, which is the view that we can justify good reasoning by appealing to observable performance (speech acts, experiments about reasoning etc.). I call my position social psychologism since I appeal to the social acts themselves for the justification of inference patterns rather than the mental acts that presumably cause these social performances. This is because I take the justification of good inference to be necessarily based in the meaning of logical terms as they are used in natural language. To rely on an over-used but apt and succinct quote—"meaning just ain't in the head".

This form of psychologism has the same advantages as the cognitive architectures form in that inference forms are shared and are thus not as relative as early criticisms of psychologism assumed, i.e., logical truth is not relative to individuals. One of the other chief advantages of such a system is that it allows for a connection between logic as a formal system and peoples' reasoning practices. For example, Pelletier et al. argue that:

> Frege's concern to cut radically logic from any psychological datum has the consequence that our relationship with logical laws becomes mysterious: we happen to know them by virtue of a form of intuition . . . but it is difficult to figure out how they could be used in actual reasoning. What Frege, and the other anti-psychologists in general, leave in the dark is the way in which logic can become applied, since they assimilate any applied logic or any 'art of thinking' . . . to a lapse into psychologism.[3]

The problem with the anti-psychologistic position is that one of our concerns, as philosophers, is to explain good and bad inference. It is this "actual reasoning" that is of concern to us (among other things, of course). In order to discuss this actual reasoning, in order to explain good and bad inference, we must engage in psychologism. We must explain the connection between our normative theory and reasoning in natural language. This is chiefly because a perfect formal system that people either cannot use because of cognitive limitations (for example, many of the calculations required for Bayesian probability theory are too complicated and involved for many people to do without a calculator and paper), or a system that people cannot access (for example, if people rejected the truth of *modus tollens* because they don't take the conditional as to be false only when the antecedent is true and the

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consequent false) clearly would not be useful in explaining correct inference in natural language.

Thus, if we want logic to have normative force, i.e., if we want to use a formal system to interpret, explain or determine good reasoning, then we need to have some way to assess validity and truth preservation in a way that explains peoples' access to these things—"To say that logic is normative is not enough. We have to say why it is so".[4] This is similar to the argument that Braine and O'Brien give for an empirically-based philosophy of logic. They claim that:

> for a theory to explain common intuitions about conditionals, it cannot be sufficient to specify truth conditions; the theory would also have to postulate that people know those truth conditions . . . Thus, there seems to be a hidden psychological postulate in the philosophical theories—an implicit claim about what people know.[5]

It is not enough to have a normative theory outlined, we need also to have some idea of how people come to know or to use logical terms and inferences. This is in some sense separate from the metaphysical question of logic since we have to answer this additional question about the connection between peoples' practices and our logical theory regardless of whether we are Platonists, constructivists, or cognitive architecture psychologists. Further, regardless of what we believe the metaphysical underpinnings of logic to be, we can only explain the use of logic in natural language by studying this use.

A Response to Frege's Concerns

In spite of the advantages of social psychologism, and in spite of the fact that it sidesteps many of the early criticisms of anti-psychologists, there are still some troubling arguments from Frege that must be addressed. The first of these arguments is the claim that psychologism cannot account for the objectivity of logic. As I argued above, social psychologism is not as relative as the type of psychologism Frege was aligned against since the sources of logical justification are not private mental events; however, social psychologism still may not give the objectivity that someone like Frege was looking for, i.e., psychologism cannot account for the necessity of logical laws. Identification of logical terms or inference patterns with social practice means that, at least in theory, logical laws can change. The third concern that I want to address is the claim that psychologism cannot allow for a distinction between what is true and what is merely thought to be true.

Frege argued in many places that facts about psychology could not be used to define or defend mathematical or logical postulates. Part of the motivation for Frege's anti-psychologism was the idea that logical and mathematical truth need to be based on firmer foundations than psychology. The upshot of this

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Fregean concern is that logical truths based upon such shaky foundations would be relative. In *Logic* Frege argues that:

> 'regarding', [and] 'putting together in the mind' is no objective characteristic. I ask: in whose mind? If they are put together in one mind, but not in another, do they then form a system? What may be put together in my mind must certainly be in my mind. Do things outside me, then, not form systems? Is a system a subjective construction in the individual mind?[6]

The problem, according to Frege with holding that a logical system can be justified in the mind of an individual is that, if logical systems are not objective, then we cannot discuss them. For example, Frege argues that:

> if something were true only for him who held it to be true, then there would be no contradiction between the opinions of different people. So to be consistent, any person holding this view would have no right whatever to contradict the opposite view; he would have to espouse the principle: *non disputandum est*. He would not be able to assert anything at all in the normal sense, and even if his utterances had the form of assertions, they would only have the status of interjections—of expressions of mental states or processes, between which such and such states or processes in another person there could be no contradiction.[7]

This criticism connects to the argument that psychologism does not allow for there to be a distinction between what is true and what is taken to be true; if we cannot discuss logical systems, then "there would be no science, no error, and no correction of error; properly speaking, there would be nothing true in the normal sense of the word".[8]

Social psychologism allows for communication about logical terms and systems since the foundations are shared in a way that they are not with individualistic psychologism. However, social psychologism is still not as objective as Frege would have liked. For example, social psychologism is still open to the criticism that different linguistic groups may endorse different logical laws. Some of these Fregean concerns still hold if debates about logical truth can be sidestepped by the claim that what is logically true for one group is not logically true for another. Since I claim that justification for the correctness of certain inference rules is tied to their meaning, this leaves open the possibility that *modus ponens* is a good inference in English and French but not in German, for example. I take this to be an empirical question in the sense that further studies will determine whether there are inter-linguistic rules of reasoning; however, I think there is good evidence already to believe that the central rules of good reasoning will be shared across languages. Firstly, different linguistic groups can reason with one another—presupposing some shared rules and assumptions. Secondly, empirical studies of reasoning have found evidence that the most solidly accepted rules (in the sense of being

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endorsed by the greatest number of people) are in fact inter-linguistic. This is one of the places where the metaphysical question about logic connects to the question of the justification of rules of reasoning. Since the possible answers to 'what is logic?' are likely things that are shared cross-culturally, the brain, the world, a platonic realm etc., it seems that our intuitions about inference rules and our logical terms will probably also be shared cross-culturally. On the other hand, if we discover that our intuitions about inference and the meanings of logical terms do vary widely across linguistic groups, then we would have to abandon the idea that our sense of logic comes from something that is shared by all humans.

The fact that there are clearly some shared intuitions about logical terms and logical inferences that are accepted cross-culturally ameliorates the Fregean concern slightly but does not eliminate it. It is still possible that a linguistic group could accept certain logical inferences that are not accepted by other linguistic groups. Also, as Quine pointed out, even if we assume that there are cross-cultural logical assumptions, we are still only describing logic according to humans. This means that logic cannot have the strength or necessity that some may have wished. Frege and other anti-psychologists were interested in developing the one true system of logic that is objective and unchangeable. Frege argues that:

> sensations are absolutely no concern of arithmetic. No more are mental pictures, formed from the amalgamated traces of earlier sense-impressions. All these phases of consciousness are characteristically fluctuating and indefinite, in strong contrast to the definiteness and fixity of the concept and objects of mathematics.[9]

Psychologism cannot get to such an entity and perhaps, presupposes that such an entity does not exist.

Some of Frege's arguments against relativism, and some of his concerns that psychologism would place logic on shaky foundations, do not hold for a social justification theory of logical truth, since social facts are more solid than individual ones and allow for correctness conditions and genuine disagreements. These social facts are not changeable in the same way that individual psychological facts are, though they are more changeable than Frege would have liked. For Frege, the one true normative system of logic was completely unchangeable. I believe that formal developments in logic have disproven the uniqueness assumption (the idea that the rules of classical logic are necessary and that classical logic is the one true system of logic) and thus that a small amount of changeability (the recognition that these rules could at least conceivably be different) is actually an improvement. As Martin Kusch argues in the psychologism entry for the *Stanford Encyclopedia of Philosophy*,

> In the light of the development of philosophy and logic over the past 70 years, it is no longer evident that the laws of Frege's and Husserl's classical logic are necessary

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> and unique. The uniqueness assumption has become more and more questionable as logicians have developed more and more logics (e.g. intuitionist logic, dialethetic paraconsistent and dialectical logic, relevance logic). Not only have Frege and Husserl failed to provide procedures for adjudicating between alternative logics . . . , but it has also turned out that even the Principle of Non-Contradiction which both Frege and Husserl regarded as one of those "boundary stones set in an eternal foundation, which our thought can overflow but never displace", can be violated—without leading to absolute inconsistency. Indeed it is violated in every dialethetic system of logic.[10]

The fact that there is reasonable disagreement between experts about what the interpretation of logical terms should be implies that different logics are at least conceivable. Given the plurality of different logics available to us, I believe that the onus of proof is now on those who argue that there is one, single, true logic. This means that we cannot merely assume that we can extract correct and incorrect inference forms from classical truth functional logic and apply them to natural language since it is now an open question as to which logic we should apply to natural language, and in which situations.

The third anti-psychologistic claim from Frege that needs to be addressed is the idea that only Platonism is able to distinguish between what is truly true and what is only apparently true. One of the motivations for this claim is the desire for logic to be objective. So, for example, logical truth should not be dependent upon human beings at all, "in order to be true, thoughts—e.g. laws of nature—not only do not need to be recognized by us as true: they do not need to have been thought by us at all".[11] The second motivation for this claim is the idea that we need some way to recognize that people can be wrong, and some way to account for this. Frege argues,

> Never let us take a description of the origin of an idea for a definition, or an account of the mental and physical conditions through which we become conscious of a proposition, for a proof of it. A proposition may be thought, and again it may be true; never confuse these two things. We must remind ourselves, it seems, that a proposition no more ceases to be true when I cease to think of it than the sun ceases to exist when I shut my eyes.[12]

Social psychologism may be able to account for the fact that individuals are wrong but seems to be unable to correct the situation where a majority or all people within a particular language group are wrong. Even if we agree that it is not possible for all people within a particular language group to be wrong, we still have an interesting and serious concern. What if the socially agreed upon logical norms do not make up any sort of coherent, consistent or complete logical system? In other words, people can be wrong, not only individually, but on the whole, and our normative system needs to be able to address this. It is an empirical question whether people on the whole are inconsistent

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in their logical reasoning, and whether the reasoning behaviours of non-philosophers and non-logicians is of any use in determining logical truth. I argue in "Empirically Informed Logic"[13] that experiments on human reasoning with conditionals show that most people are not logically inconsistent in their use and interpretation of conditionals and that their responses do have much to offer the philosopher of logic. My more extreme argument is that if people's reasoning behaviours were on the whole inconsistent or incoherent then there would be no way to justify an application of normative systems of logic to human reasoning or human behaviour. In other words, if most people's reasoning behaviour and speech acts did not express any form of coherent or consistent use of logical terms then I would argue that our discussion of those logical terms as philosophers would have no bearing on human reasoning and could not prescribe correct uses of these terms. This is because an inconsistent or incoherent use of a logical term by the majority of non-experts is, assuming social psychologism, a clear indication that the meaning of the term as used by non-experts diverges so much from expert uses of the term that they cannot be said to be the same term.

Theoretically Changeable Logical Rules

The upshot of the anti-psychologistic arguments and responses outlined above is that psychologism of any form, even social psychologism, cannot get absolute objectivity and necessity. So, the pertinent question is whether logic needs to have these features. The main reason why it would be of concern to think that logic is not wholly objective, or that logical truth is not necessary in the way that people like Frege would have liked, is if this somehow prevents logic from having normative force. As seen in many other areas of philosophy, inter-subjectivity gets us normative strength in a way that is perhaps more favourable than objectivity. The fact that logical rules can theoretically change does not mean that they do, or that they change easily. The acceptance of this theoretical changeability of rules of inference is particularly troubling to philosophers of logic since it immediately brings to mind the Carroll article "What the Tortoise said to Achilles". In this article, the tortoise is forcing Achilles to explain why he should accept a logical argument. Every answer that Achilles gives can be questioned at a higher level, e.g., "how do I know that if I accept "P" and accept that "if P then Q" that I should accept "Q"?" leading Achilles into an infinite regression. The purpose of Carroll's article is to show that we cannot justify logical truth by relying upon logical truth alone since at every step we need another rule to justify it. The problem is that logic needs a ground. Achilles exclaims in the dialogue:

> "Then Logic would take you by the throat, and force you to do it!" Achilles triumphantly replied. "Logic would tell you, 'You can't help yourself. Now that you've accepted A and B and C and D, you must accept Z!' So you've no choice, you see."[14]

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It is an explanation of this force that is needed, and the problem with accepting psychologism, according to some, is that it cannot give us this force. The only answer we can give to the tortoise, if we endorse psychologism, is "if you wish to communicate, you must accept these rules". Thus, an acceptance of psychologism is an acceptance of the fact that this regress is potentially infinite—there is no reasonable answer to the tortoise. What we should take from the dialogue between Achilles and the tortoise is not that logical truth must be (or can be) placed upon independent and certain foundations; what we should take from this dialogue is knowledge that what the tortoise is asking for cannot be given. The tortoise is asking for a justification of inference itself, but the justification game cannot take place without background assumptions about what constitutes inference. The choice is clear—either we endorse the certainty and objectivity of logical truth in which case logic cannot be applied to the uncertain, changeable realm of human language and reasoning, or we accept that logical truth is neither certain nor objective and can thus use logical systems to prescribe and interpret human reasoning.

Notes

1 It is not clear that the first claim has ever really been held by anyone but an example of the second claim would be early work done on mental logic by Braine and O'Brien.
2 For example, Cheng and Holyoak (1989), and Cosmides (1989).
3 Pelletier et al. (2008), 85.
4 Engel (1991), 292.
5 Braine and O'Brien (1991), 197.
6 Frege (1997), 208–209.
7 Frege (1997), 233.
8 Frege (1997), 233.
9 Frege (1950), v–vi.
10 Kusch (2007).
11 Frege (1997), 233.
12 Frege (1950), v–vi.
13 Lehan (2012).
14 Carroll (1895), 693.

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