40

Why Ought We to be Logical? Peirce's Naturalism on Norms and Rational Requirements

JEAN-MARIE CHEVALIER

How should we think? "It behooves a man first of all to free his mind of those four idols of which Francis Bacon speaks in the first book of the *Novum Organum*. So much is the dictate of Ethics, itself. But after that, what?", Peirce asks (5.593, 1903). Bacon's overrated work does not divulge very much (W2.311). Surely we ought to be logical, but why? The question is strange, because its answer seems self-evident: we just ought to be. Logical laws are held as norms of our thought. But there are also rules of formation and justification of our beliefs, a whole art of thinking, which play a normative role on our minds. We have cognitive dispositions and intellectual virtues as well. And as mentioned in the quote, there is ethics, too.

This brings about at least three sets of questions. First, how can norms guide our behaviors? In particular, does normativity necessarily imply prescriptions? This is a concern of a psychological kind. Next, an ontological approach: what are norms? Are they real, fictions of our minds, or ideal descriptions? Is every norm equivalent to a value? And finally, there is the epistemological question of our access to norms.

The first set of questions is psychological, but it is not certain that psychology has the means to solve it. The concept of 'normativity' is expected to overcome the limits of an approach which would reduce thought to a knowledge of our contingent minds. The problem consists of determining whether our mental activities are normative, in the sense that they can be evaluated

as good or bad, or natural facts resulting from causes. Or is it possible to accommodate 'transcendentalism' with a form of naturalism? Such has been the attempt of many Peircean scholars, from (Goudge 1947) to (Lane 2009). In order to clarify the problem, we need to take a close look at such oppositions as the natural and the normative, the descriptive and the prescriptive, the objective and the subjective, fact and value.

1.   Anti-psychologism within a naturalistic frame

There is a strong contrast between the highly problematic claims of Peirce concerning the role of psychology (and even physiology) in logic, and the very few attempts to disentangle the matter[1]. There have been mainly three attitudes in Peircean scholarship: either it focused on Peirce's early explicit statements on his unpsychological conception of logic, or on the late, as explicit statements about his normative conception of logic, or on the apparent psychological tincture of his theory of inquiry. The latter position, among which (Kasser 1999) is probably the most influential, intended to show that grounding logic on a theory of doubt and belief does not commit to psychologism.

This is very partial when compared to Peirce's abundant corpus on logic and the theory of reasoning, and on psychology. Furthermore, Peirce was himself a logician and a mathematician, and contributed significantly to experimental psychology, so that one can expect from him a broad conception of the relations between logical and psychological 'knowledges'. Nevertheless, one could show that his positions, which obviously evolved over time, are quite puzzling. I will take the easy way out in quoting a few surprising remarks from an anti-psychologistic logician:

> the analysis of conceptions will be psychology (W1.64)
>
> some anthropological facts have a great bearing upon logic (W1.362)
>
> [the three categories] may indicate an anthropological fact (W1.524)
>
> [logic] is bound, by its very nature, to push its research into the manner of reality itself, and [...] must inevitably consider how and what we think (W2.165)
>
> psychophysical laws will not fail to shed a strong light upon the theory of logic (W4.40)

---

[1] Cf. mainly (Colapietro 2003), (Dougherty 1980), (Hookway 2000), (Hookway 2010), (Kasser 1999).

> In order to gain a clear understanding of the origin of the various signs used in logical algebra [one has to show that] Thinking, as cerebration, is no doubt subject to the general laws of nervous action. (W4.163)

> Now modern logic enables us to show that three conceptions are really essential in formal logic; so that they are three fundamental categories of thought. Furthermore, reasons can be given for holding that these three conceptions are due to the three fundamental faculties of the mind, these again to three fundamental functions of the nerves; and finally these to three elementary constituents of the physical universe. (W5.237)

> We find the ideas of First, Second, Third, constant ingredients of our knowledge. It must then either be that they are continually given to us in the presentations of sense, or that it is the peculiar nature of the mind to mix them with our thoughts. Now we certainly cannot think that these ideas are given in the sense. [...] They ought therefore to have a psychological origin. (W6.182)

> Reasoning is performed by the mind. Hence, the logician must not be entirely neglectful of the science of mind. (W6.418)

> [There are some] psychological truths needed in logic (MS 400, 1894)

> Something like psychological association certainly appears in logic (2.45, 1902)

> [logic] rests on certain facts of experience among which are facts about men (5.110, 1903)

A task for the commentator would be to take a detailed look at each of these occurrences in the context of its theoretical background and explain why it does (or does not) cohere with Peirce's "assumed anti-psychologism"[2]. It would be required to examine the many ways of psychology-making, and the various acceptations of 'psychologism'[3]. It would probably give the supporter

---

[2] I thereby mean that, especially after J. Kasser's paper (implicitly directed against C.J. Dougherty's thesis that Peirce became anti-psychologist after 1896), most of the commentators agree that Peirce did not transgress his anti-psychologistic program. Cf. especially (Hookway 1992) and (Hookway 2000: 8) which contends that "Peirce consistently attacked psychologicism in logic".

[3] Cf. (Rath 1994). (Kusch 1995: 93-119) identifies no less than eleven psychologistic schools for the period 1866-1931 in Germany.

of the Peircean antipsychologism thesis quite a hard time: for instance, one definition of weak psychologism, that "psychological investigation into actual human thought processes constitute necessary though not sufficient conditions for enquiring into the foundations of logic" (Mohanty 1985: 2), is almost a paraphrase of the third quote above (namely, knowledge of psychophysical laws would shed light upon logic's theory). Of course Peirce assumes that "all attempts to ground the fundamentals of logic on psychology are seen to be essentially shallow" (5.28, 1903), but this does not mean that psychological information may not be useful for classifying arguments as valid or invalid (against Hookway 1992: 16-17).

Peirce's declarations on psychology do not sound accidental. It is as if commentators decided that either Peirce kept on the right, anti-psychologistic track, or sometimes unfortunately slipped aside. But rather than accidents, those so-called falls may be symptoms of a naturalistic framework yet coherent with his unpsychological view of logic nonetheless. Indeed, throughout the years, Peirce's observations build something essential, if not to his conception of logic, to his overall project as a logician, a scientist and a metaphysician, that is to say essential to his conception of the philosopher's task. For if he were as clear with his practice as he seems to be in his claims about the independent status of logic, why would he be flirting so dangerously with naturalism ? For instance, it is beyond doubt that physiology provides him with a strong model: the general science of signs is a "physiology of forms" (MS 478, 1903), just as "Psychology Proper" relates to a kind of "physiology of the mind," "meaning an account of how the mind functions, develops, and decays, together with the explanation of all this by motions and changes of the brain" (8.303, 1909). The phrase "physiology of the mind" (e.g. MS 741, c.1867; 1.579, 1902) was very common in the 19th century, and generally implies a causal account of the mental processes that justify our knowledge, in the same way that Kant used to refer to "the physiology of the human understanding of the celebrated Mr. Locke"[4]. So it is likely that Peirce inherits something from a British tradition that regards psychological and even physiological analyses of the mind as tools for building an epistemology (in the contemporary sense) and (in Peirce's case) for catching the real categories of the world.

Even the normative content of ideals and the ultimate ends of mankind will be expressed in those very same terms: "That ought to be done which is conducive to a certain end. The inquiry therefore should begin with searching

---

[4] A ix, cf. A 85-7 / B 117-9

for the end of thinking. What do we think for? What is the physiological func-tion of thought?" (5.594, 1903) As for the notion of habit, so fundamental to the fixation of belief theory and the pragmaticistic maxim, despite its frequent use by scholars eager to dismiss a psychologistic interpretation of the theory of inquiry, it is in fact deeply rooted in physiology too. Habit is a general rule operating in the organism (W4.249). It means that the law of habit is a law of empirical thinking (not of pure thought), and that it acts over the body, espe-cially the nervous cells (W4.39). Not only is this notion inspired by Alexander Bain but also by an American naturalist, John Murphy, the author of *Habit and Intelligence in their Connection with the Laws of Matter and Force*. The fifteenth chapter of this work, "The Laws of Habit," establishes that all mental and motor actions are habitual (except those under the control of the will). Peirce adopts this principle that all the vital operations are subjected to a (unique) law of habit. So if habit is expected to wash belief of its psychological mud, much water will be needed.

I do not claim that Peirce yielded to psychologism, but that showing that he did not would probably require many more arguments than the commen-tators' minimalist defense has developed so far. The program just sketched would not deserve an article but a whole book. That is why my strategy will be different. The rest of the paper will not examine the seeming "accidents of Peirce's anti-psychologism" that occurred between the early unpsychological view period and the late normative sciences period, but wishes to compare those two periods in and of themselves. As intimated above, the strategy of Peirce's readers who did not focus on his belief-and-doubt-based conception of logic was to insist on his explicit definition of logic as an unpsychologi-cal, normative science. The point I will be developing from now on is that Peirce's unpsychological conception of logic is *not* the same as his normative conception of logic.

2. Peirce's non-normative conception of logic

The two following questions need a distinct treatment. First, did Peirce sin against anti-psychologism? And second, did he argue for anti-psychologism? The second question may be made more precise: did he simply advocate anti-psychologism, or did he propose arguments to prove that psychologism was wrong? Having sketched out the requirements of a proper answer to the first question, I will now linger on the second one.

Let us start with Peirce's early conception of logic. As it has been the ob-

ject of many a study, I will recall its main characters as briefly as possible, in order to come to the very point I want to stress. The concept of logic is systematically exposed. "Logic has nothing at all to do with the operations of the understanding, acts of the mind, or facts of the intellect." (W1.164) The reason for this is that its object is not psychological thinking, but formal thought[5], "a study of forms, not a study of mind" (MS 350). Logic "does not deal with the matter of thought, but then it as certainly deals with thought as having matter that is as being a representation –true or false" (MS 741, 1864). Kant failed to understand that one never studies the abstract logos: thing and form are always known together through a representation, which, contrary to the *Vorstellung*, is not necessarily mental (W1.257). In other words, according to the unpsychological view, the laws of logic "apply not merely to what can be thought but to whatever can be symbolised in any way" (MS 340). Logic is "the science of the conditions which enable symbols in general to refer to objects" (W1.175).

Thus, the task of logic is to discover and present the forms of possible symbolization. Logic reveals and describes the various ways a symbol[6] can refer to an object. As a consequence, logic is not prescriptive, a prominent point that very few scholars have stressed[7]. It would indeed be nonsensical to command signs to respect some rules, or to force them into some particular behaviors. The laws of logic are not positive laws (in a juridical sense), but known by observation. Thus, the science of logic describes states of affairs, namely the real relations within ideal thought. It means that assenting to logical 'laws' or principles does not imply an action but a belief. They are not injunctions, do not convey any 'ought.' Peirce clearly states it in the first Harvard Lecture (W1.166):

> It has been supposed that the laws of logic might be broken. That they say "Thou ought" not "thou shalt," that in short they are

---

[5] Cf. (Colapietro 2003: 166-168).

[6] In his early papers, Peirce uses 'symbol' as a general term for 'sign'.

[7] Among the happy few, cf. (Levi 1997). It should be noticed that descriptivism in logic is not particularly original, though: for instance, it is Kant's conception too, and was interpreted as such by Hamilton and his followers, Thomson and Bowen (cf. Michael & Michael 1979: 85). I hereby oppose (Dipert 1994: 57): "In the loss or rejection of the normative approach to logic, Frege is particularly the villain here. In his shrill attacks on Boolean 'law of thought' and related attacks on psychologism, he never seems to have considered the possibility that the 'laws' in question might be normative/ legislative rather than descriptive (as in 'laws of nature'). For Kant and neo-Kantians, logical rules have a similarly mixed normative and descriptive function. There were probably few if any pure 'descriptivists' in logic and mathematics in the nineteenth century –not even Mill– and so it is difficult to see what Frege was ranting about."

statements not of *fact* but of *debt*. But what page of man's ledger
does this "ought" refer to? Thought *debtor* to what? It is impossible
to say.

Two arguments are conveyed in this passage. The first one states that laws
of logic cannot be violated, for it is impossible to think without them. They
define the frame outside of which there is no thought. They display a field
of possibilities, without forcing us into anything. In a way (and only in a
way), they are like physical laws, for they are known by observation, and do
not prescribe any conduct but rather describe how thought works. Drawing
a difference with the laws of physics would only be a matter of generality:
logic states the most general empirical formulæ for describing thought in any
possible world. This absolute universality very much reminds us of Frege's
own conception of logical laws, although he introduces a prescriptive element:
in a way, geometric and physical laws are laws of thought just like logical
laws, for "Any law that states what is can be conceived as prescribing that
one should think in accordance with it, and is therefore in that sense a law of
thought." (Frege 1893: xv) Logical laws "then only deserve the name 'laws
of thought' with more right if it should be meant by this that they are the
most general laws, which prescribe universally how one should think if one
is to think at all."(*idem*) Indeed, you cannot express your refusal of the laws of
logic without using them yourself.

The second argument mentioned above regards the use of "ought." "Here
is an allusion to an entry on the debtor side of man's ledger. What is this en-
try? What is the meaning of this *ought*?" (W2.99) Peirce is right in registering
that it expresses an obligation *toward* someone. As Wittgenstein would later
confirm, the other person is obliged to do something (Wittgenstein 1984: 118).
But in the case of logic, there is no "other person"! Husserl also took ad-
vantage of this semantic remark to argue against a prescriptive conception of
normativity: a command presupposes an authority who issues it, and in the
case of logic there is no such authority (Husserl 1970, vol. I §14). When a
child ought ('*soll*', in Wittgenstein's example) to do something it means that
if he does not, something unpleasant will happen. From the point of view of
meaning, an ought-sentence is not complete: for instance, you say that some-
thing goes against my lying, but what is this thing? Peirce has the clear aware-
ness that answering this demand would be meaningless for logic. Indeed, if
logic were stating the principles we ought to follow, what would be the source
of this 'ought'? What does the epistemological 'ought' mean? There is no
reason to accept Leibniz's analysis of *debitum* as what is necessary for a *good*

man to do: deduction, induction, abduction and probability are not matters of morals (W2.100). Thus, the only conceivable answer is rationality. But it would hardly hide a vicious circle, for rationality is defined by its conformity to logical laws. And in any case it would lead to the pernicious consequence that one ought to follow the laws of logic as statements of debts and not as statements of (ideal) facts.

To sum up, Peirce defends the idea that thought does not imply ought. But all the difficulties are far from being solved. If one now turns towards thinking and the psychology of women and men, is there no normativity? Once we have understood the principles of logic, there certainly is something that prescribes us to act as rationally as possible, and to think in a consistent way. Whatever logic may be, Peirce should admit that everybody ought to be logical, and that it is possible (and common) not to be so, as is evident not only from fools and madmen but the irrational behaviors and beliefs of every one of us.

It seems that Peirce draws too strong a separation between the objectivity of logic and the subjective attitudes of agents, making it all the more difficult to explain the rational requirements of psychological thinking. This reproach was often held against Frege, who advises: "Always separate sharply the logical from the psychological, the objective from the subjective" (Frege 1884: x). How, then, to justify the idea that we ought to be logical nevertheless? The only possible answer is to deduce a rule of behavior from the objectivity of logic, in other words, to draw a rational 'ought' from the logical 'is'. This however is a flagrant naturalistic fallacy. Will not Peirce's head be cut off by "Hume's Guillotine"? If he is guilty of deducing a prescription from a fact, so are Frege and Husserl, as shown by (Philipse 1989: 58-59). Indeed, their anti-psychological position did not spring from tracking the naturalistic fallacy down, but on the contrary, from deriving logical norms from non-normative propositions.

At issue here are the subtle relations between objectivity, normativity, rationality and (moral) prescription. In fact, drawing on a distinction hinted at by (Korsgaard 1996), one should perhaps say that Frege and Husserl did not derive logical but *rational* norms, for the kind of necessity embodied in the application of 'ought' to our beliefs is *rational* necessity[8]. Does Peirce derive rational prescriptions from logical norms as well? He stresses the objective vs. subjective dichotomy previously mentioned to the point that it is not clear if such a "naturalistic deduction" is still possible. If Peirce cannot use Frege and

---

[8] Cf. (Korsgaard 1996: 226, n11).

Husserl's model, how should our necessity to act and think in a rational way be accounted for?

Peirce did overtly consider the question: "Why ought we to be logical?" (W1.166) But his solution may disappoint the reader. In the prescription to conform to logical rules, the origin of the 'ought' is to be found, he states, in the fact that "we wish our thoughts to be representations or symbols of fact." (*idem*) In the course of his characterization of logic, what Peirce intends to emphasize is that the true objects of logic are signs. But for our purpose, the relevant element is a "wish for rationality". This is no satisfactory response for explaining our rationality, and sounds like a convenient phrase rather than a "self-controlled" theory. I will come back to this matter in the last section of this article.

For now, it might be an indication that our question, the justification of the rational 'ought', does not have an answer. But let us not block the road of inquiry. It may also signify that the question is meaningless: the distinction between the 'is' of logical laws and the 'ought' of rational principles would eventually be misleading, because it introduces a difference between ideal, objective symbols on the one hand, and our thoughts on the other hand, which have indeed a psychological, that is factual and subjective, component, but *can* and *should* be viewed as symbols as well. But even in this latter interpretation, Peirce skates over the matter a little too neglectfully: how does the transition from psychology to symbolics operate?

In order to clarify the relation, if any, between logical forms and rational thinking, it could be helpful to locate *the normative* in Peirce's early texts. There are four possible options to be examined: normativity may lie in logical laws, in the rational 'ought', in both, or in neither. Let us review them. The first answer seems to be adopted (at least implicitly) by (Michael & Michael 1979: 88 Fn9), but is explicitly denied by Peirce himself: the idea that logic is composed of normative laws is false (W1.166; W4.378). The second answer, namely the normativity of what Peirce takes for an "ought to be logical" – quite misleadingly, for it should rather be called an "ought to be *rational*"– seems quite natural. The problem is that rationality does not depend on features of the world but on the relations amongst an agent's mental states and their contents, whereas norms are dependent on (ideal or actual) facts. In other words, "the rational supervenes strictly on the mental, and this is not the case for the normative" (Reisner, forthcoming). This argues for a strong distinction between rationality and normativity, which needs a more objective

base[9]. Having the normativity of rational prescriptions bear on our mental states would be a form of psychologism too. In consequence, the third answer to the question about normativity, namely that it lies both in objective logic and in human rationality, is excluded. There remains only the proposition that logic is no more normative than the prescriptions to follow its rules.

Is Peirce's early unpsychological view of logic and rationality norm-free? If not, where is normativity hiding? The case is not desperate. It is not because rational prescriptions are not normative that they do not either entail or have an impact on some norms. The entailment solution is adopted by Derek Parfit, a supporter of the distinction between rationality and normativity. He warns that we must be careful to distinguish between the view that rational requirements are themselves special instances of 'oughts' or reasons and the view that they give rise to 'oughts' or reasons. The latter view is the most plausible. For him, our rational faculty gives birth to some imperative judgments. It opposes a form of internalism according to which there is some intrinsic relation between norms and wise choices or apt beliefs. But an alternative to both (moral) internalism and Parfit's radical externalism could be the "imperativist" view that normative judgments are or involve imperatives. In the latter case, the requirements of rationality expressed by Peirce would not be norms but *consequences* of certain normative, non-logical judgments.

What are those mysterious judgments, if they exist? The young Peirce does not provide any substantial clues. We nonetheless find an indication in a famous text comparing man and word. Therein, morality is said to be "the conformity to a law of fitness of things, -a principle of what is suitable in thought, not in order to make it true but as a prerequisite to make it spiritual, *to make it rational*, to make it more truly thought at all" (W1.496, my italics). Why ought we to be logical, then? Because in being so, our thought comes closer to its law of internal determination, its proper use. This latter law acts as a kind of meta-prescriptive principle, which is itself normative: we ought to be rational because there is a norm of good thinking which requires us to be so. This morality of thought, so to speak, is analogous to the functioning of a grammar. And indeed, after beauty and truth, "(t)he third excellence is morality on the one hand, Grammar on the other" (*idem*). Thus, our rational imperatives would come from some normative grammatical-like commands.

---

[9] This is originally attributable to (Parfit 2001), who argued that the requirements of rationality do not have the force of normative reasons or 'oughts'.

Such a comparison may have been inspired by Kant, who states that the rules of the understanding may be compared to those of a grammar[10]. Logic is almost grammatical in the sense of providing formal rules to our inferences. How far should the parallel between grammar of thought and morality be taken? Peirce does not place much stress on it in his first period. This may be all the more surprising since its probable Kantian source is generally held to stress the role of categorical imperatives. The understanding is the best candidate for giving its duties to thought, and Peirce could easily have followed such a conception to show that all signification bears on some laws of conduct, and that mental normativity depends on certain theoretico-practical rules expressing a "You must".

However, such a 'pragmatism,' in the sense of a doctrine conflating theoretical prescriptions on practical norms, is not truly Kantian enough to satisfy Peirce, for at least two reasons. First, Kant was always careful not to infer the deontic character of epistemic norms from the legislative abilities of our understanding. Logic is normative according to him, but its norms are not prescriptive by themselves: their normativity stems from our becoming reflexively aware of logic's rules. That is how natural, *a priori* rules of the understanding become necessary laws of its conformity to itself (cf. Anderson 2005). Second, and most importantly, Kant never based theoretical norms on morality. Logic is not originally prescriptive, nor does it become so in being inferred from moral imperatives[11]. In the 1860s, and apparently until the 1880s at least, Peirce agreed on such a strict separation between the rational 'ought' and moral prescription. And, as previously explained, Peirce also maintains a strict separation between logic and our theoretical duties. Being *sui generis*, the theoretical 'ought' therefore becomes unintelligible. Peirce cannot break the deadlock without revising his whole conception.

3. Peirce's normative conception of logic

The picture so far is as follows. In his early years, Peirce insisted that logic as a theoretical science is descriptive of the ideal categories of being, and not normative. On the other hand, we ought to behave logically, that is, our thought

---

[10] Cf. (Jaesche 1819: 11-12).

[11] Thus, for Kant, logic neither describes a fact of psychology nor a categorical imperative, contrary to what (Haack 1978: 238) surprisingly claims: according to Kant, "logic is descriptive of mental processes (it describes how we *do*, or perhaps how we *must*, think)". Literally, in logic, the inquiry is after "not how we think, but how we are to think" (Jaesche 1819: 14).

is subjected to some requirements of rationality. But this 'ought' is not normative either, at least if we take normativity in its stronger sense. Nevertheless, this rational prescription seems to have been vaguely conceived as a consequence of some normative grammar of thought.

Over the years, and under the pressure of many other parameters including the development of experimental psychology, the birth of phenomenology and a better understanding of the mathematical continuous, Peirce's systematic conception of the relations between normativity, rationality, morality and logic evolved and were clarified. This allows us to overcome some shortcomings of his early positions.

First, Peirce shows a manifest interest for the notion of norm and normativity. The word *normative* –"Überweg's adjective" to designate what is 'directive' (2.7, 1902)- was invented in the school of Schleiermacher (2.575, 1902), and Lalande's dictionary attributes its introduction into common speech to Wundt (2.7 Fn1, 1902). It was first used in the context of the German *Psychologismus-Streit*. Whatever its origin, and however short it may fall of being "particularly pleasing" on philological grounds, "the twentieth century would laugh at us if we were too squeamish about the word's legitimacy of birth" (*idem*). Nevertheless, Peirce would still be using 'critical' as a synonym for it as late as 1909 (EP 2.459).

To cut a long story short, Peirce now considers that logic is normative. In the first years of the 20th century, this is integrated in his complete classification of sciences, at the heart of which lie the normative sciences. One can legitimately wonder why Peirce changed his mind, and what are the consequences of this on our epistemic duties. Strikingly, his last conception of logic has been widely viewed as mirroring the early one, despite a complete shift. Explaining the reasons of this change would take us too far away from our stride[12]. The second question is closer to our purpose. The apparent consequence of acknowledging the normativity of logic should be to solve all the perplexities about our rational conduct: logic, with all its normative power, forces us to act according to its rules.

Unfortunately, this is not Peirce's conclusion. For he is still attached to the motives that used to prevent him from reducing logic to prescriptions: logic is not a set of principles describing a possible way of reasoning, but a statement of the conditions of reasoning *in general*. He even most paradoxically extends his anti-prescriptivism to ethics, which should not stick "to the obsolete pretense of teaching men what they are 'bound' to do." (EP 2.459, 1909) If they

---

[12] For several reasons, cf. (Burks 1943: 189).

are really bound to act in certain ways, people have no choice, and need no science to teach them what to do! In this case, what is required is only a clear acknowledgment of the facts of the matter and how categories and essences are related to each other. In the same spirit, logic does not command what one ought to think:

> Logical treatises never say anything about what 'ought to be thought' as long as there is any compulsion of thought or reflection. In those cases they only speak of how the facts are. (2.50, 1902)

So norms should not be understood as guides (in the sense of a "leading principle" of inference). Rather, they are aims. Understanding this distinction requires us to come back to the semantic analysis of 'ought'. In addition to its connotations of debt, it also evokes an aim or an end. Peirce even decides that such a teleological sense is the only way to save it from nonsense: "The question is what theories and conceptions we ought to entertain. Now the word 'ought' has no meaning except relatively to an end. That ought to be done which is conducive to a certain end. The inquiry therefore should begin with searching for the end of thinking." (5.594, 1903) And as Peirce would develop at length, the science of such ideals is esthetics. Thus, Peirce's agreement with the normativity of logic forbids it to be prescriptive but does imply that it is based on moral.

Once more, a comparison with Husserl may clarify the situation. The latter, in his contemporary *Logical Investigations* (1900-1901), pays lip service to a normative view of logic. For him like for Peirce, the first requirement of a theory of logic is to preserve the latter's objectivity and the ideality of its objects. To this purpose, Husserl needs to defend a dualistic conception of logic, as a normative science, and as a purely theoretical discipline which provides the former with its theoretical basis. He attempts to define normative requirements in terms of value judgments. To him, there are some essentially normative sciences relying on evaluative definitions, sciences to which logic only belongs in part. But "[t]he issue is not whether logic is a normative discipline, but what kind of science provides normative logic with its theoretical basis," Philipse (1989: 62) writes. To be true, logic is normative, but the *Prolegomena to Pure Logic* show that more essentially it is a theoretical, non-normative science. Normative logic, as a practical technology, is founded on the *a priori* science of pure logic. The latter itself rests on a *Grundnorm*, which needs to be the logical excellence of correctness in inference. This conception presupposes that there is a basic norm telling us to reason correctly, which is completely separated

from the theoretical content of the norms of logic. Conversely, the laws of pure logic in themselves are free from any normative connotation.

The limits of this Husserlian conception can by contrast show Peirce's relevance. One such limit is that nowhere does Husserl characterize logic's *Grundnorm*, that is, the "good from the logical point of view." A definition of the aims of logic is lacking. It is likely, of course, that normative logic essentially consists of the norms for valid deductions, namely to infer correctly, that is in non-evaluative words, to conduct truth from premises to conclusion.

As for Husserl's dual view of logic, it opposes a normative, practical technology with a pure logic expressible in completely non-evaluative terms. Peirce's early view of logic was not dual: it was strictly non-normative, even though we should follow principles of rationality. Peirce's new conception of logic seems unitarily normative, though not practical. Contrary to Husserl, it is not logic as an art but logic as a theory which is normative: like aesthetics and ethics, logic is a purely theoretical science which nevertheless sets up norms (2.156, 1902). (Mullin 1966) failed to understand that 'normative' does not have the same meaning for the two authors: the "obstetric methods" (as Mullin rightly says) of theoretical logic is normative according to Peirce in providing ideals for practice, while Husserl calls practice normative because it is *subjected* to norms. In other words, whereas Husserl sees logical norms as rules for our factual reasoning, Peirce conceives them as ideals, strictly separate from our subjective thoughts. That is why he endeavours to investigate on logic's '*Grundnorm*', the source of its fundamental 'goodness', a point missing in Husserl because it only pertains to practical logic according to him.

But on the other side, Peirce's position suffers from a major flaw: it runs the risk of inconsistency, for normative logic, as a theoretical science, is supposed to assert non prescriptive norms ('normative' having indeed the advantage over 'directive' of avoiding an apparent implication "that logic is a mere art, or practical science," 2.7 Fn1, 1902), while its ideals obviously are the norms that guide our thinking. What indeed would be the principles that we ought to observe, if not the norms of logic? It means that there must be a practical side of logic governed by the norms of its theoretical side. Peirce's first conception actually left the art of logic totally in the shade. Logic as an art (Aristotle's "organon," though he himself did not consider it an art but a science) was adopted by most logicians, from the Stoics to the British old rock logicians, *via* the scholastic doctors opposed to Duns Scotus (MS 606, 1906). Such a view particularly displeases Peirce for its essential psychologistic tone: if logic applies principles from another science, it can only be from psychol-

ogy[13].

Overcoming his reluctance, Peirce was urged by his theory of inquiry and his method of fixation of beliefs to regard logic as the art of finding methods of research (W4.378). He eventually found a way to incorporate the practical side of logic without reducing it to an art, thanks to a distinction between practical science and art paralleling the *praxis* versus *poiesis* dichotomy: The latter teaches us to make something, whereas the former only teaches us to act or do something. (MS 607, 1906) There should admittedly exist a practical science, or rather a group of a least twelve distinct sciences, following the principles of methodeutics (MS 603, 1906), but one may wonder whether those sciences still belong to logic.

Thus, like Husserl, Peirce is implicitly committed to a twofold view of logic, which is both a theoretical and practical science. Does it quite nearly replicate the distinction between *logica docens* and *logica utens*, which was invented a few years only before Peirce's system of normative sciences? In this case, Peirce would perhaps agree with Husserl's view "that it is the true sense of our supposed pure logic to be an abstract theoretical discipline providing a basis for a technology [. . .], its technology being logic in the ordinary, practical sense." (Husserl 1970: 80) And indeed, "A normative science is by no means an art, although it ought to inspire and inform an art" (MS 602, 1906). But contrary to Husserl he would probably not give the name 'logic' to this technology or art: it is barely a handy set of rational principles. That is why *logica utens*, though nearer to actual practice, is not an art of reasoning. It is normative and deals with the distinction of the true and the false (5.108, 1903). But neither is it to be identified with *logica docens*. Therefore, the usefulness of the two *logicæ* is not obvious. Is it that *logica docens*, as a formal, (often symbolic) enterprise, deals with ideal facts? A positive answer would forbid it to be ruled by norms, whereas a negative answer would leave the following question unsolved: what happened to logic as a study of pure forms? Either *logica docens* is normative, and there is no use distinguishing it from *logica utens*, or it is not, which means that logic is not essentially normative, and then the whole system of the normative sciences collapses.

Peirce's stance in this alternative may seem ambiguous. For, to sum up, on the one hand logic, ethics and esthetics are unquestionably normative, in the sense of providing ideals and ends for our actions; but on the other hand,

---

[13] Cf. (Mill 1865: 359). In that sense, it is true that Peirce's (and Husserl's) attitudes are very similar to psychologism, because they just substitute one science (pure logic) with another (psychology) as the basis of practical logic (Husserl's normative technology).

Peirce has not got rid of his opposition to a prescriptive view of normativity. And third, norms in the sense of final ends can hardly be anything other than imperatives or prescriptions. The key might be found in applying the *utens* vs. *docens* dichotomy to this last point. *Logica utens* comprises the system of norms that we spontaneously use in thinking, without particular investigation on the ends we pursue. "Every agent has a generalized ideal of good reasoning and what is not. We carry more or less distinctly in our minds patterns of good and bad reasoning, which may be called Norms" (MS 453). The texts nevertheless lack clearness, for we also read that *logica utens* is not "subject to any normative laws" (2.204, c. 1901-1902). It is "neither good nor bad; it neither subserves an end nor fails to do so" (*idem*). This apparent contradiction will hopefully be clarified by the rest of the present section and the next one. Roughly, it consists in showing that *logica utens* really *is* normative (against Pietarinen 2005), and as such is neither good nor bad, nor is it guided by *laws*, but just states what is correct thinking, although it is not self-controlled: self-control indeed guarantees normativity, but there also is another form of natural, innate norms.

Logica utens is based on prima facie ends, while *logica docens* depends on all things considered ideals, to use (Ross 1930) famous distinction. An agent's prima facie obligations may conflict, but not her actual, reflected ideals. It is when facing a "normative conflict" (to use a non-Peircean phrase), that is when experiencing a doubt on which (practical or theoretical) option to take, that we do not meet any (normative) compulsion anylonger. Then does the 'ought' find room (2.50, 1902). Every normative science supposes such a dual distinction between a 'may' and an 'ought not'. Thus, logic is a science, but not a science of what is, not yet of what might conceivably be, but of something between these two (MS 602, 1906). This modality between possible firstness and existing secondness typically is the mode of reflection and thirdness. Indeed, it is only when a possible choice happens that the norms we want to follow are in need of clarification, and that we ourselves can decide to follow such or such ends. Then we slide into the uncertain domain of the oughts, and deliberately act according to ethical principles or not. For "the moralist, as far as I can make it out, merely tells us that we have a power of self-control" (1.611, 1903).

From this point, one can imagine two scenarios: either a reflexive inquiry about norms closes the issue, and in ascending (so to speak) from *utens* to *docens* we reach normative logic back again, or even the principles of formal logic are mute on the subject, and we have no solution but try and do what we think we ought to do. The example Peirce gives, the property of elegance of

a system, is enlightening: "we are told that we ought to try simple hypotheses before complex ones." (2.50, 1902) What is the rationale of that sort of Ockhamian principle? Some have tried to show that it is an ultimate a priori epistemic principle that simplicity is evidence for truth. But it does not seem to have been very promising so far, and it is likely that "Just as the question 'why be rational?' may have no non-circular answer, the same may be true of the question 'why should simplicity be considered in evaluating the plausibility of hypotheses?'" (Sober 2001: 19). Nevertheless, it would be for two very different reasons in Peirce's system: the privilege of simplicity would belong to the prescriptive, non normative, uncertain realm of the oughty attempts to achieve what is best, whereas being logical is an ultimate ideal, a norm. In other words, whereas logical rules (like *modus ponens*, conditional proof, universal generalization, etc.) express permissions, the rules containing the language of obligation (e.g. "one must not carry out an inferential step in a deductive system unless it is permitted by one of the rules of the system"; "sets of propositions in a system should be consistent," etc.) are better counted as metalogical principles (cf. Resnik 1985: 236).

The answer to the previous alternative is now obvious: *logica docens* cannot be but normative. What then is the point in contrasting it with *logica utens*? Their difference should probably not be emphasized too strongly: they are not two kinds of logic, only two modes of considering it, as a system of intuitive normative requirements or as a reflection on the ideals of thinking[14]. Do we really need to ask ethics and eventually aesthetics for the ultimate ends in order to be logical? Is not truth a value obviously good enough not to search beyond? In short, is not Peirce's pyramid of the normative sciences a little too aesthetical itself and formal, and mostly vacuous? Peirce faces the objection:

> What, then, is our ultimate aim? Perhaps it is not necessary that the logician should answer this question. Perhaps it might be possible to deduce the correct rules of reasoning from the mere assumption that we have some ultimate aim. But I cannot see how this could be done. (1.611, 1903)

Peirce fears that a vague conception of norms be too weak to prevent us from, for instance, living a life of pleasure which would have us regress to an illogical state. It supposes holism about ideals. There lies the interest of Peirce's

---

[14] I would not be inclined to call them two 'faculties' as (Pietarinen 2005) does. He tends to present *logica utens* as a kind of rational non-normative instinct, and *docens* as a normative classification of arguments. But as shown above, it is not consistent with all the texts.

two-facet logic: in shifting from *logica utens* to *logica docens*, one criticizes one's own aims and earns more self-control over oneself. It is precisely this kind of reflexive procedure which characterizes rationality –but not normativity strictly speaking, because objective ideals do not need any critical thinking to stand by themselves. (This is why Peirce paradoxically insists on *logica utens* belonging to morality (5.108, 1903), while it is mostly *logica docens* which is self-controlled.)

I can now return to the difficult question of the reasons of Peirce's shift from a non-normative to a normative conception of logic and attempt to draw some conclusions. It seems that the normative view was (paradoxically, at least for our modern minds) rejected because of its collusion with psychologism: it is an art that gives rules and directions to our reasonings. That is why Mill enthusiastically adopts a normative conception of logic:

> Logic is not the theory of Thought as Thought, but of valid Thought; not of thinking, but of correct thinking [...]. Logic has no need to know more of the Science of Thinking, than the difference between good and bad thinking [...]. The properties of Thought which concern Logic, are some of its contingent properties; those, namely, on the presence of which depends good thinking, as distinguished from bad. (Mill 1865: 460)

For Mill, logic expresses what *must* be thought according to certain laws. But that (empirical) psychology is able to provide such laws is doubtful (2.50, 1902). Conversely, Peirce first considers that logic has no normative or evaluative function: it *is*, that is all. But the need to account for our rational duties eventually forces him to endorse a normative view of logic. However, contrary to Husserl, he did not have an originary dual conception of logic, so that, instead of putting normativity in its 'technological' part, that is, on the practical side, as Husserl does, he feels compelled to locate it into its only true logical content. As a consequence, theoretical logic is viewed as providing norms of correctness to our reasonings, though not prescribing anything. Those logical norms are themselves oriented by moral and 'aesthetical' ultimate duties. Logic still is a science of pure form without paradox: in displaying the norm of correctness, it provides a classification of formally sound arguments. A normative science is indeed classificatory, so that Peirce's early concept of logic as a science of classification survives even in his last period[15].

---

[15] I disagree with (Short 2007: 63) that logic "is normative and is not a study of pure form". Around 1902, Peirce still thinks that "[t]he only concern that logic has with this sort of [mathe-

Logic only observes what should be the relation of a fact, however it can be thought, to another fact, for the truth of the first one to imply the truth of the second (MS 603, 1906). It studies the conditions of *truth*, this kind of excellence which can or cannot belong to the objects considered as representing real objects (HPPLS II, 826, 1904). Logic is not interested in the "psychological dresses" of thinking, except if it allows the discovery of formal equivalences under superficial dissimilarities (N3.298, 1908). It is not even interested in the forms of valid human reasoning, because it would become a natural history of thought –Dewey's program (8.239-242, 1904). So why ought we to be logical? Because correct reasoning "consists in such reasoning as shall be conducive to our ultimate aim" (1.611, 1903).

In short, to the very difficult question of the rationale of rationality for a theory rejecting prescriptive norms, Peirce gives an extremely simple answer: norms state ideals of conduct (respectively, correctness, goodness and ultimate perfection for logic, ethics and aesthetics) and as such do not prescribe anything. As for our reasonings, they are directed toward those ends: we do not have abstract duties toward ideals, but ought to be rational and good *only insofar* as we *actually do* aim at realizing such ends.

4. Why Peirce may derive 'ought' from 'is'

The previous section showed Peirce's elegant solution for keeping away from psychologism without committing himself to an insuperable objective vs. subjective (Frege-like) or ideal vs. factual (Husserl-like) dichotomy. According to authorized scholarship, Frege and Husserl adopted such a (self-destructive) strategy because of their psychological conception of the mental. The *psychical*, characterized by final causality (1.253, 1902), is to be distinguished from the psychological (5.485, 1907).

> Many persons, perhaps most persons have the idea that every observation about the human mind is a psychological observation. They might as well regard the sight or sound of an apple dropping from a tree as an astronomical observation in view of what is said to have befallen Isaac Newton. (MS 614, 1908)

Despite his anti-psychological slogans, Husserl himself applies logic to the human psychological being "*as we find it*" (4.7, 1906), Peirce regrets. The former thus conflates the mental and the psychological, for his phenomenology

_____
matical] reasoning is to describe it." (2.192)

is nothing but another psychology. On the contrary, Peirce's phenomenology does not observe the same facts as psychology. "It looks upon the same world; -the same world that the astronomer looks at. But what it observes in that world is different" (8.297, 1904).

Is not Peirce's solution *too* elegant, and too simple altogether? For the suture between logical facts and following ideals is not as much explained as repelled onto a slippery slope, man's benevolence: we ought to be logical because it is the only way to reach our (logical, and eventually moral) ideals; but those ideals are not commands by themselves, they just are ultimately good, so that we love them. What if we don't? It would reveal bad dispositions: "Bad reasoning is almost as bad as bad morals" (W1.454). Peirce countenanced such a view long before his theory of normativity: to him, man should never be irrational. If representing is the act of a symbol, how is it possible that a representation be false?, he wonders (MS 921, 1860). Error must come from perversion, weakness or passion (W1.5); in all cases it is a miracle (W1.338). Labelling irrationality as supernatural reveals a conception of logicality as a natural fact. It is *normal* to be rational. The pivotal concept of normality in Peirce's early papers has not been much noticed. To a large extent, it plays the part of his absent normativity. Yet, when the normative approach is later admitted, his recourse to the normal does not cease (e.g. 1.662, 1898). Indeed, as previously established, Peirce's norms are lazy: they do not prescribe anything.

That is why logicality needs to be anchored in naturality, or more precisely in human nature: "reasoning power is related to human nature very much as the wonderful instincts of ants, wasps, etc. are related to their several natures" (MS 682, 1913). It has something of an Aquinian flavor, with the difference that it is not an essence of divine origin but a set of instincts resulting from evolution. That is why I claim against (Hookway 2000)[16] that the "non-transcendental alternative to psychologism" *is* defended naturalistically. At the heart of this issue is the possibility of a natural science of man. In avoiding the pitfalls of the *ought*, Peirce manages to preserve normativity without excluding the possibility of a naturalistic approach.

As the relations between habits, instincts and reasoning have been widely studied by scholars, it is no use dwelling on it[17]. But there is an aspect of such a natural inscription that has generally been overlooked. Instincts account for

---

[16] Cf. especially: 294-297 "Naturalism and the Transcendental Philosophy".

[17] Cf. (Murphey 1991), (Misak 1991), (Hookway 2000: 255), etc., and all the studies on critical common sense.

the wonderful success of many of our spontaneous guesses, not for our actual aiming at normative ends. That is why Peirce also needs a dispositional theory of human nature. Before (Roberts & Wood 2007), who seem to share Peirce's hope that "with the further development of ethics this relation [between good reasoning and good morals] will be found to be even more intimate than we can, as yet, prove it to be" (1.576, 1902), (Zagzebski 1996) was one of the first to relate Peirce's underlying but effective voluntary dispositionalism with 20th century works against Kantian deontism (cf. Anscombe 1958, Foot 2001), in showing that motivation for knowledge is not totally expressed by following reliable well-known rules of belief-forming.

Thus, a theory of epistemic virtues ultimately ties Peirce's system of norms and oughts. More precisely, it explains why we generally tend to do what we ought to do despite the non prescriptive character of norms: such a tendency is inscribed in our nature, not only as attuned to the laws of the world through induction and abduction, but as driven by moral virtues. In sum, Peirce's theory of epistemic virtues answers the problem of our *access* to norms: we hold them to be our aims because we meet them in our virtuous nature. In this respect, it is not so far from Sigwart, so harshly decried for his logical *Gefühl*. (Sigwart 1889: 22) reads: despite the "normative character" that is "essential" to logic, nevertheless "we deny that these norms can be cognized otherwise than on the foundation of the study of the natural forces and functional forms which are supposed to be regulated by those norms." Peirce's parallel position is no form of psychologism, but shows that a normative theory may and must be deeply rooted within nature.

<p align="center">*</p>

I wish to draw two conclusions from this study. The first one is about Peircean scholarship. As Peirce's first and last texts assert a strong claim against psychologism, it has widely been held that his late theory of logic was the one he defended in the 1860s, and that the commentator's task was to discuss the disturbing theory of inquiry within this anti-psychological framework. My purpose has been to show that such an analysis is fiction. Contrary to the normative sciences period, Peirce's first unpsychological view of logic is not normative, and fails to explain why we ought to be logical. Using Bernard Williams' typology, one could say that Peirce's thought developed from Kantian internalism to Lockean externalism. Peirce's internalist period contends that, independently from practical prescriptions, there is an internal contradiction in not looking for truth, because logic describes the laws of good think-

ing. In his normative, externalist period, Peirce would rather regard the search for truth as a moral duty, an ethical rule of belief. In the beginning, error is a miracle; in the end it is a sin against our human dispositions. One could emphatically speak of a translation from a German Peirce (under the influence of Kant, Fechner, Helmholtz) to a British Peirce (following Reid, Bain and Darwin).

My second conclusion is about psychologism and naturalism. In the present philosophical context, the two main traditions of the 20th century, idealistic phenomenology and formal analytic philosophy, are out of breath. It indicates that Husserl and Frege need to make peace with modern psychology and cognitive sciences. Does it mean a revival of psychologism? Not necessarily. On Peircean grounds, Susan Haack advocates weak psychologism, which would not *describe* our actual processes of thought but *prescribe* a correct way of thinking: "Logic, I suggested, is prescriptive of reasoning in the limited sense that inference in accordance with logical principles is safe" (Haack 1978: 238). But what is invariable throughout Peirce's works is his lack of "appetite for oughty things." Even normative logic does not prescribe anything. Against Susan Haack, therefore, I argue that it is not a matter of psychologism but of naturalism, which is very different: we need to take into account some data inscribed in our human nature to make good epistemology. In this respect, Peirce has still much to teach to contemporary philosophy.

5.   References

Anderson, R.L., 2005, "Neo-Kantianism and the Roots of Anti-Psychologism," *British Journal for the History of Philosophy* 13: 287-323.

Anscombe, Elizabeth, 1958, "Modern Moral Philosophy," *Philosophy* 33(124): 1-19.

Burks, Arthur W., 1943, "Peirce's Conception of Logic as a Normative Science," *Philosophical Review* 52(2):187-193.

Colapietro, Vincent, 2003, "The Space of Signs: C.S. Peirce's Critique of Psychologism," in D. Jacquette (ed.): 157-179.

Dipert, Randall R., 1994, "Peirce's Underestimated Place in the History of Logic: A Response to Quine," in Kenneth L. Ketner, ed., *Peirce and Contemporary Thought: Philosophical Inquiries*, New York, Fordham University Press: 32-58.

Dougherty, Charles John, 1980, "C. S. Peirce's Critique of Psychologism," *Two Centuries of Philosophy in America*, Peter Caws (ed.), Oxford, Basil Blackwell: 86-93.

Foot, Philippa, 2001, *Natural Goodness*, Oxford, Clarendon Press.

Frege, Gottlob, 1884, *Die Grundlagen der Arithmetik*, Breslau.

Frege, Gottlob, 1893, *Grundgesetze der Arithmetik*, Jena, Verlag Hermann Pohle.

Goudge, Thomas, 1947, "The Conflict of Naturalism and Transcendentalism in Peirce," Journal of Philosophy 44(14): 365-375.

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

Hookway, Christopher, 1992, *Peirce*, London, New York, Routledge.

Hookway, Christopher, 2000, *Truth, Rationality and Pragmatism*, Oxford, Oxford University Press.

Hookway, Christopher, 2010, "Normative Logic and Psychology: Peirce on Dewey," manuscript.

Husserl, Edmund, 1970, *Logical Investigations* (trad. Findlay), London, Routledge.

Jacquette, Dale, 2003, *Philosophy, Psychology, and Psychologism: Critical and Historical Readings on the Psychological Turn in Philosophy*, Springer.

Jaesche, Gottlob, 1819, *Logic of Emmanuel Kant*, London, Simpkin & Marshall.

Kasser, Jeffrey, "Peirce's Supposed Psychologism," *Transactions of the Charles S. Peirce Society*, 35(3): 501-526.

Korsgaard, Christine, 1996, *The Sources of Normativity*, Cambridge, Cambridge University Press.

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

Lane, Robert, 2009, "Persons, Signs, Animals: A Peircean Account of Personhood," *Transactions of the Charles S. Peirce Society* 45(1): 1-26.

Levi, Isaac, 1997, "Inference and Logic According to Peirce," in *The Rule of Reason: The Philosophy of Charles Sanders Peirce*, J. Brunning and P. Forster (ed.), Toronto, University of Toronto Press: 34-56.

Michael, Emily & Frederick Michael, 1979, "Peirce on the Nature of Logic," *Notre Dame of Formal Logic* 20: 84-88.

Mill, John Stuart, 1865, *An Examination of Sir William Hamilton's Philosophy*, Boston, W. V. Spencer.

Misak, Cheryl, 1991, *Truth and the End of Inquiry: A Peircean Account of Truth,* Oxford, Clarendon Press.

Mohanty, Jitendranath, 1985, *The Possibility of Transcendental Philosophy*, Dordrecht, Martin Nijhoff.

Mullin, Albert, 1966, "C. S. Peirce and E. G. A. Husserl on the nature of logic," *Notre Dame Journal of Formal Logic* 7(4): 301-304.

Murphey, Murray, 1991, *The Development of Peirce's Philosophy*, Cambridge, Harvard University Press.

Parfit, Derek, 2001, "Reasons and Rationality," Egonsson, Dan, et al., *Exploring Practical Philosophy: from Action to Values*, Aldershot, Ashgate.

Peirce, Charles Sanders, 1931-5, *Collected Papers of Charles Sanders Peirce*, C. Hartshorne and P. Weiss (ed.), Cambridge, Harvard University Press, vol. 1-6.

- 1958, *Collected Papers of Charles Sanders Peirce*, A. Burks (ed.), Cambridge, Harvard University Press, vol. 7-8.

- 1982-2010, *Writings of Charles S. Peirce: A Chronological Edition*, Bloomington & Indianapolis, Indiana University Press, vol. 1-6, vol. 8.

Philipse, Hermann, 1989, "Psychologism and the Prescriptive Function of Logic," in Mark A. Notturno (ed.), *Perspectives on Psychologism*, E.J. Brill, Leiden: 58-74.

Pietarinen, Ahti-Veikko, 2005, "Cultivating Habits of Reason: Peirce and the *Logica Utens* Versus *Logica Docens* Distinction," *History of Philosophy Quarterly* 22(4): 357-372.

Rath, Matthias, 1994, *Der Psychologismusstreit in der deutschen Philosophie*, Freiburg, Karl Alber.

Reisner, Andrew, (forthcoming), "Is There Reason to Be Theoretically Rational?" in Andrew Reisner & Asbjørn Steglich-Petersen (eds.), *Reasons for Belief*, Cambridge University Press.

Resnik, Michael, 1985, "Logic: Normative or Descriptive? The Ethics of Belief or a Branch of Psychology?," *Philosophy of Science* 52(2): 221-238.

Roberts, Robert C., & W. Jay Wood, 2007, *Intellectual Virtues: An Essay in Regulative Epistemology*, Oxford, Clarendon Press.

Ross, W.D., 1930, *The Right and the Good*, Oxford, Clarendon Press.

Short, Thomas, 2007, *Peirce's Theory of Signs*, Cambridge, Cambridge University Press.

Sigwart, Christoph, 1889, *Logik. Erster Band: Die Lehre vom Urteil, vom Begriff und vom Schluss*, Freiburg i.B.: J.C.B. Mohr. 2nd ed.

Sober, Elliott, 2001, "What is the Problem of Simplicity?" in Zellner, A.et al., *Simplicity, Inference and Modelling: Keeping It Sophisticatedly Simple*, Cambridge, Cambridge University Press: 13–31.

Zagzebski, Linda, 1996, *Virtues of the Mind: an Inquiry into the Nature of Virtue and the Ethical*, Cambridge, Cambridge University Press.