Confessions of a classical Normativist

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1. Why were you initially drawn to the philosophy of logic?

My interests have always been those of a philosopher, who took logic both as a tool and a source of problems for philosophy, not those of a practicing logician. I once tried, under the guidance of Jean Van Heijenoort, to work on the French logician Jacques Herbrand, whose pioneering work laid the basis of proof-theory, but I soon had to realize my limitations. I got interested in logic because issues such as nominalism *vs*. realism about universals, the nature of truth and of propositions seemed to me more salient and tractable when raised in the context of logical theories. Indeed I have never seen any real opposition between philosophy and logic, broadly conceived as the set of issues dealing with the most abstract parts of our thinking and of our language. I drew my initial inspiration from Dummett's monumental commentary on Frege, which seemed to me to be a kind of *Critique of Logical Reason*, and got interested in Davidson's program in semantics and in the opposition between realist and antirealist theories of meaning. Dummett strongly emphasized the connection between intuitionistic logic and antirealism, argued for molecularism on the basis of his conception of logical constants, and defended a verificationist conception of meaning. I sided with Davidson, advocating a realist conception of semantics and classical logic, but I have always admired the way Dummett approached and shaped these problems. Like everyone else, I took Quine and Tarski to be the gospel, but I have always been attracted by the style of English logicians and philosophers - Prior, Geach, Dummett and Strawson – in part because they had a better sense of the history and a wider metaphysical scope. Indeed, Quine too had an interest in ontology, but he wanted a minimal ontology. Early on I was interested in the work of Ruth Marcus, who was not only a great logician, but also had great philosophical ideas (about modalities, reference and belief) which were very much underappreciated at the time. I am still nostalgic about the 1970s, which were a Golden Age for analytic philosophy. At that

time logic and the philosophy of logic were not very distinct from the philosophy of language, and philosophers, linguists, and logicians talked a lot to each other and often coexisted harmoniously in philosophy departments. Today, most practicing logicians are in computer science departments, and the philosophy of language has lost its empire. Indeed those who today call themselves "formal philosophers", and whose mother tongues are advanced logic, computer programming and probability theory, are often dismissive of "straight" analytic philosophers, who are suspected sloppiness, because they do not always express their views within a formalism (see for instance Clark Glymour's "manifesto" and Timothy Williamson's "Must do better"[1]). In the 1970s, I heard people like Patrick Suppes and Dana Scott express similar feelings about analytic philosophy, but the divide between the formalists and the informalists was not so great at that time.

2. What are your main contributions to the philosophy of logic?

It's not for me to say. But if I were to characterize my approach I would say that what is distinctive of it is that it tries to deal with the central issues of the philosophy of logic in a synthetic way. In that respect, I am not a very analytic philosopher. Although logic has been the main tool and source of inspiration of analytic philosophers during the past century, it seems to me that attention to detail, to puzzles and to (mostly logical) paradoxes has tended to obscure the wider issues which are at stake: How general is logic? How much is formal? Does it tell us anything about reality? What is its relationship to thought and to thinking? To language and meaning? Is there anything like logical knowledge and in what does it consist? Which logic is the right logic? In my book *The Norm of Truth: An Introduction to the Philosophy of Logic* (Prentice Hall 1991), I considered the basic problems of logic as centered around three main questions, each associated with a specific paradox or problem:

- How can logic be informative (Mill's paradox: if the premises of a syllogism already contain the information present in the conclusion how can we learn from logical inferences)? How can there be logical *knowledge*?
- How can the laws of logic be justified in a non-circular way (Agrippa's trilemma for logical knowledge: either the justification is circular, or it is arbitrary, or it leads to an infinite regress)?

[1] Timothy Williamson, "Must do Better", in *The Philosophy of Philosophy*, Blackwell, Oxford 2005, Clark Glymour , http://choiceandinference.com/2011/12/23/in-light-of-some-recent-discussion-over-at-new-apps-i-bring-you-clark-glymours-manifesto/

- How can logic be normative (Lewis Carroll's paradox of inference: how can logical laws or rules move us?)

I have been interested in these three issues ever since. Concerning (a), it is often tempting to answer the problem of informativeness by saying that triviality and topic neutrality are mostly features of elementary and first-order logic: as soon as logic goes beyond the first-order, with modal, higher-order and non-classical logics, inference becomes a much less straightforward matter, and logical structures become complex and "interesting", in contrast to the dull monotony (in both senses of this word) of classical logic. This is indeed the same complaint raised by mathematicians: the poorer the logic, the more boring logical inferences are. I disagree. Classical first-order logic can be interesting, and its structures can be complex and not trivial. Gentzen's calculi are not trivial, and exhibit the shape of proofs in a beautiful way, Herbrand's theorem too is not trivial. Wittgenstein said that there cannot be surprises in logic. That is just false. There is such a thing as logical knowledge and we can learn by deduction. And it is not true that in order to gain insight we need to adopt some non-classical logic. One can learn from classical logic and a classical approach. Very often in science a simpler theory has more explanatory payoffs when it deals with complex issues than a more complex theory, which posits more entities and more sophisticated explanations. Thus attempts made philosophers like Davidson or linguists like James Higginbotham to analyze our event language in classical quantificational terms, or Williamson's epistemicist's theory of vagueness, which stick to classical logic, seem to me more interesting than theories which at once posit more complicated structures, such as higher-order quantification and supervaluations respectively. We learn more when a classical scheme cannot be applied to, for instance, natural language than when many non-classical schemes apply. Of course, the love of classical simplicity has its diminishing returns, and there is a point where one has to go non-classical in logic. But classical logic is the norm. However interesting and creative the efforts of dialetheists, paraconsistent and dynamic logicians can be, it seems to me that classical logic remains, and has to remain, the standard tool. That may seem very conservative, given the blooming of non-classical logics. But I am an absolutist in logic: although non-classical logics are very interesting, it seems to me that only classical logic can serve as a norm for philosophical inquiry. This may not be true for purposes other than philosophical – especially in mathematics, economic modeling and computer science. But when it comes to philosophy, we have to stick to bivalence. Contradictions cannot be true. Hegel will never triumph over Russell.

With respect to (b), philosophy of logic is the mirror of general epistemology. Just as we need a theory of the justification of our basic beliefs, in particular those based on perception, we need an account of what Crispin Wright has called basic logical knowledge. And the options here are very close to those of Agrippa's trilemma: logical laws or rules are primitive and based on nothing else, or they are circularly based on other laws and rules, or there is an infinite regress. If one rejects these options, there is no choice but to accept that logical laws are based on nothing. One may thus adopt skepticism or conventionalism. Although a lot of thinkers have been tempted, in one way or another, by the last option, including Carnap, whose principle of tolerance says that "in logic there are no morals and everyone is free to choose his own system", I think that we have to resist this extreme relativism. I hate the kind of sloppiness which pervades all present day logic with respect to which system is best. Everyone seems to assume that we are in a kind of supermarket where you are free to choose whichever logic suits our particular purposes. But that is not true. In logic there are morals, and we are not free to choose. One system has to be the best and we need foundations. So I reject the kind of logical pluralism which seems to be accepted by most practising logicians.

Now, if one believes, and do, that there is but one logic which is the right logic, which one is it? Is it intuitionistic logic? I agree with Dummett that we need a justification of deduction, and that we cannot rest content with a form of holism where logical rules support each other by a kind of network association. Some inference rules have to be primitive and basic. Dummett and Prawitz have argued in favor of a form of logical foundationalism about the logical constants, and claimed that we need to impose certain conditions, such as harmony and conservativeness on logical connectives in order to avoid weird logical connectives like Prior's infamous *tonk*. But according to them these constraints imply logical revisionism and the choice of intuitionistic logic as the right logic. But do the tighter constraints on logical connectives imply logical revisionism? It is far from clear. Alan Weir (1986), Christopher Peacocke (1987, 1993) and Peter Milne (1994) have argued that harmony is available to the classicist too. So one can be a logical realist, a partisan of bivalence and of classical logic, and also adopt the canons for logical constanthood emphasized by the intuitionist. Am I, then, a classicist of the strongest stripe, like Timothy Williamson? Yes I am. But being a classicist need not entail agreement with all the claims of the ultra-conservative view that Williamson advocates. He famously says that "When philosophical considerations lead someone to propose a revision of basic logic, the philosophy is more likely to be at fault than the logic". I do not see why philosophy ought to be ruled

by logic in such a way. Williamson probably means that logic wears the trousers because philosophy by itself, lacking logical rigor, is unable to state what is right in terms of justification of logical rules. I disagree.

There can be *philosophical* arguments for conservatism. One is Quine's "meaning variance thesis", according to which the non-classical logician "changes the subject" by giving new meanings to the logical connectives. But this view depends strongly on Quine's views on radical translation, which one needn't accept (and I don't). Another kind of argument is suggested by Williamson when he says about non-classical treatments of vagueness: "Conditional proof, argument by cases and *reductio ad absurdum* [these are all invalidated by supervaluationism] play a vital role in systems of natural deduction, the formal systems closest to our informal deductions. [...] Thus supervaluationists invalidate our natural mode of deductive thinking". Now to what extent is a mode of thinking "natural"? Cognitive psychology suggests that it is far from clear that humans follow the rules of ordinary logic, and there are many studies which seem to show that inferences like modus ponens, modus ponens, or disjunctive syllogism are often violated. So we cannot be content with an argument to the effect that our "natural" ways of thinking favor classicism. A better argument is, according to me, that classical logic is normative for our thinking. A norm is an idealization. An idealization is not a natural law, be it psychological or physical. But it's not independent of the facts. One line to take here is to adopt a form of reflective equilibrium conception of logical laws, similar to the one taken by Rawls in ethics. I find congenial the comparison between logic and ethics, which has been with us since Herbart ("logic is the ethics of thought"). But neither moral principles nor logical principles are a matter of revision and of consensus. They have be firm and, to speak like Frege, as solid as a rock.

Question (c) is the one which has occupied me most. I have been interested in the nature of normativity in logic, but also in epistemology and in the philosophy of mind, and indeed in ethics, and my work in all these fields is a reflection about the nature of norms. There are a number of analogies between all these domains, and the structure of the normative domain is strongly unified, but it also displays important dissimilarities. In a series of essays and in a forthcoming book in French[2], I have examined these issues, as they arise, in my view from

[2] "Logical Reasons", *Philosophical Explorations*, 8, 1, march 2005, 21-35, "Dummett, Achilles and the Tortoise", *The Philosophy of Michael Dummett*, The Library of Living Philosophers 2007; "Oh! Carroll! Raisons, normes et inférence " in *Klèsis*, 13 , 2009 ; "How to resist a Tortoise", "Wie man einer Schildkröte widersteht", *Proc. Deutscher Kongress 2011*, Meiner 2012, « The lessons of Carroll's regress », 2012, to appear in *the Carrollian*, *Avatars de la tortue*, to appear.

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Lewis Carroll's famous and enigmatic dialogue between Achilles and the Tortoise, published in *Mind* in 1895. Why does the Tortoise refuse to draw the conclusion of a simple inference in *modus ponens* form? Is it, as the usual lesson of the tale has it, that he conflates a premise and a rule of inference? Or is it that he refuses to take logical laws (or rules) as normative and capable of moving our minds? The Tortoise's problem is logical *akrasia*: he sees the rule, but willingly refuses to follow it. He doubts that logic is normative, or doubts that logical norms have a motivational power. To answer his challenge, one has to give an account of the normativity of logic. The norm cannot be a further proposition that we consciously and reflectively entertain – for otherwise we would be led to Carroll's regress. It cannot be that one has to follow the rule blindly without thinking about it, for in logical reasoning, we attend to reasons. Neither is it that we have a form of *knowledge-how* related to the inference form, or that we master a practice, because logical knowledge is not a species of know how. None of these solutions work. I try to defend a more complex picture. Our logical knowledge is based on a tacit knowledge of rules (largely unconscious), but we also develop rational dispositions associated with our main logical concepts; in inferring we attend, although non-reflectively, to logical reasons. We have to combine such an account with a realist view of logical reasons and of epistemic norms.

3. What is the proper role of philosophy of logic in relation to other disciplines, and to other branches of philosophy?

The philosophy of logic is neither a branch of logic (it's not "philosophical logic", understood as a logical inquiry about matters more or less philosophical) nor a branch of the philosophy of language, nor a branch of the philosophy of science, although it shares with these fields of inquiry a number of themes and concerns. The philosophy of logic deals with the philosophical problems raised by logic. A number of these problems are epistemological. What is the justification of logical inferences? What kind of knowledge is logical knowledge? What is a proof? Other problems are ontological. What is logic about? To what kind of entities is the logician committed? To what extent can there be a formal ontology? Other problems are closer to the philosophy of language. What is predication? What is logical form? Others are closer to the philosophy of mathematics and computer science. So in my view, the philosophy of logic is a part of philosophy, not of logic. It cannot be itself "formal" in the way a logical theory can be formalized, although it has to use, to a large extent, formal results and logical theories.

A number of philosophers do not see things that way. They practice what they call "formal philosophy", "formal epistemology", "deontic

logic" or "formal value theory", and advocate the use of formal models throughout philosophy. They hold that one cannot deal with a philosophical problem or concept without first translating it into formal terms and then constructing a logical theory, from which one can derive various theorems. This approach has proved extremely fruitful in a number of domains, *e.g.* for the notion of truth (Tarski), for the formalization of the ontological proof for God's existence (Gödel, Plantinga, Oppy), for giving a model of the origins of the social contract (Skyrms) and for modeling belief change (Alchouron-Gardenförs-Mackinson, Levi, Rott). This is to name only a few successful formal approaches to specific philosophical problems. These methods are descendants of the axiomatic method although the formalisms that they use are much more complex than those of logic proper, for they often use modal logic, model theory, probability theory, dynamic logic, higher-order logics and a wealth of other formalisms. The formalisms provide a great deal of clarification: one sees exactly what the assumptions are, and what follows from them. One shows that certain *prima facie* attractive ideas are problematic (for instance Lewis's impossibility results about conditionals), and so one is able to test, through logic, the solidity of certain philosophical proposals. Although I admire these methods, and support strongly their use, I am skeptical about what they can really achieve.[3] Very often I find the basis of the formal language used, for instance for modeling belief change, very stipulative, and so I have doubts about what they actually prove. For instance Hans Rott, in his monumental work on belief change,[4] suggests that his results show that theoretical reason is largely a part of practical reason. For all the impressive results that he demonstrates, it seems to me that the claim is premature. Tarski's formalization of the ordinary notion of truth is a major contribution to logic and to philosophy, but it hardly solves the main issues about truth, which continue to be as debated as they were when he first proposed his semantic conception in the 1930. I also find fascinating recent work on Fitch's paradox of knowability, which purports to show that on an anti-realist view of truth, all truths are known. But it is still an open question whether all truths are knowable or not. So, when Timothy Williamson urges his colleagues to use more the rigorous methods of logic to deal with philosophical problems, I approve the advice, but I am pessimistic about the possibility that formal methods can actually solve, or even

[3] See P. Engel "Formal methods in philosophy: Shooting right without collateral damage", in n T. Czarnecki, K. Kijania- Placek, O. Poller, & J. Woleński (Eds.), *The Analytic* Way*: Proceedings of the 6th European Congress of Analytic Philosophy*, 2010.

[4] H. Rott, Change, Choice and Inference: A Study of Belief Revision and Nonmonotonic Reasoning, Oxford University Press, Oxford, 2001.

make philosophical problems more tractable. Logical modeling cannot replace philosophy. I am not, however, a partisan of what used to be called "informal logic", in particular in the hands of P.F. Strawson, who took it as a kind of investigation into the structures of natural language, and as opposed to formal logic. I believe, on the contrary, in the power of formalism, but I also believe that there are limits to its use and to its capacity to solve philosophical problems.

4. What have been the most significant advances in the philosophy of logic?

During the last part of the twentieth century, the work of Michael Dummett and Dag Prawitz on truth, proof and logical consequence stands as the most significant for the philosophy of logic, together with the discussions of sequent calculi and structural logics, which give us a much deeper view about the structure of inference and about the nature of logical constants especially by Stephen Read, Neil Tennant and Stewart Shapiro. I am impressed by work on substructural logics, relevant logics, and linear logics, although, as I said above, I resist the kind of logical pluralism which is defended today by writers like Graham Priest, Greg Restall and Jc Beall.

I have always been an admirer of Crispin Wright's work in the philosophy of logic and mathematics, his renovated Frege-program, although I do not share his commitments. I also admire a lot Hintikka's system of ideas, which goes with a vast program of logical reform. But I must admit that I have never been tempted to work within it, except perhaps when it comes to the reading of the history of philosophy, with issues about time, modality and necessity.

One of the most important developments in the philosophy of logic during the last fifty years has been the renewal of the great tradition of logical metaphysics, which goes from Leibniz and Bolzano to Husserl and early analytic philosophy. This tradition is in permanent opposition to the empiricist tradition of Hume, Mill and Quine. Although the Quine's influence has been overwhelming, it's fair to say that Quine's doubts and qualms about modal logic have been overcome by the work of Ruth Marcus, David Lewis and Saul Kripke. Today quantified modal logic is a basic tool of philosophers, and the issues at the intersection of logic and metaphysics are at the center of the field, especially in the work of Kit Fine. But modal logic is not in opposition to classical logic. It is an extension of classical logic than a revision of it. As the title of Williamson's last book has it, we can conceive of modal logic as metaphysics by other means.

The other developments which I find very significant are those which relate to epistemology. A large part of the philosophy of logic is episte-

. mology. Issues about the nature of belief, of knowledge, about condi-tionals and the nature of reasoning, as well as issues about epistemic normativity are as central in the epistemology of logic as in general epi-

stemology. Work in epistemic logic and in formal epistemology is here very relevant, and Timothy Williamson's "knowledge first" program is very important, not only because of Williamson's classical absolutist stance, which I share, but also because it promises to illuminate the notion of logical knowledge. On these matters, I also find very important Christopher Peacocke's work on reason and the *a priori*, and Paul Boghossian's work on the nature of inference. Ian Rumfit is also a philosopher of logic whose work I admire a lot. The work of Igor Douven on probability, assertion and conditionals seems to me also first rate, as does Erik Olsson's work in formal epistemology, and David Christensen's work on rationality and belief.

In the philosophy of mathematics, the work of Paul Benacerraf, George Boolos, Hartry Field, and Penelope Maddy, among others has been very important. Among present day philosophers of mathematics I consider the work of Leon Horsten, Volker Halbach, Jeffrey Ketland on the relationship between truth and proof to be very impressive.

5. What are the most important open problems in philosophy of logic, and what are the prospects for progress?

Is logic formal? Which logic is the right logic? What is the nature of consequence? What is an inference? What justifies logical laws and rules? What is logical knowledge? What is existence and to what extent does quantification tell us what it is? What are propositions? What is predication? What is truth? What is logical truth? Is logic normative? In spite of a wealth of formal developments, none of those basic problems seem to me solved, and there is no hope of solving them, because they are, like all philosophical problems, wide open. It is interesting to see how old issues resurface. For instance, the present debates concerning deflationism about truth echo Carnap's neutralism about ontology, and the debates about the meaning of logical constants renew the issue of the analytic/synthetic distinction. This does not mean that we cannot have progress, for the developments in logic help us see these issues in novel ways, and by introducing new methods and concepts.

Besides the work mentioned above, one issue which I still find very important is the relationship between logic and psychology. Frege and Husserl successfully fought against the psychologism of their time, but psychologism is still alive. Pluralism about logic favors a descriptive stance about natural language semantics, and many philosophers adopt psychological theories of reasoning and of meaning based on impressive advances in the psychology of reasoning. We are still far from

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having satisfactory evolutionary conceptions of the origins of logic. The idea that logic originated in dialectics and in argumentation, rather than in abstract thought about deduction and truth, is still very attractive to a number of logicians and cognitive scientists, who reject what they call normativism. I am a normativist, in the old fashioned style. I take logic to be normative, absolute, classical. But that does not mean that we should be content with its pure theory without trying to understand how logic is normative and how logic regulates our thinking. To understand logical normativity, we have to attend to psychology, without forgetting that it's logic, and not psychology, that wears the trousers.