

Foreword

June 15, 2021

In 1910 the young Jan Łukasiewicz published a remarkable book, *The Principle of Contradiction in Aristotle*.

Something over 2000 years earlier, Aristotle, in book Γ of his *Metaphysics*, had taken the views of some of his Presocratic predecessors in his sights and defended the claim that no contradiction can possibly be true. The text is somewhat tangled—even by Aristotelian standards; but its success was undeniable. It fixed the Principle of (Non-)Contradiction into high orthodoxy in Western Philosophy—so much so, that virtually no Western philosopher for the next 2000 years felt the need to defend the Principle at any length. True, there have been a few dissenters. Hegel is the most obvious. However, such was the power of orthodoxy, that most commentators on Hegel—though certainly not Łukasiewicz—have gone out of their way to argue that when he said that the world was contradictory, he didn't really mean it.

In the first part of his book, Łukasiewicz takes Aristotle's text and, with clinical precision, demolishes its arguments. Why it had taken over two millennia for someone to do this is an interesting question, which I won't pursue here. But I think it fair to say that most commentators on *Metaphysics* Γ now take Łukasiewicz' critique to be substantially correct, and have had to work hard to try to salvage anything from Aristotle's arguments.¹

Having demolished Aristotle's case for the Principle, the question then remains as to whether one should hold it to be true, and if so, why. That issue takes up the rest of Łukasiewicz' book. The outcome of this is not as impressive as that of the first part of the book, but the discussion is

¹For my own attempts in this direction, see 'To be and Not to Be—That is the Answer. On Aristotle on the Law of Non-Contradiction', *Philosophiegeschichte und Logische Analyse* 1 (1998), 91-130. Reprinted as ch. 1 of *Doubt Truth to be a Liar*, Oxford University Press, 2006.

intellectually and psychologically fascinating. What we see is Łukasiewicz wrestling to defend a principle he obviously wishes to endorse, despite the evidence to the contrary he discusses. He is clear that there appear to be counter-examples to the Principle, such as the set-theoretic paradoxes, non-existent contradictory objects, and paradoxes of motion; and he is unable to defang them. Indeed, in places he even appears to endorse some of them. Moreover, his final case for the Principle is disappointingly weak, even going against some insightful comments he makes earlier about reasoning under inconsistency. Łukasiewicz is clearly torn between reason and desire.²

Łukasiewicz' discussion is fascinating for another reason. As he is well aware, it is located at a crucial moment in the history of logic. He knows that new mathematical methods are coming to play a central role in logic. He is familiar with some of the writings of Frege and Russell (though presumably not *Principia Mathematica*, Volume 1 of which appeared only in November of the same year), and he makes explicit use of Coutourat's 1905 *L'Algèbre de la Logique*. Moreover, his discussion of Aristotle is clearly informed by distinctions which the new symbolic techniques make clear. Modern readers will not be surprised by this.

What they may be surprised by is the extent to which Łukasiewicz draws on ideas in logic that—at least for most of the 20th Century—were out of fashion. The relevant intellectual climate in which Łukasiewicz is working is dominated by Hegel, on the one hand, and the phenomenological tradition of Brentano—who taught Łukasiewicz' own teacher, Twardowski—on the other. In particular, the ideas of Meinong—another student of Brentano—whose lectures Łukasiewicz attended in Graz, loom large in his discussion. What we have here, then, is an absorbing study of logic in flux.

Of course, Łukasiewicz was himself to go on to make significant contributions to the new area of mathematical logic, especially by inventing many-valued logic. In this, he was to take on, not the Principle of Non-Contradiction, but the other principle defended by Aristotle in the same book of the *Metaphysics*: the Principle of Excluded Middle (though Aristotle himself notoriously appears to backtrack on this in *De Interpretatione*). Why did Łukasiewicz switch his interest from the one principle to the other between 1910 and 1920? (As is now well known, many-valued logics may be

²The case for these claims is made in detail in my 'Torn by Reason: Łukasiewicz on the Principle of Non-Contradiction', ch. 18 of S. Costreie (ed.), *Early Analytic Philosophy: Some New Perspectives on the Tradition*, Springer, 2016.

used to challenge both principles.) Perhaps we will never know the answer, but Jan Woleński suggested to me that it was because of the criticism of his book which Łukasiewicz received in person from Stanisław Leśniewski, eight years his junior.

Moreover, given his interest in the Principle of Non-Contradiction, Łukasiewicz could very easily have produced the first modern paraconsistent logic. In Appendix A of his book, he first specifies a positive propositional logic (drawn from Couturat). To this he then adds axioms for Boolean negation. It would have been simple for him to add axioms for a paraconsistent negation instead. He does not. The construction of the first modern paraconsistent logic was left for his student, Stanisław Jaśkowski, only in 1948.

In the same year that he wrote his book, Łukasiewicz wrote a short paper in German, ‘On the Principle of Contradiction in Aristotle’, which contained his analysis of Aristotle’s arguments. That paper was translated—somewhat belatedly—into English in 1970 and again in 1979. Hence, the content of this part of Łukasiewicz’ book is now well known by Aristotle scholars—and should perhaps be better known by contemporary defenders of the Principle of Non-Contradiction. However, the contents of the rest of the book—which is the part which will probably be of more interest to logicians—was not canvassed in that paper.

The book itself was translated into German in 1993, and French in 2000. But it has never been translated into English before. Hence, it has been inaccessible to English-speaking logicians who are linguistically challenged (such as myself) until now. A great debt is therefore owed to Holger Heine for the present book, which contains not only his careful translation but a knowledgeable scholarly introduction and a perceptive commentary.

This book opens a window on a crucial period in the history of logic. It should be read by anyone interested in that history.

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