

Logic as Ultra-Physics

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The number of rival logical systems is growing without an end in sight. This has proved to be a mixed blessing. On the one hand, we have a rich set of formal tools that allows us to model inferences in a variety of ways. On the other hand, the existence of rival logical systems threatens to undermine logic's role as a univocal and definitive arbiter of disagreements over the validity of inferences. If, for any given inference, one can always find a logical system that sanctions its validity and another that forbids it, then it seems that the aforementioned role no longer befits logic. The most that we can hope for are intra-system evaluations of the validity of inferences. The consequences for rational debate are dire. Disputes in philosophy, science and beyond run the risk of turning into trivial squabbles as anybody who finds themselves in a logical pickle may be able to slip away to a more agreeable logical system. The aim of this talk is to mount a defence of the view that logic can, and in actual fact does, univocally and definitively answer questions about the validity of at least some inferences. This is tantamount to saying that some rules (and potentially axioms) are the right ones. If you like, they are the ones that would fill the pages of a book on the one 'true' logic. More controversially, I argue that their rightness is determined by the physical world itself. Indeed, I argue that the right logic, but obviously not our conception of it, is itself a structural feature of the world. For obvious reasons I call the emerging view 'logic as ultra-physics'. As a case study of this ultra-physics, I utilise the principle of non-contradiction.