EDITORIAL

Guest editorial preface

Billy Joe Lucas

It seems apt in an introduction to this issue to chat a bit about changes in logic perhaps not yet familiar to everyone who does philosophy of religion. There are now perhaps more distinct logics than even logicians who do only logic can know in full detail. Even at the elementary level of truth-functional logic, motivated options abound: many-valued logics allow up to an infinite number of truth-values (e.g., see 'undefined' as a third option to true or false in footnote 46 of my essay in this volume); moreover, engineers and software specialists create multi-valued practical applications that work well, thus from a pragmatist point of view are viable options. Other options include a variety of alternative relevant logics, and similarly for constructivist sub-logics, and we have an explosion of options for sub-systems that block proof of *all* contradictions from the existence of some particular kind(s) of contradictions ('paraconsistent' logics). One's choices here can force changes in options for modal and /or first-order logics. And we have useful non-monotonic logics that do not impose classical 'validity' as a required condition. It is not possible to give an adequate brief overview of the (relatively) consistent options now available in Set Theory, even by ignoring those that use second-(or higher) order logic as well as constructivist set theories. And there are extensions to mainstream versions with options as to which "large cardinal" axioms one could or should (or could or should not) endorse (Steinhart's essay makes use of large cardinals). George Boole (see essay 8 in his book cited in my essay) recommends we *not* believe even in the existence of all sets *much* smaller than any large cardinal. Yet other kinds of logic are those which allow formulas of infinite length (Romero and Pérez provide an impressive use thereof).

Modal logics are perhaps the most often used logics in our journal. Setting aside systems mentioned above, it is in practice difficult to stay on top of all the new options.

B. J. Lucas (✉)
B2400 Manhattanville College, 2900 Purchase Street, Purchase, NY 10577, USA
e-mail: BillyJoe.Lucas@mville.edu

Relatively new kinds of modal systems are 'dynamic' logics and alternative logics of action and logics of belief-revision are rich examples. And there is an immense literature on interactive combinations of two or more modal logics, e.g., many-dimensional logics. However, polymodal (multimodal) logics are of obvious value when examining philosophical theories that contain two or more modal concepts: I have tried to make my essay an accessible introduction to such systems, and focus on theories of intellectual rights and obligations with strong implications for non-believers who have moral regret of no faith.

Eric Steinhart's essay makes use of set theory, and devises the use of an axiological hierarchy of increasingly better possible worlds as analogs to the never ending series of ordinal numbers initially generated by the full power set axiom and the (big) union axiom, but also includes extensions of ZFC via each consistent large cardinal axiom, and thus defines an enormously large of number of gods (world-creators), each god at each ordinal rank able to create at least one better world than all predecessor gods corresponding to lower ranked ordinals. Thus, we have (or might have) a series of ever more perfect yet never maximally perfect gods: *ordinal polytheism*. A god (world creator) who creates a best possible world at any given rank thus surpasses all previous gods in the axial hierarchy but cannot create a universe at the next ordinal level of better universes. The essay raises all sorts of interesting questions, not least of which is a very clever argument for infinite polytheism as *the* viable set of options if one wants to believe in a creator god.

Giovanni Mion in our second essay makes use of the relative strength of existential (∃) and universal (∀) formulas in classical first-order logic. Mion argues that intelligent, intensive collective efforts to prove the truth of *an ∃ (existence) formula* which *fail* to produce evidence for its truth can constitute (provisional) good evidence that the ∃ claim is false, whereas comparable efforts that fail to prove the *negation* of an ∃ claim are *not* of comparable merit as evidence for the negation of an ∃ claim ('∼ ∃' is a '∀ ∼'universal claim). If so, then absence of good arguments for the existence of a god *do support* a (provisional) conclusion that no god exists, *whereas* failures to disprove the existence of a god are *not* of comparable evidential value in favor of belief that a god exists. One could perhaps add a bit of support for Mion's argument by noting that, *a la* Bertrand Russell (*passim*), ∃ formulas can be known to be true *even absent the possibility* of producing a specific true instance thereof: e.g., a particular number exists that will never be used as a specific example of anything by any human.

In our third essay, Laureano Luna takes on Patrick Grim's arguments against the possibility of any omniscient being. Luna raises objections to Grim's attempt to prove that omniscience is an inconsistent concept as well as his claim that there *can be no* consistent definition of 'omniscience'. A key move in Luna's line of argument is the claim that Grim's arguments require a Platonist theory of inconsistent sets and classes and Luna's counter-move aims to show non-Platonist interpretations can rebut Grim's objections. (Section V of Steinhart seems to offer yet another line of objection to Grim, albeit wholeheartedly Platonist.)

Gustavo E. Romero and Daniela Pérez are physicists (who also do philosophy) and offer us some detailed insights into the details of how causality in Physics is a relation between events in local space-time, and thus is *not* a concept of 'cause' that makes sense as commonly used in phrases akin to the 'cause of the universe'. We

are then given correct derivations of what follows from the assumptions used in the cosmological arguments of Aquinas (second way) and Kalam (Lane variation) *when* those premises are *reinterpreted* using concepts of 'causality' as used in the physical sciences (in P3 for Aquinas the sub and superscripted operator part of the formula should be read as a universal quantification over an infinite list of *conjunctions*). I think many readers will find interesting and challenging results in our fourth essay. This task inevitably requires introduction of some actual Physics: if a paragraph or so feels a bit overwhelming simply skim those details, lest one miss quite interesting new philosophical results. Romero and Pérez also offer an alternative to traditional causal versions of cosmological arguments: look instead for *non*-causal explanations of our universe as basis of arguments for the existence of a world-making god.

I cannot make much sense of much of our final essay by Billy Joe Lucas. The author, I fear, is beyond my help at this point in time. For readers without much interest in logics, I suggest that in spite of its conflicts with sound common sense, the first four sections might be worth a quick read (if one ignores *formal allegations* as to what proves what). If you are for (against) Clifford's thesis, you might find the 23 options thereto of interest (skim from the sentence that ends with footnote 30 down to mention of S5). Wittgensteinians might wish to ignore footnote 30. Section V appears to claim articulations of theories of 'categorical' moral truth with the un-Kantian property that empirical facts are of relevance to moral truth. In VII our author seems perhaps unduly upset over the 'proper' relations between metaphysics, epistemology, ethics and logic. Moreover, it appears that he regards all logics as *theories* awaiting evaluation (and thus perhaps in some way contingent?).