Review of: "A Priori Arguments for Determinism/Universal Necessity – and the Leibnizian Theodicy"

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Potential competing interests: No potential competing interests to declare.

I offer my remarks from the position of an average potential reader of this text: i.e. a non-specialist where modal logic is concerned. My comments are intended to enhance the reader's access to a range of valuable ideas and insights that can be found in the text under consideration.

However, the essence of the Author's argument is inextricably linked to modal logic. It is advisable and necessary to state precisely which system of modal logic the text is related to, as the information given in the introduction (and other text) is insufficient. I will justify this below. In particular, it is necessary to indicate the specific rules of operation of quantifiers and the rules of inference and axioms used by the Author.

Once the points raised below have been clarified, it will be possible to deal with subsequent parts of the text in more detail.

The first and most crucial doubt, whose resolution is not provided by a reading of the text, consists in the observation that the fundamental law of all modal logics using the necessity functor (L) is an axiom formulated in modal sentence logics in the following form: Lp p. Presumably, if this is also a thesis of the logic in which the Author is (probably) formulating his own considerations and inferences, then this axiom would be of the form Ap(Lp p), where "A" is a general quantifier. All the inferences and all the discussion in the article revolve around the derivation (in at least seven ways) of the inverse thesis: i.e. Ap(p Lp). If this is the case, the Author proves, at best, the equivalence of Ap(Lp iff p), which allows the elimination from this system of logic of all expressions containing functors of necessity (and possibility also). This system reduces to a system of ordinary non-modal logic, as the remaining modal operators, e.g. epistemic ones – in the absence of axioms associated with them – are ordinary non-modal functors. Thus, the system does not so much state that there is a necessity for the existence of a state of affairs asserted by *any* sentence, as simply prove that every sentence'"p iff Lp" is a thesis of the system.

It follows from the above that the Author's intention could only be fulfilled in a modal calculus of the sort in which the sentence Ap(p Lp) can be proved and the sentence Ap(Lp p) cannot be proved (this being, as the Author claims, a modal two-sorted quantifier predicate calculus with identity). This matter therefore calls for precise clarification.

Further ambiguities, which the Author – in my opinion – needs to clarify precisely in the text, concern this "two-sorted" quantification. From the text as it stands, I am unable to understand what this could mean: e.g. the ascription "Ap.p", whose use would seem to go against the usual laws for decomposition of "A" into component elements of an implication (also in modal logics). By analogy, I also do not know what “Ax.x” could mean. In predicate accounts, what it means for predicates (with free or bounded variables) to occur in the range of a quantifier’s scope is clear: it is ‘any (also false) sentence p’. (The enthymematic premise, however, is that it is ‘any *true* sentence’ – cf. below.) However, if this is the intuition, then it also applies to false sentences. From this, it follows that the mere derivation of the thesis Ap(p   Lp) does not yet determine anything about reality “in itself”, about its necessity, etc., and this goes against the clearly opposite intention of the Author. To say something about reality, one must still have at one’s disposal, say, the thesis ‘p’, if one is to obtain, by detachment, the thesis ‘Lp’. Thus, what is taken, inferentially, as given in the text would, at best, prove that (all) the theorems of some (which?) modal calculus (without the Lp   p law) are necessary. This is certainly not the case for the infinite number of other true sentences ‘about the world’ of which this calculus says nothing. The necessity of obtaining the thesis ‘p’ is evident precisely because Ap(p   Lp) speaks of every sentence in the syntactic sense, and also of false sentences. For example, the Author proves, in particular, the following theorem: “‘2 + 2 = 5’   L‘2 + 2 = 5’”. In fact, in most accounts, we have such conditional, hypothetical and counterfactual statements from which nothing concrete follows: e.g., we have the laws of propositional logic p (not-p q) and not-p (p q), which show that if p (or not-p) is a thesis of the system, then the thesis also furnishes a “counterfactual implication” to the effect that not-p q (or p q), and this is so for any sentence q (also false). So quantification should be restricted to true sentences. However, this leads to difficulties, which Tarski and Gödel’s Theorem I.I informs us about. This shows that, in my view, the formulas of a given calculus are not precisely distinguished from the formulas of its metalanguage in the text.

In the previous section, I stated that the thesis of the Author’s system is the sentence ‘2 + 2 = 5’. This is, of course, a simplification, since one would have to assume that in the calculus (or, this time, a theory?) we have additional predicates and constants at our disposal: i.e. ‘+’, ‘2’, ‘5’, additional (e.g. Peano;s) axioms, etc. However, it is not possible to have a theory that contains all possible concrete predicates, and that generates “all possible truths about the world”. So it turns out that we are dealing with pure logic. So are there any ‘existential axioms’ in this logic, asserting the existence of specific individuals, such as God? If so, they need to be stated explicitly, as the existence of something concrete is unlikely to arise from pure logic alone. (The axioms indicated in the text are not sufficient.)

If we are using a distinguished universe (e.g. w_0 = @), it is worth quoting the Stanford Encyclopedia of Philosophy in this context: “A related problem is that on the fixed-domain interpretation, the sentence ∀y□∃x(x=y) is valid. Assuming that ∃x(x=y) is read: y exists, ∀y□∃x(x=y) says that everything exists necessarily.” Perhaps this comment will help the Author to achieve his objectives.

If one holds that the expression “Ap.p” does not contain within its scope the free variable “p”, then the scope of this quantifier should be renamed. In that case, the question arises whether it follows from “Ap.(p K(g ; p)”, for example, that “(p Ap. K(g ; p)”? If so, this can raise further difficulties.

Specifying the inference rules, and in particular the substitution rules (if there are any), is surely a requirement here. Given expressions such as “Ap. K(g ; p)”, is it possible to obtain, for example, an infinite-length expression like “K(g ; K (g ; etc.)”, and so on? (There are also several other unexpected consequences that seem to lead to contradictions.)

It should be stressed that using distinct letters to denote predicates in an argument in a logical sense adds nothing. Thus, e.g., arguments 1 and 2 in the text are perfectly indistinguishable in a logical sense. It can be seen from this that the intuitions the Author associates with these inscriptions are completely independent of the formalism used. Apart from that, designating an individual with, e.g., the letter “g”, does not make it possible to tell whether it is an angel or God. One should also add, for example, the axioms of existence and uniqueness, and other specific ones. These axioms, given as premises in the argument, do not allow the elimination of other interpretations of the individual “g”.

So much for my comments on the most important formal issues arising here. Beyond these, I would add that the intuitions related to the issue raised in the title, and the attempt to codify and write them down in formal terms in the article in question, are extremely valuable, even if it should prove impossible to eliminate instances of a lack of formal precision completely. The text contains many valuable insights into understanding Leibniz’s arguments from the *Theodicy*. I do hope that the Author is able to shed light on the doubts raised here, and re-articulate and supplement the text so that my remarks prove unfounded and turn out to reflect nothing more than my own ignorance and lack of insight. Regardless of the outcome, however, I would say that if it should happen that there are problems in clarifying all of the difficulties arising within the framework of this text, it would be worth seeking to reformulate the arguments and considerations presented there in colloquial rather than strictly formalised language.

Minor remarks: a) it is necessary to indicate bibliography to the points where Quine, Gödel and Anselm are mentioned, b) it is not “exactly” true that every Christian “believes that a possible world is actual if, and only if, it is created (made actual) by God”, i.e. that the world has a beginning in time, because some of them can believe that the world exists infinitely long in time.