Actuality and Necessity – A Puzzle about Modality

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Abstract

In a recent paper – *"A Priori* Arguments for Determinism/Universal Necessity, and the Leibnizian Theodicy" – I considered, among other arguments for determinism, a modal argument which I called "the World-Argument." I here repeat that argument in informal terms. I will then focus exclusively on the issues it raises in modal logic and in the metaphysics of modality; Leibnizian themes, prominent in "*A Priori* Arguments …," are marginal in the present paper.

In a recent paper – *"A Priori* Arguments for Determinism/Universal Necessity, and the Leibnizian Theodicy" – I considered, among other arguments for determinism, a modal argument which I called "the World-Argument." I here repeat that argument in informal terms. I will then focus exclusively on the issues it raises in modal logic and in the metaphysics of modality; Leibnizian themes, prominent in "*A Priori* Arguments …," are marginal in the present paper.

Here is *the World-Argument*, and, first of all, its premises:

- Premise 1: Every true proposition is true in the actual world.
- Premise 2: The actual world is [the possible world] w_0.
- Premise 3: For every proposition q which is true in w_0 it is necessary that q is true in w_0.
- Premise 4: For every proposition q it is necessary: if q is true in the actual world, then q is true.

Now consider any true proposition, call it: p. From the truth of p it follows [by Premise 1]: (a) p is true in the actual world. From this, it follows [by Premise 2]: (b) p is true in w_0. From this, it follows [by Premise 3]: (c) It is necessary that p is true in w_0. From Premise 4, it follows [by elementary modal logic]: (d) For every proposition q: if it is necessary that q is true in the actual world, then it is necessary that q is true. From this, it follows [by Premise 2]: (e) For every proposition q: if it is necessary that q is true in w_0, then it is necessary that q is true. From this, it follows [by (c)]: (f) It is necessary that p is true.

Since p is an arbitrarily chosen true proposition, this deductive argumentation seems to show, on the basis of the given premises, that *every true proposition is necessarily true* – which is *universal necessity*, a particularly strong form of determinism. I suppose that even those who incline towards determinism do not want to be convinced of determinism by *this* argument. So, what is wrong with it? If the World-Argument is faulty, its fault (s) must either lie with the logical inferences employed in it, or with its premises, or with both.

In fact, it is easy for an experienced modal reasoner to spot a problem in it: The step from (d) to (e) consists in a so-called *substitution of identicals* – identicals according to Premise 2 – in a modal context: "the actual world" in "For every propositions q: if it is necessary that q is true in the actual world, then it is necessary that q is true" is replaced by "w_0," yielding "For every proposition q: if it is necessary that q is true in w_0, then it is necessary that q is true." It has been known for a long time that substitution of identicals, while being unproblematic when applied in non-modal contexts, can be invalid if applied in modal contexts. And indeed it seems to be invalid *here*; for (d) seems to be true, but (e) seems to be not true (or in other words, non-(e) seems to be true); for (e) appears to have counter-instances, for example: It is necessary that it is true in w_0 that WWII occurred, but it is not necessary that it is true that WWII occurred.

Are there other inferential problems? Apparently *not*: The rest of the inferences employed in the argument seem unobjectionable. But what is to be said about the truth of its premises? In fact, it can be argued that all four of its premises are true (note that I neither approve nor disapprove of *the foundations* of the four-part argumentation that follows):

Premise 2 is true: We employ "w_0" to refer in all contexts to a possible world that, though we do not know it to its full extent, we nevertheless know better than any other possible world. This is so because we live in it; we know countless features and parts of it, all of which are *actual*. In fact, w_0 is the possible world of which *all* features and parts are *actual* (also those features and parts we do not know); it is *the actual world*.

Premise 1, in turn, is self-evidently true. How could a proposition be true and at the same time not be true in the actual world?

Arguing for Premise 3 by way of *reductio ad absurdum*, suppose that [the arbitrarily chosen] proposition q is true in w_0, and that it is not necessary that q is true in w_0. According to *the possible-worlds-analysis of necessity*, this means that q is true in w_0, and that in some possible world it is not true that q is true in w_0. This, one may well argue, is absurd; for although the truth of q in w_0 does certainly not determine the truth of q in every possible world, it evidently determines the truth in every possible world of the proposition that q is true in w_0.

Arguing for Premise 4 by way of *reductio ad absurdum* and again applying *the possible-worlds-analysis of necessity*, suppose that in [the arbitrarily chosen] possible world w the following is true: [the arbitrarily chosen] proposition q is true in the actual world but not true. Therefore we have: (1) it is true in w that q is true in the actual world, and (2) it is true in w that q is not true. (2) comes down to this: q *is not true in* w. And (1) amounts to this: it is true in w that q is true in w; for "the actual world" *is an indexical term* and here refers to w. Therefore, (1) comes down to this: q *is true in* w. – We have a contradiction, and the assumption for *reductio* cannot be true. Therefore, there is (after all) *no* proposition q and possible world w in which it is true that q is true in the actual world but not true. Therefore [by *the possible-worlds-analysis of necessity*], for every proposition q it is necessary: if q is true in the actual world, then q is true.

Obviously, the main pillars of the above argumentation for the truth of the four premises of the World-Argument are *the possible-worlds-analysis of necessity* and *the indexical theory of world-actuality*. Ironically, these two central aspects of *the standard (philosophical) theory of (ontic/alethic) modality* – in short: STOM[1] – do not only serve to establish the premises of the World-Argument, they also serve to refute the World-Argument *for good* – that is, for good *as long as one*

follows STOM. How so?

As we have seen, the World-Argument contains a problematic inference: the step from (d) to (e) via substitution of identicals in a modal context. A friend of the argument and of the kind of determinism it leads to might suggest the following improvement: "Substitution of *necessary* identicals in an alethic modal context is as unproblematic as substitution of identicals in a non-modal context. So, why not strengthen Premise 2 by necessitation, or in other words: by replacing Premise 2 by Premise 2+: *It is necessary that* the actual world is w_0?"

The effect of this modification of the World-Argument is that its logic becomes unassailable. However, is it *still* the case that all of its *current* premises are true? If one follows STOM, the answer must be "No." For suppose Premise 2+ were true; suppose it were necessary that the actual world is w_0. Hence, according to *the possible-worlds-analysis of necessity*, it is true in every possible world that the actual world is w_0. Now, *there is more than one possible world* – which is another central aspect of STOM, and not only of STOM but of every other interesting theory of ontic/alethic modality. Thus, *besides* the world w_0, there is the world w_1, say. It follows that it is true in w_1 that the actual world is w_0; which according to *the indexical theory of world-actuality* means that it is true in w_1 that w_1 is w_0; which comes down to this: w_1 is w_0 – a glaring falsehood!

It might seem that this settles the matter: It might seem that the World-Argument faces the following dilemma: Either one goes with Premise 2, and the logic of the World-Argument is problematic, albeit its premises are true; or one goes with Premise 2+, and the logic of the World-Argument is unassailable, but one of its premises is false (namely, Premise 2+). In either case, the World-Argument does not establish its conclusion. However, this negative verdict depends, of course, on the presupposition that STOM is entirely adequate for analyzing the World-Argument, and that there is no alternative theory which one can also use to analyze the World-Argument.

STOM is ideally suited for a modal ontology according to which there is a vast plurality of possible worlds, each one of which is as possible as every other possible world, each one of which is actual relative to itself and non-actual relative to every other possible world – *and there is nothing more to say*, at least not about the actuality of possible worlds. But one glance at Premise 2 of the (original) World-Argument ought to convince us that the modal ontology just sketched cannot be the whole story; for Premise 2 accords *a special status* to precisely one possible world: w_0; that world is *the actual world*: the one possible world which is – *simpliciter* – actual. *How* can this be true? *How* can the truth of Premise 2 be fitted into the sketched modal ontology with its perfectly egalitarian status of all possible world regarding possibility and actuality? *How*, in other words, can the truth of Premise 2 be squared with the indexical theory of world-actuality, which is entailed by that modal ontology and which is a part of STOM; that is, with the idea that the singular term "the actual world" refers in every possible world *w* to *w* (and there is nothing more to say, at least nothing substantial).

There is only one way to do it: the *simpliciter*-referent of "the actual world" is fixed to be w_0 *for no substantial reason*, purely conventionally (though the fixing *does* confer *distinction*). The *simpliciter*-referent of "the actual world" could also have been fixed to be (the possible world) w_1 – or w_{123}, or w_{83}, or …; it is easily verified that – under STOM – the World-Argument becomes neither better nor worse by uniformly replacing "w_0" in it by "w_{99}," say. This conventionalism is the only

way to square STOM with the special status of w_0 conferred to it by asserting that it is the actual world; that status, adherents of STOM must hold, is a status of *purely stipulated distinction*.

Now, this *is* very counter-intuitive; for the special status of w_0 as *the actual world does* seem to be *substantial*, not purely conventional, not purely stipulatory. If this is really the case, if it is not a metaphysical illusion, then STOM cannot be the wherewithal for analyzing the World-Argument; then the mere plurality of possible worlds says, in itself, nothing in favor of "The actual world is w_0" being a contingent truth – just as it says nothing in favor of its being a necessary truth. What is certain, then, is that the unique distinction of w_0 among the infinitely many possible worlds – the distinction of being identical to *the actual world* (where "the actual world" is a definite description whose uniqueness condition is fulfilled: exactly one possible world is, *simpliciter*, actual) – cannot be the outcome of a metaphysically arbitrary stipulation.

How, then, could "The actual world is w_0" be a *contingent* truth? Why, quite simply thus: It is a perfect ontological accident that the actual world is w_0; the actual world could very well have been another possible world, and –*ultimately*, from the metaphysical point of view – there is simply no explanation for the fact that the actual world *is* w_0 and not another possible world. This is a *factum brutum*; it simply came to pass that the actual world is w_0; there is nothing "behind" this.

Or "The actual world is w_0" could be a contingent truth in the following way (another of the very many conceivable ways of actual-world-contingency, but a rather salient one): God made w_0 actual and no other possible world, this act of creation being *free* in the libertarian sense.

And how could "The actual world is w_0" be a *necessary* truth? For example thus: By the essences of all beings, hence necessarily, God is the absolutely perfect being, and by the essences of all possible worlds, hence necessarily, w_0 is, everything considered, the best possible world.[2] God – being necessarily absolutely perfect: eternally existent, omnipotent, omniscient, perfectly good (hence also perfectly generous) and perfectly rational – necessarily creates, and in His necessary absolute perfection must create, must make actual, the possible world which necessarily is the best possible world: w_0.

Let those believe this who can believe this! Anyway, a rather more secular way of making "The actual world is w_0" a necessary truth can, *ironically*, be extracted from Lewisian modal theory. There is *irony* here because, as we have already seen, STOM – and therefore *Lewisianism*,[3] which is a special form of STOM – can be used to justify the view that "The actual world is w_0" is a *contingent* (though stipulated) truth: because – according to *the indexical theory of world-actuality* – the actual world is w_0 in w_0, but in another possible world *w* the actual world is not w_0 but *w*. Therefore, it is not true in every possible world that the actual world is w_0, hence – according to *the possible-worlds-analysis of necessity* – it is not necessary that the actual world is w_0. Thus, since "The actual world is w_0" is true (and it is true also according to STOM), it must be *contingently* true. Thus speaketh STOM.

But now, in addition to the tenets of STOM, Lewisianism – a special form of STOM – has it that every concrete possible particular – every *possibile* – is a part of one and only one possible world (possible worlds being spatiotemporal maximal concrete possible particulars); and, to boot, Lewisianism has it that this mereology of possibility is purely a matter of

essences (of the possibilia): *it cannot be otherwise*; just like arithmetic is purely a matter of essences (of the natural numbers): it cannot be otherwise. In particular, *we* (you and I, concrete possible particulars that we are) are parts of w_0, and of no other possible world; *and it cannot be otherwise*. Hence, by the lights of Lewisianism, why not hold that "the actual world" is to be defined as the possible world of which *we* are parts? Then it is a matter of the essences of all possibilia (including the possible worlds and *us*), and therefore *necessary*, that the actual world is w_0.

Note that there is still an element of pure, arbitrary stipulation in this: after all, by the lights of Lewisianism (and *so far*, in harmony with STOM), one might just as well define "the actual world" as the possible world of which (not *we* but) *these particular otherworldly human possibilia* (say, counterparts of you and I) are parts. *We* have no edge of actuality on those otherworldly humans. After all, *they* think with the same justification – and the same non-justification – that *their* world is special by being the only possible world that is actual, with which *we* think that *our* world, w_0, is special by being the only possible world that is actual.

We have, therefore, the curious situation in theory-assessment that as long as one looks exclusively at a certain special feature of Lewisianism (namely, the essential belonging of possibilia – in particular, of *us* – to one, and only one, possible world), it can turn out to be *necessarily* true that the actual world is w_0 (namely, if the unique mark of world-actuality is definitionally taken to be *our* belonging to w_0 and to no other world); whereas when one looks exclusively at the features which already belong to Lewisianism qua its being a form of STOM, it is *contingently* true that the actual world is w_0. One might put it in less friendly terms: Lewisianism suffers from a significant lack of coherency.

Notwithstanding this failure and other failures (for example, also of the idea that w_0 – alleged to be essentially, hence necessarily, a best possible world such that there is no other best possible world – *must* turn out to be uniquely actual because, necessarily, all of its prima facie competitors for actuality are eliminated *just in virtue of its superlative worth* qua being the best possible world[4]) – notwithstanding these failures, it is certainly not entirely out of the question that the actual world is necessarily w_0. But just as certainly it requires a notion of actuality-*cum*-necessity which is not that of STOM. (And of course one will *also* have to take leave of STOM if one wants to have it as a *contingent* truth that the actual world is w_0, *but* is not content with the rather thin notion of actuality-*cum*-contingency [or: actuality-*cum*-non-necessity] provided by STOM.)

Would it help the World-Argument if it were *necessary* that the actual world is w_0? There is a *prima facie* and a *secunda facie* answer to this question.

First, the *prima facie* answer: Of course it would help! After all the World-Argument goes through, logically and premise-wise, if Premise 2 – "The actual world is w_0" – is replaced by its necessitation: Premise 2+, and if Premise 2+ is true.

Second, the *secunda facie* answer: According to STOM, all four premises of the World-Argument are very plausible, including Premise 2 (by making the fitting stipulation); but, as we have seen, Premise 2+ – "It is necessary that the actual world is w_0" – is, according to STOM, *not true* if there is more than one possible world – and there *is* more than one possible world, not only according to STOM. Therefore, if, in an effort to boost the World-Argument, Premise 2 is replaced by the *true* Premise 2+, the theory of ontic/alethic modality that allows this replacement cannot be STOM; it must be a

different theory. Now, does a theory of ontic/alethic modality which allows the truth of Premise 2+ give to Premises 1, 3, and 4 of the World-Argument at least as much plausibility as is given to them by STOM?

Premises 1 and Premise 3 give no reason to doubt that this is indeed the case. Premise 4 – "For every proposition q it is necessary: if q is true in the actual world, then q is true" –, however, seems troublesome. Can Premise 4 be true *if*, given the truth of Premise 2+, "the actual world" is no longer an indexical term, or [or/and] necessity is no longer truth in every possible world?

One can avoid answering this question by starting the World-Argument *not* with Premise 4 (together with the other premises), but with its logically weaker corollary: "For every proposition q: if it is necessary that q is true in the actual world, then it is necessary that q is true," which is step (d) in the (original) World-Argument. Call that corollary "Premise 4+" and replace Premise 4 by it; it is easily checked that the conclusion of the World-Argument, if it follows logically from Premises 1, 2+, 3 and 4, *also* follows logically from Premises 1, 2+, 3 and 4+. But now: Can Premise 4+ be true *if*, given the truth of Premise 2+, "the actual world" is no longer an indexical term, or [or/and] necessity is no longer truth in every possible world?

Yes, Premise 4+ can be true then; in fact, it *is* true then. Suppose Premise 2+ is true. The truth of Premise 2+ entails that, in a certain sense, there is necessarily just one *possible* world: w_0. This is so because, necessarily, no possible world except w_0 *really* can be the actual world if it is necessary that the actual world is w_0. But then, the notions of actuality and necessity that enable the truth of Premise 2+, also enable the truth of Premise 4+: Let q be any proposition and suppose that it is necessary that q is true in the actual world. It follows by Premise 2+: It is necessary that q is true in w_0. Moreover, it also follows by Premise 2+ that, necessarily, w_0 is the only *possible* world (that is, the only possible world that *really* can be the actual world). Thus, since it necessary that q is true in w_0, it follows that it is necessary that q is true in every *possible* world. It stands to reason that this, in turn entails: It is necessary that q is true.

Thus, it would indeed help the World-Argument if Premise 2+ were true! Non-determinists can only hope that it isn't true. And there is, of course, plenty intuitive (but not empirical!) evidence against its being true. For, unless we are deeply – unbelievably deeply – mistaken about the actual world/w_0, it is, for example, true – and true in the actual world/w_0, and necessarily true that it is true in w_0 – that WWII occurred; but it does certainly not seem a necessary truth that WWII occurred. Thus, there is an apparent counter-example to the conclusion of the World-Argument – *precisely speaking*: to the conclusion of the *logically impeccable* version of the World-Argument now under consideration, in which Premise 2 is replaced by the logically stronger Premise 2+, and Premise 4 is replaced by the logically weaker Premise 4+. And therefore, making use of *selective logical contraposition*:[5] Premise 2+ does not seem to be true, and, one has to admit, it seems *very much* to be not true.

Premise 2+ is the pivot of the World-Argument. It is an empirical truth that the actual world is w_0; in other words, Premise 2 is empirically true. But this does not preclude that it is a *necessary* truth that the actual world is w_0. Neither, of course, does it preclude that it is a *contingent* truth that the actual world is w_0. Unfortunately, experience does not teach us anything about the (ontic/alethic) modality of the truth that the actual world is w_0 – it teaches us nothing about the modal

character of the true Premise 2. Experience is strictly silent concerning this point. *A priori* considerations based on *a priori* intuitions are all we have here. However, as philosophers have known at least since the time of Kant, *a priori* considerations – at least if they are not of a purely logical or mathematical nature – can turn (and, as a rule, do turn) either way: *pro* et *contra*, *sic* et *non*.

Footnotes

[1] Actually, I do not know *how standard* that theory really is. Note that the modal metaphysics of David Lewis is a form of STOM. But STOM is certainly not generally burdened with the idiosyncrasies of Lewis's theory – as, for example, counterpart theory and extreme modal realism. I surmise that deflationary modifications of *Lewisianism* (of which *Leibnizianism* is an ancestor) serve as the most popular tools for present-day philosophers – in particular, non-specialists – when they have to deal with ontic/alethic modality. STOM is a kind of "average" of those modifications.

[2] In the proposed hypothetical metaphysical scenario, the existence-and-uniqueness conditions for the two definite descriptions ("the absolutely perfect being" and "the best possible world") are *necessarily* fulfilled.

[3] For getting to know Lewisianism thoroughly, nothing better can be done than to read David Lewis's *On the Plurality of Worlds*.

[4] Cf. Nicholas Rescher, *Axiogenesis. An Essay in Metaphysical Optimalism*.

[5] This is an instance of *selective logical contraposition*: If C follows logically from P1, P2+, P3 and P4+ [and it does so follow], then non-P2+ follows logically from non-C, P1, P3 and P4+. There is also the following logical connection: If (e) follows logically from P2+ and P4+ (that is, (d)) [and it does so follow], then non-P2+ follows logically from P4+ (that is, (d)) and non-(e). And non-(e), as we have seen early in the paper, does seem to be true. Last but not least, there is the following logical connection: If P4+ follows logically from P2+ [and this seems to be indeed the case], then non-P2+ follows logically from non-P4+. But whereas there is strong intuitive assent to non-C and to non-(e), intuitive assent to non-P4+ seems to be lacking.

References

- Lewis, David: *On the Plurality of Worlds*. Oxford: Blackwell 1986.
- Rescher, Nicholas: *Axiogenesis. An Essay in Metaphysical Optimalism*. Lanham, MD: Lexington Books 2010.