

THE TRANSIENCE OF POSSIBILITY

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ABSTRACT

The standard view of metaphysical necessity is that it is truth in all possible worlds, and therefore that the correct modal logic for metaphysical necessity is S5, in models of which all worlds are accessible from each other. I argue that S5 cannot be the correct logic for metaphysical necessity because accessibility is not symmetric: there are possible worlds that are accessible from ours, but from which our world is inaccessible. There are (or could be) some individuals who, if they had not existed, could not have existed. Once such individuals are lost, their possibility is gone forever.

Key words: metaphysical necessity, modal logic, S5, accessibility, symmetry

1. *Truth in all possible worlds?*

It is now widely (though not universally) accepted that metaphysical necessity is to be distinguished from logical necessity. A proposition is logically necessary if it is a theorem of logic. The notion of logical necessity is not without its problems. When we say ‘a theorem of logic’, which logic is appropriate for this definition? Should we use mere first-order logic, or something more powerful? (Are axioms of second-order logic logically necessary truths?) What if the relevant logic is not complete, so that some true sentences are not theorems? Are all mathematical truths *logically* necessary? Or, given the apparent failure of efforts to reduce mathematics to logic, should we say that some mathematical propositions are not logically necessary but perhaps ‘mathematically necessary’, relative to a particular system of mathematics? How should we adjudicate wrangling between adherents of mutually incompatible logics, such as classical and non-classical logics?

Regardless of how we answer these questions, the notion of logical necessity is at

heart a syntactic one. A logically necessary sentence should be deducible, either in a formal system or using informal semantics, from logical axioms. The prevailing opinion is that metaphysical necessity, by contrast, is not a syntactic notion. The class of metaphysically necessary truths might include interesting and substantive theories on a whole host of different topics: essences, or the identity of indiscernibles, or the supervenience of the mental on the physical, or The list is potentially limitless. Of course, each candidate for inclusion on the list would need to be assessed separately. But from looking at the diversity of the candidates, we have no reason to think that all metaphysically necessary truths would or should be subsumable as theorems of some topic-neutral logic. Thus we need an independent description of what it means for a sentence to be metaphysically necessary.

Metaphysical necessity is sometimes glossed, by those already inclined to accept talk of possible worlds, as truth in all possible worlds. This is a very high standard for a proposition to meet — much higher, for example, than the standard for nomological necessity. A proposition is nomologically necessary iff it holds in all possible worlds whose laws are sufficiently similar to ours, or perhaps (depending on one's purposes) iff it holds in all possible worlds whose laws and initial conditions are sufficiently similar to laws and conditions in our world. These are the worlds that are nomologically *accessible*, and nomologically inaccessible worlds are disregarded. But for metaphysical necessity, no possible world is too far away. If there is even one world where a proposition fails, no matter how remote the world is, the proposition fails to be metaphysically necessary. All possible worlds are metaphysically accessible. Metaphysical necessity is truth at all accessible possible worlds; therefore, given universal accessibility, metaphysical necessity is truth at all possible worlds.

It has been suggested that the concept of metaphysical necessity cannot be reductively *analysed* as truth in all possible worlds unless one has a non-modal account of possible worlds (of the sort offered in Lewis 1986, for example) — hence my characterization of the putative definition as a 'gloss'. But let us put aside the question of whether the gloss can be a genuine analysis. Even as a mere equivalence, is it accurate? Are all possible worlds equally accessible when it comes to evaluating the metaphysical necessity or possibility of propositions?

The same question can be put in formal rather than metaphysical terms: Is S5 the correct modal logic for metaphysical necessity, as is commonly thought?

A metaphysician can evaluate the most popular of the various modal logics on the market by considering the model structures (frames) that characterize each of the logics.¹

¹ A logic is characterized by a class of model structures (frames) iff the logic is sound and complete for that class of frames, i.e., iff the theorems of the logic are all and only those sentences that are valid in every frame within that class, Hughes and Cresswell 1984, p. 12, p. 54; Hughes and Cresswell 1996, p. 40. Proofs of the completeness results assumed in this paper (e.g., that S5 is characterized by the class of frames that are reflexive, symmetric and transitive) are available in both these sources.

A Kripke model structure consists of a set of worlds, with one identified as actual, and an accessibility relation on those worlds. A world w_2 is *accessible from* a world w_1 iff w_2 is possible relative to w_1 : that is, if w_2 represents a genuine possibility with respect to w_1 . Different logics are associated with different types of accessibility relation. By deciding — on metaphysical rather than formal grounds — what type of accessibility relation is appropriate for metaphysical necessity, we can narrow down the candidates for the correct modal logic, perhaps to a single winner.

S5 is certainly the most plausible candidate. It is characterized by model structures that are reflexive, symmetric and transitive. An accessibility relation with these three properties need not be universal, as there can be discrete equivalence classes of worlds, with no accessibility relations holding between worlds in different equivalence classes. However, such discrete equivalence classes turn out not to matter, since superfluous equivalence classes can be trimmed away to leave a single class of worlds all of which are accessible from each other. In fact, it can be shown that S5 is also characterized by a single model structure (of the type known as a canonical subordination frame) in which all worlds are accessible from each other: a sentence is a theorem of S5 if and only if it is valid in a canonical subordination frame on which all worlds are mutually accessible (Hughes and Cresswell 1984, p. 123). In effect, S5 makes all worlds universally accessible, as required by the standard account of metaphysical necessity.

Despite the attractiveness of the view that metaphysical necessity is truth in all possible worlds, I shall argue that the correct modal logic for metaphysical necessity cannot be S5, on the grounds that symmetry fails for relative possibility. In the next section I will briefly discuss some reasons for thinking that relative possibility should be reflexive and may be transitive, and outline what I take to be the correct framework for statements involving higher-order modality (possibilities about possibilities). In section 3 I will offer an argument against the symmetry of accessibility that arises from what I shall call the transience² of possibility: some possible objects cannot be retrieved once they have been hypothesized away. There are possible objects which, if they had not existed, could not have existed.

2. Reflexivity, transitivity and nested possibilities

It seems fairly clear that accessibility should be reflexive. Given an arbitrary possible world w , we do want to require that w be possible relative to itself. (These are *possible* worlds, after all!) The weakest modal logic that honours this intuition is the logic T, the characteristic axiom of which is

$$\mathbf{T}: \Box A \supset A.$$

² As is so often the case in modal talk, this is a temporal metaphor for a modal phenomenon.

This axiom says that whatever is necessary is true: any proposition that is metaphysically necessary will be true at the actual world. The **T** axiom is false on some other interpretations of the necessity operator ‘ \Box ’, e.g., the deontic one on which ‘ $\Box A$ ’ is read as ‘it is morally required that A ’; but on such interpretations the relevant accessibility relation is not reflexive. The relative possibility relation for deontic logic(s) picks out those worlds which are morally permissible relative to ours, and our own world is not one of them. However, if ‘ $\Box A$ ’ is read as ‘it is metaphysically necessary that A ’, it seems intuitively obvious that if ‘ $\Box A$ ’ is true, ‘ A ’ should be true as well: anything that is necessarily true must be true *simpliciter*. Christopher Peacocke has offered a very detailed argument that the axioms and rules of **T** should be regarded as correct (Peacocke 1997). As this is not highly controversial, I will not discuss reflexivity further.³

Transitivity is a different matter. Nathan Salmon has offered a sorites argument against the transitivity of the accessibility relation (Salmon 1986; Salmon 1989). Suppose we agree by and large with Kripke (Kripke 1980) that a table has its origins essentially — that is, it was necessarily made from a certain piece of wood P_0 — but want to allow a little leeway in the origins. The table could have been made from a very slightly different piece of wood, say P_1 , which is the same size and shape as P_0 but is taken from one millimetre further down the same tree trunk as P_0 . So there is a world w_1 at which the table is made from P_1 . At world w_1 , it will be true that the table could have been made from P_2 , a piece of wood that is taken from one additional millimetre further down the same tree trunk. So there is a world w_2 , accessible from world w_1 , at which the table is made from P_2 . Suppose that accessibility is transitive. Then there is a world w_{1000} , accessible from the actual world, at which the table is made from P_{1000} , a piece of wood that differs from the table’s actual origins by a full metre. Such a difference is too large; the table could not have been made from P_{1000} . Thus world w_{1000} cannot in fact be accessible from the actual world. Unless we want to give up the transitivity of identity, we must give up the transitivity of accessibility. Having done so, we must discard the axiom of modal logic that guarantees transitivity:

$$4: \Box A \supset \Box \Box A; \text{ or, equivalently (and more perspicuously): } \Diamond \Diamond A \supset \Diamond A$$

³ That is, except in this footnote. The counterexamples to the symmetry of accessibility that I discuss later in the paper require that sometimes domains can decrease when we move from one world to another world accessible from it (although domains can also increase). When domains differ from world to world, a standard definition of what it means for a sentence of the form ‘ $\Box Fa$ ’ to be true at a world w is that ‘ Fa ’ is true in every world accessible from w at which ‘ Fa ’ is defined (i.e., at which ‘ Fa ’ receives a truth-value). There can be truth-value gaps. Suppose that the domain of w does not contain the referent of ‘ a ’. ‘ Fa ’ is undefined at w , so ‘ Fa ’ is not true at w . Suppose also the referent of ‘ a ’ is missing from the domains of all worlds accessible from w . At all of those worlds, ‘ Fa ’ is undefined. Then ‘ $\Box Fa$ ’ is vacuously true at w : at all of the zero worlds accessible from w at which ‘ Fa ’ is defined, ‘ Fa ’ is true. So ‘ $\Box Fa$ ’ is true at w even though ‘ Fa ’ is not true at w . Thus even if a frame is reflexive, the axiom **T** may not be valid in that frame. (I am grateful to an anonymous referee for this point.)

In order to guarantee the truth of axiom **T**, what is needed is that we adopt a different semantics from the account above. We can disallow truth-value gaps and require that if a sentence is not true at a world (say because of a non-referring term), it is false. Then ‘ $\Box Fa$ ’ is true at a world w iff ‘ Fa ’ is true at every world accessible from w . If at some of those worlds the referent of ‘ a ’ does not exist, then ‘ $\Box Fa$ ’ is false at w . Then if the model is reflexive, ‘ $\Box Fa$ ’ cannot be vacuously true at a world at which ‘ Fa ’ fails to be true.

Despite sharing Salmon's modal intuitions about the table, I am no more convinced by his argument by than a sorites argument purporting to show that there is no such thing as baldness. An appropriate solution to the dilemma would require a general solution to the problem of vagueness, not the piecemeal rejection of the transitivity of accessibility. Nevertheless, Salmon's argument is extremely helpful in showing how the concept of metaphysical necessity might be divorced from that of truth in *all* possible worlds. Some possible worlds, like w_{1000} , are too far away to be of interest when we are assessing metaphysical necessity, just as some possible worlds are too far away to be relevant to questions of nomological or physical necessity.

This may be too quick, however. It is not clear that w_{1000} is a *possible* world, even a remote one. Table T is actually made of P_0 , and w_{1000} is supposed to be a world at which T — the very same table — is made of P_{1000} , a completely different piece of wood. (Let's suppose that T is less than one metre long.) If we are assuming the essentiality of approximate origin, the table in w_{1000} is a different table. A world that is possibly possible, or possibly possibly possible, or ... , may be an impossible world. w_{1000} is merely a possibly⁹⁹⁹ possible world and is not itself possible. Only those w_n sufficiently close (this is vague) to the actual world are possible. This would preserve the equivalence between metaphysical necessity and truth in all *possible* worlds.

An adequate account of the relationship between possibly possible worlds and straightforwardly possible worlds requires a base-level account of what is involved in claiming a counterfactual situation as a genuine possibility. Such an account is given in Hayaki 2003, so I will not reproduce the full details here. For my present purposes, I will need only the standard (or a common) actualist view of possible worlds as linguistic entities⁴, supplemented by some apparatus for dealing with higher-order modality so that we can adequately discuss the transitivity and symmetry of accessibility.

When we refer to a total counterfactual situation as genuinely possible, *i.e.*, as a possible world, we are postulating a linguistic entity of a certain kind (say a complete and metaphysically consistent set of sentences in an idealized language).⁵ Let's call this a

⁴ My actualist, ersatzist inclination is to say that genuine possibilities are delineated in part by the strictures of logic and in part by the latitude with which we use terms in our language. A possible world is a (total) way things could have been, and ways that things could have been are distinguished from ways that things couldn't have been by reference to linguistic rules. When I say that Richard Nixon couldn't have been a poached egg, I am appealing to the comparatively ungenerous boundaries of the term 'Richard Nixon': our grasp of what it takes for something to be Richard Nixon does not permit us to postulate a world in which he is a poached egg, rather as our understanding of legal chess moves does not permit us to move a rook diagonally. The closest we can get is a world from which a Nixon-like person is completely absent and in which there is an extra poached egg not found in our world. This is not to say that metaphysical necessity is mind-dependent; nor is it, in any ordinary sense, (merely) language-dependent. Whether a true proposition is necessary or contingent is determined by the syntactic rules of the language, empirical facts that bear on correct reference (such as Hesperus turning out to be Phosphorus, or gold turning out to be the element with atomic number 79), and, most importantly, extrapolations from thought experiments that reveal how in fact our language sets transworld identity conditions (such as a refusal to treat a table made from completely different materials as the very same table).

⁵ I concede Lewis's point (Lewis 1986) that the notion of metaphysical consistency must be taken as primitive unless one has a fully reductive analysis of the concept of a possible world, of the sort that he offers (as does Armstrong, in Armstrong 1989; see below).

world-story. The world-story will contain both non-modal and modal propositions: ‘there are purple cows’ as well as ‘there could have been blue giraffes.’ (Without using talk of worlds or world-stories: ‘It could have been the case that there were some purple cows and that there could have been blue giraffes.’) For the possibility within a possibility, we are postulating a world-story within a world-story.⁶

Now, to return to the issue of transitivity: are possibilities-within-possibilities guaranteed to be possibilities *simpliciter*? With ordinary fiction, a story-within-a-story is not necessarily a story in its own right. A story might contain a character who has written a best-selling novel, not one word of which is made available to us as the readers. It is true within the story that the character has created a story, but this internal story is not a story. Similarly, a world-story-within-a-world-story — henceforth a second-order world-story — is not a world-story *simpliciter*, *i.e.*, a first-order world-story. However, it may be that the nested possibility is not only a possible possibility, but an actual possibility: not only is it the case that it *could have been* the case that there could have been blue giraffes; it *actually is* the case that there could have been blue giraffes. In such cases, rather than saying that the second-order world-story containing blue giraffes is also a first-order world-story, I shall say that there is a separate first-order world-story according to which there are blue giraffes.

Some possibilities-within-possibilities are themselves genuine possibilities. Of course, this does not mean that all are, so we have not yet answered the question of whether to accept Salmon’s argument for treating some nested possibilities as impossible. If Salmon is right, then on the new framework of nested worlds there is a first-order world-story according to which table T is made from P_1 rather than P_0 ; within that, a second-order world-story at which T is made from P_2 ; nested deep within, a thousandth-order world-story at which T is made from P_{1000} ; and although for sufficiently small n , there are duplicate first-order world-stories in which T is made from P_n , these disappear as n approaches 1000. For the reasons mentioned before, I am not inclined to reject the transitivity of accessibility on the basis of a sorites argument; however, I will leave the matter open, since I shall take another route of attack on S5 as the correct logic for metaphysical necessity.

There is one important thing to note about the framework of nested world-stories: since higher-order world-stories are not themselves world-stories (any more than merely possible individuals are actual individuals), the accessibility relation is no longer a relation between possible worlds, but between an n th-order world-story and an $(n+1)$ st-order world-story nested inside it. The actual world is the only zeroth-order world-story, and second- and higher-order world-stories are not world-stories *simpliciter* (because they

⁶ This relation is not set-theoretic containment; see Hayaki 2003. Each n th-order world-story stipulates the $(n+1)$ st-order world-stories within it. When we say that there is a second-order world-story within a first-order world-story, this is elliptical for the official translation: there is a first-order world story according to which it is true that there is a second-order world-story.

are not first-order world-stories).⁷ Metaphysical necessity is still truth in all world-stories, but these are just first-order worlds. ($\Box A$ is true at the actual world if and only if A is true at all worlds directly stipulatable from the actual world.) The **T** axiom holds iff each n th-order world-story stipulates a copy of itself; the **4** axiom holds iff whenever an n th-order world-story stipulates an $(n+1)$ st-order world-story that stipulates an $(n+2)$ nd-order world-story, the n th-order world-story directly stipulates a copy of the $(n+2)$ nd-order world-story as an $(n+1)$ st-order story in its own right.

3. *Transient possibilities and the failure of symmetry*

In addition to the axioms **T** (reflexivity) and **4** (transitivity), the modal logic S5 also includes the following axiom for symmetry:

$$\mathbf{B}: A \supset \Box \Diamond A$$

Using the standard Kripke semantics, we can explain the rationale for this axiom (or theorem) as follows. Suppose that it is true that A , and accessibility is symmetric. Then for any world w that is accessible from the actual world, the natural world should be accessible from w . So at any such world w , it will be true that possibly A , by virtue of its being true in the actual world that A . Since it is true that $\Diamond A$ in all worlds accessible from the actual world, it is true at the actual world that $\Box \Diamond A$.

According to the nested world-story framework, the axiom **B** will hold iff whenever an n th-order world-story stipulates an $(n+1)$ st-order world-story, the latter stipulates an $(n+2)$ nd-order world-story that is a copy of the n th-order world-story.

David Armstrong has offered an argument somewhat similar to mine against the symmetry of accessibility (Armstrong 1989). My transient possibilities involve disappearing individuals; his involve disappearing universals. They are introduced in the context of his combinatorial theory of possibility, wherein possible worlds are constructed in a naturalistically acceptable manner from the components of our own world, with one exception: ‘alien individuals’ (*i.e.*, individuals who do not exist at our world) can be made available for recombination in other possible worlds through ‘abstraction’ and ‘analogy’. However, as on his view universals must be instantiated, alien universals can-

⁷ For the hairy ontological details, see Hayaki 2003. If a novel says that there is a Belgian detective with a magnificent moustache, this does not imply that there is (in our world) a flesh-and-blood Belgian detective with a magnificent moustache. If a novel says that there is a novel about a tall, gangling Finnish detective who is a vegetarian, this does not imply that there is (in our world) a paper-and-ink novel about a tall, gangling Finnish detective who is a vegetarian. Similarly, if a first-order world-story says that there is a world-story according to which there exists a tall, gangling Finnish detective, this by itself does not imply that there is (in our world) a first-order world-story according to which there exists a tall exists a tall, gangling Finnish detective.

When we say that a sentence (such as an axiom of a modal logic) holds ‘at all worlds’ or ‘in all world-stories’, the following need to be disambiguated:

- (1) The sentence holds at all first-order worlds.
- (2) The sentence holds at all n th-order worlds, for all $n \geq 0$.

not exist. This means that possible worlds can be derived by contracting the actual world with respect to the number of universals, but not by expanding it. Suppose our world contains a simple property F which is missing from an accessible world w . Then our world is not accessible from w because it contains a property that is alien to w . Armstrong writes:

How can it be denied that a certain simple universal might not have been instantiated? But to make such a supposition is to suppose actuality contracted, and then, with this supposition made, actual actuality will contain a universal alien to the supposed actuality. Hence the actual world becomes inaccessible to, that is, not a possible world relative to, the supposed world. But this, we argued, a Combinatorialist can accept. You cannot get the actual world combinatorially from the supposed world. With actuality contracted, possible worlds must be considered contracted. That seems straightforward. Its formal expression is that a class of worlds which contains both the actual world and certain contracted worlds must have an S4 rather than an S5 logic. (Armstrong 1989, p. 63)

If one does not already subscribe to Armstrong’s combinatorialism and his realism about (instantiated) universals, the above argument may not be persuasive. My own counterexamples to the axiom **B** do not require such prior commitments. For some proposition A , once we move to a world-story at which it is false that A , the possibility of A is irretrievably lost. These examples of transient possibilities do not require the nested world-story framework, although I will occasionally use the framework for ease of exposition. The counterexamples to symmetry do not rest on any closeness metric between worlds (*cf.* Salmon’s counterexample to transitivity, in which w_1 is close enough but w_{1000} is too far away), but more straightforwardly on the intuitive failure of accessibility in one direction.

Consider the following sentence:

(I) Even if I had not existed, I still could have.

A reasonable interpretation of (I) is:

(I') $\Box(I \text{ do not exist} \supset \Diamond(I \text{ exist}))^8$

⁸ Perhaps this translation requires some justification. (I) is intended as a metaphysical thesis: in all worlds at which I do not exist, my existence is still a possibility. Thus, it is true at all worlds that if I do not exist, it is possible that I exist.

The following is also a plausible candidate for the formalization, and closer structurally to the original English subjunctive conditional (I):

(I'') I do not exist $\Box \supset \Diamond(I \text{ exist})$

This says that if it were the case that I do not exist, then it would be the case that it is metaphysically possible that I exist. In general, a counterfactual ' $P \Box \supset Q$ ' is not equivalent to the strict conditional ' $\Box(P \supset Q)$ ' (Lewis 1973); the latter entails the former but not vice versa. However, this gives us what we need. Our question is whether there is a counterexample to (I') or some similar strict conditional (such as (I') or (\Box) below); if there is, then accessibility is not symmetric. If we find a plausible counterexample to the counterfactual, then this will also falsify the strict conditional as desired. So it is harmless to gloss the English subjunctive conditional (I) as (I').

We can give another defence of the assimilation of (I) to (I'). The counterfactual (I'') is true at a world w iff, roughly,

Is (I') true (at the actual world)? Consider all those worlds (for now, it needn't matter whether we mean Kripkean worlds or first-order worlds in the hierarchy of world-stories) at which I don't exist. At some, my parents decide not to have children; at others, they never meet; at yet others, they don't exist at all. Take the last possibility, the most remote case. If my parents had not existed, could I have existed? The popular doctrine of the necessity of origin states that I am essentially the (unique) product of the union of a certain egg and sperm. Without my parents, the sperm and egg would not be available. Nevertheless, it would still be true that events could have unfolded so as to produce my parents, the egg, the sperm, and me — after all, we are talking about metaphysical possibility, not nomological.

It is not obvious that we are in the clear, however. Consider a (first-order) world-story according to which I do not exist. It seems entirely plausible that according to that world, someone qualitatively identical to me could have existed. What, if anything, allows the inference that such a person (in the second-order world-story) would in fact be me rather than a duplicate?

A counterpart theorist could say that that the person in the second-order world-story who is qualitatively identical to me would be my counterpart by virtue of being extremely similar to me and more similar to me than is any worldmate of hers (Lewis 1968). This would be enough to secure the truth of (I). However, this will not help those of us who favour transworld identity over counterpart theory.

Another response, more in keeping with the Kripkean spirit, would be to appeal to the sufficiency of origin. Not only is it essential (*i.e.*, necessary) to my identity that I be the product of a particular egg and sperm, but being the product of that egg and sperm is sufficient for being identical to me. Of course, if the hope was to find a purely qualitative description by which I might be identified, referring to a particular egg and sperm will not be helpful for those world-stories where those particular gametes are absent; the problem would iterate to that of finding further sufficient conditions for being those gametes. Furthermore, sufficiency conditions for transworld identity, usually employed in order to establish the essentiality of origin (Salmon 1981; Forbes 1985; Salmon 1986), have been attacked as being “false, or at least groundless” (McKay 1986); too strong in disallowing even minor variation in origin (Robertson 1998); or too limited once restricted to avoid counterexamples (Hawthorne and Gendler 2000). This, coupled with the dim prospects for a purely qualitative specification of sufficiency conditions for transworld identity, should be enough to give one pause about the permissibility of identifying the me-like creature in the second-order world story as me.

all those worlds closest to w (by some appropriate closeness metric) at which I do not exist are worlds where it is possible that I exist. The strict conditional (I') is true at a world w iff all those worlds accessible from w at which I do not exist are worlds where it is possible that I exist. Accessibility from w is usually not the same thing as being in the sphere of worlds closest to w , but the content of (I) forces the use of a closeness metric on which all accessible worlds count as being in the closest sphere.

It has been pointed out that there is no ‘Jules-Verne-o-scope’ (Kaplan 1979) with which to peer into other possible worlds so that we might compare them with ours. Rather, Kripke’s famous dictum is that possible worlds are “stipulated, not discovered through a powerful telescope” (Kripke 1980, p. 44). When I say that there is a possible world in which I am an inch taller, I do not need to ask, ‘How can I be sure that the woman in the world I’m talking about, who looks just like me but is an inch taller, is really me?’. So why not simply stipulate that (I) is true: for every world at which I do not exist, there is another world, accessible from the first, at which I — the very same person, not some duplicate — do exist?

There is a general worry about this model for counterfactual possibilities, that it is not completely clear what the bounds of permissible stipulation are. If origin is indeed essential, I may not stipulate a world in which I am the daughter of the current actual Queen of England. I may not stipulate a world in which Hesperus and Phosphorus are distinct. The main source of guidance concerning which metaphysical possibilities are genuine is simply modal intuition: thought experiments about counterfactual situations. That does not seem highly reliable. I personally can report that although my intuitions regarding origin essentialism are fairly stable, I am divided on whether I could still have existed even if I had not existed.⁹

Surely we can do better than this. Perhaps there is a brute fact of the matter about such transworld identities and possibilities. In addition to the usual properties such as mass, acceleration, date of birth, eye colour and so on, I also have a non-qualitative property, a unique haecceity or thisness (Adams 1979) all my own. It is my thisness, more than any ‘suchnesses’ (qualitative properties) I have, that ground my identity, both across times and across worlds; for suchnesses, with the exception of the essential ones, are notoriously changeable from one time to the next and from one world to another.

The problem with appealing to haecceities to solve our current problem is that haecceities can hardly be regarded as explanatorily prior to the identity of an object. To say that the me-like person in the second-order world-story is me iff she has my haecceity is not to say much more than that she and I are one iff she and I are one. Thisnesses are by their nature not themselves identifiable or even describable, and certainly they are not uncontroversial.¹⁰

⁹ For what it’s worth, my mother (a non-philosopher) is adamant that if I had not existed, only a qualitatively identical duplicate of me could have existed.

¹⁰ David Wiggins writes: “The requirement that essences determined otherwise than through identity itself should be unique to particulars (like almost any other attempt either to say anything or to deny anything by means of the idea of *haecceity* or this-ness) is the product of confusion. [...] So far, we lack any reason to believe in the existence of any *haecceitas* that is defined or manufactured otherwise than via designation of the owner of the property in question. It is hard to think of anything true and significant that could be said using the idea of thisness (which-ness?) not better said while respecting the distinctions *designation / predication* and *particular / universal*. It is harder still to imagine an approach to the identity of a thing that makes its explanatory beginning with *haecceitas*.” Wiggins 2001, p. 126.

I am aware that my case against the truth of (I) is hardly conclusive. However, the overall case against the symmetry of accessibility can be strengthened by considering other examples. Suppose that leptons are indeed indivisible and structureless. Does each lepton have sufficiency conditions for transworld identity, despite not having any constitution to speak of? Does it have its own thisness? In order to block the argument against symmetry, we would need the following:

(L) Even if this lepton had not existed, *it* [the very same lepton] still could have existed.

Analogously with (I) and (I'), the gloss is:

(L') $\Box(\text{this lepton does not exist} \supset \Diamond(\text{this lepton exists}))$

I cannot find any strong intuitions to support (L) or (L'). Even worse, not only do we need something analogous to (L) for all actual objects; we need it for all *possible* objects. That is, the analogue of (L) must hold not just at the actual world, but in all higher-order world-stories as well, for any denizen of those higher-order worlds and not just the ones that also live in the actual world. So we need:

(\Box) Necessarily, for any object x , even if x had not existed, x could have existed.¹¹

(\Box') $\Box\forall x\Box(x \text{ does not exist} \supset \Diamond(x \text{ exists}))$

This is an extremely strong requirement to impose on all of modal space.

Even for those whose intuition is strong that some individuals, like people, are interesting enough to have sufficient conditions for transworld identity (such as origin or constitution), I suspect it will be difficult to maintain the same bravado for fundamental particles, especially as their identity conditions are already so problematic. Maintaining the symmetry of accessibility requires that there always be a distinction between any possible object and its exact duplicate. Holding on to this principle strikes me as rash. The sensible course of action is to jettison it, along with our allegiance to S5 as the correct logic for metaphysical necessity. Accessibility is not symmetric. Some possibilities are ephemeral; once they have passed into the shade, they will never again see the light of possibility.¹²

¹¹ In fact, if one wished to defend **B** (by ruling out transient possibilities) but reject **4**, one would also need (\Box) with arbitrarily many occurrences of “necessarily” at the front.

¹² I am grateful to an anonymous referee for helpful comments on an earlier draft.

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