

Lewisian Worlds and Buridanian  
*Possibilia*

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# Lewisian Worlds and Buridanian *Possibilia*

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Many things can be other than they are. Many other things cannot. We talk about such things all the time. But what is this talk about? One answer, presently dominant in analytical philosophy, is that we are speaking of possible worlds: if something can be other than it is, then it actually is that way in some (other) world. If something cannot be otherwise, it is not otherwise in any world whatsoever. But what are these worlds? David Lewis famously claims that every world exists, just like ours does. In contrast, the medieval thinker John Buridan understands modal logic in terms of objects and causal powers: if something can be other than it is, then there is a causal power that can make it that way. If it cannot, then no causal power—not even God—can make it otherwise. As we'll see, (i) the Lewisian plurality is not possible on Buridan's account, and accordingly (ii) a basic tenet of classical theism is untenable on Lewis's metaphysics. In short, either the Lewisian plurality is incoherent, or a core monotheistic tenet is impossible.

Modal sentences deal with things that can or must or cannot be. For example, we say that a triangle *can* be drawn, *must* be three-sided, and *cannot* be round. What makes a modal sentence modal? Short answer: its inclusion of a modal term like *can* (*possibly*), *must* (*necessarily*), and so forth. Such terms register that a claim is being qualified in such a way that the conditions of its truth are not limited to the way things actually are. But what is this modal talk about? Over the past two and a half millennia, answers have varied. Relatively recently, we have come to think of modes in terms of quantification over worlds: what is possible is true in at least one world, and what is necessary is true in all. Call this the *worlds-reading* (WR) of modal sentences. David Lewis (1941–2001) famously understands WR ontologically: these worlds really exist as spatiotemporal isolates, and are every bit as real as our own.

30 Contrast WR with a much older—and for a long time prominent—  
 31 understanding of what modes are: terms whose operation on sentences  
 32 expands (or *ampliates*) the extension of their terms, so that the terms range  
 33 over possible objects, including non-existent ones. The modal properties of  
 34 these objects are grounded in the causal powers of existing things: a triangle  
 35 can be drawn because you or I can draw one; it is necessarily three-sided  
 36 because there is no causal power (not even God) capable of making a triangle  
 37 to be otherwise—at least, not without depriving it of its triangularity. Call  
 38 this the *objects reading* (OR) of modal sentences. This is the view of John  
 39 Buridan (c.1300–1361).<sup>1</sup> A careful examination of WR and OR reveals that (i)  
 40 they are incompatible, so that the Lewisian plurality is not a possible object or  
 41 collection of objects; and accordingly that (ii) the worlds-reading, at least in  
 42 its Lewisian form, is incompatible with a basic tenet of classical monotheism.

43 Why compare Buridan and Lewis? I have three reasons. First, Lewisian  
 44 modal realism is well-known, and therefore provides a convenient off-the-  
 45 shelf foil for Buridan's modal ontology. Second, Lewis has clear ontological  
 46 commitments, and so he is easy to pin down. Compare the ontologically  
 47 agnostic Kripkean modal semantics and syntax: you and I may have very  
 48 different views on what worlds are, but nevertheless agree on a Kripkean  
 49 reading of the claims of WR.<sup>2</sup> So the Kripkean account does not provide a  
 50 clear and illuminating contrast for Buridan's modal ontology, the way Lewis's  
 51 approach does.<sup>3</sup> Third, contrasting Lewis and Buridan illuminates latent  
 52 aspects of both. It gives us an insight into Lewis, hitherto unrecognised in  
 53 the literature; and it reveals Buridan's own views on the limitations on divine  
 54 power—limitations he does not explicitly discuss at length. After all, placing  
 55 restrictions on God's power would have been a hazardous thing to do at the  
 56 fourteenth-century University of Paris.<sup>4</sup> All the more so for an Arts Master

1 For a discussion of earlier debates about causal powers in the twelfth and thirteenth centuries, see Peter King (2021).

2 This is indeed one of the strengths of modern modal logics: we can use them to talk about worlds, computation states, etc.—as Patrick Blackburn, Johan van Benthem, and Frank Wolter point out in the preface to their (2007) *Handbook of Modal Logic*. More on this in a moment.

3 I do not doubt the value of contrasting Buridan's account with other views of what worlds are: Adams's (1974) reduction of modal talk to sets of propositions, Plantinga's (1974) view that they are states of affairs, Stalnaker's (1976) that they are properties, or Fine's (2003) that they are facts. I suspect that for various reasons, some subtle and some less so, Buridan's anti-realism would preclude all these. But Lewis's view is the most unlike Buridan's and therefore provides a useful foil for now.

4 In particular the infamous Condemnations of 1277 insisted on the boundlessness of divine power. For a discussion, see Grant (1979), and more recently Thijssen (2018).

57 who, as he explicitly acknowledges, is not qualified to teach theology.<sup>5</sup> All the  
 58 same, we can tease out the consequences of the views Buridan does express.  
 59 And there is more here than meets the eye.

60 Let's begin with WR, which is relatively familiar, and has two important  
 61 shortcomings that point to two strengths of OR.

## 61 Possible Worlds

63 Nowadays, we tend to think of modality in quantificational terms: a modal is  
 64 a sentence with a modal operator like '□' or '◇', for necessity and possibility,  
 65 respectively. Such operators quantify across possible worlds. On these lights,  
 66 □ $\varphi$  just says that  $\varphi$  holds in all possible worlds, and ◇ $\varphi$  says that  $\varphi$  holds in  
 67 at least one. The parallel, then, is with the ordinary first-order quantifiers:  
 68 (□-like) '∀', and (◇-like) '∃'.<sup>6</sup>

69 There is much to be said for WR, but here I will limit myself to two points.  
 70 First, it's versatile: we can use the apparatus of worlds to construct a wide  
 71 variety of systems of alethic modal logic—that is, modal systems dealing  
 72 with necessary truths, possible truths, and so on. We can characterise an  
 73 astonishing number of systems in this way, and haggle about which one is  
 74 best (or best for what). We can also characterise non-alethic systems to model  
 75 knowledge and belief (epistemic logic), past, present, and future time (tense  
 76 logic), and morality (deontic logic). WR, then, is extremely fruitful.<sup>7</sup>

77 Second, the WR is precise: can we give clear quantificational definitions of  
 78 terms like *necessarily* and *possibly*, which might otherwise seem qualitative  
 79 and murky. And, using Kripke's apparatus of frames, we can characterise our

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5 That Buridan never advanced beyond the post of arts master, and so—in spite of his evident brilliance—never taught at the higher and more prestigious Faculty of Theology, is remarkable. In modern terms, this would be a bit like deciding to remain an assistant professor for life, even when promotion was available. For a discussion, see Jack Zupko (2003, xi–xii).

6 One need not, however, be committed to a semantics of possible worlds in order to think of modal terms quantificationally: already in 1924, well before the possible-worlds innovations of Kripke, Otto Jespersen pointed out that “necessity means that *all* possibilities are comprised, just as impossibility means the exclusion of all possibilities” (1924, 325, emphasis original). And before him, Avicenna (980–1037) gave a temporal reading of the modal operators, where what is necessary is always true, and always true is linked with the quantificational term every. See Khaled El-Rouayheb (2009, 210).

7 As Graham Priest (2016, 2653) puts it, “the clarity of the mathematics involved, and their usefulness in an analysis of many things other than modality—such as conditionals, meaning, knowledge and belief—meant that they [i.e., possible worlds] soon became part of the intellectual landscape.”

80 systems with mathematical precision. But beyond all this, we might wonder:  
81 what are these worlds, anyway?

## 1&21 *Lewisian Worlds*

83 David Lewis's answer to this question is famous and bold: all possible worlds  
84 exist, and they are just as real as ours. As he tells us (1986, 2):

85       The other worlds are of a kind with this world of ours. To be  
86       sure, there are differences of kind between things that are parts of  
87       different worlds [...] but [...] the difference between this and the  
88       other worlds is not a categorical difference. Nor does this world  
89       differ from the others in its manner of existing.

90 So there are many worlds—as many, in fact, as there are ways things can be.  
91 This ontological account of WR prompts two questions: how are these worlds  
92 externally distinct from each other, and how are they internally unified?  
93 Answers to both questions turn on spatiotemporal relations. To the former,  
94 Lewis tells us (1986, 3):

95       There are no spatiotemporal relations at all between things that  
96       belong to different worlds. Nor does anything that happens at one  
97       world cause anything to happen at another. Nor do they overlap;  
98       they have no parts in common.

99 Lewis frequently treats causation as the paradigmatic spatiotemporal relation.  
100 Since the worlds have no spatiotemporal relations to one another, *a fortiori*,  
101 there can be no causal interactions between them. They are, therefore, em-  
102 phatically not like planets that are too far removed to interact with each other.  
103 Instead, they are spatiotemporal isolates. Call this Lewis's *isolation doctrine*.

104       Importantly, Lewis does not say that different worlds *cannot* interact, as  
105 if blocked from doing so. Rather, they just *do not*: the notion of interaction  
106 between different worlds makes no sense within his theory. This requirement  
107 has a stipulative flavour—and, indeed, it is precisely that: a stipulation. This  
108 point is important, and we will return to it in section 3.

109       In like manner, Lewis accounts for the unity of worlds in terms of spa-  
110 tiotemporal relations (1986, 71):

111       If two things are spatiotemporally related, they are worldmates  
112       [...] things are worldmates iff they are spatiotemporally related.

113 A world is unified, then, by the spatiotemporal interrelation of its  
 114 parts.

115 Again, this is presented in a stipulative way, though it is a corollary of the  
 116 doctrine of isolation: worlds are spatiotemporally isolated, and therefore  
 117 any spatiotemporally related things belong, *eo ipso*, to the same world. Here,  
 118 whether or not causal interaction *actually* occurs is less important than imme-  
 119 diately above: there does not need to be any obvious causal relation between  
 120 two things for them to belong to the same world. A long-dead star too distant  
 121 from Earth to interact with it nevertheless has spatiotemporal relations to us:  
 122 it is some distance away in time and space, and it came into being at some  
 123 time relative to us. It is, therefore, our worldmate.

124 The foregoing considerations can be distilled into a precise account of  
 125 Lewisian worlds or *possibilia*, to wit:

126 POSSIBILIA<sub>L</sub>. A world *w* is an isolated unity of spatiotemporally  
 127 interrelated parts. If *x* and *y* have any spatiotemporal relations, they  
 128 are members of the same world.

129 Importantly, the spatiotemporal relation is Euclidean. Let *R* be the spatiotem-  
 130 poral relation, so that *Rxy* says that *x* is spatiotemporally (though not neces-  
 131 sarily causally) related to *y*. Then, by POSSIBILIA<sub>L</sub>,

$$\forall xyz(Rxy \wedge Rxz \rightarrow Ryz)$$

132 For clarity, we can also represent this diagrammatically, as follows:

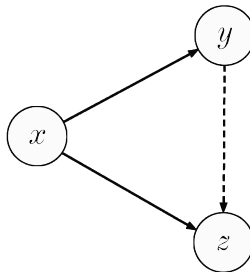


Figure 1: Euclidean R

133 Here, R is represented by arrows; if the relation represented by the solid  
 134 arrows between  $x$  and  $y$ ,  $x$  and  $z$  hold, then the relation represented by the  
 135 dotted arrow between  $y$  and  $z$  also holds.

136 This fact makes the case that the Lewisian plurality is impossible (set out  
 137 in section 3) much easier to make, so let's linger on it for a moment. Let  $Rxy$   
 138 and  $Rxz$ . It follows that  $Ryz$ . If it didn't, then  $x$  would be worldmates with  
 139 two objects that are not themselves worldmates with each other. So there  
 140 would be partial but incomplete overlap among at least two worlds. And  
 141 this goes against both  $\text{POSSIBILIA}_L$ , and against commonsense thinking about  
 142 spatiotemporal relations: if, for example,  $x$  is some spatial or temporal distance  
 143 from both  $y$  and  $z$ , then there must be some distance, however great, between  
 144  $y$  and  $z$  themselves. Therefore, the spatiotemporal relation R is Euclidean.

145 At the beginning of this section, I noted two significant advantages to  
 146 the WR of ordinary modal language: WR is precise, and fruitful. Before we  
 147 turn to the possible objects of Buridan, it's worth asking whether WR has  
 148 any drawbacks. For present purposes, I want to highlight two: WR does not  
 149 represent what is going on in ordinary modal language, and taken on its own,  
 150 it is uninformative about what grounds the modal properties of things.

151 To begin with the latter: the extensional account furnished by WR does  
 152 not capture the ordinary notion of necessity *for* or *as*. For example, triangles  
 153 are necessarily three-sided; three-sidedness is necessary *for* triangle-hood.  
 154 Whereas you can paint a triangular object blue without removing its trian-  
 155 gularity, you cannot, say, rearrange its parts in such a way that it gains (or  
 156 loses) a side, and yet remains a triangle. This fact is not directly expressible  
 157 on WR; all it can tell us about this (or any other) necessary claim is that it  
 158 is true in every world. Fair enough, but such claims do not account for the  
 159 inseparability of three-sidedness and triangularity.

160 Probably for this reason, most ordinary modal talk is not about worlds at all,  
 161 but rather about things, and the ways they can be in *this* world. Scott Soames  
 162 gives some remarks that support this point in his discussion of reference to  
 163 non-existent objects (2010, 128):

164         Although this is controversial, the idea that we can refer to, and  
 165         quantify over, only things that exist is, I believe, an unfounded  
 166         philosophical prejudice at variance with our ordinary thought  
 167         and talk. For instance, imagine that I have all the materials to  
 168         build a doghouse, plus a plan specifying every detail of the design  
 169         and construction, including how each of the materials will be

170 used. From studying the plan and materials, I know exactly which  
 171 structure I intend to create. Having identified it uniquely, I can  
 172 refer to it, predicate properties of it, and even name it.

173 Soames's dog house is a possible, non-existent object. What makes it possible  
 174 is what *he* can do with materials and plans in *this* world. A lot of our day-to-  
 175 day modal talk is like this: when, for example, someone says they can paint  
 176 their house green, they are talking about *themselves*, and what they can do  
 177 with *their house*—not about their counterpart, in a relevantly similar world in  
 178 which their counterpart's house is green.

179 Thus for all its versatility and precision, WR does not provide a full and  
 180 accurate report of what is going on in ordinary modal language. Such language,  
 181 judging by Soames's example, is about possible things, at least some of which  
 182 do not exist, whose modal properties are grounded in existing causal powers. I  
 183 have called this the objects reading (OR) of modal language; it is the approach  
 184 taken by John Buridan. It turns out that objects like Soames's doghouse are  
 185 precisely what Buridan has in mind in his analysis of *possibilia*.

## 182 Possible Objects

187 In the WR of modal language, modes operate on whole sentences, quantifying  
 188 over possible worlds. In contrast, Buridan's modal logic is not propositional  
 189 but *terminist*; he thinks of modes as acting on sentences' terms.<sup>8</sup> Hence in his  
 190 treatment of modal semantics in *Tractatus de Consequentibus* (2.4), he tells us  
 191 that:

192 A sentence (*propositio*) [...] about possibility has a subject term  
 193 that is amplified (*ampliatum*) by the modal term that follows  
 194 it, so that it stands (*ad supponendum*) not only for those things  
 195 which exist, but also for those things which *can* exist even though

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8 While Buridan's *possibilia* have not received much attention, a good deal has been said already about Buridan's modal syntax and semantics. To date, the most thorough treatment of his syntax is chapter 9 of Paul Thom's (2003). And, following the concluding suggestions in G.E. Hughes's (1989), Catarina Dutilh Novaes (2007, 79–114) and Spencer Johnston (2015; 2017, 41–43) have given detailed analyses of Buridan's logic in terms of possible worlds. Gyula Klima, too, has remarked in his monumental translation of Buridan's *Summulae de Dialectica* that Buridan's modal semantics contains “effectively the gist of the idea of modern possible-worlds semantics” (2001b, 82, n.123).



196 they do not. Hence in this way it is true that air can come from  
 197 water, although this is not true of any air that presently exists.<sup>9</sup>

198 Air from water is, as Paul Thom (2003, 170) has observed, a simple account  
 199 of boiling. The water in this pot could boil; but since it is not boiling, it is  
 200 not true of any actual air that it came from this water. Hence this water is  
 201 possible—but not actual—air. Elsewhere, Buridan gives the appealing exam-  
 202 ple of vinegar that could be produced from this wine, but will not, simply  
 203 because you are going to drink the wine first (*de Caelo*, 1.25).<sup>10</sup> These are  
 204 the non-existent possible objects—or *possibilia*—to which the modal terms  
 205 expand—or amplate—the terms of a sentence.<sup>11</sup>

206 What are these non-existent *possibilia*?<sup>12</sup> Buridan deals with *possibilia*  
 207 obliquely in his logic and metaphysics, and so we will have to reconstruct his  
 208 view from these discussions. Here, I present three key passages: one dealing  
 209 with necessity, one with impossibility, and the last with possibility. Approach-  
 210 ing Buridan’s account of the *possibilia* from these three angles will allow us  
 211 to build up a consistent and robust picture of his views on what they are.

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9 “propositio [...] de possibili habet subiectum ampliatur per modum sequentem ipsum ad supponendum non solum pro his quae sunt sed etiam pro his quae possum esse quamvis non sint. Unde sic est verum quod aer potest fieri ex aqua, licet hoc non sit verum de aliquo aere qui est.” (Unless otherwise stated, all translations here are mine.) Note that Buridan is here talking about *divided* (roughly, *de re*) modals; he deals with *composite* (roughly, *de dicto*) modals elsewhere. Now, immediately below this passage, Buridan tells us that a modal sentence “B is possibly A” is equivalent to “What is or can be B can be A.” An anonymous reviewer for this journal has remarked on the connection with Williamson’s (2013, sec. 1.3) distinction between two readings of “possible stick”: the *predicative* reading (“x is a stick and x could have existed”), and the *attributive* reading (“x could have been a stick”). Buridan’s own account looks, *prima facie*, more like the predicative reading; but perhaps the two are not equivalent. At any rate, this question could form the basis of a stand-alone paper.

10 Cf. Aristotle’s cloak in *Peri Hermeneias* 9, which can be cut up, but may also simply wear out first (19a12–16).

11 For an overview of Buridan’s semantic doctrine of modal ampliation, and a case for it as one of his most significant contributions to the development of logic, see Zupko (2003, 67–70; 2018, sec. 4).

12 An anonymous reviewer for this journal has remarked that the common use of the term *possibilia* is for non-existent (possible) things, and does not extend to existing things as well. This is how I use it here, though it should be borne in mind that all *actualia* are, for Buridan, *possibilia* as well. After all, everything actual is possible.

## 2.1 Necessity in the Prior Analytics

213 If S is necessarily P, then (by modal duality) it is not possible for S not to  
 214 be P—something Buridan explicitly acknowledges (see, e.g., *Tractatus de*  
 215 *Consequentibus* II, 5). Yet this analysis faces a problem. As Buridan asks in his  
 216 *Quaestiones super libros “Analyticorum Priorum”* (QAPr 1.25), what is the  
 217 modal status of the following sentence?

218 (1) Humans are animals.

219 Is (1) necessarily true? In *Prior Analytics* 1.9 (310a31), Aristotle clearly thinks  
 220 so. And indeed, (1) serves as a stock example of a necessary truth in medieval  
 221 logic.<sup>13</sup> Yet (1) is falsifiable, since God could annihilate all human beings. As  
 222 Buridan tells us (QAPr 1.25, arg. 3):

223 If it were supposed that [(1)] were not necessary, it would be  
 224 because God is capable of annihilating every human being. And  
 225 in such a case, no human would exist, and so no human would  
 226 be an animal.<sup>14</sup>

227 For Buridan, all affirmative sentences, including universals, have existential  
 228 import, in contrast with negative sentences (both universal and particular),  
 229 which do not. Thus Buridan would reject the reading of (1) given by classical  
 230 FOL ( $\forall x[\text{Human}(x) \rightarrow \text{Animal}(x)]$ ), which is capable of vacuous truth.<sup>15</sup>  
 231 Since there is no vacuous truth for affirmatives, (1) can be rendered false  
 232 by the annihilation of its subject matter. Therefore, since (1) is falsifiable, it  
 233 expresses a contingent truth.

234 Nor is this sort of contingency limited to sentences which, like (1), are taken  
 235 from the natural sciences. It is a problem even for geometry:

236 If this were so, then no claim of geometry would be necessary  
 237 either, since God can just as well annihilate all magnitudes as all  
 238 human beings. And then it would follow that geometry would

13 Along with “God exists” and “No human is a donkey.” Modern logical textbooks prefer mathematically-flavoured examples like “The set of primes is denumerable” and “ $a = a$ .” The conventionalised role of these stock examples is clear.

14 “Item, si poneretur quod non esset necessaria, hoc esset pro tanto quia deus posset annihilare omnem hominem; ideo nullus homo esset, et sic nullus homo esset animal.”

15 I have discussed this aspect of Buridan’s logic, in connection with the traditional Square of Opposition, in Schuman (2022, 205–208).

239 not be a science, which everyone would regard as false and unac-  
 240 ceptable. (*QAPr* 1.25, arg. 3)<sup>16</sup>

241 God can annihilate everything with magnitude, and therefore magnitude itself.  
 242 If God were to do that, then all the affirmative claims of geometry would be  
 243 false, since the things they deal with would not exist. This is a consequence  
 244 of Buridan’s anti-realism, which extends even to the objects of mathematics  
 245 and geometry: if it so happened that there were no triangular arrangements  
 246 of matter, then there would be no triangles (though it would still be possible  
 247 to think and talk about them, like the roses of yesteryear). The same holds for  
 248 all other geometric and mathematical objects.

249 Worse, even if God never gets that destructive, a crisis remains: the mere  
 250 fact that geometric claims *could* be falsified by an act of divine will entails that  
 251 these claims are contingent. If the truth of any claim is contingent, so is its  
 252 subject matter. Since the subject matter of any Aristotelian science (*scientia*)  
 253 must be necessary, it follows that even geometry is not a science. We can  
 254 expect the other sciences—with the obvious exception of theology—to fare  
 255 no better, given that God could annihilate their subject matter, too. So can  
 256 there be any science (apart from theology) at all?

257 Buridan’s answer is yes: the claims of geometry (and of the other sciences)  
 258 are necessary, but their necessity is attenuated: they are not necessarily true  
 259 *simpliciter*. Rather, they are true “so long as” or “just when” (*de quando*)  
 260 the things their subject and predicate terms stand for exist.<sup>17</sup> Assuming no  
 261 annihilation of their subject matter occurs, they will remain true—indeed,  
 262 *necessarily* true:

263 Necessity “just when” (*de quando*) comes about from the fact that,  
 264 whenever the subject and predicate terms do stand for anything,  
 265 they stand for the same thing (I am here speaking of affirmative  
 266 sentences). And in this way I say that the following are necessary:  
 267 “Humans are animals,” or also “Horses are animals.” Indeed, even  
 268 “A rose is a flower” is necessary in this way, even if there are no  
 269 roses now. And although there is not a lunar eclipse happening

16 “si hoc obstaret, nulla propositio geometrica esset necessaria, cum deus ita possit annihilare omnes magnitudines, sicut omnes homines. Et tunc ultra sequeretur quod geometria non esset scientia, quod reputatur ab omnibus falsum et inconveniens.”

17 For an analysis of this kind of necessity, in particular in connection with tense and the necessity of the past, see Normore (2013).

right now, still the following is necessary: “A lunar eclipse is a lack of light [coming] from the sun.” (QAPr 1.25, co)<sup>18</sup>

So a sentence like (1) is necessarily true, assuming the existence of the things it deals with, namely, humans. Likewise, the claims of astronomy are true even when the events they describe are not presently occurring, since any time they *do* occur, the sentences are true. Thus, according to the account set out by Buridan in QAPr 1.25, a sentence like (1) can only be falsified by the *annihilation* of the things it deals with. There is no way to falsify (1) that leaves humans intact. So whenever humans exist, (1) is true.

Thus the contrast between necessity and contingency in terms of modality simply construed (*simpliciter*) is the contrast between unfalsifiability and falsifiability. The contrast between necessity and contingency in terms of *de quando* modality is the contrast between falsifiability only by annihilation (*de quando* necessity) and falsifiability by alteration (*de quando* contingency). That humans are animals is *de quando* necessary, because it can only be rendered false by the removal of its subject matter—that is, by annihilating all humans. In contrast, the fact that some humans are bearded is *de quando* contingent, since shaving them alters the fact, but leaves the subjects essentially intact.

From these observations, we can give the following Buridanian definition of necessity:

BURIDANIAN NECESSITY. S is necessarily P just in case S can only be made to be not-P by annihilating S.

This provides a good starting point for an account of Buridanian modality; however, there are crucial ambiguities that must be sorted out if the above definition is to be consistent with the others we will look at below. Its adoption here is, therefore, tentative.

18 “Necessitas de quando ex hoc provenit quod oportet subiectum et praedicatum quodcumque supponunt pro aliquo supponere pro eodem; et hoc dico in affirmativis. Et sic dico quod haec est necessaria ‘homo est animal,’ vel etiam ‘equus est animal.’ Immo etiam haec est necessaria ‘rosa est flos,’ licet modo nulla sit rosa. Et quamvis non sit eclipsis lunae, tamen haec est necessaria ‘eclipsis lunae est defectus luminis a sole.’”

## 2.2 *Impossibility in the Peri Hermeneias*

298 In *Peri Hermeneias* 2 (16a19), Aristotle tells us that nouns (ὀνόματα; Aristoteles  
299 Latinus: *nomina*) have signification. But Buridan asks, what about nouns like  
300 *chimera*, which do not signify anything at all?

301 It is asked: does every noun (*nomen*) signify something?

302 Objection: it does not, because the term *chimera* signifies nothing  
303 apart from a chimera. And yet a chimera is nothing. Therefore, it  
304 signifies nothing whatsoever. (*Peri. Herm.* 1.2, arg. 1)<sup>19</sup>

305 A chimera not only does not exist, like the roses of yesteryear; it is, in fact,  
306 impossible. Buridan makes this point several times: the chimera is made of  
307 impossible parts.<sup>20</sup> In this respect, we may take it to be just like Schopen-  
308 hauer's wooden iron or Frege's square circle (Schopenhauer 1819, vols. 1,  
309 para.53; Frege 1884, para. 74). Because the chimera cannot exist, it cannot be  
310 signified. And this seems to present a semantic counterexample to the *Peri*  
311 *Hermeneias* definition of nouns, even though syntactically, *chimera* functions  
312 like any other noun.

313 Buridan's solution here is to treat *chimera* as equivalent with the phrase  
314 "animal made up of parts that cannot be combined," and to note that, although  
315 this whole phrase does not signify anything, it has significative parts (namely,  
316 *animal* and *part*). The details of this solution need not detain us here. What is  
317 significant for our purposes is the role of the chimera as an impossible object,  
318 whose impossibility is a function of its putative combination of impossible  
319 parts. We can use such *impossibilia* for our next definition:

320 BURIDANIAN IMPOSSIBILITY. S is not possibly P if S and P cannot  
321 be combined.

322 This relatively straightforward definition will be useful for untangling an  
323 important exegetical problem in section 2.4.

19 "queritur utrum omne nomen significat aliquid. Arguitur quod non, quia iste terminus 'chimaera' nihil significat aliud a chimaera. Et tamen nihil est chimaera. Ergo nihil omnino significat."

20 "chimaera est animal compositum ex membris ex quibus impossibile est aliquod animal componi" (*De Demonstrationibus* 8.2.3). For a lively discussion of the role of the chimaera in the history of philosophy, see Ebbesen (1986).

### 2.3 Potency in the Metaphysics

325 In his *Questions on the “Metaphysics” of Aristotle (QM)* 9.5, Buridan raises the  
 326 question of whether everything that something *will* do can be said to be what  
 327 it is *able* to do. If so, we get some strange results, as Buridan points out:

328 A horse can come from wool. For earth comes from wool [by  
 329 decomposition], and grass come from the earth, and from those  
 330 grass which perhaps a horse will eat there can come horse semen,  
 331 and, at length, another horse. And so even a horse can come from  
 332 wool. And the same holds for all other modes of transmutation.<sup>21</sup>

333 Here the problem is whether or not the relation between S and P expressed  
 334 by “S is possibly P” is transitive: if S can be P, and P can be Q, does it follow  
 335 that S can be Q?

336 No, says Buridan: when we say that S can be P, we are generally speaking  
 337 in terms of a *proximate* potency, rather than a remote one: S is proximately  
 338 possibly P if S can become P in no more than one transmutation. In this way,  
 339 wool is possibly earth, because it can become earth in one transmutation (i.e.,  
 340 decay); similarly, earth can become grass, and so on. Any other potencies that  
 341 require multiple transmutations are remote—as is, for instance, the potency  
 342 of wool to become a horse. Hence Buridan tells us that:

343 Aristotle concludes the opposite. For he asks, when should some-  
 344 thing be said to be in potency, and when should it not? And he says  
 345 that something should not be said to be in potency with respect  
 346 to some form, except when only one transmutation is required,  
 347 by which that form may be imparted on it. (*QM* 9.5, fol. 58rb)<sup>22</sup>

348 So although remote potencies can be discussed transitively, proximate poten-  
 349 cies cannot. If the two are conflated, as in the horse-from-wool example, then,

21 “Similiter ex eadem lana potest fieri equus, quia ex lana fiet terra, de inde herba, et ex illa herba forte quam equus comedet poterit fieri sperma equi et tandem equus. Et ita etiam ex lana potest fieri equus. Et sic de omnibus aliis modis transmutandi” (*QM* 9.5, fol. 58rb). Among the other modes of transmutation Buridan discusses here are “Wool can become a hatchet” (wool > earth > stone > iron > hatchet), and “An infant can build a house” (infant > adult human > carpenter).

22 “Oppositum determinat Aristoteles. Querit enim quando aliquid debeat dici in potentia et quando non. Et dicit quod aliquid non debet dici in potentia ad aliquam formam, nisi quando sola transmutatio requiritur per quam illa forma perducatur.” Buridan seems to have in mind Aristotle’s *Physics* 1.4 (188a32–b3).

350 according to Buridan, the result is an equivocation.<sup>23</sup> Thus, although wool  
 351 can decompose into earth, grass can grow from earth, and so forth, it does not  
 352 follow that wool can become grass—much less a horse. Hence in speaking of  
 353 possible horses, we are not speaking of all the things that, through multiple  
 354 transmutations, could become a horse. If we were, then everything would  
 355 be a possible horse, since, as Buridan observes, “anything can come from  
 356 anything—albeit through several transmutations” (*QM* 9.5, fol. 58rb).<sup>24</sup>

357 So much for *possibilia* arising from natural causes, like possible dirt that  
 358 can be generated from wool. But a problem remains: why couldn’t God just  
 359 rearrange the matter in a horse, say, to make it into a pile of dirt? So then a  
 360 horse is possibly dirt (and vice-versa).<sup>25</sup> And if so, then our main problem  
 361 comes roaring back: everything is possibly everything.

362 Buridan himself does not consider this problem, but there is indirect textual  
 363 evidence that he would reject such a claim: after all, he frequently tells us that  
 364 the following is impossible:

365 (2) A human is a donkey.

366 Granted, it is not beyond divine power to transform the matter of a human  
 367 being into a donkey by imparting on it the appropriate form. But again, (2) is  
 368 impossible. How?

369 The solution is to appeal to the notion of change entailing annihilation (or  
 370 destruction—more on this in a moment), which we saw above in connection  
 371 with *de quando* necessity. For example, consider the following sentence:

372 (3) Socrates is a human.

373 Any formulation of (3) is true whenever Socrates exists. And while (3) can be  
 374 rendered false, this can only happen by the destruction of Socrates. Similarly  
 375 if, instead of being served a hemlock cocktail, Socrates met his demise by  
 376 having his matter suddenly morphed into the form of a donkey, (3) would

23 “Modo in proposito est bene aequivocatio de potentia propinqua et remota” (*QM* 9.5, fol. 58va).

24 “quia ex quolibet potest fieri quodlibet—licet per multas transmutationes.”

25 Given the essentialist background of the current discussion, I’m aware I am treading dangerously close to an old problem at which even young Socrates is reported to have balked: Does dirt have an essence? (*Parmenides* 130c–d). I wish to remain neutral on this point: for my purposes, the only concession I have to make is that whatever makes horses horsey is essentially different from whatever makes dirt dirty. Maybe I beg the question on this. But I invite you to beg it with me. After all, we’re in good company, historically speaking.

377 become false. But so would the claim that Socrates himself is a donkey, since  
 378 Socrates himself would no longer exist. So Socrates is not possibly a donkey.

379 We have limited ourselves to transmutation in talking about things-possibly-  
 380 being-other-things, and to one transmutation at that. Granted, then, God can  
 381 morph Socrates's matter into a donkey. But this morphing does not count as a  
 382 transmutation in the natural sense, nor is it a potency belonging to Socrates.  
 383 And so this fact no more entails that Socrates is a possible donkey than does  
 384 the fact that Socrates can die and decay into soil, which then nourishes a  
 385 plant, which a donkey eats, etc.

386 Here, then, we return to the original claim that *impossibilia* are impossi-  
 387 ble combinations: donkey-Socrates, chimaeras—anything, in short, made  
 388 up of parts that cannot be combined. Soon, we will see that Lewisian possible  
 389 worlds, too, are Buridanian *impossibilia*. But first, we have to find a way of  
 390 making the foregoing definitions consistent.

#### 2<sub>v4</sub> What Are Buridanian Possibilia?

392 In a seminal (1989) paper, G.E. Hughes raises several questions about Buri-  
 393 dan's modal logic and its underlying ontology. Concerning the latter, he tells  
 394 us (1989, 97):

395 For a long time I was puzzled about what Buridan could mean by  
 396 talking about possible but non-actual things of a certain kind. Did  
 397 he mean by a "possible A," I wondered, an actual object which is  
 398 not in fact A but might have been, or might become, A? My house,  
 399 e.g., is in this sense a possible green thing because, although it  
 400 is not in fact green, it could become green by being painted. But  
 401 this interpretation won't do; for Buridan wants to talk, e.g., about  
 402 possible horses; and it seems quite clear that he does not believe  
 403 that there are, or even could be, things which are not in fact horses  
 404 but which might become horses.

405 Notably, Hughes makes no mention of the *Metaphysics* discussion—about  
 406 horses, too!—which we just considered. This comes as no great surprise: that  
 407 text is, to this day, neither edited nor translated.<sup>26</sup>

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26 Granted, Hughes himself did know Latin and was experienced in palaeography. He even edited a portion of the *Logica Magna* of Paul of Venice (ca. 1369–1429). Still, one can't read everything.



408 Even so, Hughes's initial proposal is actually quite close to Buridan's own  
 409 account: a house is a possible green thing, because there are powers in the  
 410 world capable of making it so. The issue of substantial change—things be-  
 411 coming horses—is somewhat more thorny, since it seems a little odd to speak  
 412 of things which are not horses, but which could become horses, as Hughes  
 413 observes. And yet this is precisely what we are warranted to do, as Buridan  
 414 explicitly tells us, provided we limit ourselves to at most one transmutation:  
 415 horse semen is not a horse, but it is a possible horse.

416 Frustrated by his version of the horse puzzle, and unaware of Buridan's *QM*  
 417 discussion, Hughes falls back on the familiar framework of possible worlds  
 418 to describe what Buridan is doing:

419 What I want to suggest here, very briefly, is that we might under-  
 420 stand what he says in terms of modern "possible world semantics."  
 421 Possible world theorists are quite accustomed to talking about  
 422 possible worlds in which there are more horses than there are in  
 423 the actual world. And then, if Buridan assures us that by "Every  
 424 horse can sleep" he means "Everything that is or can be a horse  
 425 can sleep," we could understand this to mean that for everything  
 426 that is a horse in any possible world, there is a (perhaps other)  
 427 possible world in which it is asleep. It seems to me, in fact, that in  
 428 his modal logic he is implicitly working with a kind of possible  
 429 worlds semantics throughout. (Hughes 1989, 97)

430 Here, Hughes first claims that Buridan's modal logic can be understood using  
 431 the modern apparatus of possible worlds semantics. But then he strengthens  
 432 that claim: Buridan is in fact working with possible-worlds semantics, however  
 433 implicitly.

434 From what we've seen of Buridan so far, we can tell that at least the latter  
 435 claim is mistaken. Buridan's view of modality is grounded in *causation*: if  
 436 there exists no power to make S to be not P (at least without annihilating S),  
 437 then S is necessarily P. Likewise, if S can be made to be P (through at most one  
 438 transmutation), then S is possibly P. Thus something's modal properties are  
 439 grounded in the powers that exist *in this world*, which are capable of making  
 440 it to be this or that way. In other words, Buridanian *possibilia* are, in general  
 441 terms, objects, some of them nonexistent, whose modality depends on the  
 442 causal powers of actually existing things. Since one of these existing things is  
 443 the Almighty, and since the Almighty exists by simple (which is to say strictly

444 unalterable) necessity, the modal properties of the *possibilia* are stable. There  
445 are no other worlds in the picture.

446 So much for what Buridan's view is not. But the definitions we've distilled  
447 from the texts face an important exegetical problem: both necessity, on one  
448 hand, and possibility, on the other, are each in their own way inconsistent with  
449 the account of impossibility as sketched above. Impossibility, unlike necessity,  
450 does not turn on annihilation: a chimaera is made up of impossible parts,  
451 not parts that would be literally reduced to nothing if they were combined.  
452 Moreover, there are diachronic possibilities, such as a human turning into a  
453 corpse, which are not synchronically possible: a human cannot be inanimate  
454 and rational at the same time, even though every human is a possible corpse.  
455 Just like *chimera*, *inanimate rational animal* therefore picks out an impossible  
456 object. The language of transmutations is therefore not applicable to syn-  
457 chronic impossibilities. These facts call for a re-examination of necessity  
458 and of possibility as set out above. We will soon see that (i) these accounts can,  
459 happily, be made consistent, and (ii) that the consistent account that emerges  
460 gives us a straightforward definition of Buridanian *possibilia*.

461 First, the account of necessity, which turns on annihilation (rather than  
462 destruction) of the subject is too strong. There is more than one way to  
463 make Socrates not a human, and thereby to deprive him of his essence: one  
464 is through (divine) annihilation—literal reduction to nothing. Another is  
465 through (divine or natural) destruction—undergoing a change that entails  
466 removal of his (human) essence. After all, following his death, Socrates is no  
467 longer a human, but this fact does not turn on any annihilation of Socrates.

468 Why then does Buridan discuss necessity in terms of annihilation at all? Re-  
469 call that, in the *QAPr*, Buridan is (*inter alia*) worried about the falsification of  
470 geometrical claims: if *all* magnitudes were annihilated, then the propositions  
471 of geometry would be rendered false. But this would not follow if everything  
472 with mass were simply destroyed—that is, if everything now existing were  
473 reduced to an undifferentiated soup. Even in that soup, there would be at least  
474 some dimension, surface, and so on to speak of. Conversely, the claim that  
475 humans are animals *would* be falsified if all humans were destroyed—that is,  
476 if everyone died all at once. Hence it seems that the reliance on annihilation  
477 is stronger than it needs to be for the definition of humans as animals, though  
478 perhaps not for the propositions of geometry taken collectively. I therefore  
479 propose a weakening of this requirement, at least for our definition of *possi-*  
480 *bilia*: S is necessarily P, just in case S cannot be made other than P without  
481 *destroying* S.

482 The second exegetical problem is that the definition of possibility is quite  
 483 weak: supposing that S is possibly P just in case S can become P through at  
 484 most one transmutation, it follows that Socrates, while still alive, is possibly a  
 485 corpse. Fair enough; but, as we observed, the combination of Socrates, *qua*  
 486 rational animal, and corpse, *qua* inanimate object, is impossible.<sup>27</sup> Therefore,  
 487 the most straightforward reading of impossibility, set out in section 2.2, clashes  
 488 with the weak sort of possibility set out in section 2.3. What do we do?

489 It is true that Socrates is possibly a corpse. And it is also true that Socrates,  
 490 while alive and barbate, is possibly clean-shaven. In the former case, Socrates  
 491 loses his essence; in the latter he does not. We should therefore distinguish  
 492 two kinds of change: one which involves loss of essence, but only through  
 493 one transmutation; and another which leaves the subject intact.

494 Which kind of possibility is relevant to our purposes? *Impossibilia* are  
 495 impossible combinations; *possibilia* then should be possible ones. Since at  
 496 least some transmutations involve change into something impossible with  
 497 the essence of the subject, as our example of *rational animal* and *inanimate*  
 498 *object* shows, *possibilia* cannot include contrary diachronic states considered  
 499 synchronically. We should, therefore, take the stronger reading of possibility,  
 500 suggested by the account of impossibility: S is possibly P iff S can be P in a  
 501 way that does not entail the destruction of S.

502 From these considerations, we can give the following definition of *possibilia*,  
 503 which balances out the accounts in Buridan's texts:

504 POSSIBILIA<sub>B</sub>. S is possibly P just in case there is a power to make S  
 505 to be P without destroying the essence of S.<sup>28</sup>

506 This definition casts a pretty wide net: *possibilia* will include not just the  
 507 various natural kinds and subkinds we see in the world, but also anything else  
 508 which could be produced by any power—including God—without destruc-

27 For a discussion of related problems in the logic and semantics of the twelfth century, see Cameron, M.A. (2015).

28 As an anonymous reviewer for this journal has pointed out, this definition, and the intuitions that motivate it, rest on essentialist assumptions. That is true, but the assumptions are weak ones: we need not assume that we have correctly identified the essence of S; we need only say that as a member of a natural kind, S has an essence—whether or not we know what it is. Still, one might worry about possibilities for houses and other artifacts, since (at least in Aristotelian metaphysics) artifacts do not have essences. A house, then, is possibly green, and also possibly a heap of rubble, and neither of these changes involves a loss of essence. Perhaps we could appeal to the house's function, which is preserved in the case of painting, but lost when it is reduced to rubble. But I leave that for another day.

tion of the subject. So horses larger than planets are, presumably, (divinely) possible; as are humans capable of walking on water, virgin mothers, and so on. But conspicuously absent from this jungle of *possibilia* is the Lewisian plurality of worlds with which we began.

### 3 Are Lewisian Possible Worlds Possible?

—Or, to put the question in Buridanian terms: can God create a Lewisian plurality of worlds? First, the argument pro: it seems that God can indeed create as many worlds as God pleases. Recall our account of the unity of Lewisian worlds, set out above (section 1.1). So long as we conceive of a world as just a cluster of spatiotemporally interrelated *possibilia*, there seems to be no barrier in principle to clustering them. Here is why: some—and probably most—possible objects are made up of interrelated possible parts. Consider, for example, a possible watch that does not now exist. Such a possible watch will not be undifferentiated all the way through, like liver paste, but will have interrelated possible parts—possible gears, possible springs, etc.

Now it would be arbitrary and just plain wrong to place a limit on how large such a possible object could be, at least in terms of what God can create: if a watch can be made the size of a tower clock, why not a watch the size of Manhattan? Likewise, it would be arbitrary to place a limit on their complexity: if a watch the size of Manhattan is permissible, why not a huge and complex astronomical horologium—one as large and complex as our universe, even?

From these considerations, we can distill two principles, namely:

- (i) *possibilia* can be internally complex, comprising interrelated possible parts; and
- (ii) there is no limit in principle to the size or complexity of such *possibilia*.

From (i) and (ii)—so the argument runs—it follows that God could make worlds, roughly construed as manifolds of interrelated objects.

In fact, we can strengthen this claim: the *possibilia* just *have* to be in some possible world. Consider a possible object, say a fork: Can such an object exist outside a world or manifold? Or must any such possible object exist within some kind of manifold? The existence of a fork outside some spatiotemporal manifold seems, if not impossible, then at least a little weird. A fork in the absence of other objects is one thing, but a fork in the absence of time and space is quite another. And so, it seems, possible objects only ever inhabit

543 possible worlds—a claim Jonathan Schaffer describes as a “platitude” (2010,  
 544 65). Thus a metaphysics of possible objects must, if it is to be coherent, collapse  
 545 into a metaphysics of possible worlds.<sup>29</sup> To put it in Buridanian terms: God  
 546 could create a fork, but not without creating it in some world.

547 What this argument gets us is world-boundedness for anything God could  
 548 create. What it does not get us is a plurality of such worlds in a Buridanian  
 549 ontology. And there is good reason to reject such a plurality on these terms,  
 550 both for Buridan and for Lewis. Note first that these worlds are either actual,  
 551 in the sense that God has made them, or they are possible but non-existent, in  
 552 the sense that God has not made them, but could. In either case, the question  
 553 is: could God make an actual plurality of worlds? If so, then the Lewisian  
 554 plurality is possible; if not, then it is impossible.

555 Following Lewisian doctrine, these worlds will have to be isolated: if they  
 556 are not, they no more count as distinct possible worlds than do planets in  
 557 different galaxies or, say, the city of Paris in different epochs. They must not  
 558 be at any spatiotemporal distance from each other. So can God create worlds  
 559 that are not worldmates in this way?

560 Suppose God made these worlds. What does it mean to say such worlds  
 561 are causal isolates—i.e., that they cannot interact? Distance will not do the  
 562 trick: worlds are not causally isolated by any spatiotemporal distance, the way  
 563 you and I are isolated from a long-dead star in Andromeda. Space is not what  
 564 separates the worlds. Nor is time. Lewis has been clear.

565 Perhaps we can say that God stipulates that the worlds cannot interact:  
 566 there is just an impermeable barrier between the worlds, analogous to the  
 567 glass plates separating different tanks in a divided aquarium, or the walls  
 568 splitting off different theaters in a cineplex. Perhaps it is physical, perhaps it  
 569 is by divine *fiat*. Either way, we then face three problems.

570 First, what happens when two things in different worlds interact with the  
 571 dividing barrier or *fiat* that separates them? Suppose, for instance, that there  
 572 is a barrier between worlds  $\Gamma$  and  $\Delta$ . Now  $\gamma$  and  $\delta$ —possible objects in  $\Gamma$  and  
 573  $\Delta$ , respectively—are blocked from interacting by the barrier/*fiat* (imagine  
 574 fish bumping into the opposite sides of a glass aquarium divider). Then the  
 575 barrier that prohibits causal interaction between the two worlds,  $\Gamma$  and  $\Delta$ ,  
 576 nevertheless causally interacts with both of them. Therefore, that barrier will  
 577 be a member of both worlds, according to Lewis’s definition: it has worldmates  
 578 on both sides. But preventing such world-straddling was precisely what the

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29 I owe the gist of this argument to Douglas Campbell.

579 barrier was supposed to do. Its very act of blocking makes it a world-straddler.  
580 We can try adding barriers so that the two barriers on the  $\Gamma$  and  $\Delta$  sides are  
581 separated, a bit like parallel sheets of glass in a double-paned window. But  
582 then we get a regress: What keeps the barriers themselves apart? What would  
583 happen if one barrier collided with whatever separates it from the other? In  
584 any case, the barriers must both interact with whatever separates them.

585 Second, even if God could somehow separate  $\Gamma$  and  $\Delta$  causally from each  
586 other, it would still make sense to think of them as related temporally: just as  
587 we can speak of one movie in a cineplex starting at the midpoint of another,  
588 so we can speak of a universe being half as old as another—that is, as being  
589 created midway along the life cycle of another universe. For instance, we  
590 could reasonably ask whether, from God’s perspective, the timeline of  $\Delta$  is  
591 half as long as that of  $\Gamma$ , whether  $\Delta$  already existed when  $\Gamma$  was created, and  
592 so on.

593 Third, and most importantly, even if such worlds could be isolated from  
594 each other in a way that circumvents the foregoing two problems, they will still  
595 be causally related via their causal dependence on God. As we saw (section 1),  
596 the general spatiotemporal relation (though not necessarily causation) is  
597 Euclidean: if  $xRy$  and  $xRz$ , then  $zRy$ . Thus although two worlds may not  
598 causally interact, they are not spatiotemporally independent, since they have  
599 the same cause. They are, then, causal siblings, even if they never interact.  
600 And if they are produced by the same cause, then they are causally related, if  
601 only in virtue of being created by the same God.

602 Lewis considers pseudo-pluralities (his term) like these, which, according  
603 to him, are not made up of truly isolated worlds. Their constituents are, rather,  
604 worldmates, even if locally they look like isolated worlds. Here is the one our  
605 cineplex and aquarium examples most closely resemble:

606         The spacetime of the big world might have an extra dimension.  
607         The world-like parts might then be spread out along this extra  
608         dimension, like a stack of flatlands in three-space. (Lewis 1986,  
609         72)

610 But, as Lewis is quick to point out, this is not a true plurality. For him, there is  
611 no way to speak of temporal relations across truly isolated worlds: if there is

612 anything like a common origin, then the worlds belong to the same manifold.  
 613 And if they belong to the same manifold, they are not truly isolated.<sup>30</sup>

614 Here is the most common objection I have faced to this line of reasoning: it  
 615 is not that Lewisian worlds *cannot* interact, in the sense that there is some  
 616 mechanism keeping them apart. Instead, they just *do not*. This is a restatement  
 617 of Lewis's isolation doctrine. But the isolation doctrine is not a conclusion  
 618 Lewis reaches by argument, as we saw in section 1. It is, rather, a stipulation.  
 619 And in fact, this is how Lewis presents it: right up front, on the second page  
 620 of his (1986) exposition. It is thus more a starting point than a destination.

621 Accordingly, no criticism of this doctrine can address Lewis's arguments for  
 622 it, since he does not give us any. All that can be asked is whether it makes any  
 623 sense. The answer, on Buridan's metaphysics (or any metaphysics that posits  
 624 a single First Cause), is *No*. To anyone who espouses such a metaphysics,  
 625 then, a Lewisian plurality of worlds must be something like Naive Set Theory:  
 626 plausible on the face of it, but deep down self-contradictory. Lewis's worlds  
 627 simply do not work on Buridan's framework. And, we might think, so much  
 628 the better for Buridan.

629 I am not, by the way, the first to make any claims about the (in)compatibility  
 630 of Lewisian worlds with classical theism, though the causal one I have been  
 631 elaborating here is novel. Paul Sheehy (2006) sets out a number of problems  
 632 for the classical theistic conception of God on Lewisian modal metaphysics.  
 633 The most significant of these is his argument, suggested by Richard Davis  
 634 (2008), that Lewisian possible worlds effectively chop God up, making each  
 635 counterpart God a world-bound entity—an understanding that runs contrary  
 636 to classical theism's commitment to divine unity. Ross Cameron, R.P. (2009)  
 637 disagrees: Lewisian metaphysics can countenance abstracta existing outside  
 638 of any world, as numbers do, so long as these abstracta are pure sets—that is,  
 639 sets that contain only sets in their transitive closure (sets, sets-of-sets, sets-  
 640 of-sets-of-sets, and so on, but no elements anywhere: only sets, including the  
 641 empty set). God, it seems, could be such a set—even if it's doubtful whether  
 642 such a set is what God's believers believe in (or, anyway, believe they believe  
 643 in). Subsequent debate (Paul Sheehy 2009; Chad Vance 2016; Michael James  
 644 Collier 2019, 2021) has dealt with this problem of divine (unitary) existence

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30 Something similar could be said for the synchronic contrary possibilities of Scotus's (much discussed) *Lectura* I, dist. 39, q.1–5. Since these possibilities are rooted in the causal powers of a (single) will, they are worldmates. Therefore, these synchronic contrary possibilities are not true worlds in the Lewisian sense. For a discussion of Scotus in terms of possible worlds, see Wyatt (2000).

645 and world-boundedness, and whether, in these ways, God can be counte-  
 646 nanced on Lewisian worlds. Brian Leftow (2012, 541–545) has, moreover,  
 647 criticised Lewis on the grounds that positing one God is more economical  
 648 than positing several (more on this in a moment).

649 For my part, I agree with Cameron and Collier that a Lewisian ontology can  
 650 indeed countenance an abstract, un-world-bound Necessary Being of sorts.  
 651 And I agree with Sheehy and Vance that Lewisian worlds are incompatible  
 652 with classical monotheism, albeit for reasons apart from the ones they exam-  
 653 ine. After all, it is integral to classical theism that God has a creative—which  
 654 is to say causal—role to play as well: God “created the heavens and the earth”  
 655 (Genesis 1:1), is the One without Whom “nothing was made that was made”  
 656 (John 1:2), the Originator, “Who commands only ‘Be!’ and it is” (*Al Baqarah*  
 657 “The Heifer,” 117), and so on. (Countless other sources could be cited to this  
 658 effect, but you get the idea). This central aspect of God’s activity is incompati-  
 659 ble with Lewis’s doctrines about the plurality of worlds. Accordingly, possible  
 660 worlds of the sort we have considered here will be deeply incompatible with  
 661 (monotheistic) medieval philosophy in general—even if certain aspects of a  
 662 given thinker’s modal logic or ontology might remind us of this (by now quite  
 663 familiar) framework.<sup>31</sup>

664 What about Lewisian metaphysics considered in its own right? Even though  
 665 a unified First Cause is not available on this framework, it does not follow that  
 666 Lewis and his followers have to be atheists; if there is plurality in the worlds,  
 667 there can also be a plurality of first causes. There is textual evidence that  
 668 Lewis recognises this implication of his theory: in the introduction to the first  
 669 volume of his (1983) *Philosophical Papers*, he remarks in passing that his view  
 670 is consistent with the claim that “there are countless gods but none of them  
 671 are our worldmates” (1983, xi). Since the worlds are, ontologically speaking,  
 672 just like ours, it follows that our worldmates could include a local deity, and  
 673 Lewis could merely be mistaken about the constituents of our actual world.  
 674 So the Lewisian can still opt for a kind of polytheism, or mono-poly-theism, to


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31 This will be true even when philosophical discussion centers on the notion of multiple worlds, e.g., in the claim of Al Ghazali and the Ash’arite theologians that God could have made other worlds than this one. Here, too, the worlds that could exist are referred back to a single unified power to bring them into existence, and so there is a similar problem for Lewis’s separation doctrine to the one discussed above. For a lively and interesting overview of this aspect of Al Ghazali’s thought, see Taneli Kukkonen (2000). (I am grateful to Silvia Di Vincenzo for bringing this to my attention.)



675 adapt a term coined by Hart (2013, 127). But even basic classical monotheism  
676 is, on these lights, impossible. For Lewisian ontology is a jealous god.\*

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