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## *Introduction*

When analyzing the notions of possibility, necessity or contingency, almost all philosophers nowadays take the term of possible world as a very useful tool. Despite some exceptions, none of them dares to challenge the apparatus and its usefulness. Anyway, the apparatus as it stands has been considered insufficient recently and so some philosophers found it useful to enrich it with impossible worlds.

Traditionally, Lewis's modal realism is considered as the most famous metaphysical theory of modality which has ever been formulated. Despite its rich ontology consisting of *concrete* actual and non-actual individuals, its position can hardly be weakened by its rivals. It comes therefore as a surprise that the theory does not allow into its ontology impossible worlds, the entities appearing to be important constituents of any theory of modality. In particular, Lewis formulates an argument, according to which a contradiction in some impossible world would infect what is true *simpliciter*, thereby making the whole theory contradictory. On the other side, there are authors who straightforwardly accept Lewis's theory of modality but point out its deficiency with respect to certain analyses. They argue that since impossible worlds seem to be equally useful in providing explanations as their possible mates, we should find a reasonable way as embrace them.

However, as far as I know, every attempt to incorporate impossible worlds into Lewis's theory either failed or succeeded at the cost of abandoning some of the theory's essential features. Although the question – 'Is Lewis's own argument against concrete impossible worlds conclusive?'- has been answered negatively by various authors, the second one, namely 'Can a modal realist about possible worlds accept impossible worlds without violating thereby his main tenets?' has not been addressed

satisfactorily yet. My main interest, therefore, will be to consider the two questions as a whole unit and provide an all-inclusive approach towards concrete impossible worlds. It will be shown that the existence of impossible worlds does not affect the wholesome character of Lewis's theory and so does not undermine virtues of Lewis's theory in the first place. Moreover, it is to be expected that every serious philosophical theory, whose task is to accommodate fundamental features of modality, does not omit impossibility from its scope of applications.

My thesis is divided into five chapters. In **Chapter I** outline Lewis's notorious argument from the existence of concrete possible worlds and its variant from the existence of impossible ones. **Chapter II** exposes the main tenets as well as conceptual, ontological and semantic applications of Lewis's theory. In **Chapter III** I emphasize the crying need for impossible worlds in the theory and adduce several especially significant reasons for the acceptance of extended genuine ontology. **Chapter IV** discusses Lewis's own argument against impossible worlds. It is argued that the argument fails because it begs the question in favour of possible individuals. **Chapter V** presents a particular purely extensional proposal which treats impossible worlds and impossible individuals in the same manner as the possible ones, firstly presented by Takashi Yagisawa. Iteration of logical spaces is admitted and considered as a necessary (though not lethal) consequence of the postulation of impossible worlds. Although the ontology is extravagant, my purpose here is to show that there is still a way to find the theory reasonable. As Yagisawa remarks: 'Lack of complete understanding, however, is not the same as absurdity. It is impetus for further investigation' (Yagisawa 2010: 205).

Let's, therefore, begin with the investigation.

# ***I. Two Arguments from Ways***

## ***1.1 Introduction***

This chapter starts by introducing Lewis's famous argument from 'ways the world might have been' (Section 1.2). Then, similar argument for impossible worlds ensues and subsequent dilemma for any modal realist is formulated (Section 1.3). Finally, Section 1.4 proposes several definitions of impossible worlds used for the rest of the thesis.

## ***1.2 The First Argument***

In his *Counterfactuals*, David Lewis formulates an argument according to which

'[It] is uncontroversially true that things might have been otherwise than they are. I believe, and you do so, that things might have been different in countless ways. But what does that mean? Ordinary language permits the paraphrase: there are many ways things could have been besides the way they actually are. On the face of it, this sentence is an existential quantification. It says that there exist many entities of a certain description, to wit, 'ways things could have been'. I believe things could have been different in countless ways. I believe permissible paraphrase of what I believe, taking the paraphrase at its face value. I therefore believe in the existence of entities which might be called 'ways things could have been'. I prefer to call them 'possible worlds'' (Lewis 1973: 84).

The argument states at least two things. One of them is the fact that we believe in the ways the world, our actual world, might have been. The other thing is that the ways at issue are entities of some sort or other over which we quantify. If we agree with Quine<sup>1</sup> and accept that to be is to be a value of a bound variable, modal notions are to be understood as quantifications over entities of some kind or other, namely possible worlds<sup>2 3</sup>.

### 1.3 *The Second Argument and Dilemma*

However, we can ask, while accepting Lewis's argument from ways, why should we not accept a similar argument for the existence of impossible worlds, namely 'ways the world *could not* have been'? The argument, as it goes, is a variant of the argument from ways obtained by replacement of possibility terms (could, might, possible) with corresponding impossibility terms (could not, might not, impossible). Thus, reformulating the argument, we have:

It is uncontroversially true that things could NOT have been some ways. I believe and you do so, that there are countless ways in which things could NOT have been. But what does that mean? Ordinary language permits the paraphrase: there are many ways things could NOT have been besides the way they actually are. On the face of it, this sentence is an existential quantification.

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<sup>1</sup> Cf. Quine (1948).

<sup>2</sup> The term of possible worlds is, of course, not a novelty. We can find the whole bunch of philosophical conceptions working with (or at least presupposing) the notion. Notoriously, it is Leibniz who gave the live to the notion of possible worlds. However, some commentators found the notion implicitly contained in Parmenides, Democritus, Leucippus, Aristotle, Scotus, Spinoza or Meinong. See Pruss (2002).

<sup>3</sup> John Divers in his (2002) lists three attitudes towards possible worlds: 1) *abstentionism*, which proposes no applications of possible-worlds discourse at all, 2) *antirealism*, persisting in the use of the notion of possible worlds without commitment to their existence and 3) *realism*, proponents of which hold the ontological thesis saying that there *exists* a plurality of possible worlds.

It says that there exist many entities of a certain description, to wit, '*ways things could NOT have been*'. I believe things could NOT have been different in countless ways. I believe permissible paraphrase of what I believe taking the paraphrase at its face value. I therefore believe in the existence of entities which might be called '*ways things could NOT have been*'. I prefer to call them '*impossible worlds*'.<sup>4</sup>

Given Lewis's original argument for the existence of possible worlds, there seems to be no principal difference when applied to impossibilia<sup>5</sup>. But then, a dilemma arises: either we do not accept Lewis's argument from ways for both possible and impossible worlds or we do so in both cases. In the former (reductio) case, we get:

1. If Lewis's argument can be applied in the case of possible worlds, then it can be applied, *mutatis mutandis*, in the case of impossible worlds as well.
2. Lewis's argument cannot be applied in the case of impossible worlds.  
Thus, Lewis's argument cannot be applied in the case of possible worlds either.

To embrace the latter alternative - the one advocated in my thesis - is to accept Lewis's initial argument from ways and apply it uniformly to the case of impossible worlds. The result is a *modus ponens* version which looks as follows:

1. If Lewis's argument can be applied in the case of possible worlds, then it can be applied, *mutatis mutandis*, in the case of impossible worlds as well.

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<sup>4</sup> See, for example, Naylor (1986).

<sup>5</sup> The view that impossible worlds should inherit the metaphysical status of their possible mates is called Parity Thesis. For further arguments against drawing an ontological division between possible and impossible worlds, see Priest (1997: 580 - 581) or Priest (2005: 139).

2. Lewis's argument can be applied in the case of possible worlds.

Hence, Lewis's argument can be applied in the case of impossible worlds as well.

### ***1.4 What are Impossible Worlds?***

Now, before proceeding to the main subject of my thesis, it is necessary to clarify the starting point of the debate. That is, we have to define the notion of impossibility and, a fortiori, the notion of impossible world itself in order to set the things up. In short, what are we dealing with when we say: "*it is impossible*"?<sup>6</sup>

Although contemporary literature offers several qualifications of *what* is supposed for impossible worlds to be, just three of them can be considered as pertinent for our purposes. The first specification is general. Impossible worlds are those worlds in which the laws of logic are in some respect different. Given a particular logic, worlds that are impossible relative<sup>7</sup> to that logic are the worlds whose truths do not wholly overlap with the truths holding in any possible interpretation of the logic. The second definition of impossible worlds is less general, because it defines them as worlds where the set of things that hold is not the same as the set of things that hold in any possible interpretation of *classical* logic. Even more restrictive specification considers impossible worlds as worlds in which (some) contradictions are true: to say that  $(P \text{ and } \sim P)$  is true is to commit ourselves to the existence of impossible worlds, because no *classical* interpretation can validate that result.

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<sup>6</sup> It is the broadly *logical* or *metaphysical* impossibility (as opposed to, say, relatively uncontroversial physical, epistemic or moral impossibilities) that I am here concerned with.

<sup>7</sup> As it will be shown later, there are no possible and impossible worlds *simpliciter*. Instead, what we have at hand is a variety of possible and impossible worlds which are such with respect to certain criteria.



Is any of the above definitions applicable to the theory of genuine<sup>8</sup> impossible worlds? To answer the question affirmatively, we need to understand Lewis's theory in more details. I will, therefore, devote the next chapter to the exposition of genuine modal realism.

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<sup>8</sup> Lewis's conception is characterized as 'genuine', standing thereby in opposition to its rivals - ersatz theories. These theories take possible worlds 'at cheap' what means that 'we can have *one world only*, and countless *abstracts* entities *representing* the ways that this world might have been' (Lewis 1986: 136, my emphases). Lewis recognizes three varieties of ersatzism: linguistic, pictorial and magical, whilst their answers to the question 'How does a world represent?' are as follows: 'it represents the way a sentence does', 'it represents the way a picture does' and 'it just represents, and there is nothing more to be said', respectively. For a more comprehensive overview of ersatzism, see Divers (2002: 169-180), Lewis (1986: Chapter 3) or Van Inwagen (2001: 227-233).

## ***II. Genuine Modal Realism***

### ***2.1 Introduction***

In this Chapter I will present genuine modal realism in some details. In particular, I expose the ontological and conceptual postulates of the theory (Section 2.2), justify them in Section 2.3, maintain theory's conceptual applications (Section 2.4) and, finally, underwrite the ontological identifications the theory offers (Section 2.5).

### ***2.2 Exposition***

'Modal realism', 'extreme modal realism', 'genuine realism', 'concretism' or 'Lewisianism' are but different labels of one and the same metaphysical theory<sup>9</sup>. Its core is the belief that the world we live in as well as every other possible world is a very inclusive thing of the same ontological kind. Since the very inclusive things are concrete mereological spatiotemporally related sums, 'the worlds are something like remote planets; except that most of them are much bigger than mere planets, and they are not remote' (Lewis 1986: 1). According to Lewis, to be a concrete world means:

- a) to have parts that are paradigmatically concrete, for example chairs, stars, pigs
- b) to be particular as opposed to being universal, to be an individual as opposed to being a set
- c) to have parts standing in some kind of external relation to each other
- d) to be determinate, rather than to be an abstraction of anything else<sup>10</sup>.

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<sup>9</sup> The fullest and comprehensive treatment of concrete possible worlds is contained in Lewis's *magnum opus*, Lewis (1986).

<sup>10</sup> Lewis names the above criteria as the Way of Example, the Way of Conflation, the Negative Way and the Way of Abstraction, respectively. See Lewis (1986: 81-86).

Though the interpretation of modal speech depends on whether we speak of *de re* or *de dicto* modalities, our possible worlds discourse always takes for granted that there are full-blooded possible worlds and their parts. Moreover, the modal realists accept the following ontological theses<sup>11</sup>:

- I) There are **individuals**<sup>12</sup>.
- II) There are **sets**.
- III) There is the empty set.
- IV) For every individual there is a set such that the individual is its only member.
- V) There are set theoretic constructions out of individuals.
- VI) Some individuals are worlds.
- VII) The world is an individual a) whose parts are **spatiotemporally** related to each other and b) is not a part of any other individual except itself.
- VIII) The actual world is the world which contains us and our surroundings as its parts.
- IX) Every individual which is a **part of** a world is a part only of that world and not of any other world<sup>13</sup>.
- X) Anything can coexist with anything else and anything can fail to coexist with anything else. Or, more accurately: for any individuals  $a, b, c \dots n$  there is a world containing any number of duplicates<sup>14</sup> of each.

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<sup>11</sup> I borrow Divers's exposition in his (2002) in order to clearly and systematically provide the main characteristics of Lewis's modal realism.

<sup>12</sup> Throughout the exposition, I am using **fat face** in order to maintain the primitives of the theory, meaning conceptual and ontological instances posited but not further analyzed by the theory.

<sup>13</sup> For instance, if some individual  $x$  is a member of worlds  $v$  and  $w$ , then all individuals in  $v$  are spatiotemporally related to  $x$  and likewise all individuals in  $w$ . But since spatiotemporal relation is symmetric and transitive, it follows that all individuals in  $v$  and  $w$  are spatiotemporal related to one another, and since the worlds are supposed to be maximal,  $v$  and  $w$  are identical.

Taking these theses literally, possible worlds are individuals spatiotemporally and causally<sup>15</sup> separated from one another. Actuality is considered as meaning this-worldly, i.e., it varies from one world to another which world is actual.

### ***2.3 Why Believe in Concrete Possible Worlds?***

Lewis's equivocation between the 'ways worlds might have been' and realistic universes is regarded as a manifestation of economic philosophical thinking. Since his strategy rests on the supposition that there is not an absolutely true metaphysical theory, the only thing we can do is to compare rival theories of modality and evaluate them by applying the cost-benefit criterion<sup>16</sup>.

Denying the absolute truth of any theory, Lewis insists on accepting such a theory whose benefits outweigh its costs. And this is exactly what he bases his defence of the controversial ontology on. Put in philosophical terms, Lewis's theory is ideologically economical because of its *qualitative* parsimony. More naturally, if a theory keeps down the number of fundamentally different *kinds* at the expense of extending of their instances, it is *qualitatively* more parsimonious than a theory that does not<sup>17</sup>. Since the only primitives the genuine modal realist uses are individuals and sets, there are only two ontological categories in his theory. What is more, the entities are extensional.

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<sup>14</sup> '...we can say that two things are duplicates iff (1) they have exactly the same perfectly natural properties, and (2) their parts can be put into correspondence in such a way that corresponding parts have exactly the same perfectly natural properties, and stand in the same perfectly natural relations'. (Lewis 1986: 61).

<sup>15</sup> It is, of course, disputable whether or not we take causal relations as to be conceptual primitives. See Divers (2002: 92).

<sup>16</sup> Since every theory has its benefits as well as its costs, the overall comparison of rival theories is a very complex matter.

<sup>17</sup> This is explicitly stated in Lewis (1973: 87). For a modification of the principle, see Divers (1994).

However, what about its *prima facie quantitative* extravagance? Is it not, someone may ask, too high a cost when the theory violates our common opinion about what there is? Lewis's answer is straightforward: No. Although he recognizes that it seems to be false to postulate the ontology of infinite number of concrete possible worlds, it does not have to imply automatically the failure of his theory. Of course, he concludes, the theory would fail outside the philosophical room. But the area in which we make philosophy is beyond the reach of common sense. A similar idea can be found in Van Inwagen (1986), when he says: '...the office of common sense is to keep us from playing cards for high stake with people we meet on trains, and not to endorse metaphysical opinions' (Van Inwagen 2001: 225).

All in all, we can agree not to ignore common sense and accept the opinion that failing the test of commonsensical clarity is a disadvantage. But wait! Theoretical benefits can still be worth of the cost. Let us, therefore, take a look at some applications of Lewis's theory.

## ***2.4 Conceptual Applications***

To apply Lewisian interpretation of possible worlds conceptually means to define and elucidate modal and intensional concepts in terms of the conceptual primitives accepted by the theory. What we came to know so far is that the only conceptual primitives concretism accepts are individuals (ontological thesis I), sets (ontological thesis II), spatiotemporal relatedness (ontological thesis VII) and part-of relation (ontological thesis IX). Hence, the theory, if successful in analyzing modal and intensional concepts, seems to have resources to do the work in an explicit, non-modal and purely extensional manner. Unsurprisingly, such an explanation is considered by every modal realists as realizable.

### 2.4.1 *Possibility, Necessity and Contingency*

To begin with the concepts of possibility and necessity, the basic theoretical postulate of genuine modal realism is:

- (1) It is possible that P *if and only if* there exists a possible world *w* at which P.

(1), as it stands, is an ordinary modal claim in which P stands for a non-modal statement and the term of a possible world directs our attention to a single spatiotemporally related part of the logical space. Since the phrase 'at some possible world' restricts the domain of quantification, it behaves exactly like the modifier 'in Australia' or 'in my bed'<sup>18</sup>. Said more clearly, genuine modal realism accommodates modal claims as quantifications over worlds in which non-modal claims hold.

Furthermore, we have seen that every individual, except for worlds themselves<sup>19</sup>, is worldbound. To say, therefore, that

- (2) There is a philosophizing cat.

is, in fact, to say:

- (3) There is a philosophizing cat in some possible world.

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<sup>18</sup> Cf. Lewis (1986: 5).

<sup>19</sup> Surely, every possible world is part of itself. Yet, it is the proper part-hood relation that is at issue here.

However, we have also claims the interpretation of which does not contain quantification over possible worlds as maximal mereological sums of spatiotemporally interrelated individuals<sup>20</sup>. Given these cases, the genuine realist is forced to interpret her quantifiers as unrestricted, i.e., as not involving the reference to any particular possible world. We can demonstrate this kind of statements in a simple way, providing an example of a claim which is, according to Lewis's theory, non-contingently true. Namely:

- (4) It is possible that there is a plurality of worlds<sup>21</sup>.

The claim in question is about the whole logical space, i.e., the whole plurality of worlds, and so it cannot be interpreted in the ordinary manner like

- (5) There is a plurality of worlds in some possible world<sup>22</sup>.

Instead, quantification goes unrestricted. This means that modalizing in such extraordinary cases calls for a special treatment. In particular, any modal modifier is redundant and, consequently, the postulate for their analysis would be slightly modified:

- (6) It is possible that P *if and only if* P.

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<sup>20</sup> As we will see later, such claims cause serious troubles for Lewis. See Chapter III.

<sup>21</sup> The other examples are: 'It is possible that there are natural properties' or 'It is possible that there are numbers'. Since the entities at issue are not world restricted, they are analyzed extraordinarily, e.g., without reference any particular world. Cf. Divers (2002: 47).

<sup>22</sup> According to Lewis's realism, the claim (5) is nonsensical. However, other theories do consider the claim as meaningful. See, for example, Plantinga (1974: 46).

The concepts of necessity and contingency are analyzed in the same fashion. It only suffices to define them in terms of possibility and we are obtaining the following formulations:

- (7) It is necessary that there is a philosophizing cat *if and only* there is a philosophizing cat in every possible world

and

- (8) It is contingent that there is a philosophizing cat *if and only if* there is a possible world in which there is a philosophizing cat and there is a possible world in which there is not a philosophizing cat.

(7) and (8) are shaped as ordinary (world restricted) modal claims. However, (7) can be given also an extraordinary interpretation: genuine realist 'appeals to the extraordinary interpretation of modal claims whenever she intends or interprets the associated non-modal content as content that is not world-restricted content' (Divers 2002: 50). To wit:

- (9) It is necessary that there is a plurality of worlds *if and only if* there is a plurality of possible worlds

because there is no world-restricting element afoot in the content of (9) to sustain subsequent existential or universal generalization.<sup>23</sup>

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<sup>23</sup> Cf. Divers (2002: 49).



On the other side, the explanation of contingency in the extraordinary interpretation is ambiguous, since all matters about the logical space are, according to Lewis, non-contingent. The claim

- (10) It is contingent that there is a plurality of worlds *if and only if* there is a plurality of worlds and there is not a plurality of worlds,

is, together with any other extraordinary contingent claim, trivially false, because what holds of the logical space unrestrictedly is not a contingent matter, and in non-contingent matters what is possible is also necessary. Logical space simply cannot be otherwise, full stop<sup>24</sup>.

### 2.4.2 *Intensional Entities*

Besides the above non-modal analysis of modal concepts, we can explain intensional concepts extensionally as well. One strategy is to characterize a certain group of intensional concepts by certain theoretical roles. For example, to work with the term of property is to use it to play a certain theoretical role in a philosophical theory. Lewis's own words: 'To deserve the name of 'property' is to be suited to play the right theoretical role; or better, to be one of a class of entities which together are suited to play the right role collectively' (Lewis 1986: 55). To analyze conceptually the notion of property is, therefore, to identify the notion with the theoretical role it plays in the theory. For this reason

- (11) A is a property *if and only if* RA,

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<sup>24</sup> See Lewis (1986: 125). I will say more about the extraordinary interpretation in Chapter V.

where A stands for a particular property, say 'being a negative charge' while R stands for a certain theoretical role it plays. Other kinds of intensional entities, like propositions or states of affairs, call for similar postulates. In particular

(12) P is a proposition *if and only if* RP

and

(13) S is a state of affairs *if and only if* RS

where P and R stand for a certain proposition and a certain state of affairs, respectively.<sup>25</sup>

### 2.4.3 Counterfactuals

Counterfactuals are another kind of phenomenon modal realism deals with. Since they appear to be of modal kind and Lewis invokes a thoroughly non-modal account of possible worlds, his theory can be employed in providing a reductive or non-modal account of counterfactual conditionals as well. Here, the basic conceptual postulate is:

(14) If it had been the case that A then it would have been the case that C *if and only if* for any selected world  $w$ , at  $w$ , if A then C.

In order to understand better the postulate, it will be useful to adduce an example. Lewis writes: "*If kangaroos had no tail, they would topple over*" seems to me to mean something like this: in any possible state of affairs in which kangaroos have no

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<sup>25</sup> For more details concerning conceptual analysis of intensional notions, see Divers (2002: 47-49).

tail, and which resembles our actual states of affairs as much as kangaroos having no tail permits it to, the kangaroos topple over' (Lewis 1973: 1, his emphasis). Accordingly, the claim

(15) If kangaroos had no tail, they would topple over

is, according to Lewis's theory of counterfactuals, true *if and only if* there is no possible world  $w$  more **similar**<sup>26</sup> to the actual world than some possible world  $v$  such that

- 1) the antecedent and consequent of the conditional are true in  $v$  and
- 2) the antecedent is true in  $w$  but the consequent false in  $w$ .

Going beyond the ontology of the actual world and accepting non-actual possible individuals and set-theoretic construction out of them, the concretist theory of counterfactuals can be formulated.

I will end the list of conceptual applications here. As it should be clear now, all Lewis's analyses terminate in analysans whose components are only primitive concepts of *individual*, *set*, *part-of relation*, *similarity relation* and *spatiotemporal relation*. Yet, the next step is required. To understand and assess every component of Lewis's theory, we should note that it is not just the explanation and elucidation of modal and intensional concepts by familiar ones that make the theory powerful. It is also the ontological point of view that plays an important role. And so the question remains:

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<sup>26</sup> As it will turn out, the notion of similarity is crucial in Lewis's theory, playing an important role not only in the evaluation of counterfactuals, but also in the evaluation of *de dicto* and *de re* modal claims. Of course, several factors are important: internal and external properties, context or pragmatic considerations. See, among others, Lewis (1973: 39) or Lewis (1986: 8, 234).

what are the merits of genuine modal realism with respect to its ontological applications? The next section will provide the answer.

## 2.5 *Ontological Identifications*

Given the ontological primitives of genuine modal realism (Section 2.2), every ontological identification will have to make do with individuals, sets and set-theoretic constructions out of them in order to fulfil Lewis's ambitions<sup>27</sup>.

As he contends, the framework enables us to do the job and thereby provides genuinely nominalistic accounts of notions like that of a property or a proposition. The 'creatures of darkness' are, simply speaking, identified with individuals and their set theoretic constructions. Moreover, since the worlds of genuine modal realism are existing concrete individuals, or more accurately, maximal mereological sums of individuals, their extensional character is indisputable. But, having noted this point, how exactly the identification is to be performed? Which entities, if any, among those we believe in, can occupy the property or proposition role?

### 2.5.1 *Properties*

To begin with properties, the first nominalistic proposal is:

- (16) The properties are subsets of the set of *individuals*.

Now, one can argue that nominalism (with respect to properties) has its own drawbacks. One of them is that nominalism considers various intuitively different properties as one and the same. Let us suppose for the sake of the argument an example of a philosophizing cat and a flying pig. The property of a philosophizing cat is, according to nominalism (with respect to properties), the set of all philosophizing

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<sup>27</sup> Briefly, everything is either an individual or a set.

cats. The same, unsurprisingly, holds for the case of flying pigs. But the actual world contains neither cats that can philosophise nor pigs which fly, and so the allegedly different properties must be identified with one and the same set<sup>28</sup> - the empty one. Whether you like it or not, the objection ends, this is unacceptable.

Well, though the objection under consideration is powerful with respect to certain theories (namely nominalism with no commitment to merely possible individuals), it is, most probably, harmless to modal realism. Since the fact that the unsubstantiated prejudice in favour of the actual is assumed<sup>29</sup>, the actualistic<sup>30</sup> premises identifying the properties with the empty set simply beg the question. Seen from Lewis's point of view, the premises one-sidedly restrict the universe of quantification to the actual world and its parts. And that is illegitimate<sup>31</sup>.

Lewis, contrary to the actualism, proposes an altered formulation of the ontological postulate (16): 'Sets of *possibilia* are entities we should believe in which are just right for one version of the property role' (Lewis 1986: 55-56, my emphasis). Not only actual individuals, but all possible ones should take a part in the ontological identification.

Consequently, combining set theory with the stock of merely possible concrete individuals affords him to overcome the objection. As long as there really exist possible worlds whose parts are flying pigs as opposed to philosophizing cats, we cannot identify the set consisting of flying pigs with the set consisting of philosophizing cats. They are plainly different. Thus,

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<sup>28</sup> It should be clear from the extensional character of sets: you cannot have two different sets with the same members.

<sup>29</sup> See Meinong (1910: 78-81).

<sup>30</sup> Since neither flying pigs nor philosophizing cats *actually* exist, they (according to actualism) do not exist at all. For more about actualism, see Menzel (2008).

<sup>31</sup> Of course, the premises are true when quantifying over *everything actual*.

- (17) The properties are subsets of the set of *all* actual *and* nonactual individuals.

### 2.5.2 Propositions

A similar strategy as in the case of properties can be used in the second part of the question, i.e., the one concerning the ontological status of propositions. Asking once again: Which entities, if any, among those we believe in, can occupy the proposition role?

Nominalistically understood, the answer is simple: the propositions are the sets of possible worlds, in which they hold. For instance, the proposition

- (18) A cat is on the mat

is identified with the set of all those possible worlds, which are such that the cat is on the mat in them. The only change in comparison to properties is that instead of taking concrete non-maximal individuals as the members of the sets, we will take entire concrete possible worlds as their members. The identification, then, goes as follows:

- (19) The propositions are the subsets of the set of all *possible worlds*<sup>32</sup>.

Equally, we can identify a proposition with a special kind of property, namely the property of being a world in which that proposition holds. One way or the other, the result will be the same – purely nominalistic and extensional account of propositions.

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<sup>32</sup> For the analysis of propositions in terms of possible worlds, see also Stalnaker (1976).

### 2.5.3 Truthmakers

The last kind of ontological application of genuine modal realism ontology I want to mention here is a provision of adequate truthmakers for modal claims. Since, according to Lewis, every modal truth is an existential truth the truthmaker principle states these three points:

‘[First], it seems attractive to claim that acceptance of GR puts one in a position to say that certain modal facts are really just existential facts. Second, it seems a short step to the further thought that it is these existential facts that are the truthmakers for modal claims. Third, it seems right to hold that talk of existential facts can be replaced here with talk about the existence of individuals’ (Divers 2002: 52).

The problem that immediately arises is that both modality *de re* concerning individuals and modality *de dicto* concerning propositions seems highly problematic in the case of worldbound individuals. How can you, the objector asks, analyze ordinarily - that is, worldboundly - modality *de re*, let say about yourself<sup>33</sup>. Strictly speaking, your view is not a view of ‘transworld identification’, because no individual exists in more than one world. According to your theory, the objector continues, *you* could not have been otherwise, because *you* do not exist in more than one possible world.

It is, Lewis replies, the individual or a couple of individuals in another possible world, similar in relevant respects to me, who represent *me* as having some properties *I* do not actually have. It is *my* counterpart or counterparts, individuals qualitatively similar to *me*, who play the role you demand. If I *could* have some properties I do not

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<sup>33</sup> See Kripke (1972: 45 fn. 13) or Plantinga (1974: 102-107) among others.

actually have, *my* counterpart in other possible world *has* them. For example, the statement

(20) I could have won the US presidential election in 2008

is true *if and only if* there exists a possible world, *w*, such that an individual, *x*, which is a part of *w* and which is *my* counterpart became a winner of the US presidential election in 2008. Briefly, the modal truth of my possible-winning is reduced to the *existence* of a full-blooded concrete worldbound individual fulfilling some intrinsic and extrinsic conditions<sup>34</sup> and standing in counterpart relation to *me*.

Interestingly, the situation is not different in the cases of truthmakers for *de dicto* claims. Despite the fact that *de re* modalities are about individuals and *de dicto* modalities are said to be about propositions, the latter modalities are about individuals, none the less. To illustrate that, let have the following claim:

(21) It is possible that our laws of nature do not hold.

The claim, if true, says that a certain *proposition*, namely the proposition 'our laws of nature do not hold', is true at some possible world. Equivalently (in the context of modal realism, of course), the claim also predicates a property – the property of being such a world at which our laws of nature do not hold – to some maximal possible individual. That is

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<sup>34</sup> Following Lewis, I distinguish intrinsic properties, which things have in virtue of the way they themselves are, from extrinsic ones, which they have in virtue of their relations or lack of relations to other things. Cf. Lewis (1986: 61).



- (22) It is possible that our laws of nature do not hold *if and only if* there exists a possible world which is such that our laws of nature do not hold therein.

To sum up, there is no fundamental difference between *de dicto* and *de re* modalities in Lewis's theory. We always speak about particular individuals, non-maximal in *de re* modalities, maximal in *de dicto* ones<sup>35</sup>. So, '...whether I speak of counterpart relations or accessibility relations (metaphysical accessibility, as opposed to epistemic or doxastic or the like) I still mean some sort of relations of comparative similarity' (Lewis 1986: 234). This concludes my exposition of genuine modal realism on which the following debate will be based<sup>36</sup>.

## 2.6 Summary

The main target of this chapter was to provide a comprehensive (though not exhausting) characterization of genuine modal realism. I conclude that the theory offers a reductive analysis of modality, provides an extensional reduction of intensional entities, analyses counterfactuals and gives us a strong theory of truthmakers. Furthermore, the theory is qualitatively parsimonious, simple and,

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<sup>35</sup> Again, this is a particular feature of Lewis's theory not shared with its rivals.

<sup>36</sup> The semantic applications of genuine modal realism can be initiated by Kripkean 6-tuple

$$\langle W, w, R, D, Q, V \rangle$$

where  $W$  is the non-empty set of worlds,  $w$  is the member of  $W$ ,  $R$  is the accessibility relation on  $W$ ,  $D$  is the non-empty set of individuals,  $Q$  is the function from worlds to set of individuals and, finally,  $G$  is the representing valuation - the function that assigns subsets of  $D$  to predicates, members of  $D$  to names and variables and sentences to truth values. Of course, genuine modal realism cannot get by the above model because of the counterpart theoretic treatment of *de re* modalities. Since we have already known that individuals of genuine modal realism are worldbound, they do not exist in more than one world. Subsequently, we need to enrich the model in order accommodate counterparts into the account. Thus, the modified model

$$\langle W, w, R, D, Q, C, V \rangle,$$

in which  $C$  stands for the counterpart relation.

For more details concerning the applications of concrete possible worlds, see Divers (2002: 43-58).

notwithstanding its quantitative extravagance, still sufficiently strong to meet its aims and objectives.

# III. Impossible Worlds – Why to Bother with Them?

## *3.1 Introduction*

The previous chapter showed that the strength of (concrete) possible-worlds account was the main reason why philosophers spend previous thirty – forty years in developing their conceptual, semantic and ontological applications. Is the situation different when impossible worlds are in dispute? Does it really make a sense to postulate such anarchic individuals as impossible worlds?

My claim is that the benefits gained by postulating concrete possible worlds can be extended by the acceptance of concrete impossible worlds without thereby violating Lewis's twofold principle: a) taking them at face value is known not to lead to trouble and b) taking them some other way is known to do that. Since I think that taking them at face value is known not to lead to trouble and the rejection of impossible worlds does, I agree with Yagisawa, when he writes:

'[We] should either not value the Lewisian virtues and therefore not accept Lewisian possibilism, or else accept Lewisian possibilia *and* impossibilia as well...[If] we should accept Lewisian analysis and therefore Lewisian possibilia because of the Lewisian virtues, then we should accept impossibilia, because doing so will give us a better analysis with a higher degree of Lewisian virtues' (Yagisawa 1988: 182-183, his emphasis).

The fact that the modal realism enriched with impossible worlds –Yagisawa christens it extended modal realism<sup>37</sup> - offers the analyses worth of the metaphysical prize while remaining extensional can be demonstrated by several debatable claims. As we shall see later, the claims point out the deficiency of modal realism, leading it thereby into difficulty. The claims in question are these: ‘there are necessarily coexistent properties and propositions’ (Section 3.2), ‘counterfactuals with impossible antecedent are not trivially true’ (Section 3.3), ‘logical facts could fail’ (Section 3.4), ‘there are impossible beliefs’ (Section 3.5) and ‘truthmaking thesis holds non-trivially’ (Section 3.6).

### *3.2 There Are Necessarily Coexistent Properties and Propositions*

Armed with the ontological postulates of modal realism, Lewis identifies properties and propositions with the sets of individuals and the sets of possible worlds, respectively (Section 2.5.1 and Section 2.5.2). Moreover, since the individuals and sets are extensional entities, properties and propositions are trouble-free with regard to putatively intensional character of the ‘creatures of darkness’<sup>38</sup>.

Furthermore, we already know that Lewis’s ontology ends up with the actual world confinement and, in addition to all actualia, includes also non-actual individuals into the menu of what there is (Section 2.2 and Section 2.3). Thus, although the properties of ‘being a philosophizing cat’ and ‘being a flying pig’ do coincide in the actual world, the very coexistence does not imply their sameness.

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<sup>37</sup> See Yagisawa (1988).

<sup>38</sup> The phrase belongs to Quine when (ironically) saying: ‘Intentions are creatures of darkness, and I shall rejoice with the reader when they are exorcised....’ (Quine 1976: 188).

Since the actual world is one of many possible worlds, the set of all possibilia that are philosophizing cats is not the same as the set of all possibilia that are flying pigs.

So far so good. However, we can still find some properties that are coextensive not only in the actual world, but also in every *possible* world. Since the properties like ‘being triangular’ and ‘being trilateral’ are possessed by the very same class of all actual and non-actual things, they are necessarily coextensive and, a fortiori, indistinguishable by genuine modal realism.

Analogously, there are impossible properties had by no possibilia at all. These, too, are not discriminated by genuine modal realist, because her ontological postulates identify them with the empty set. For instance, the property of ‘being round and square’ is intuitively different from the property of ‘being pink and not pink’ despite the fact that the set of round and square things is the same as the set of things that are pink and not pink.

Are these consequences acceptable for nominalists? It seems not. But what if we extended our ontology? To include impossibilia into the list of what there is would rescue all the concretist’s ambitions and discriminate the necessarily coexistent as well as impossible properties. Doing so, properties would be defined as follows:

- (23) Properties are subsets of the set of all actual and nonactual possibilia *and* impossibilia<sup>39</sup>.

Now, given that properties are (according to *extended* modal realism) sets of possible *and* impossible individuals, the property of ‘being triangular’ is obviously different from that of ‘being trilateral’. The difference rests on the fact that there is an

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<sup>39</sup> Note that the question: ‘Are impossibilia parts of the actual world?’ is not at issue here. Cf. Priest (1998).

impossible world whose one part is a triangular individual without also being trilateral.

The same principle holds for impossible properties. To differentiate ‘round square’ things from ‘pink and not pink’ ones, it only suffices to ‘find’ a world which contains an alien instantiating the property of ‘being round and square’ without also containing a ‘pink and not pink’ stunner. Of course, this world is not possible. But who cares? One more step, i.e., the extension of the set of possible worlds to impossible mates, guarantees as well as justifies the move.

The impossibilist’s strategy can be also applied when necessary and impossible propositions are in question. The only difference in relation to properties is that the whole impossible worlds, not mere impossible individuals, come on stage. Let us have a pair of sentences:

(24) The Law of Non-Contradiction (henceforth LNC) does not hold.

(25) The law of identity does not hold.

Intuitively, the propositions do not say the same thing notwithstanding the fact that they hold in the same set of *possible* worlds. Since the devoted Lewisian must identify them, he gets into trouble. On the contrary, the extended Lewisian can differentiate them and, as it seems, provides a better theory with respect to explanation of propositions. Shh, at the cost of richer ontology!

### ***3.3 Counterfactuals with Impossible Antecedent Are not Vacuously True***

It seems that impossible worlds could also be required in the analysis of counterfactuals. As we have seen, Lewis modelled counterfactuals using the possible

worlds semantics of modal logic (Section 2.4.3). Since his analyses of counterfactuals are restricted to possible worlds and do not include impossibles into his account, ‘it seems...that one sort of impossible antecedents, a self contradictory one, logically implies any consequent’ (Lewis 1973: 24). It is not, therefore, surprise that we need a finer-grained analysis of counterfactuals in order to nontrivially evaluate those ones containing impossible antecedent.

The reason that we can assume something impossible and then wonder what would and what would not be the case shows the demand for impossible worlds. In other words, although there are counterfactuals with impossible antecedents which are, by definition, true, they are not trivially so. For instance, the claim

- (26) If some mathematician were to square the circle, all mathematicians would have been amazed

is intuitively true, but not only because the impossible antecedent occurs in it. To see the non-triviality, let’s compare the counterfactual with another one which is, according to Lewis, trivially true, but intuitively false. For example:

- (27) If some mathematician were to square the circle, I would have been a priest<sup>40</sup>.

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<sup>40</sup> To strengthen the intuition, consider the following pair of counterfactuals:

- (26) If some mathematician were to square the circle, all mathematicians would have been amazed.  
 (26’) If some mathematician were to square the circle, none of the mathematicians would have been amazed.

The problem is that, on Lewis’s theory of counterfactuals, both of these statements must be given the same truth value.

Certainly, the fact that the former counterpossible conditional is intuitively true whilst the latter is intuitively false cannot be handled solely by the possible worlds approach. Something has gone wrong.

On the other side, maintaining that there really is an *impossible* world which contains the crazy mathematician together with his amazed colleagues as its parts, without also containing me as a priest, does not seem to violate our intuitions. If so, why do not modify Lewis's initial idea concerning counterfactuals? Doing so, our conceptions of counterfactuals would be the following: a counterfactual conditional is true if and only if there is no possible *or* impossible world  $w$  more similar<sup>41</sup> to the actual world than some possible or impossible world  $v$  such that a) the antecedent and the consequent of the conditional are true in  $v$  and b) the antecedent is true but the consequent is not true in  $w$ .

### 3.4 Logical Facts Could Fail

As several places of Lewis's work indicate<sup>42</sup>, he considers logical facts as being neither about individuals, nor about worlds. They are, he thinks, about whole totalities of possible worlds in which they hold. However, here the problem for traditional concretism arises: there is, surely, only one Lewis's pluriverse, and so only one bunch of logical laws. Accordingly,

(28) Logical facts could fail.

is trivially false statement<sup>43</sup>.

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<sup>41</sup> Or course, it remains disputable whether any possible world is more similar to the actual world than any impossible world. Cf. Nolan (1997: 550).

<sup>42</sup> Cf. Lewis (1986: 7, 51, 125, 126, 128)

<sup>43</sup> Divers argues that although the claim is false in Lewis's theory, it is not a trivial matter. See Divers (2002: 75).



Now, we can ask: what if we accepted the very essence of logical pluralism<sup>44</sup> and so deny the opinion that there is only one true logic? Since the content of the logics in question could not be given by counterpart of any particular possibilia, modal realist calls for an alternative solution.

The impossibilist's strategy in this case is to postulate the plurality of alternative logical spaces using, interestingly, Lewis's own line of argumentation. More precisely: ordinary language permits the paraphrase: there are many ways *the whole plurality of worlds* could have been besides the way *the whole plurality of worlds* actually is. On the face of it, the sentence is an existential quantification meaning that (without regard to its truth or falsity) the statement

(28) Logical facts could fail

really expresses the quantification over pluralities of worlds, separate pluriverses, where different logical laws hold. Consequently:

(29) Logical facts could fail *if and only if* there exists a logical space, a sum of possible worlds, at which logical facts fail.

However, the crucial question should be addressed: What are logical spaces?

In order to have a careful statement of the definition of logical spaces, I will use Yagisawa's somewhat lengthy speech. He writes:

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<sup>44</sup> 'According to logical pluralism there is not *one* true logic; there are *many*' (Beall & Restall (2000: 475, their emphases).

‘Let us assume that the largest accessibility relation (viz. logical accessibility) is an equivalence relation. A logical space consists of all and only worlds which form an equivalence class under the largest accessibility relation; for any world  $w$ , the logical space which includes  $w$  includes all and only worlds that are logically accessible from  $w$ . Within a logical space, any world is logically accessible from (i.e. possible relative to) any world. Any world that lies outside a given logical space is not accessible from (possible relative to) any world in that logical space and belongs to a different logical space’ (Yagisawa 1988: 182).

Naturally, the aim of the definition above as well as my aim here is not to provide specific details of logical space<sup>45</sup>. Nevertheless, the opinion of extended realists is that to take the claim ‘Logical facts could fail’ at face value and, a fortiori, consider it as an existential quantification over logical spaces is the only acceptable reading available to Lewis. Moreover, it appears to preserve his own stance and so retains his purely extensional ambitions.

### ***3.5 There Are Impossible Beliefs***

It is an indisputable fact that all of us sometimes experience having *inconsistent* beliefs. But how to analyse them nontrivially if only possible worlds and possible individuals are available? Accepting Lewis’s own opinion concerning beliefs<sup>46</sup>, the content of a belief state can be identified with the set of worlds that make the beliefs true. By that, the claims

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<sup>45</sup> See Chapter IV.

<sup>46</sup>[The] content of someone’s system of belief about the world (encompassing both belief that qualifies as knowledge and belief that fails to qualify) is given by his class of *doxastically accessible worlds*’ (Lewis (1986: 27, his emphasis).

(30) I believe that the coffee I drunk in the morning was impossible

and

(31) I believe that a crazy mathematician has squared the circle

express the same belief: in the former case, the belief is the set of all worlds in which I - or better, my counterpart(s) - drunk the impossible coffee, while the belief expressed by (31) is ontologically identified with the set of all those worlds where a crazy mathematician squared the circle. Notoriously, it is the empty set.

It is no accident that once impossible worlds became acceptable, the situation changes. For, by extended modal realists' lights, the fact that the above beliefs are different is underpinned by the existence of an impossible world in which my counterpart did not drink the impossible coffee, but in which the crazy mathematician did the strange act of squaring the circle, none the less.

### ***3.6 Truth-making Thesis Holds Non-Trivially***

Finally, the need for impossible worlds (namely in Lewis's theory) has also been felt in the case of truth-making principle. Divers formulates the initial charge from triviality of truthmaking thesis as an objection from non-contingency<sup>47</sup>. A simple way to put the objection is this. When asking after the modal status of the truth about possible individuals, say unicorns, the extraordinary interpretation is called into play<sup>48</sup>. Unrestrictedly speaking, there are no contingent truths, because 'it is not

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<sup>47</sup> Cf. Divers (2002: 53-56)

<sup>48</sup> Recall the distinction between ordinary and extraordinary interpretation of modal claims (Chapter II, Section 2.4.1).

contingent what condition the entire system of worlds does or doesn't satisfy' (Lewis 1986: 125). Every truth about whole pluriverse is, according to Lewis, necessary.

Now, consider the statement concerning merely possible, nonactual individual:

(32) It is possible that unicorns exist.

Since the existence of unicorns is an absolutely<sup>49</sup> necessary condition for its truth, it cannot be the case that *the claim is true and there are no unicorns*. Given the ontology of genuine modal realism, the second conjunct – '*there are no unicorns*' - is impossible. But as Divers correctly points out, the absolute necessity of unicorn's existence is a necessary condition for *whatever* claim to be true.

The same reasoning, the objection carries on, holds for sufficient conditions. Since it is absolutely impossible for unicorns not to exist *and* the claim 'there are no unicorns' being true, then the existence of unicorns is also sufficient condition for the claim being true. Moreover, since the existence of the unicorns is absolutely necessary, the claim is necessary truth. Hence, using the same argumentation as in the case of necessary conditions, 'the existence of unicorns is a sufficient condition for the truth of any truth that hold of *absolute* necessity' (Divers 2002: 55, my emphasis).

Consequently, the existence of unicorns suffices for the truths of any absolute possibility claim formulated in an extraordinary manner. Absurdly looking result!

What should be clear so far is the fact that Divers's argument from non-contingency is based on Lewis's assumption about the whole plurality of worlds, e.g., that the plurality of worlds *could not* have been otherwise. In other words, it is the necessary status of absolute possibility claims that implies the absurd results. It

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<sup>49</sup> To be absolutely true means the same as to be true *simpliciter*, e.g., without regard to any restrictions put on quantification.

seems, therefore, legitimate to ask: why to accept the claims about absolutely *everything*, about *everything what there is*, as meaningful ones. Why do we not deny the very claims about absolutely everything, providing by that the room for impossible worlds as parts of alternative logical spaces?

By admitting impossible worlds into her ontology, extended modal realist simply refutes the reduction of locutions of the form, 'S is possibly  $\phi$ ' and 'S is necessarily  $\phi$ ', where 'S' stands for logical space, to 'S is  $\phi$ ', where the last locution of 'is' is meant unrestrictedly, ranging over everything what there is. Doing so, she automatically refutes Divers's second conjunct and, a fortiori, the whole argument<sup>50</sup>.

### 3.7 Summary

In sum, *prima facie* at least, the previous cases showed how important and useful the term of impossible world is. Since, as I think, the benefits of Lewis's theory concerning possibilia outweigh its ontological generosity, adequate response to any of the aforementioned objections is required in order for theory to succeed in competition. I then argued that the appropriate extension of the ontology is such an alternative that enables us to meet the objections on one side, contributes to its overall strength on the other.

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<sup>50</sup> Cf. Chapter V.

## ***IV. Lewis on Impossible Worlds***

### ***4.1 Introduction***

This chapter addresses Lewis's original argument against concrete impossible worlds. Section 4.2 points out the main premises of the argument. Next, in Section 4.3, I delineate the difference between actual truths and truths *simpliciter* and maintain that the argument from the existence of merely possible individuals is analogous to the argument from the existence of 'merely possible' impossibilia.

### ***4.2 Against Impossible Worlds***

Lewis's disapproving attitude towards impossible worlds is expressed by a *reductio* in the following way:

[The] discussion of restricting modifiers enables me to say why I have no use for impossible worlds, *on a par with* the possible worlds. For comparison, suppose travellers told of a place in this world – a marvellous mountain, far away in the bush – where contradictions are true. Allegedly we have truths of the form 'On the mountain both P and not P'. But if 'on the mountain' is a restricting modifier, which works by limiting domains of implicit and explicit quantification to a certain part of all that there is, then it has no effect on the truth-functional connectives. Then the order of modifier and connectives makes no difference. So 'On the mountain both P and Q' is equivalent to 'On the mountain P and on the mountain Q'; likewise 'On the mountain not P' is equivalent to 'Not: on the mountain P'; putting these together, the alleged

truth 'On the mountain P and not P' is equivalent to the overt contradiction 'On the mountain P, and not: on the mountain P'. That is, there is no difference between a contradiction within the scope of a modifier and a plain contradiction that has the modifier within it. So to tell the alleged truth about the marvellous contradictory things that happen on the mountain is no different from contradicting yourself. But there is no subject matter, however marvellous, about which you can tell the truth by contradicting yourself. Therefore there is no mountain where contradictions are true. An impossible world where contradictions are true would be no better' (Lewis 1986: 7, fn. 3, my emphasis).

If we take a look at the argument more closely, we can reformulate it in several steps:

1. There exists an impossible world at which (P and  $\sim$ P).
2. At  $w$  (P and  $\sim$ P) *if and only if* at  $w$  P and  $\sim$ (at  $w$  P)<sup>51</sup>.
3. To tell the alleged truth about the marvellous contradictory things is not different from contradicting yourself.
4. There is no subject matter about which you can tell the truth by contradicting yourself.  
Impossible worlds do not exist.

Admittedly, either the assumption

(2) At  $w$  (P and  $\sim$ P) *if and only if* at  $w$  P and  $\sim$ (at  $w$  P)

or

(4) There is no subject matter about which you can tell the truth by contradicting yourself

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<sup>51</sup> The principal difference between Lewis and his rivals is that for him 'at  $w$ ' works as a restricting modifier. If, on the other hand, 'at  $w$ ' were not a restricting modifier but functioned like 'According to some world-story', then Lewis's argument would fail. It is because of the fact that non-restricting modifiers *do* have an effect on truth-functional connectives. For example, 'Fred says that not P' and 'Not : Fred says that P' are independent : both, either, or neither might be true' (Lewis 1986: 7, fn. 3). For a criticism of Lewis's account, see Lycan (1991: 227), among others.

guarantees the negative answer to the question: Are there impossible worlds?

In what follows I will try to show that one of the assumptions, namely assumption (4), can be denied without thereby falling into utter nonsense<sup>52</sup>. To put it otherwise, the admission of true contradictions in (some) worlds could be a way out from Lewis reductio. After all, 'Why can you not tell the truth about an impossible thing by contradicting yourself? It seems that you have to contradict yourself to tell the truth about impossible thing. What else would we expect? Impossible things are *impossible!*' (Yagisawa 1988: 203, his emphasis).

Paraphrasing the intuition into the modified version of Lewis's argument, we get:

1. There exists an impossible world at which (P and  $\sim$ P).
2. At  $w$  (P and  $\sim$ P) iff at  $w$  P and  $\sim$ (at  $w$  P).
3. To tell the alleged truth about the marvellous contradictory things is not different from contradicting yourself.
4. There *are* true contradictions.  
Impossible worlds *do* exist

In order for the argument to be sound, we must show that all its premises are true. Can we do that without sacrificing the spirit of genuine modal realism? I believe we can. What is more, we can do that within the bounds of Lewis's own methodology.

### ***4.3 Truths at World vs. Truths Simpliciter***

As should be already known from the previous chapters, proponents of genuine modal realism generally look at the notion of 'truth' itself as defined in terms of 'truth in' relation. This means that a certain sentence is true at a world *if and only if* it is true when we quantify over all the things in that world.

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<sup>52</sup> The other alternative is the denial of the assumption (2). This is the route presented by Lycan (1994: 39-41) or Yagisawa(2010: 182-186).



By the same token, when Lewis argues for the existence of merely possible individuals, he strictly differentiates between actual truths and truths *simpliciter*<sup>53</sup>. In particular, we get the actual truths when we quantify over less than everything there is (i.e. Lewis's plurality of worlds), thereby implicitly or explicitly restricting ourselves only to the actual world and its parts. Truths *simpliciter*, on the other side, are not restricted to any particular part of Lewis's pluriverse<sup>54</sup>. Omitting all restrictions put on our quantifiers, we quantify over everything what there is, i.e. over the whole plurality of worlds. For example, the claim

(33) There are flying pigs

is false, whilst we tacitly restrict existential quantifier to the actual world and its parts. Hence

(34) Flying pigs do not *actually* exist

is, restrictedly speaking, true. However, that does not mean that the flying pigs do not exist *simpliciter*<sup>55 56</sup>. Of course, sometimes it is reasonable to ignore them and quantify restrictedly over us and our surroundings. But to ignore something does not imply that the entity at issue does not exist<sup>57</sup>. Similarly, when I look into the fridge and say that there is no beer, I do not thereby deny that there is no beer outside the fridge. I simply ignore all of them by restricting my existential quantifier to a much

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<sup>53</sup> Cf. Lewis(1986, 3).

<sup>54</sup> Once again, 'the worlds are something like remote planets; except that most of them are much bigger than mere planets, and they are not remote' (Lewis 1986: p. 1).

<sup>55</sup> This opinion stands in direct opposition to the view espoused by actualism, according to which the claim 'Everything there is exists or is actual' is unconditionally true. Cf. (Menzel 2008).

<sup>56</sup> Here is the move from ordinary to extraordinary interpretation of modal claims. See Section 2.5.1.

<sup>57</sup> That is, the entity exists *simpliciter*.

more limited part of reality, namely the contents of my fridge<sup>58</sup>. Accordingly, in the same manner as we concentrate our attention on the fridge and truly say there is no beer, we can also restrict our attention to the actual world and truly say that there is no flying pig, ignoring (but not denying) thereby a huge amount of flying pigs in other possible worlds.

Thus, the very existence of *possibilia* together with the difference between actual truths and truths *simpliciter* commits Lewis to the denial of following purely *actualistic* principle:

(35) *Actually P if and only if (unrestrictedly) P,*

where P stands for a proposition such as, say, 'there are flying pigs'. Since there are no flying pigs in the actual world, the left-hand side of the biconditional is false. But, as concretist's ontology dictates, individuals of this kind *do* exist, none the less. Well, we do not find them here among our worldmates, because they are merely possible. Yet, to be merely possible means (unrestrictedly speaking) nothing else but to exist in some possible world. Subsequently, the right-hand side of the biconditional is true and the whole equivalence fails to be true.

Interestingly enough, Lewis's stance changes when impossibilities come up under discussion. In comments on Lycan, he states: 'He [Lycan] is not suggesting that I claim to quantify over incomplete or inconsistent Meinongian objects<sup>59</sup> - of course I do not - but only that I claim to quantify beyond actuality' (Lewis 1986: 98). In other words, whereas Lewis countenances quantification beyond actualia, quantification beyond *possibilia* is strictly denied.

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<sup>58</sup> Cf. Lewis (1986: 137).

<sup>59</sup> Basically, Meinong thought that objects can be characterized in various ways and have their (possible and/or impossible) properties whether they exist or not – existential status is irrelevant.

Now, the question arises: What about the very similar ‘one step further’ principle, namely

(36) *Necessarily P if and only if (unrestrictedly) P?*

Can it be said that the principle fails in Lewis’s theory? Surprisingly, the opposite is true: necessary truths and truths *simpliciter* are considered by Lewis as equivalent, because necessary truths as well as truths *simpliciter* hold without regard to any restrictions on quantification<sup>60</sup>. For instance, it is a truly remarkable fact that the LNC is true *simpliciter* because it holds with respect to any *possible* world. Analogously, LNC is true necessarily, because there is no *possible* world in Lewis’s pluriverse which would violate the principle. As a result:

(37) *Necessarily LNC holds if and only if (unrestrictedly) LNC holds*

is true in the traditional concretism.

#### 4.4 Conclusion

To sum up, we have seen that Lewis’s argument for the existence of merely possible individuals rests on the difference between two kinds of truths, namely *actual* truths and truths *simpliciter*. However, and without further qualification, Lewis ignores the analogous difference, i.e. the difference between *necessary* truths and truths *simpliciter*. But, by examining the very similarity between the principles mentioned above, namely (35) and (36), Lewis’s commitment to the latter principle as opposed to the former one seems illegitimate. More accurately: Why do not go one

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<sup>60</sup> He formulates the principle in the following form: ‘[N]ecessarily all swans are birds iff, for any world W, quantifying over parts of W, all swans are birds. More simply: iff all swans, no matter what world they are part of, are birds’ (Lewis 1986: 7).

step further and provide an argument for the existence of impossibilities and thereby deny the latter principle as well? I will turn to this issue in the next chapter.

## V. Extended Modal Realism

### 5.1 Introduction

One existing proposal put forth by Takashi Yagisawa suggests that genuine modal realists should go beyond possible worlds and postulate additional alternative logical spaces. Our logical space - Lewisian pluriverse - is according to the proposal only one of many logical spaces. In this Chapter I examine Yagisawa's theory in specific details (Section 5.2); put forward a response to a particular objection against it (Section 5.3); sketch the notion of logical law (section 5.4); and, finally, argue for the metaphysical status of contradictions (Section 5.5).

### 5.2 More Lewis's Pluriverses?

It seems that Yagisawa's reasoning was motivated by the idea initially formulated in Skyrms's reaction to Lewis's theory. Skyrms writes:

'[L]ewis believes that our reality is a superworld incorporating many possible worlds. A more conventional view holds that our reality incorporates only one possible world. If, as I have argued, this is ultimately a contingent physical question, we would want to say that it is possible that Lewis is right and possible that he is wrong. That is to say, in possible-world talk, that there is more than one superworld. A consistent realist must then hold that many *superworlds* are real, and incorporate them into an even richer reality, a super-super world' (Skyrms 1976: 331, fn.10, his emphasis).<sup>61</sup>

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<sup>61</sup> For Lewis's answer, see Lewis (1986: 100-101).

In other words, once concrete possible worlds are admitted, the above passage indicates the following:

- 1) Logical space is the totality of all logically possible worlds.
- 2) Logical space might have been different.
- 3) Possible difference is to be understood in terms of plurality of logical spaces, not only of those of possible worlds.

Very roughly speaking, if we envisage Lewis's argument from 'ways the world might have been' and grasp every possible difference among them in terms of plurality of alternatives, we should also accept its extension - extended modal realism - in the shape of 'ways the Lewis's pluriverse might have been' too. So, Skyrms concludes, the regress is embarrassing to modal realists<sup>62</sup>.

Of course, we can agree with Skyrms that the cost is high. But in the same breath we can add that the cost is not so high as to make the theory nonsensical. In any case '[it] is not to be demanded that a philosophical theory should agree with anything that the man on the street would insist on offhand, uninformed and therefore uninfluenced by any theoretical gains to be had by changing his mind' (Lewis 1986: 134-135). Moreover, we saw that the benefits of Lewis's theory (Chapter II) together with the conceptual, semantic and ontological applications of impossible worlds (Chapter III) constitute strong reasons for the theory to be considered more deeply.

To begin with, one of the reasons already listed is the intuitively true possibility statement about the whole plurality of Lewis's worlds:

(28) Logical facts could fail.

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<sup>62</sup> Cf. Skyrms (1976: 332, fn. 10).

According to Lewis's own theory, (28) is necessarily false because it states how the whole plurality of worlds could have been besides the way it in fact is. But, we can ask: how, then is it possible that philosophers preferring *different* logical systems, i.e. the sets of claims about what really follows from what, apprehend the implications of their opponents' views?<sup>63</sup> Yagisawa thinks that the answer is straight: '[Logical] facts are not about any particular possibilia, not even possible worlds. So, their content cannot be given by counterparts of any particular possibilia. So Lewisian way calls for alternative logical spaces' (Yagisawa 1988: 186).

Having Lewis's distinction between actual truths and truths *simpliciter* in mind, one additional step seems to give sense to the desired extension. All that is needed is an additional demarcation between two kinds of truths, namely necessary truths and truths *simpliciter*. The intuition behind may be of the following kind: the principle

(38) *Necessarily* LNC holds *if and only if* (unrestrictedly) LNC holds

is false, because the right-hand side is false despite the left-hand one being true.

Analogously to the previous difference between actual truths and truths *simpliciter*, we ignore some worlds - inconsistent ones - in our ordinary thinking, since it is sensible to restrict ourselves to the possibilia and ignore impossible individuals in our everyday thought and language. But, again, our ignorance does not make them go away<sup>64</sup>.

Moreover, the fact that LNC holds in every *possible* world sustains one's intuitions about our logical space as a domain where every contradictory sentence

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<sup>63</sup> For more detail concerning logical pluralism, see Beall and Restall (2006).

<sup>64</sup> See Lewis (1986: 213) in order to see the analogy between Lewis's and mine argumentation.

fails to be true<sup>65</sup>. It is the falsity of the right-hand side of the biconditional that plays the crucial role in the impossibilist's argument. LNC does *not* hold *simpliciter*, because to hold *simpliciter* means to hold unrestrictedly, whereas to hold necessarily means to hold in every world fulfilling certain conditions, to wit, restrictedly. In short (and without violating our ontological intuitions): LNC holds necessarily, because it holds in *every consistent* world, while it fails to hold *simpliciter*, i.e. it fails in *inconsistent* ones.

To summarize, Lewis differentiated between actual truths and truths *simpliciter* in order to give a sense to his modal realism. We, on the other hand, went an extra mile for another differentiation not found in Lewis in order to give a sense to concrete impossible worlds. Obviously, both strategies are very similar, because they stand or fall on the difference between various restrictions put on the quantification. So, what is the crucial and fundamental difference between them?

Motivated by Lewis, extended modal realist considers her existential quantifier as variously restricted, hence changing its universe of discourse depending on implicit or explicit restrictions. But there is more to be said here, for there is no room for an absolutely unrestricted quantifier in the extended theory. Using a quantifier with absolutely no restriction does not, according to the extended modal realism, give a sense. When Lewis quantifies with absolutely no restriction, extended modal realist quantifies restrictedly over one logical space, namely Lewis's plurality of worlds.

But how, the question can arise, should we consider truths *simpliciter* while relinquishing unrestricted quantification? Yagisawa's answer is as follows:

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<sup>65</sup> However, since absolute status of possibility and necessity is abandoned, the argument seems to hold without regard to the truth or falsehood of LNC in the actual world. By the way, in response to Priest (2002a), Lewis writes: 'I keep forgetting whether you'd rather say that contradictions are possible, or that for all we know we live in an impossible world' (Lewis 2004: 177).



'[Here] I differ from Lewis. If the existential quantifier is used with absolutely no restriction, it will mean, 'There exists an  $x$  in some world in (our) logical space'. But according to me, it will mean, 'There exists an  $x$  in some world in some logical space in some super logical space in some super super logical space ... in some (super)<sup>n</sup> logical space...'(Yagisawa 1988: 202) <sup>66</sup>.

Since Lewis's theory enables there to be the maximal universe of discourse, he quantifies unrestrictedly over the whole logical space consisting of all possible worlds. Yagisawa, on the other hand, considers Lewis's pluriverse as only one of many. Any quantification is restricted to a particular domain without regard to the fact whether a fridge, the actual world or the whole plurality of Lewis's possible worlds is picked out as the pertinent domain. Put straightforwardly: 'quantification over *everything* is clearly intended to range over a unique all-inclusive domain that is not restricted in any way at all. I do not think such a domain is available' (Yagisawa 2010: 203, my emphasis). Let, therefore, recapitulate Skyrms's above argument in order to grasp the difference in more details:

1. Reality is the totality of everything.
2. Reality might have been different.
3. Possible difference is to be understood in terms of a plurality of alternatives.

As Lewis correctly points out, the lethal regress from the plurality of worlds to plurality of super – super ...- worlds works because of the above three assumptions.

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<sup>66</sup> In another place Yagisawa aptly answers directly to Skyrms's reductio argument from Lewis's superworlds in the following way: 'He [Skyrms] thinks that the regress is absurd. I do not. I think the regress is unavoidable and should be embraced by any modal realist' (Yagisawa 2010: 205).

In this light, it seems that whilst accepting Lewis' analysis of possibility, we should deny either premise (1) or premise (2).

Whereas Lewis denies premise (2)<sup>67</sup>, I, together with Yagisawa, deny premise (1). Speaking about the whole reality is, purely and simply, meaningless. We are always stuck with some kind of possibility, whether physical, metaphysical or logical: '[for] *any* kind of possibility K the totality of K-possible worlds could have been otherwise' (Yagisawa 2010: 204). In other words, there is no *absolute* possibility and, a fortiori, no *absolute* impossibility. All we have at our disposal is a variety of *restrictedly* possible and impossible worlds. There is no notion of absolute possibility or impossibility, full stop.

To sum it up, in spite of Lewis's disinclination to impossible worlds, there is a feasible way to show that Lewis's own methodology from merely possible individuals can be applied to impossible worlds and their parts as well. By considering every possibility and impossibility as restricted to a particular domain of reality, we can sustain Lewis's analysis of possibility in terms of plurality of alternatives, whatever kind of possibility is at issue. All we need is to surrender the phrase 'the totality of everything' as a meaningful expression and get by only with restricted terms of possibility, contingency and necessity.

### 5.3 *Still Reductive?*

Unsurprisingly, a lot of philosophers do not agree with the presented solution, emphasizing that the extended modal realism stands in a double bind. The objection, put crudely, is the following: If impossible worlds are taken as concrete entities of the same kind as Lewisian possible worlds, then we face the following problem: we

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<sup>67</sup> Again: '[it] is not contingent what condition the entire system of worlds does or doesn't satisfy' (Lewis 1986: 125).

seemingly have to resort to primitive modality in order to delimit impossible from possible worlds, thereby losing the alleged main advantage of modal realism over rival accounts<sup>68</sup>. Hence the question: do the proponents of concrete impossible worlds really ignore Lewis's non-modal analysis of modality?

Yes and no. We should note that the objection, in the first place, is directed to the absoluteness and steadfastness of the notion of impossibility in the first place. The proposal presented here is, contrary to the initial assumption, based on the abandonment of the absolute status of impossible worlds in the sense that no world is absolutely impossible. Thus, an impossible world is impossible only with respect to some worlds whereas does not have to be impossible with respect to another. Additionally, the same can be said about possibilia. Worlds are not possible as such, but only relative to other worlds. Again, it is *prima facie* Lewis's view that modality is restricted quantification, i.e. quantification restricted from the standpoint of a given world (perhaps ours) by means of so called 'accessibility' relations<sup>69 70</sup>.

Abandonment of absoluteness on one side together with the sensitive work with the accessibility relation on the other enable us to define possible as well as impossible worlds non-modally: 'Within a logical space, any world is logically accessible from (i.e., possible relative to) any world. Any world that *lies outside* a given logical space is not accessible from (possible relative to) any world in that logical space and *belongs to* a different logical space' (Yagisawa 1988: 182, my emphases). Resumed in the shape of a simple questionnaire:

*Question:*     What are logically impossible worlds?

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<sup>68</sup> Cf. Berto (2010).

<sup>69</sup> Cf. Lewis (1986: 7).

<sup>70</sup> Recall (from Chapter I) that it is the logical or metaphysical accessibility that I am primarily interested in. Thus: A world *w* is *logically* impossible relative to another world *v* if and only if *w* is *logically* inaccessible from *v*.

*Answer:* Logically impossible worlds are those worlds which are parts of different logical spaces to the logical space the actual world is part of.

*Question:* What is the difference between possible and impossible worlds?

*Answer:* They are parts of different logical spaces.

*Question:* What is a logical space?

*Answer:* A logical space is a sum of all and only worlds accessible from one another under largest accessibility relation; for any world  $w$ , the logical space which includes  $w$  includes all and only worlds that are *logically* accessible from  $w$ .

*Question:* But how are the logical spaces differentiated?

*Answer:* They are differentiated on the basis of logical laws.

*Question:* And how to apprehend the laws?

## ***5.4 A Note on Logical Laws***

That the question of the status of logical laws is especially important here should be clear from Yagisawa's pivotal individuation of logical spaces: different logical spaces do *not* share logical laws. According to him, extensional and non-modal theory of both possible and impossible worlds requires there to be a notion of logical space in order to differentiate between various kinds of worlds. A world belonging to one logical space is impossible with respect to another world *if and only if* the latter world does not belong to the logical space the former one is a part of.

However, does the definition of logical space suffice for the work? The answer is yes, provided that we are clear about the notion of logical laws and the relation between worlds and logical laws holding at them. Since Yagisawa left the problem open and never explicitly addresses the crucial question of how extended modal realists differentiate the newly posited impossible worlds from the possible ones non-modally, Divers writes:

[Yet] we are offered no account of what it is for a world to have one logic rather than another – an account that would have to inform us, how (if at all) the logical laws at a world  $w$  differ from the laws of nature at  $w$  or, indeed, from any other universal truths that obtain at  $w$  (Divers 2002: 76).

In short, the major challenge presented by Divers is to find such an acceptable conception of logical laws which would fulfil Yagisawa's ambitions as well as preserve Lewis's extensional ontology.

One alternative takes it for granted that logical laws or logical inferences are conventions or rules, simply something that people do<sup>71</sup>. This so called naturalism defines a logical rule as valid if and only if it is one of the rules that govern people's practices of inferring. From that point of view, logical laws are the sets of inference rules. What is important here is the fundamental distinction between concrete world on one side, and its inhabitants' practices of inferences, on the other. The naturalism puts the logical laws into world's inhabitant's hands, therefore crowns them as the criterion of what is logical. As a result, 'which [logical] rules are valid is a matter which depends upon human agreement (of action)' (Priest 1979: 297). Logical rules are, in a word, conventional.

Yet, at least two objections can be brought up against the naturalist theory of logical laws. First, what about a world with a plethora of distinct inferential practices, each with different conventions? The only alternative seems to consider that as a justified option and thereby allows a world with plurality of logics without any questions<sup>72</sup>. Second, what about uninhabited worlds, worlds without rational beings and, a fortiori, without conventions? Is the absence of inhabitants a sufficient condition for a world to be logically lawless at all?

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<sup>71</sup> Cf. Priest (1979: 296).

<sup>72</sup> See, again, Beall and Restall (2006).

One way or another, such an account of logical laws does no more accord with Yagisawa's extended modal realism than with Lewis's notorious version itself. Concrete worlds, whether possible or not, should not be dependent on people's conventions, moods and humours. The robust full-bloodedness of modal realism indicates a more realistic picture of logical laws. The long and the short of it, they seem to be entrenched (somehow) in reality.

Although we can be logical pluralists in the sense that different logical frameworks are supposed to be internally valid and useful, it should be noted that the notion of 'logical truth' taken as to imply truth in *any* logical system has little impact on truth in a metaphysically deep sense: 'if metaphysics is about mapping the fundamental structure of reality, then logic...is about representing the results formally' (Tahko 2009: 45). The same holds for the reasoning about possibility, necessity or contingency: The problem of modality *in the world* is left, according to logical pluralism and conventional account of logic, unresolved.

For that reason alone the second alternative - i.e. the conception embedding the logical laws of worlds into the worlds themselves - seems to be a more suitable route in the case of concrete (im)possibilia<sup>73</sup>. In the simplest, the 'metaphysical' interpretation of logical laws amounts to famous considerations of mind and language *independent* entities as governed by some sort of principles: the snow cannot be white and not white, all bachelors are married, one is prime number, nothing is pink and black all around and so forth<sup>74</sup>. I will digress briefly and underwrite the difference between the two alternatives on the example of contradictions.

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<sup>73</sup> Tahko (2009) explicitly advocates this position when LNC is in question.

<sup>74</sup> As I argued in the Section 5.2, the fact that all mentioned principles hold in the case of consistent worlds, i.e. worlds in which narrower and broader metaphysically interpreted logical laws holds, does not imply that they hold *simpliciter*.

## 5.5 *Semantic and Metaphysical Dialetheism*

The distinction between the conventionalist and metaphysical conception of logical laws discussed above finds its particular instance in the considerations about contradictions or, in the other words, in the considerations of the LNC. Their dual interpretation depending on either semantic or metaphysical inclinations<sup>75</sup> prefers semantic or metaphysical *dialetheism*<sup>76</sup>, respectively.

The semantic dialetheism holds that there are no inconsistent things in reality. Since the ambiguous relationship between language and the world, the only true contradictions concern semantics instead of metaphysics. The putative true contradictions are consequences of indeterminacy in semantic and hence are not implied by the indeterminacy of the world. This modest conception, of course, agrees with the opinion that there are true contradictions. What is more, the conception feels free to reject *ex falso quodlibet*, i.e. the rule that every proposition follows from contradiction<sup>77</sup>. However, their admitting presupposes the consistency and non-contradictory status of reality, regardless of the fact whether reality is considered as the actual world or as the plurality of all worlds<sup>78</sup>.

Alternatively, the opposite stance - metaphysical dialetheism - agrees with its semantic counterpart to the extent that there really are true contradictions. Nevertheless, there is not such an agreement between them when their ontological status is in question. Given the metaphysical understanding of contradictions, the

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<sup>75</sup> In addition, Mares (2004) mentions the epistemic alternative: 'On doxastic views of paraconsistency, we need logical means to deal with contradictory beliefs or theories. We have to allow people to derive further beliefs of theorems from their theories without committing them to believing every proposition' (Mares 2004: 265).

<sup>76</sup> Dialetheism is the view that there are dialetheias, while a dialetheia is a sentence,  $A$ , such that both  $A$  and its negation,  $\sim A$ , are true at the same time. Cf. Berto & Priest (2008).

<sup>77</sup> The law is also known as the explosion principle according to which anything follows from a contradiction.

<sup>78</sup> Interestingly enough, the considerations about dialetheism are almost always concerned with the actual world as identified with everything what there is.

metaphysical dialetheist holds that there are features of (possible or impossible) worlds themselves ‘for which any *accurate* description will contain a true contradiction’ (Mares 2004, 270, my emphasis).

But, as Priest notes, mind independent reality should fulfil some conditions in order for us to speak meaningfully of metaphysical contradictions. In particular, the reality should be such that

1. There is an extra-linguistic reality

Next, this reality must comprise things that are propositional in some sense, or the talk of its being consistent or inconsistent would make no sense. So we must have that

2. Reality is constituted by facts or by fact-like entities such as objects-cum-properties. Even given 2, there is still nothing consistent or inconsistent simply in a bunch of facts. There must therefore be more to the matter than this; there must be something within the structure of facts that corresponds to negation in language. It must be the case that

3. There are polarities within facts.

That is, if  $f +$  is a possible fact, say one that would make  $\alpha$  true, there must be a corresponding one,  $f -$ , that would make  $\sim\alpha$  true (Priest 2006: 300).

As far as I can tell, Priest does not see a problem in admitting the realism of some kind or other presupposed in the paragraphs above. At this point, I agree. That is: I also think that there is a way to argue coherently for metaphysical dialetheism.

Now, our initial question of logical laws in general can be considered along very similar lines. One option, considering logical laws as conventions, corresponds to the semantic dialetheism, whereas the conception taking all logical laws as



metaphysical features of concrete worlds themselves find its analogue in metaphysical dialetheism<sup>79</sup>.

If I am right so far, the theory of concrete possible worlds instantiating various metaphysical structures enables us to differentiate between logically distinct worlds and, by the same reasoning, determines which worlds are impossible with respect to which ones. Moreover, accepting Priest's polarities within worlds, the borderline between possibilia and impossibilia can be elegantly drawn as the difference between worlds realizing one, both or neither end of polarity of facts. The world in which both ends are realized would be Lewis' impossible world, containing logical gluts. On the other hand, the world which realizes neither ends would be incomplete, having logical gaps in its metaphysical structure<sup>80</sup>. What more can we desire?

## 5.6 *Universal Logic?*

The strongest objection directed to the extended modal realism of Yagisawa's spirit and the last one I want to discuss here concerns the logic of extended modal realism. The objection, in nutshell, is this:

'[Is] the logic that is to be applied to IGR [impossibilist genuine modal realism] then, to consist in genuinely universal principles that hold over all 'logical spaces'? If there are such principles, why not stick with the conservative view that these characterize the maximal domain of absolute (logical) possibility and discount the variations between 'spaces' as variations of restricted, non-logical

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<sup>79</sup> Tahko (2009) argues in a similar way when he interprets LNC as a metaphysical principle: 'The core idea is that the Law of Non-Contradiction is a general principle derived from how things are *in the world*' (Tahko 2009: 32, my emphasis).

<sup>80</sup> Indeed, the problem of inhabited worlds does not arise here. Since worlds, inhabited or not, are collections of positive, negative, positive and negative or neither positive nor negative facts, their inhabitants do not dictate worlds' logical laws.

possibility? If there are no such universal logical principles, what then?' (Divers 2002: 77).

The problem, as it stands, is that we do not dispose of a universal logic with respect to which we could non-trivially reason about all the ontological postulates of extended modal realism. But one of the key features of logic is that it is topic-neutral, i.e. that its scope of application is universal and not restrained by subject-matter. (any attempt to provide such a universal and overall theory must (in principle) fail, to boot). End of the objection.

Yes, I admit that the pertinence of this objection is plain. Since I denied unrestricted quantification over absolutely everything, truths *simpliciter* have no room in the theory. And, the objector argues, it is exactly that kind of truths that determines the overall logic of whatever theory is at issue.

Moreover, there is no such a problem in ersatz theories of modality, because ersatz theories do identify actual truths with truths *simpliciter*. So, when an ersatzist about possible and impossible worlds considers actual truth as governed, say, by classical logic, she takes truth *simpliciter* as well as the overall logic of her theory to be classical. Suppose, for example, that ersatz impossible worlds are taken to be sets of propositions<sup>81</sup>. Suppose also, that the set in question has as its members a sentence together with its negation. Apparently, a contradiction is true according to the ersatz world, without there being true contradictions *simpliciter*: 'If worlds were like stories or story-tellers, there would indeed be room for worlds *according to which* contradictions are true. The sad truth about the prevarications of these worlds would *not* itself be contradictory' (Lewis 1986: 7, fn. 3, my emphases). Hence, the obstacle for extended modal realists stands: 'What now'?

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<sup>81</sup> Cf. Adams (1974).

There are, in my opinion, at least two possible ways how to meet the challenge. The first (modest) approach rests on the modifying one's logic to the extent that the modified logic would accommodate impossible worlds in a non-trivial sense. This position, represented mainly by paraconsistent philosophers<sup>82</sup>, maintains that there really are inconsistencies in reality. For example, there are situations in which things like the failure of *ex falso quodlibet* happen. If that were so, the logic copying these phenomena should be paraconsistent. What is more, one does not have to necessarily accept actual truth of contradictions. It only suffices to emphasize that truth of some contradictions 'somewhere' in reality (in some impossible world) does not imply their truth in the actual world.

So far so good. However, as Nolan argues, this answer misses the point in a very important respect. Since the existence of impossible situation for every way things *cannot* be implies the existence of a situation where even the principles of the modified logic fail, 'for just about any cherished logical principle there are logics available where that principle fails' (Nolan 1997: 547). No matter what one's logic is, no kind of weakening the logic will be able to handle all the impossible situations. Accordingly, any attempt to provide a universal logic which would apply to absolutely every situation, possible or not, goes bankrupt.

The second option to be mentioned here presents, as it seems, the straightforward consequence of the extended modal realist's strategy presented and advocated in my thesis. How can we, we can fittingly ask, require there to be a unified and absolutely universal logical theory of whole reality? In any case, if reality as a whole admits of no logical systematization (except in parts), then our theories of reality will surely have only limited logical reach.

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<sup>82</sup> Cf. Priest (2002b).

That stance, as opposed to its predecessor, resigns from the systematization of the whole reality at all. All we can do is to elucidate that part of reality we are dealing with. Of course, which logic is the right one is another problem not to be solved here. The most important is only the very idea that reality *as a whole* is not admissible to any logical formalization.

Surely, this position might seem hard to swallow. But why one should expect the whole reality to fit any logical system, and, a fortiori, be accessible to our reasoning abilities<sup>83</sup>. Once more, the phrase ‘the totality of everything’ is, *prima facie*, meaningless. It is, therefore, only to be expected that every venturing *beyond* our logical space goes hand in hand with the production of the impalpable logical chaos.

## 5.7 Summary

In conclusion, I argued that Yagisawa’s proposal provides non-modal analysis of those matters concerning impossibilities without thereby sacrificing the main virtues of Lewis’s theory. Further, if the proposal to apprehend logical laws as features of the whole concrete worlds is accepted, only one step further is needed to shed light on the notion of logical spaces and, subsequently, to delineate the demarcation between possible and impossible worlds. Lewisian logical space, in particular, comprises all and only worlds with the same logical laws<sup>84</sup>. The worlds with different logical laws would be parts of different logical spaces. If two worlds belong to different logical spaces, one is impossible with respect to the other, and vice versa. However, one serious cost, if cost at all, is admitted: no logic is quite enough general to cover entire ontology of the proposed theory.

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<sup>83</sup> Cf. Kiourti (2009: 115).

<sup>84</sup> Again, I let the question ‘Is the actual world consistent?’ unanswered.

## Conclusion

I hope to have persuaded the reader that genuine modal realism is able to accommodate impossible worlds into its ontology. In particular, I argued that the extension of Lewis's ontology does not end in blatant *non-sequitur*, it contributes to the overall strength of genuine modal realism, sustains reductive analysis of modality, and last but not least, provides a simple and even elegant metaphysical theory of modal phenomena. Moreover, the resulting theory and subsequent ontological distinction between the possible and the impossible is justifiable given the methodological framework of Lewis's own theory. Of course, there are certain oddities in the proposed theory, namely: it seems to be too incredible. So what? The impossibilia are just not actual. The objection from incredibility, then, simply collapses into a statement of actualist dogma, the statement being denied throughout the whole thesis.

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