doi: 10.5007/1808-1711.2016v20n1p81

IMPOSSIBILIA

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Abstract. The paper defends the so-called extended modal realism, a theory according to which there are concrete impossible worlds. Firstly, modal realism is presented. Next, the way of how its ontology enriched by impossible worlds should look like in order to save its main theoretical virtues is pursued. Finally, I argue for a claim that metaphysical impossibility equals to dissimilarity between worlds instantiating distinct metaphysical structures.

Keywords: Modal realism; possible worlds; impossible worlds; logical structure.

1. Introduction

It is a kind of truism to think that theorizing about possibility requires considerations about some kind of objects. It is also a kind of truism to think that the objects at issue are possible. Finally, we certainly are used to think as if possible objects existed (with a rather broad notion of existence). Such a stance, however, opens several crucial questions as what those object are, where, if anywhere, those objects exist, etc. In other words, besides semantic analyses of phenomena concerning possibility, metaphysical consideration enters into the debate.

Historically, there are two competitive answers to the questions 'What possible objects are?' and 'Where they exist?' (with 'where' not necessarily meaning spatio-temporal location). On one hand, we have various actualistic approaches to the nature of possible objects claiming that possible objects are nothing but actually existing entities. For example, possible worlds — a special kind of possible objects — are identified with maximal consistent sets of sentences, maximal consistent sets of propositions, maximal properties of the universe, maximal states of affairs, configurations of physical points etc. The main idea behind those approaches is that possible objects are 'constructible' out of actually existing entities and no ontological commitment beyond actualia is needed. On the other side, there are modal realists. According to them, the most feasible way out of the 'creatures of darkness' problem is to extend our ontological commitments beyond actually existing entities. Put briefly, besides actual chairs, cars or people out there in the actual world there exist merely possible individuals among which are merely possible chairs, cars and people. The argument goes as follows:

> 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 para-

Published by NEL — Epistemology and Logic Research Group, Federal University of Santa Catarina (UFSC), Brazil.

> phrase: 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, p.84).

Interestingly though, the problem of modality does not terminate here. For, it is not only possibility, contingency and necessity that constitute the problem of modality. We certainly, at least implicitly, talk as if there were impossible objects too. For example, we are able to non-trivially reason about impossible situations, about impossible properties, impossible propositions and impossible beliefs. By parity of reasoning, theorizing about impossibility requires considerations about some kind of objects, namely those impossible. The problem, again, is the following: 'What are those objects?', 'Where, if anywhere, those objects exist?' and 'What is their logic?'.

Actualists' answers to the above questions are straightforward. They simply extend their definitions in such a way as to a) include impossibilia into their ontology, while b) do not discredit their safe and sane ontology. Such theories treat impossible worlds as constructions, abstract entities on a par with possible worlds. So, impossible worlds for actualists are sets of propositions or sentences that are occasionally inconsistent and/or incomplete, mutually inconsistent collections of atomic states of affairs, inconsistent properties of the universe and so forth. Simply, it seems that accepting impossibilia means for them accepting ontology of a sort which they are already committed to.

The situation is radically different for modal realists. Since, according to them, possible objects are of the same ontological kind as the actual objects are, to postulate impossibilia on a par with their possible counterparts would end up in concrete, full-blooded inconsistencies. It is because of the inference from 'at world w, Px and not Px' to 'at world w, Px, and it is not the case that, at world w, Px'. Consequently, impossibilities and, in particular, logical ones would be according to the extension of possibilism out there in reality (Berto 2009).

In the first part of the paper I outline the general strategy of modal realism as how to analyze modal phenomena (away). Next, I consider the idea of an overall logic and the relation between logic and metaphysics. Namely, my main target will concern the mutual dependence between metaphysical theory and its logic and how bad it is if no particular logic maps reality in its whole. I also consider an argument against the existence of concrete impossible worlds and try show how the argument can be blocked. Finally, I propose a strategy as how a consistent theory of concrete impossible worlds could look like. The theory is called extended modal realism.

2. Modal Realism and Impossible Worlds

There is a traditional account of impossible individuals. It says that in order to accommodate impossible individuals into one's ontology, (a sort of) paraconsistent position should be accepted. Such a stance has for it that the only way of taking impossibilia under logical control is to admit some contradictions to be true. It is the change of logic, it is argued, that is needed in order to non-trivially analyze impossible phenomena. Moreover, they have for it that intensional operators at impossible worlds behave in a non-classical way while truth conditions for conjunction or disjunction — those extensional ones — are the same thorough them.

In Graham Priest's words:

> There are no [non-normal] worlds at which $A \wedge B$ is true, but A is not, or at which A is true, but $\neg\neg A$ is not. But it is conditionals that express the laws of logic, not conjunctions or negations. That is why it is their behaviour (and only theirs) that changes at non-normal worlds. (Priest 2001, p.172).

By the parity of reasoning, it was argued that if the arguments for the existence of possible worlds justify our beliefs in them (qua ways things could have been) the same form of argument appears to justify our belief in ways things could not have been. But them some problems arise. Paraphrasing Nolan (Nolan 1997), the motivation is to provide a logic which applies to every situation, possible or not. Surely, we can choose, say, a weak paraconsistent logic according to which some contradictions are true. But, *ex hypothesis*, there is an impossible situation for every way things cannot be, even situation at which the very logic is invalidated, that is, situation where the principles of every 'possible' logic fails. For example, it cannot be the case, according to Priest, that $\neg\neg A$ is true, but A is not. Therefore there is an impossible world such that at that world $\neg\neg A$ is true, but A is not. To put it otherwise, the hypothesis of extended modal realism puts no restrictions whatsoever on the kinds of impossible worlds that there are. How can a modal realist introduce impossible worlds into her theory?

According to modal realism the following thesis holds:

(P) It is possible that P *iff* there is a world, w, such that at w, P.

while there exist infinitely many causally and spatiotemporally isolated possible worlds, each of which is concrete maximal mereological sum of individuals. Additionally, modal realists consider restricted modalities as corresponding to restricted quantifiers over worlds. Accordingly, we do have a tool to delineate, say, physically possible worlds from those impossible non-modally, provided that a) we have a grasp of what the laws of nature are, b) the very notion of nomological laws is non-modal and c) nomological accessibility amounts to nomological possibility. In general, the strategy is to concretize (P) in its particular instantiations, namely

($P^\star$) It is nomologically possible at w that P *iff* there is some world w_1 similar to w with respect to its nomological laws N, and at w_1, P

and

($I^\star$) It is nomologically impossible at w that P *iff* there is no such a world w_1 similar to w with respect to its nomological laws N, and at w_1, P,

respectively. Given that the notions of the law of nature (N), accessibility relation and the possible world itself are non-modal, the distinction between ($P^\star$) and ($I^\star$) would be non-modal too. What about logically impossible worlds?

Although contemporary literature offers several qualifications of what logically impossible worlds are, three of them are important 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 to that logic are those 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 and $\sim P$) is true is to commit ourselves to the existence of impossible worlds, because no *classical* interpretation can validate that result.[1]

According to David Lewis impossible individuals do not exist as it is contradictory to postulate them. If you want an argument, here is one:

I) There exists a *concrete* impossible world at which (P and $\sim P$).

II) At $w \sim P$ *iff* $\sim$(at $w\,P$).

III) At w (P and $\sim P$) *iff* at $w\,P$ and $\sim$(at $w\,P$).

IV) To tell the alleged truth about the marvelous contradictory things is not different from contradicting yourself.

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

Therefore

Impossible worlds do not exist.

He argues that it is the metaphysical status of his worlds — concrete mereological sums of spatiotemporally interrelated individuals — that suffices for the claim that contradiction true of some concrete world penetrates to the actual world (Jago

2013a). Put otherwise, Lewis has for it that there is no difference between a contradiction within the scope of the modifier and a plain contradiction.

On the other side, he continues:

> 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, p.7, fn. 3).

It is since the fact that

> [o]ther modifiers are another story. 'According to the Bible' or 'Fred says that' are not restricting modifiers; they do not pass through the truth-functional connectives. 'Fred says that not P' and 'Not: Fred says that P' are independent: both, either, or neither might be true (Lewis 1986, p.7, fn. 3).

As it is clear from the above, modifiers like 'according to the Bible', 'Fred says that' or 'according to the Robin Hood story' are not restricting modifiers and thus do not pass through the truth-functional connectives. For example,

(A) 'Fred says that not P' *iff* 'Not: Fred says that P'

is false because (A), as a biconditional, is false if the left-hand-side and right-hand-side truth-values do not co-vary, that is, if one of them is true, while another is false. Apparently, we can have such an inconsistent story. Given that the story is an inconsistent set of sentences nothing forbids us to make one up. Moreover, we can do that without any contradiction infecting the actual world. There is thus no problem with *ersatz* impossible worlds.[2]

In his (1986), he admits that the notion of concreteness is not very clear for him. However, he formulates four ways (plus one additional in the footnote) as how to understand the distinction. Namely,

a) the Way of Example: concrete entities are things like donkeys, sticks, stones and puddles, whereas abstract entities are things like universals and numbers.
b) the Way of Conflation: the distinction between concrete and abstract entities is just the distinction between individuals and sets, particulars and universals or perhaps particular individuals and anything else.
c) the Negative Way: abstract entities have no spatiotemporal location; they do not enter into causal interaction, they are never indiscernible one from another.
d) the Way of Abstraction: abstract entities are abstractions from concrete entities; they result from somehow subtracting specificity, so that an incomplete description of the original concrete entity would be a complete description of the abstraction (Lewis 1986, §1.7).

Added to the notion of concreteness, the phrase 'at *w*' works for modal realists as a restricting modifier. That means that it works similarly as the phrase 'In Australia' does (Lewis 1986, p.5). For example, the proposition 'in Australia, all philosophers are logicians' is true if and only if we ignore everything outside Australia and quantifying over the things in Australia only, all philosophers are logicians. In a similar vein, when I look into my fridge and say, sadly, that there is no beer I do not mean that there is no beer in the whole town. My sadness was caused by the fact that I had restricted my attention to a particular domain — the content of my fridge — and found no beer in it. Stretching an extra mile beyond actualia, Lewis thinks, is nothing but a restricted quantification. When we say that there are no talking donkeys we, according to modal realism, tacitly restrict our attention to the parts of the actual world, ignoring thereby other — merely possible — talking donkeys. That does not, however, mean that mere possible individuals do not exist.

Having the above in mind, Lewis can meet the most frequent objection against his theory. Let, for example, have the following argument:

1. Assume that there is a possible talking donkey.
2. Talking donkeys do not actually exist.
3. Everything what there is actually exists.
4. There is a talking donkey that does not exist. (contradiction)

Therefore

There are no talking donkeys.

Lewis denies the argument because (3) begs the question against his modal realism. When he says that there are not talking donkeys, he is restricting his quantifier to the actual world only, ignoring (but not denying) other-worldly donkeys inhabiting other possible worlds. Since they (unrestrictedly) exist (although not in our part of reality) (3) is false, full stop.

3. Question-Begging Premise?

Let us now return to Lewis's very argument against impossibilia. In particular, Lewis asks us to assume that there is an inconsistent world at which (P and $\sim P$) holds. Also, he supposes that restricting modifiers like 'at *w*' have no effect on truth functional connectives and thus to say about the world that $\sim P$ hold is not different from saying that it is not the case that at w, P.

However, even granted that, it does not seem to follow that there is no contradictory world. The reason is that Lewis's argument is methodologically analogous to the actualist's argument against possibilia. Namely, recall Lewis's response to the argument against the existence of mere possible individuals. Provided his ontological position, he denies the claim

(3) Everything what there is actually exists

as begging an important question against genuine modal realism.

Now, recall also Lewis's own argument against impossibilia. Lewis claims that his worlds are not stories but concrete masses of stuff, and that the phrase 'at w' works as a restricting modifier. So far so good. He concludes, however, that those two assumptions are sufficient reasons for accepting the crucial premise of his argument, namely

(II) At $w \sim P$ *iff* $\sim$(at $w\,P$)

Due to (II), Lewis concludes, a hypothesis of there being concrete impossible worlds is self-contradictory.

Let me summarize. There are, according to Lewis, concrete talking donkeys. To say that there are not means, for him, to beg a serious question against his realism. However, there is an analogy in methodology. For, there are, according to extended modal realism, concrete impossible worlds. To say that there are not means, according to extended modal realist, to beg a question. The reason is the following. Consider the argument:

i. There is a concrete box, which is both empty and not empty.[3]
ii. The box is not empty *iff* it is not the case that it is empty.
iii. The box is empty and it is not the case that it is empty.
iv. There is no subject matter about which you can tell the truth by contradicting yourself

Therefore

There is no such a box.

For Lewis, such an argument is sound. Why? Because there is no subject matter about which you can tell the truth by contradicting yourselves and, more importantly,

(ii.) A box is not empty *iff* it is not the case that it is empty

holds. Recall, that biconditional is false *iff* the left-hand-side and right-hand-side truth-values do not co-vary and that happens only when one side is true and the other false. In particular, (ii.) is false *iff* the truth values of the left-hand-side and right-hand-side co-vary. But is that not exactly the case? *Ex hypothesi*, there is a box which is empty and not empty. Thus, the answer to the question

a) is the box empty?

would be YES. Also, *ex hypothesi*, the box is not empty. Therefore, the answer to the question

b) is the box not empty?

would also be YES, contrary to the right-hand-side of (ii).

Note again, that the phrase 'at w' works by means of restricting the domain of quantification. In this case, we quantify over the content of a quite unusual box only and, surely, the box is inconsistent. But what did we expect? Although the box is concrete and, at the same time, the phrase 'at w' works as a restricting modifier, (ii.) simply fails when it comes to impossibilia. Put otherwise, to be a concrete entity does not secure that a modifier that quantifies over it passes through the truth-functional connectives. It does in some cases, namely when consistent individuals are at issue. But as far as concrete impossibilia are concerned, (ii.) simply begs a crucial question against the existence of the inconsistent box.

Now, let's go back to the Lewis's original argument:

I) There exists an impossible world at which (P and $\sim P$).

II) At $w \sim P$ *iff* $\sim$(at $w\,P$).

III) At w (P and $\sim P$) *iff* at $w\,P$ and $\sim$(at $w\,P$).

IV) To tell the alleged truth about the marvellous contradictory things is not different from contradicting yourself.

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

Therefore

There are no impossible worlds.

Let suppose that P stands for a proposition 'it is raining'. *Ex hypothesi*, there exists a world, w, such that 'it is raining' and 'it is not raining' at w. So, the answer to the question

$a^{\star}$) is it raining at w?

would be YES, confirming thus the left-hand-side of (II). Also, the answer to the question

$b^{\star}$) is it not raining at w?

would be positive, contrary to the right-hand-side of (II). But if that is so, (II) fails. In any case, if 'at w' ranges over contradictory worlds, then we cannot infer from the fact that not P is true at w, that it is false that P is true at w — P is also true at w!

Given the above, it is not the concreteness of Lewis's worlds that prohibits the existence of concrete impossibilia. As it seems, it does not really matter what we take possible and impossible worlds to be when (II) is at issue.[4] Since the premise (II) of the argument against concrete impossible worlds can be shown to be question-begging, extended modal realism still presents a powerful alternative to it rivals.[5] But how an extension should go? I will discuss an option in turn.

4. Concrete Impossible Worlds

One might suggest that as the notion of nomological law can lead to the non-modal analysis of nomological modality, we could draw a line between logically differently behaving concrete worlds by means logical laws. Yagisawa writes:

> Within our logical space, logical laws and logical facts are universally shared. But beyond the boundaries of the logical space they are as parochial as physical laws and physical facts are within the logical space. Suppose that w_{11}, w_{12}, and w_{13} are impossible worlds, i.e., worlds in a logical space other than ours. Suppose further that w_l (a world in our logical space) shares both the law of non-contradiction and the law of excluded middle with w_{11} and shares the law of non-contradiction but not the law of excluded middle with w_{12}. Then we may say that, *ceteris paribus*, w_1 is closer to w_{11} than to w_{12}. Suppose that w_1 shares a particular logical fact that the halting problem is unsolvable, with w_{11} but not with w_{13}. Then again, we may say that, *ceteris paribus*, w_1 is closer to w_{11} than to w_{13}. (Yagisawa 1988, p.196).

The task for extended modal realists is, therefore, the following: in order to sustain the Lewisian reductive analysis of modality, (P) will have to be reformulated in such a way as to keep the distinction between possible and impossible worlds non-modal. At the same time it should be done with no violation of other Lewisian virtues. However, Yagisawa left the problem of logical laws open and never explicitly addressed the question of how extended modal realists differentiate the newly posited impossible worlds from the possible ones non-modally. I therefore suggest the following:

($P^{\star\star}$) It is possible that P *iff* there is an accessible world, w, such that at w, P.

Apparently, one reading of (P) takes logical possibility and necessity to be just another kind of restricted modality, namely restricted quantification over (some) worlds. To put flesh on the bones of (P^{**}), we get

(P^{***}) It is possible that P *iff* there is a logically accessible world, w, such that at w, P.

while logical accessibility works analogically to nomological accessibility, namely

(P^{****}) It is possible that P *iff* there is some world w_1, which is similar to w with respect to w's logical laws, and at w_1, P.

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.

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, p.182, my emphases). Resumed in the shape of a simple questionnaire:

Question: What are logically impossible worlds?

Answer: Logically impossible worlds are those worlds which are parts of different logical spaces.

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: How to apprehend the laws?

Answer: By means of various logical structures.

5. Logical Laws

Next issue to be discussed is whether it makes sense to think of logical models in isolation from the concrete world without them being divorced from any kind of

spatiotemporal totality. To put it otherwise, such a realistic conception of logical laws would capture the complex logical structure of world(s) itself rather than, say, everyday practices of inference.

One way to look at the status of logical laws is to consider them as mere conventions. This alternative takes for granted that logical laws, or rather rules of logical inferring are conventions, simply something that people do. This so-called naturalism defines a logical rule as valid if and only if it is one of the rules that governs 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 a concrete world on one side, and its inhabitants' practices of inferring, on the other. The naturalism puts the logical laws into world's inhabitant' 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, p.297). Logical rules are, in a word, conventional.

There are two problems, however. Firstly, recall what Lewis's worlds are. *Ex hypothesi*, worlds are masses of concrete matter, some of which are inhabited by rational individuals, some of which are not (Kiourti 2010, Ch. V). If we insisted that laws of logic are, say, theorems of the best systematization of our inference practices, what can we say about the uninhabited worlds? Are they logically lawless, or even logically uncontrolled? Secondly, it may turn out that inhabitants of one world develop two quite different — even inconsistent — systematizations of the facts of our inferences. If concrete sums of stuff have nothing to do with logical behaviours of their inhabitants, would that mean that the world where this happens is logically pluralistic? If yes, how many logics can be true at such worlds?

All those questions arise so far as human conventions are concerned. Given modal realism, moreover, it appears (somehow) that worlds themselves have something to do with the logical behaviour of their inhabitants. It is therefore not a surprise that modal realists can be inclined to consider a more realistic account of logical laws.

In contemporary debates on logic prevails the opinion that logic cannot be revised. Interestingly though, such revisions have happened in the past and continue to the present times. Revising and, eventually, localizing the applicability of one's logic seems, moreover, to be a consequence of the fact that we can always find situations that fail to conform to any specific logical principles. But how to adjust the variety of logics, that is, a variety of account of entailment, with metaphysics?

Think of the case of logical pluralism. The most influential branch of logical pluralism — the pluralism about logical consequence — has for it that there are models in which the relation of logical consequence is different. Such a model-theoretic approach has, however, certain limitations. One of them is that a classical logician and, say, an intuitionist can agree on the model-theoretic definitions of classical validity and of intuitionist validity. What they really disagree is which notion of validity —

whether classical or intuitionist — coincides with the notion of genuine, or *normal*, validity, utterly independent of the model-theoretic definition. In other words, genuine notion of validity is not defined model-theoretically (unless trivial), because truth in model *is* different from the truth in the real world. While truth in model is defined purely formally, truth in the full-blooded world is supposed to have a serious metaphysical impact (Tahko 2009).

Another option is to think about logical laws as real structures that possible worlds instantiate. In words of Mortensen, it is possible to see physical theories in a very abstract fashion, that is, in isolation from the concrete universe, although it can be difficult to grasp their connection with our world (Mortensen 1989). By the same reasoning, things might well be that way with abstract looking logical countermodels. Something might be a world not-too-dissimilar from our own, yet have *structural* aspects which render false propositions such as $\sim(A \wedge A)$ (somehow) supervene on the way the world, or rather its logical structure, is. Nonetheless, it is the structural properties of a world that give us its logical laws.

I thus claim that possible worlds instantiate certain logical structures. For now, I take the notion of logical structure going primitive. However, several points can be made on the notion. Firstly, it is a matter of fact as which laws of nature hold of the actual world and the best theory of nomological phenomena is about to provide an appropriate description of it. By the same way of thinking, it is a matter of fact as which logical laws hold of the actual world and the best logical theory is about to provide an appropriate description of it. It is consequently a matter of fact that this world has one logical structure rather than another. Secondly, logical structures of worlds are described by logical systems, while logic true of a world is such a logic which describes the structure of the world accurately. Thirdly, it is simply a matter of fact what structures are instantiated by what worlds. Finally, logical structures of worlds still can be thought as 'modally sensitive' in a sense that a possibility for a world to have different logic can be established as a similarity between different logical structures (Vacek, forthcoming).

Roughly speaking, if impossible worlds display different logical structures (or lack thereof), the process of their ordering may copy the ordering of merely possible worlds. Due to Lewis/Stalnaker treatment of counterfactual conditionals similarity comes by different degrees. In effect, they introduced a system of 'spheres' for which the following holds: W is the set of all worlds, \$ is a function from worlds to sets of subsets of W, so that $\$(w) = \{S_1, S_2, \ldots, S_n\}$, with $S_1 \subseteq S_2 \subseteq \ldots \subseteq S_n = W$. Worlds within a given sphere $S_i, 1 \leq i \leq n$, are more similar to w than worlds outside it. (Lewis 1973; Berto 2009).

Now, it seems natural to extend the account of similarity between impossible worlds and, a fortiori, between different logical structures. Surely, such a move is crucial and outside the boundaries of traditional 'sphere' reasoning as there are no

different logical structures within Lewis/Stalnaker strategy. However, it definitely makes sense to claim that impossible worlds display various degrees of anarchic behaviour. For example, worlds at which some contradictions are true but it is not the case that everything happens seem more structured than the explosion world, that is a world at which any proposition holds. It can also be claimed that some impossible worlds are closer to the actual world than some impossible ones. For, possible worlds where the laws of physics or biology are different from the actual world seem more bizarre than worlds at which, say, I drink impossible coffee while everything else being the same.

In nutshell, my proposal is the following. For a world to be impossible means for the world to be logically inaccessible. Since logical accessibility is nothing but logical similarity with respect to logical laws, impossibility means logical dissimilarity. Worlds instantiate logical structures which determine their logical laws. There are different logical structures, different ways the world could not have been.

6. An Inconsistent Hypothesis?

A very first reaction to the postulation of different logical structures is the challenge as what the logic of that very hypothesis is. The objection, as it goes, is that the hypothesis must be expressed in some language and, a fortiori, in some logic. Objections of this kind has appeared frequently, including Quine (1948), Divers and Melia, (2002), Divers (2002), Miller (1993), Nolan (1997), Jago (2013), etc. Thus Divers:

> ... the hypothesis of the existence of impossible individuals is an inconsistent proposition, [so] ... the existence of impossible individuals is inconsistent with the ontological postulates of [GR]., (Divers 2002, Ch. 7, fn. 14),

Miller:

> [r]ound square cupola' purports to be a description of a possible object, but it is not. It is a contradictory description and so describes nothing. Hence it describes no individual. (Miller 1993, p.154),

and even Quine:

> [s]till, all the rank luxuriance of Wyman's universe of possibles would seem to come to naught when we make a slight change in the example and speak not of Pegasus but of the round square cupola on Berkeley College. If, unless Pegasus were, it would be nonsense to say that he is not, then by the same token, unless the round square cupola on Berkeley College were, it would be nonsense to say that it is not. (Quine 1948, p.24).

On the other side, Nolan points out that

> [m]any metaphysical views seem to be such that if they are true at all, they are necessarily true, and if false, necessarily so: yet rivals understand each other, and we metaphysicians flatter ourselves that we are engaging in real debates, where argument and invocation of considerations are important: we are not babbling mere nonsense, even when some of our number (or many of our number) fall into necessary falsehood. The metaphysics of modality and possible worlds is only the most obvious example: when a metaphysical picture commits one to claims about the nature of possible worlds, and modal claims as a result about what is and is not possible (like Lewis's denial that there could be several disconnected spacetimes not otherwise connected by some special natural external relations, it is often involved in commitments that are necessarily false if certain of its rivals turn out to be true instead. Nevertheless, debate over modal questions continues, and exploration of systems of modal metaphysics other than the sort one accepts is a standard part of such investigation, both to see if one can put one's finger on what one finds unattractive, and to see whether one should switch one's views to a rival which proves more plausible. (Nolan 1997, p.539).

Given the above, it seems that metaphysical reasoning requires us to engage in a discourse concerning the necessary and the impossible, respectively. For, it seems plausible that if one metaphysical approach is true, it is necessarily so while the others are necessarily false, thus impossible. In order to make such a discourse meaningful and, following Lewis, do not contradict ourselves when (rationally) engaging in the discourse, no logic is weak enough to accommodate and rationally evaluate them. Again, it's due to the fact that there is an impossible situation for every way things cannot be, even situation at which the very logic is invalidated, that is, situation where the principles of every 'possible' logic fails.

Similarly, metaphysicians often have a reasonable grasp of what the world would be like if, for example, Lewis's modal realism was correct. By the same reasoning, metaphysicians often have a reasonable grasp of what the world would be like were extended modal realism be correct. Even granted that the plurality of metaphysically conceived logical structures is too much to accept, it does not automatically mean that anything is the case. For example, 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. When the existential quantifier is used with absolutely no restriction, for modal realists it means, 'There exists an x in some world in (our) logical space'. But according to extended modal realism it means, '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) n logical space...'(Yagisawa 1988, p.202).

Next, according to Lewis, 'quantification over *everything* is clearly intended to

range over a unique all-inclusive domain that is not restricted in any way at all. However, Yagisawa continues, 'I do not think such a domain is available' (Yagisawa 2010, p.203, my emphasis). In order to grasp the difference in more details let have the following tripartite of theses:

A. Reality is the totality of everything.

B. Reality might have been different.

C. 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. In this light, it seems that whilst accepting Lewis' analysis of possibility, we should deny either premise (A) or premise (B). Whereas Lewis denies premise (B), Yagisawa, denies premise (A) as, for him, 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, p.204).

Another substantial disagreement between modal realists and extended modal realists comes with the notion of primitive modality. Namely, philosophers do not agree with the extended version of modal realism, emphasizing that the extended modal realism stands in a double bind. The objection, put crudely, is the following: if impossible worlds are conceived as concrete entities of the same kind as the Lewisian worlds, then we face the following problem: we 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 its rival accounts. Hence the question: do the proponents of concrete impossible worlds really ignore Lewis's non-modal analysis of modality?

Yes and no, extended modal realists may reply. 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 others. Additionally, the same can be said about possibilia. Worlds are not possible as such, but only relative to other worlds. Again, it is Lewis's view that modality is restricted quantification, i.e. quantification restricted from the standpoint of a given world by means of 'accessibility' relations. And so on.[6]

The above demonstrates the meaningfulness and substantiality of debates in modal metaphysics. Metaphysical disputants can often wonder how reality would be if their opponents are correct. It is due to the fact that they employ counter-possible

conditionals, conditionals that allow us to talk of what cannot be in a nontrivial way.

Yet another available strategy in order to avoid the threat of inconsistent hypothesis is to add such conditionals into the theory of extended modal realism which obey no logical rules with no exceptions. Such conditionals are rationally justified, although no theorems which hold regardless of the content of the antecedent or consequent are provided (Nolan 1997, p.554). Since to produce an ultralogic which is truth-preserving in no world that we can reason about is a misguided venture — we apparently can reason what would happen if some non-classical logic were true — a better way to go is to use the device of conditionals to carry out the debate of impossible cases.

Namely, metaphysical theorizing is hypothetical reasoning and is quite close to accepting a certain kind of conditionals, to with, conditionals with impossible antecedents. To be more precise, one should accept B under the hypothesis A if and only if one is prepared to accept the subjunctive conditional if A then B, where A stands for a certain logical theory — a description of a logical structure — and B for its consequences. Such a move enables even a classical logician to reason about an inconsistent theory without contradicting herself (despite it being formally much more messy). (Nolan 1997, p.560). The defense of extended modal realism can then be seen as having conditional form. That is, no argument for the existence of concrete impossible individuals is provided. Rather, the existence of concrete impossible individuals is assumed in a sense that if there are concrete impossible individuals and there are such and such problems and such and such potential solutions. Briefly, I pursue the following strategy: 'were the assumptions of there being plurality of logical structures I am hypothetically endorsing to be true such and such would be the case'. 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. But such a proposal only reminds us that philosophizing very often goes beyond an incredulous stare.

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Notes

[1] Cf. Berto (2009).
[2] The ersatzers say that we can have one world only, and countless abstract entities that represent the ways the world might have been. See Lewis 1986, p.136.
[3] I borrowed this example from well-known story of Graham Priest. See Priest (1997).
[4] Although Lewisian can insist that the methodology does matter. In Lewis words: "To conduct a debate, one needs common ground; principles in dispute cannot of course fairly be used as common ground; and in this case, the principles not in dispute are so very much less certain than non-contradiction itself that it matters little whether or not a successful defence of non-contradiction could be based on them" (Lewis 2004).
[5] One may argue that Lewis never claims that the fact that the "at *w*" operator is restricting is due to the concreteness of the world. However, what he says in this footnote seems to indicate this.
[6] For more, see Vacek (manuscript).