Possible Worlds and Possibilities of Substances

Vladislav Terekhovich

v.terekhovich@gmail.com

Abstract. Despite the notions of possible worlds and substances are very important subjects of contemporary metaphysics, there are relatively few attempts to combine these in a united framework. This paper considers the metaphysical model of the origin and the evolution of possible worlds that occur from an interaction between substances. I involve Leibniz's doctrine of the striving possibles that every possibility of substance has its essence and tendency towards existence. It is supposed that the activities of substances are constantly aimed at using this tendency in all possible ways. Only the consistent and stable interactions between the substances give birth to stable objects in one of many worlds. Thus, the activity of substances changes from the possible modality of being to the actual modality of being in a form of existence of the worlds. I divide substance's possibility into two aspects—dynamic (possible or virtual history) and static (possible or potential mutual state). Thanks to the summation of virtual histories, in the possible modality of being, the maximal number of virtual histories is combined into the actual history in the actual modality.

Keywords: modality, being and existence, virtual history, activity of substance, Leibniz's striving possibles, process philosophy

1. Introduction

The issue of the reality of possibility, possibilia, and possible worlds is one of the most difficult challenges of metaphysics. The question of the ontological nature of possibilities and the possible worlds has held a special importance since the 1960s, when the semantics of modal logic (Hintikka, 1970; Kripke, 1980; Herrick, 1999) was developed. Authors have speculated about the correlation between being, existence and reality of possible states of affairs in different worlds (Adams, 1974; Resher, 1975; Loux, 1979; Forbes, 1985, Lewis, 1986; Blackburn, 1993; Fine, 1994; Chihara, 1998; Divers, 2002; Armstrong, 1997, 2004). Some authors admit that modality has two aspects—static and dynamic; since a possible state of affairs, eventually, must transfer into an actual state of affairs. Adams (1974) held that possible worlds are better thought of as "world-stories", or consistent sets of propositions. Hintikka (1983) proposed that possible worlds are better thought of as scenarios, so that possible individuals can have world lines in some possible worlds. However, most researchers in metaphysics have neglected the dynamic aspect of modality. There has been little interest in answering the questions of whether these possible scenarios represent the evolution of actual or possible objects, as well as how the possible scenarios are connected with a

possible world's emergence. Another issue is what happens to possible objects and possible worlds that never become actual.

The emergence of one world is considered a subject of process philosophy (Whitehead, 1969; Rescher, 2006) that, as a rule, opposes substance metaphysics (Hoffman, & Rosenkranz, 1997; Loux, 1978, 2002; Lowe, 1998, 2006; Koslicki, 2008). However, other authors have argued that substantial and processual approaches are mutually complementary (Romer, 2006). The tradition of combining substances, possibilia (or possibles), and possible worlds comes from Leibniz (1951, 1989). Some modern researchers continue to connect substances and equal entities with possibility[1].

In this paper, I consider the metaphysical model of the origin and evolution of possible worlds. The model describes a general mechanism, under which any being changes from a possible to an actual modality. For this purpose, I expand the neglected idea of active substances, which create all objects and worlds. My hypotheses, in many respects, are based on some ideas of Leibniz. I involve his doctrine of the striving possibles and at the same time, I refuse to use his idea that only one perfect world exists. I suppose that every possibility of substance has its own essence and tendency towards existence in many worlds. Among the infinite set of possibilities, only one possibility can exist in one world. I divide every possibility of substance into two aspects—dynamic (possible or virtual history) and static (possible or potential mutual state). Then, I consider two modalities of being of substance possibilities. In a possible modality, these are (non-existent) in the form of separated possible states and possible histories; in an actual modality, these exist in the form of the objects' states (actual) and histories (actual) in one of many worlds (actual).

I propose that objects achieve their existence in one of the multitude certain worlds thanks to substance tendencies towards existence. The activities of substances are constantly aimed at using this ability in all possible ways, and the objects are produced through these substance activities. It follows that the objects also tend to actualize the maximal number of their possibilities in each state of affairs of a certain world. This tendency is the global aim of every object. In the possible modality of being, the objects try or examine the maximum number of possibilities of motion in each of their subsequent actual states. To achieve this aim, from each initial actual state, the objects move simultaneously along all virtual histories that are possible in a given state of affairs. Thanks to the summation of these histories, in the possible modality, the maximal number of virtual histories is combined into the actual history in the actual modality of being. In moving only along this actual

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[1] Zimmermann (2000) argued that the world has been produced by substances out of a field of possibilities. Hence, worldly objects come into existence by some initial emergence of the world, which is thus an exteriorization of substance in a sense that substance unfolds its organizational structure. Kauffman (2002) explores general laws governing the class of coevolutionary self-constructing communities of autonomous agents and a tendency describing the flow from the already actualized states to adjacent possible states of some object.

history, the object can take the maximal number of potential states. In this way, the substances reach their aim.

The structure of the paper is as follows. In Section 2, I briefly review some popular metaphysical approaches to the possible objects and possible worlds. In Section 3, I divide possibility into two aspects. A dynamic aspect is a possible history in the space of possible events or a direction of changes in object's relations with the environment. A static aspect is a possible mutual state of the objects and environment. In Section 4, I show that the word "possible" adds nothing to the properties of the object or worlds. Thus the notion of possible object or possible world are redundant. From this, I come to the three conclusions: only states and histories can be possible; any world is the mere world; the number of the worlds is limited only by possible mathematical structures. In Section 5, I propose to appeal to the notion of substance for the connection both the notions of worlds and objects. So only the consistent and stable interactions between the substances give birth to relatively stable objects in a certain world. In Section 6, the hierarchy of the three levels of possibilities and three stages of the metaphysical evolution of worlds is described. It is supposed that an ultimate aim of this evolution is a realization of maximum numbers of objects' possibilities to interact with other objects. In section 7, the proposed model is compared with other approaches to possible worlds: modal realism, possibilism, and actualism.

2. Possible objects and possible worlds

There is a widespread opinion that any object is an actual object. From this follows the concept that non-actual possible objects are nothing. There is another conservative view that any object is an existing object. In general, complex views can be divided into realism and nominalism (Rescher, 1975; Lowe, 1998; Divers, 2002). Realism considers every possibility as something that exists in reality, regardless of whether we think about the meaning of notions. Nominalism denies the existence and reality of possible worlds and possibilities; they are mind involving and exist only as names, fictions or theoretical constructions.

The points of view of the possible worlds depend on the correlation between being, existence and actuality. The *modal realist* or *Lewis's possibilist* (Lewis, 1986) states that an infinite number of possible worlds exist in actuality, and they are just as actual as our world. Our world is just one among many like it. Possible events or objects exist that are not less than actual events or objects. To exist in the world is simply to be a part of it.

For the *classical possibilist*, possible objects and possible worlds are in the ontological sense, so some of them could have existed in the physical world. The only physical world exists as actual, and it consists of actual objects that exist too.

According to the *Dispositional essentialists* (Shoemaker, 1984; Ellis, 2001; Bird, 2006, 2007), a world is, ultimately, merely like a conglomerate of objects and irreducible dispositions. Dispositional properties are, unlike categorical properties, supposed to be properties that are not wholly manifest in the present; thus, they are the ultimate ontological units that explain events. Any object that possesses the dispositional essence of some potency is disposed to manifest the corresponding disposition under stimulus conditions, in any possible world.[2]

The *actualist* (Adams, 1974) denies the reality of possible objects and states that everything that *is* exists as an actual thing. There is nothing that not an actual thing, so physical existence equals being. Possible worlds are nothing more than fictions, "ersatz" linguistic constructions created within the actual world; they are abstract states or conditions in which a certain world could be. Kripke (1980) argued that the term "possible world" is just a useful language tool for visualizing the concept of possibility. Some of the actualists (Plantinga, 1974) invoke unactualized individual essences. In other words, every object has an individual essence independent of the object that has it, whether the object is actual or non-actual. One of the versions of actualism—combinatorism—considers possible worlds as a certain sort of recombination of properties and relations of objects or states of affairs of the actual world (Armstrong, 1997).

All realistic models of possible worlds face many difficulties. For instance, how do possible worlds connect with each other, and if they interact, how is this interaction related to causality? The main question is how possible worlds emerge and obtain reality. The nominalist faces other issues. How do possibilities and possible worlds turn into the actual world: by chance or law? What is the difference between objects in actual and possible worlds? What happens to possible objects and possible worlds that never become actual? In the next section, to study these questions, I will apply the notions of possible states and possible histories.

3. Possible states and possible histories

One of the main obstacles in the metaphysics of modality is the absence of a clear definitions of possibility regarding the notions of possible objects, possible states of affairs and possible statements. According to modal logic, if a statement is true in all possible worlds, then it is

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[2] Bird (2006) argued that mere possible objects are not things that exist (if at all) in other worlds, but not in this one; instead, they are things that have being in our world, but do not exist. Thus, unrealized manifestations of possibilities are part of the world just as much as manifestations that are realized.

necessary. A statement that is true in some possible worlds is possible.[3] These are notions only of a static way to describe a possibility. However, there is also another way. We can describe the evolution of a possible object or a possible history of a possible state of affairs.

The ancients said that if one wants to know the world, one should know oneself. Let us conduct a thought experiment[4]. Generally, we think about a possibility in two different ways. First, we think about the state of affairs or state that we would want to achieve. We imagine many possible states and select one based on the specific criteria. For instance, I imagine myself on a yacht near a tropical island. Second, to achieve the selected possible state in my mind, I try to imagine many possible sequences of my actions and those of others (possible histories) that could lead to the selected state. I could give up a job or win money and buy the yacht. If these possible histories in my mind are inconsistent with the existing state of affairs, I return to the initial set of possible states and select something simpler. For instance, I imagine myself in a new car. Although, there is also no money to buy it, I consider this possible state as more probable. This way, I can further imagine possible histories that could lead me from the existing state of affairs to a possible new state.

On the one hand, I can actively influence the sequences of possible actions or possible histories. On the other hand, the possible states arise as a passive result of the possible history. Let us divide every object's possibility into two aspects. A dynamic aspect of possibility is a possible history or direction of change in an object's relations or a possible object's trajectory in the space of possible events. A static aspect of possibility is a possible mutual state of the object and environment or the possible shape of its internal and external relations with other objects.

An actual object is defined by its actual states in actual space, and a possible object is defined by its possible states in some spaces of possible events. Any change of a possible state is a possible event, and a set of possible states or events could be considered a possible history. The same possible state could be reached by many possible histories; many possible histories may start from one possible state.

My intuition tells me that the possible yacht, which I selected in the thought experiment, is not the same as an actual yacht. However, intuition might be wrong. For the realist, the difference between possible and actual yachts is relative. When the modal realist thinks that the yacht is possible, he or she implies the possibility concerning only the world where the modal realist exists;

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[3] From the viewpoint of essentialism, possibility is a kind of essence, and *De re* modality concerns the modal properties that an object has in virtue of itself (Fine, 1994; Zalta, 2006). Something is considered as physically possible if it is permitted by the laws of physics. The issues of physical possibility and metaphysical possibility are widely discussed (Ellis, 2002; Della Rocca, 2002; Mackie, 2006).

[4] Our capacity to conceive or imagine various states of affairs has often been thought as a guide to whether the state of affairs is possible. However, the questions are following: does conceivability entail possibility or provide its evidence, or is it merely a good guide to possibility? (Yablo, 1993; Chalmers, 2002).

in other worlds, the yacht is actual. The nominalist thinks about the possibility of the yacht only concerning a certain thing in the actual world. In both cases, the possibility of the yacht relates to an actual world—to the only actual world or one from many actual worlds. I can think of the actuality of the yacht, only if it is part of some actual world—the only world or one of many worlds. Thus, the notion of the yacht is rigidly connected to the notion of the world—actual or possible. The yacht could be the only yacht in the world. Then, the possible history could also represent the possible evolution of the possible yacht in one of the possible worlds (possibilism) in two ways: (a) as the possible evolution of the actual yacht in the only actual world (actualism) or (b) as the possible evolution of the actual yacht in one of many actual worlds (modal realism). In all cases, the possible history is the dynamic aspect of possibility representing the direction of changes in the possible yacht's relations (a static aspect of possibility).

4. What are possible: objects and worlds or states and histories?

To understand the relations between possible states, possible histories, and possible worlds, we must define the notion of "world". The simplest definition is that the world is everything that exists, regardless of what individual people think about it. Following Heidegger, the world is that within which entities appear, a field or set of conditions for any intra-worldly relation (Mulhall, 1996, p. 96). When we think about the world, regardless of whether it is a possible or an actual one, we imply something individual, wholly interrelated and ordered or some internally unified set of objects with shared properties. The ordering appears as a harmony, regularity and consistency between objects. Consistent objects exist, relate, and interact under common rules with particular mathematical structures. To be whole, the world also has to possess stability. Stability is one of the main properties of the world because its general consistency (rules) has to be saved after any changes. So the world is not just any set of objects, but only an inherently consistent and stable set. Of course, only some part of properties of world's objects saves after any changes of the world, and another part saves only after particular changes.

World's objects can be described with states and history in some space. Thus, when we think about the specific world, we imply that the states and histories of world's objects are, at least partly, consistent and stable. One of the useful consequences of world's internal consistency and stability is that we can describe states and histories of objects in terms of world-lines in space-time of a certain world.

The world is the set of consistent and stable objects, as well every actual object is a consistent and relatively stable aggregate of actual states and actual history. Thus, a possible object is also not

any aggregate of all possible states and possible histories, but only the consistent and relatively stable one. The possible object automatically belongs to one of the worlds—actual or possible. If the aggregate of the possible states and histories is inconsistent and not stable, it is no sense to consider any special possible object. One might separately consider only the possible states or possible histories in a certain world, but not the possible object as something whole. The object has a single world-line in a certain world. The world-line is the history of change of object's states in space-time of this world. The mere sum of these possible states and histories is not possible object yet. So the word "possible" adds nothing new to the properties of the object, and the notion of possible object is redundant. It is enough just to specify whether a certain object belongs to the possible or actual world. Moreover, if there is no reason to consider the notion of possible objects, what is the reason to consider the notion of possible worlds? Both actual and possible worlds are a consistent and stable set of objects that are always actual. Both actual and possible worlds consist of possible states and possible histories of their objects. Hence, the word "possible" adds nothing new to properties of the world since every such world has equal rights of the merely world. At the same time, the specific state of the object can be reached by many possible histories, and it can give rise to many other possible histories leading to possible new states.

Three conclusions follow from the reasoning above.

- Any object and world are always mere object and world. We might call these actual, but it is redundant.
- The number of the worlds is only limited by possible mathematical structures.
- Only states and histories can be possible.

As mentioned in Section 2, there are some variants of two extreme points of view: there are many possible worlds with equal rights (modal realism), or there are the only actual world and many possible worlds (possibilism or actualism) (see Fig. 1).
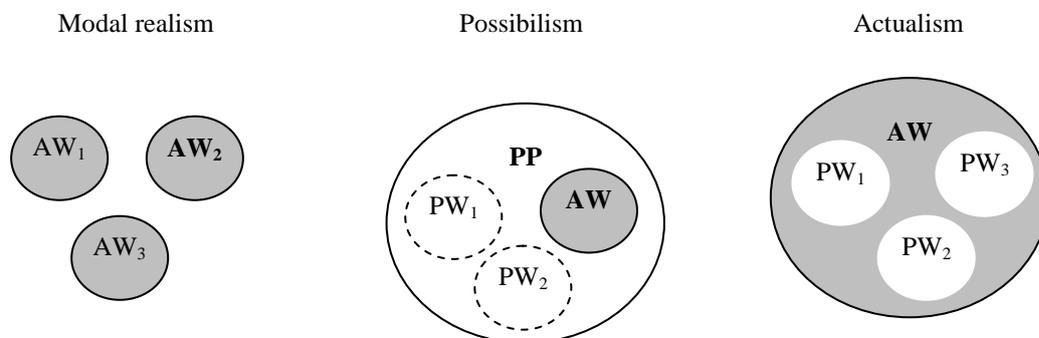
Fig. 1. Three points of view of reality of Possible Worlds (PW) and their relations with Actual Worlds (AW) and Pure Possibilities (PP). The grey color of a background means "actual", the white color means "possible". The solid contour means "existence", the black dotted contour means "being", the absence of the contour means "no being" and "no existence".

Now, we can take one more hypothesis. There is a total aggregate of separated inconsistent and unstable possible states and possible histories, and only some of these being consistent and stable generate objects (actual) that united in various worlds (actual). The objects exist due to their mutual interactions within one of the worlds under constant common rules with particular mathematical structures (see Fig. 2).
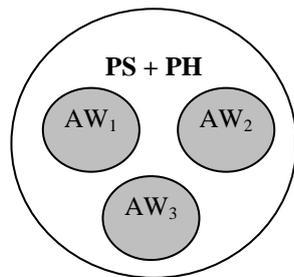
Fig. 2. The actual objects in the various Actual Worlds (AW) have been produced from separated Possible States (PS) and Possible Histories (PH).

It looks like the modal realist's view, but Lewis's assumption about causally isolating of worlds from every each other is too strict and controversial. Let imagine two worlds A and B and consider relationships between their objects. If the set of possible states and possible histories is inconsistent and unstable in A-world but consistent and stable in B-world, we could suppose such possibilities can give the existence only for the objects in B-world. In A-world, the objects that interact only with other objects of A-world are always actual objects for A-world. In B-world, the objects that do not interact with objects in A-world have neither possible nor actual status in A-world.

One could imagine another way of the interaction. For instance, an object in B-world interacts with possible states and histories of the object in A-world, but does not have sufficient stability in A-world. Theoretically, this interaction is possible if particular main properties of the object in B-world do not coincide with the main properties of A-world. From the point of view of A-world such object could be perceived through the notion of a virtual object in A-world, since it exists in A-world though not in an actual form. The virtual object in A-world may not be observed in A-world directly, but it is able indirectly to affect other objects in A-world. In the next section, I will argue that the notions of objects are insufficient yet to describe their interaction between different worlds, and we need the notion of substance.

5. Substances are before objects

We face a kind of a circle of definitions. Any object can be only the object in a certain world, and any world can be only the world of objects. What are primary: objects, worlds, or something else? We can solve this issue if we find some basic elements, which connect with both the world and objects, but their being or existence needs neither the objects nor the worlds. Such basic elements cannot be any particles of matter because the particles are the objects in the world too. The basic elements must be the fundamental entities of reality; they must possess active internal ability to make changes in themselves and other basic elements. In a history of philosophy, there were several suitable notions: atoms (Democritus), substances (Descartes, Spinoza), monads (Leibniz), the pure ego (Fichte), the will (Schopenhauer) and many others. Among others, I prefer the notion of substance, but there are some difficulties.

Firstly, the philosophical views of substance are very varied and controversial (Hoffman, & Rosenkranz, 1997; Lowe, 1998, 2006; Loux, 1978, 2002; Koslicki, 2008). The realists say that substances are entities independent of our perception; objects are only a result of activity and interaction between the entities. The anti-realists say that substances are mere forms of relations between the objects or just names for object's perceptions. They add that an individual object is nothing but a set or bundle of properties, having metaphysical priority over the objects.

Secondary, process philosophy (Whitehead, 1969; Rescher, 2006) opposes substance metaphysics. In contrast to the substance view of reality, with its focus on what there is, process approach analyzes becoming and what is occurring as well as ways of occurring. The core assumptions of substance metaphysics focus on discrete, countable, static individuals and the sometimes neglect of dynamic aspects[5].

Following Leibniz (1989), substances are beings capable of action; it means that they are endowed with primitive active and passive powers (p. 159, 207). Then, he introduced a theory of the striving possibles (Leibniz, 1951), where he showed a distinction between essence (the nature of a thing) and existence (p. 347-349). He postulated that the principle of governing essences is that of possibility or non-contradiction. Every essence (possible thing) tends of itself towards existence, but the one that will actually exist is that which has the greatest perfection or degree of essence or the greatest number of possibles at the same time. The doctrine of the striving possibles, however,

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[5] Recently, authors have added to an old argument of self-organization the argument of the interpretation of quantum mechanics. Instead of micro-objects combining to produce standard processes, modern physics considers very small processes (quantum phenomena) combining to produce ordinary macro-objects (Eppersen, 2004; Stapp, 2007).

seems plainly inconsistent with a number of other Leibnizian principles, for example, with doctrine that God's choice determines which world will exist[6].

In this paper, I have no opportunity to consider a huge discussion of metaphysics of substance. I propose, partly following Leibniz, the model that is merely the assumption. Let us substance is a single whole entity, and it has inside itself a source of activity. Thanks to the self-moving, essence of substance needs for being neither other substances nor any objects nor even worlds with their space-time. Perhaps, there is the only Thing that needs to be for the being of substances. This Thing is the Universal Source of all substances, and we nothing know about it.

Assume that the main property of substances is the ability to act. To act means to create, to change, and to maintain possible connections with other substances. The activity of substances is constantly aimed at using this ability in all possible ways. The essence and aim of substance's being are the application of this ability. The interactions between substances are not limited by anything besides the same activity of other substances. These interactions can be consistent or inconsistent, stable or unstable. The consistent and stable interactions between substances give birth to relatively stable objects in a certain world. Thus, the objects are produced by the activity of substances.

If we expand the Leibnizian doctrine of the striving possible, then every possibility of substance has its essence and tends towards existence in some world. Among the infinite set of possibilities, only one can exist in one of many worlds. If every possibility of substance has static (possible states) and dynamic (possible histories) aspects, it seems that there are two modalities of being of substances' possibilities. In possible modality, these are in form of separated possible states and possible histories; in actual modality, these exist in form of objects' states (actual) and histories (actual) in one of many worlds (actual).

The consequence of these assumptions is that basic particular properties of every world (including properties of space-time) and its objects are determined by ways of the mutual interactions between substances. One should consider only the objects in connection with their certain world whereas outside this world one should consider only substances. For the interactions between substances, which do not generate stable objects yet, one could use the conception of chaos, vacuum, and others.

In the next section, I will combine two hypotheses: (a) that some of the possible states and possible histories became consistent and generate the stable objects (actual) that united in various worlds; and (b) that interactions between substances give birth to stable objects in a certain world.

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[6] See discussion about this (Blumenfeld, 1973; Shields, 1986).

6. Worlds arise from interactions between substances

The issue that we say nothing yet about is that where separate possible states and possible histories are before these generate a variety of objects in a certain world (see Figure 2). On the one hand, the possible states and histories can be in different worlds. On the other hand, within one world, the specific state of the object can be reached by many possible histories, and every new state can give rise to many other possible histories leading to possible new states. So, what is the difference between possible states and possible histories that belong to objects from different worlds?

I suppose, it is more precisely, instead of notion of possible world, to use a notion of a set or cluster of all separated possible alternative states and histories, when they do not become consistent and not stable yet. These clusters under given conditions could create some number of stable objects, and hence the worlds of objects can arise. To avoid a linguistic confusion, such clusters should be substituted for some another notion, for example, of "proto-world". To distinguish between possible states and histories within one of the proto-worlds with others outside any proto-worlds, I will call these "potential states" and "virtual histories." Potential means latent and capable to exist actually under the given conditions. Virtual means having the essence or effect, but without manifestation in actuality.

The next step is the description, how worlds could be created and evolve thanks to the interaction between substances. Divide this process into three stages or levels (see Fig. 3).

Level I: "pure possibilities". There are no worlds and no objects. There are just active self-sufficing substances that possess the ability and possibility to create, to change and to maintain possible relationships with other substances. Every this possibility has two aspects. A static aspect is united all possible static forms of substances' interaction. A dynamic aspect is united all possible process of creating and change of substances' interaction.

Level II: "proto-worlds". All possibilities of substances have different properties. The sets of possibilities that have the shared properties unite with each other and create the separated potential states and virtual histories within one of the proto-worlds. The shared properties of the proto-world can enable the potential states, and virtual histories create the future objects. At this level, only from the view of modal semantics one can consider a notion of possible objects as something that can arise from a certain proto-world.

Level III: "worlds". Within one of the proto-worlds, sooner or later, some number of virtual histories becomes consistent. At the first moment of such consistency, the first actual history arises and leads to the first actual state of the first object. A new world emerges instantly. Each of the

actual histories and actual states differs from virtual histories and potential states of this object by their maximum ability to be actual in this world.
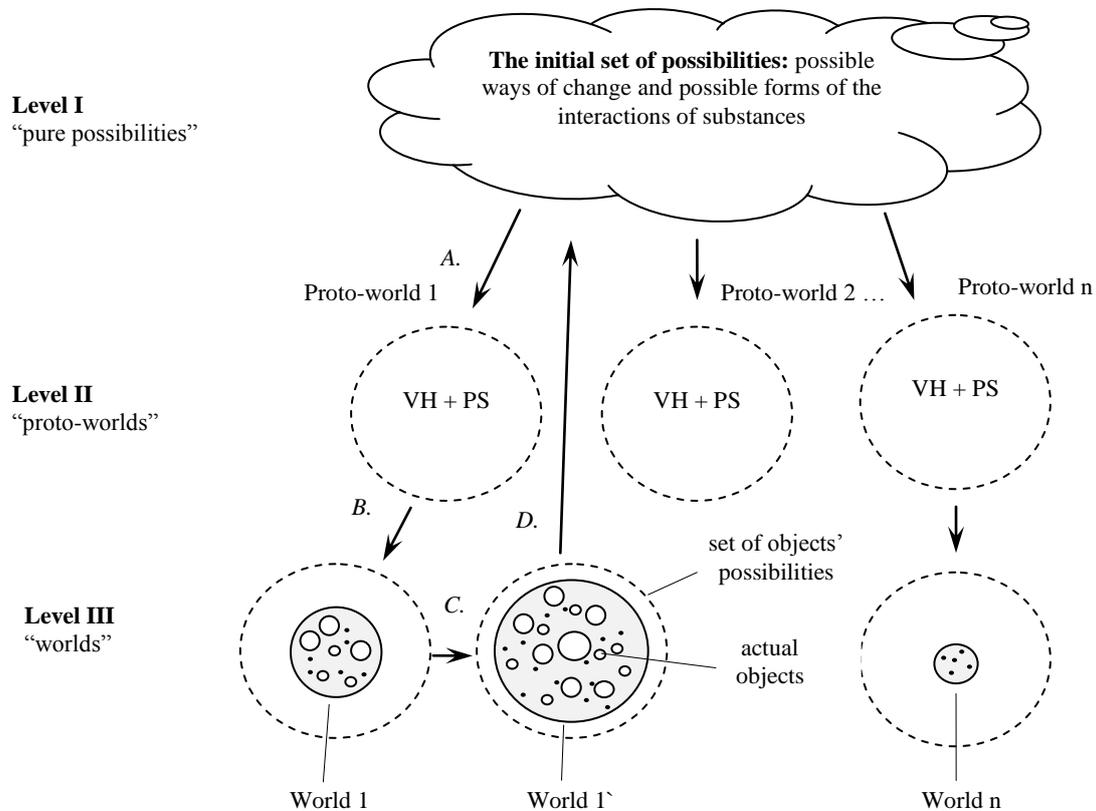
Fig. 3. The hierarchy of the levels of possibilities and the stages of evolution of worlds. A: the initial set of pure possibilities produces many proto-worlds of virtual histories (VH) and potential states (PS). B-C: the world emerges inside one of the proto-worlds and grows up until its set of objects' possibilities transforms into actual objects. D: when everyone possibilities turn to actual histories and states of objects, this world will disappear and dissolve to the initial set of possibilities.

Consider some consequences that can follow from the model in figure 3. The first one concerns causality; the second one concerns an ultimate aim of a world's evolution.

The objects obtain their existence in a certain world thanks to substances tend towards this existence. Following substances the objects also tend to actualize the maximal number of their possibilities in each state of affairs of a certain world. This tendency is the global aim of every object. In the possible modality of being, the objects try or examine the maximum number of possibilities of motion in each their subsequent actual state. To achieve this aim, from the each actual initial state the objects move simultaneously along all virtual histories that are possible in a given state of affairs. Thanks to the summation of the histories, in the possible modality, the maximal number of virtual histories is combined into the actual history in the actual modality of

being. In moving only along the actual history, the object can take the maximal number of potential states. In this way, substances achieve their aim.

Let us imagine that the inherent activity of substances causes continuous fluctuations of the objects near their stable states and histories that are actual. After any change of object's environment, it looks like the object finds new stable states. It seems if the object strives itself for along new stable history. In fact, in the new state of affairs, the object has a different set of virtual histories that due to their summation creates the new actual history. Thus, the true causes of phenomena of Level III are at Level II. The object does not know in advance, which of virtual histories would be an actual one. The object does not choose particular actual history. Thus, the mutual play of the object's trials creates the actual object's history. It means that a habitual view on causality, as having a mutual effect between actual objects, remains only for solving practical problems. The process, when object's being changes from the possible to actual modality leads to the more general process, when the actual reality of every world constantly emerges due to interactions of all possibilities of all objects within this world.

According to our model, the ultimate aim of the world's evolution is a realization of maximal number of the objects' possibilities or abilities to interact with other objects of the world. However, it is impossible to actualize every possibility at once. To achieve this global aim, the objects have to undergo a long process of gradual complication. The more complicated and hierarchical objects, the more possibilities they can actualize. Consequently, on the one hand, the unactualized possibility has to disappear; on the other hand, each of them has to take part in a world's evolution. How is it possible? I think that we need two modalities of being again. The unactualized virtual histories and potential states continue their being in the possible modality and continue to influence histories and states that exist in actual modality.

After having exhausted all its possibility, the particular object reaches its aim and has to end own existence in a certain world. However, after object's disappearance its information cannot disappear too, it has to be distributed among other objects of this world. If the set of proto-world's virtual histories and potential states is limited, sooner or later, the complete transition of these in actuality leads to the disappearance of the whole world. Unfortunately, our universe will have to disappear too. Fortunately, if a number of substances and their possibilities is infinite, a number of proto-worlds has to be infinite too.

7. Conclusion

The aim of this paper has been to introduce the model of the origins and the evolution of possible worlds. I expand the neglected idea of active substances, which create all objects and

worlds**.** Any new metaphysical construction will be more interesting than others only provided it gives better solutions of old metaphysical issues. At the same time, a new model must not deny other points of view of the philosophical status of possible worlds but tries to combine their parts in some more or less consistent way.

Compare the proposed model with other approaches to possible worlds. I think that the *modal realist* is right that one actual object or individual cannot exist in two different worlds. He is also right that all possible worlds exist equally and can be called actual worlds. Though, Lewis' assumption regarding causally isolating of the worlds from each other is too strict. If the object is a mere relatively stable form of the interactions between substances, the same substance, in principle, could take part in the creation of the objects not only in a single world, but in many worlds (see Figure 4). Thus, the objects are connected with each other through their common source of existence—substances. On the one hand, the objects of different worlds are incompatible since the properties of their proto-worlds, including conditions of stability, are too different. On the other hand, virtual histories and potential states of these worlds can influence each other. For example, virtual history, exhibiting itself as a virtual object in A-world, can generate the actual history in B-world; then virtual history can generate the object in B-world. Consequently, the objects of the different world can interact with others not directly, but using virtual objects. So the exchange of information between worlds is feasible.

The *possibilist,* perhaps, is right that every world is unique because its proto-world unites virtual histories and potential states, which have the particular set of shared properties. However, this uniqueness does not mean that such world is only single. The possibilist is also right that all possible objects and all possible worlds possess an ontological status. However, he confuses the notions of "possible object" with the notion of "possible states" or "possible histories" of objects. The adding of the word "possible" to objects or worlds is redundant. There is only proto-world of potential states and virtual histories, but it is not possible world yet.

The *actualist* and *modal logician* might be right that potential states and virtual histories do not exist in the worlds yet. Though, they are wrong calling the sets of possible states and histories as "possible worlds" that are just metaphors. According to proposed model, these are in the possible modality of being. The actualist is right that there are hidden possible states and histories in the actual world. However, that is true only for a certain world under a given boundary conditions. Not all of possible forms of substances' interactions can be actualized by the objects in every world.

The proposed model (Figure 4) could be relevant to building an ontic version of structural realism (Cao, 2003; Ladyman et. al., 2007), especially regarding the dilemma of whether only structures without individuals or structures as relations of individuals exist. Perhaps, this opposition can be solved if the proto-worlds of Level II are real structures, which consist of the set of virtual

histories and potential states. Then, we can consider the objects of a certain world (Level III) quasi-individuals because their properties are defined through their relationships in the structure of their world. In this case, the true individuals are substances, which define the properties of every proto-world's structure.

This paper is one of many attempts to create a consistent set of simple relations between the possible world, possible states and possible histories. The findings of this study are restricted that any investigation of possible worlds faces two difficulties: (1) a problem of generality, that we use the same word "possible" to refer very different notion: world, object, state and history; (2) a problem of psychologism, that we try to transfer the properties of our conceivable private possibilities to all possibilities in general. Of course, I cannot avoid both restrictions completely, but it was a curious trial.

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