

## ON MODALITIES WITH POSSIBLE WORLDS

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ANDREJ ULE

University of Ljubljana, Faculty of Arts, Ljubljana, Slovenia  
andrej.ule@guest.arnes.si

CORRESPONDING AUTHOR

andrej.ule@guest.arnes.si

**Abstract** I am discussing the concept of possible worlds as it is used in modal semantics, which Danilo Šuster also discusses in his book *Modal Catapults*. I wonder how to understand possible worlds in the talk of the non-existent, for example, in explicitly imaginary discourses. Only the context of the discussion, where modal propositions about virtual (irreal) entities or virtual (irreal) states of affairs appear but not a priori judgments about what is in principle logically possible or impossible, can establish a meaningful speech about relevant possible worlds. This raises several problems, e.g., interpreting statements that refer to both real and virtual entities, especially interpreting some counterfactuals about real and virtual entities. It seems that in some instances, we cannot “get rid” of counterfactuality, e.g., by semantic conversion into ordinary general sentences about possible worlds of a certain kind.

**Keywords**possible world,  
virtuality (irreality),  
imaginary discourse,  
the context of  
discussion,  
counterfactual

## O MODALNOSTIH Z MOŽNIMI SVETOV

ANDREJ ULE

Univerza v Ljubljani, Filozofska fakulteta, Ljubljana, Slovenija  
andrej.ule@guest.arnes.siDOPISNI AVTOR  
andrej.ule@guest.arnes.siSprejeto  
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**Izveček** Razpravljam o konceptu možnih svetov, kot se uporablja v modalni semantiki, o katerem govori tudi Danilo Šuster v svoji knjigi *Modalni katapulti*. Sprašujem se, kako razumeti možne svetove v govoru o neobstoječem, na primer v eksplicitno imaginarnih diskurzih. Menim, da lahko smiseln diskurz o relevantnih možnih svetovih vzpostavi le kontekst razprave, v katerem se pojavljajo modalne propozicije o virtualnih (nerealnih) entitetah ali virtualnih (nerealnih) stvareh, ne pa apriorne sodbe o tem, kaj je v principu logično možno ali nemogoče. Pri tem se pojavlja več težav, npr. interpretacija relativnih izjav, ki se nanašajo tako na realne kot na virtualne entitete, še posebej interpretacija nekaterih protidejstvenikov o realnih in virtualnih entitetah. Zdi se, da se v določenih primerih ne moremo “znebiti” protidejstvenosti, npr. s semantično pretvorbo v navadne generične stavke o možnih svetovih določene vrste.

**Ključne besede**  
možni svet,  
virtualnost (irealnost),  
imaginarni diskurz,  
kontekst razprave,  
protidejstvenost

In his book *Modal Catapults*, Danilo Šuster discusses various forms of modal arguments that are important for philosophy, e.g., the use of various types of conditionals in ethics, epistemology, and ontology (Šuster, 2023). For the most part, philosophy relies on today's standardized forms of modal logics and on various types of semantics of possible worlds for this task, which stem from Hintikka's and Kripke's "invention" of various semantics of this type in the 1950s (Kripke, 1963; Hintikka, 1957), although the very idea of interpreting modal statements with the help of possible worlds is much older, as it can be found already in Leibniz in the 17<sup>th</sup> century. With the help of such semantics, it is relatively easy to interpret various modal statements and entire modal logic systems. Despite the tremendous popularity and prevalence of this semantic methodology, this methodology also has some limitations. This was noticed already by W. V. O. Quine in his criticisms of modal statements and the semantics of possible worlds (Quine, 1960). Some, such as D. Lewis, try to strengthen the vague ontological status of possible worlds by giving them the status of alternative realities (Lewis, 1976) or reject them and allow them only the actual world (Mackie, 1973). Some think that beyond various types of modalities, we need a special status of actuality (Cowling, 2011). Others understand possible worlds only as verbalized imaginary possibilities (Rosen, 1990) or try to expand the concept of possible worlds with "impossible worlds" (Nolan, 2021), etc. In these ways, various authors try to solve paradoxes concerning modal sentences, especially counterfactuals. Some paradoxes of this type are also excellently presented by Danilo in his book (for more on different variants of the possible worlds' theory, see, e.g., Divers, 2002).

In my essay on the non-existence (Ule, 2019), I talked about how complex the logical formulation of the non-existence speech is. Assumed "possible worlds" are generally worlds that contain some non-existent, although at least possible virtual entities or possible virtual facts. We can assume that such entities or facts belong to certain worlds that are at least virtually, e.g., verbally, or imaginatively possible. We can ask whether such virtual worlds also belong to the possible worlds of modal logic. We cannot say anything about this in advance, since only the specific context of the discussion or argumentation indicates (but by no means uniquely implies) what belongs to the multitude of semantic possible worlds.

In discussions about the modal qualities of things, events, or sentences, we must assume some area of explicit or at least tacit agreement, i.e., we must assume some common context of the discussion, which sufficiently defines the "boundaries"

between the actual and only possible, as well as the boundaries between possible, necessary, and impossible. In this case, sudden shifts in the context may quickly occur, which lead us to various semantic and logical confusions.

Discussions about possible worlds in modern philosophy, especially in modal logic, are already quite extensive, branched, and even contradictory. It is not possible to find any at least relatively plausible conception of possible worlds that would not raise some weighty objections (see, e.g., Divers, 2002). Therefore, I will limit myself to an informal and initial definition of possible worlds as groups of objects, states of affairs, and events that can be assumed to be possible in certain real or fictitious circumstances. I don't want to commit to any more precise definitions of the mentioned "groups", such as, e.g., the widespread use of "maximality", e.g., maximally consistent sets of sentences, propositions, states of affairs or properties of things, etc., that is sets that would include all in principle possible non-contradictory combinations of sentences, propositions, states of affairs or properties of things, etc., because in our linguistic and mental practice, we only need limited sets, e.g., in a given discussion, the relevant set of descriptions, objects, states of affairs, and events.

Even our "current world" cannot be defined as a maximal set of the above type because every day we encounter a series of current situations where, at least practically, and sometimes also in principle, it is not possible to determine whether a sentence or a proposition is true or false, whether a state of affairs is a fact or not, whether a thing has or does not have certain properties, etc. For example, quantum physics features a whole series of situations where, even in principle, it cannot be determined whether some quantum objects at a given time interval have or do not have some properties (just think of the famous Schrödinger's cat in a quantum box, where it is in principle impossible to determine whether the cat is alive or dead before we "look at it") (Schrodinger, 1935). Therefore, I do not agree with Dale Jacquette's thesis, who tried to define the current or the actually existing world as the only possible world where we can speak, that it corresponds to a maximally consistent combination of sentences or propositions, as well as maximally consistent combinations of states of things or properties of things, while all other possible worlds should be non-maximal or submaximal, because in those we can always find objects where it is not possible to determine whether a property belongs to an object or not (Jacquette, 2005: 244–246).

One could say that such worlds know of “defining voids”. So, at most, we could talk about the fact that the current world is at least “minimally” submaximal in relation to all other possible worlds, but this is also a questionable definition, because for every submaximal possible world, we could “find” a corresponding maximal possible world, where, for example, in cases of “defining voids”, such voids were artificially filled by arbitrarily assigning some properties or their complements to previously “undetermined” objects. Even in the case of Schrödinger’s cat, we can assume the existence (or better subsistence) of two possible worlds, in one the cat would be dead even before we opened the box, and in the other it would be alive. Well, this solution of the problem was suggested in the famous Everett’s theory of many worlds, where every logically possible quantum-mechanical course of things corresponds to some alternative physical world, where exactly such a course takes place and in which there is some observer who notices the “corresponding” state of things, e.g., finds a dead or alive cat in the box (Vaidman, 2018).

I believe that the current world can only be determined as actual by pointing to it, i.e. by saying or implying that we exist in the same reality where we speak or think about, and where this existence includes some implicit totality of actually existing beings, like “all actual things”, “everything that actually happens”, etc. Such a determination is never absolutely certain, it depends, among other things it depends, on the context of the discussion or thinking, because this context also carries within it a distinction between what happens or exists *regardless of the context* and what exists *in regard of the context*. This also means that the distinction between the actual possible world and “merely” possible (e.g., virtual) worlds is relative and conditional, but not absolute. However, it is nevertheless important that such a distinction is possible according to each context (discussions, etc.), so we are always faced with it, whether we are aware of it or not. In this sense, I am talking about the inevitability of agreeing to some current world as actual and about the difference between the actual and non-actual possible worlds.

I would like to point out here that I adopt a somewhat non-standard conception of possible worlds, i.e. I adopt a non-fixed set of objects for possible worlds because they may change according to the different variants of the given context of the discussion.<sup>1</sup>

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<sup>1</sup> Therefore, I don’t accept the Kripke’s postulate about necessary identities or about *de re* identity of objects in the set of possible worlds (Kripke, 1971). I accept only the limited postulate about necessary identities, namely identities are necessary only in those segments of the given context where it is possible to talk (think) about a certain object

In a discussion of some ancient mythological story, e.g., about the Pegasus story, I assume that Pegasus exists only in some Greek mythological stories, by no means in all, and of course not in the actual (real) world. However, in those stories where Pegasus appears, he represents the same being, regardless of whether he is imagined perhaps as an immortal divine or as a mortal semi-divine being (who, for example, died together with the hero Bellerophon when they wanted to climb Mount Olympus). The sentence “Pegasus may have had golden wings” is similarly a meaningful part of the discussion because Pegasus with golden wings “appears” in various contemporary artistic representations. These present a kind of extended mythological context of Pegasus story. In this sense, we can talk about a possible world by regarding the context of Greek mythology, where Pegasus has golden wings, although “usually” he is represented as a purely white horse with white wings.

Let us consider some sentences about meaningful combinations of fictitious and real essences and states of affairs. Take the sentence, “Hercules is stronger than Muhammad Ali.” We cannot assign a clear meaning and truth value to this sentence because we simply do not know in what context we are talking about Hercules and Muhammad Ali, as there does not seem to be any common context of discussion that contains the stories of either character. Also, Hercules is a character from Greek mythology, who is considered a purely fictional character, while Muhammad Ali was a real person, one of the best boxers of all time. However, we think the sentence makes sense and is even true. I think that is the case because most of us unwittingly change the original, purely mythological context of talking about Hercules into an expanded mythological-real context, where we either imagine Hercules as a real person fighting Muhammad Ali or we attach Muhammad Ali to the myth of Hercules and imagine an extended mythological context where the two again clash with each other.

In any case, it probably seems to most of us that in such a duel, Hercules would win without a doubt because he is said to be endowed with a whole range of divine powers and qualities (e.g., invulnerability, divine strength, incredible speed of reaction to problems, etc.). Therefore, given the reasonably permissible beliefs about the mythological Hercules, we can mentally construct a multitude of possible worlds

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or creature. In these segments we can talk about “this and that object (creature)”. Kripke’s proof of the necessity of identities applies only to true nominal identities, i.e. for identities that explicitly allow nominal predicates (e.g., the predicate “necessary ( $x = a$ )”) but not for real identities that consider only predicates of real properties (e. g. the predicate “ $x$  is great”) (see my paper “Ali je identiteta res nujna” (Is Identity Truly Necessary)(Ule, 2003).

in which a meeting between the mythological Hercules and the actual Muhammad Ali could take place, and in all these possible worlds, Hercules would defeat Muhammad Ali because Muhammad Ali does not possess divine qualities, which are said to be “owned” by Hercules. In this sense, the sentence “Hercules is stronger than Muhammad Ali” is even necessarily true, not just contingently true.

In short, in judgments of sentences about virtual entities, we must consider both completely real possibilities and various virtual possibilities. This also applies to sentences where fictional and factual entities are mixed.

Take for example the relational sentence, “Hamlet is more unhappy than Margaret II.” (Margaret II is the current queen of Denmark). Here, we must proceed similarly to the case of Hercules and Muhammad Ali, in short, we must find some extended context of the story of Hamlet, in which the (real-life) Queen Margaret II would also belong. In doing so, we would make minimal changes to preserve the assumed identity of Hamlet and the identity of the real queen and see whether the sentence “Hamlet is more unhappy than Margaret II” would be non-trivially true given this context. I think anyone can easily imagine such a context, in which Hamlet would still be an extremely unhappy and divided man, and the Queen of Denmark relatively happy and content, although she might be very concerned about Hamlet’s fate. You should never, e.g., make changes such that Margaret II. would become Hamlet’s queen-mother, because then the assumption that Hamlet is more unhappy than Margaret II might be untrue, at least judging by what is supposed to happen to his mother in the play.

The situation is more complicated in the cases of counterfactuals with unrealistic ingredients. Here, it may happen that we cannot get rid of counterfactuality in any way, in short, we cannot switch to some non-contrafactual conditionals about possible worlds of a certain type.

Let’s take our above example, “Hercules is stronger than Muhammad Ali”. In no “normal” possible world of Greek mythology does the said duel occur. However, the given sentence seems to be true. Maybe it is true counterfactually. In this sense, the sentence “Hercules is stronger than Muhammad Ali” suggests a counterfactual:

- (1) “If Muhammad Ali met Hercules, then Muhammad Ali would lose the fight to Hercules.”

We could argue (in the sense of Lewis, 2001) that in all nearby possible worlds, which, given the context of Greek mythology, are as similar as possible to the world where the actual Muhammad Ali lived and where the fight between Muhammad Ali and Hercules would take place, Muhammad Ali loses to Hercules.

If we try to semantically interpret this counterfactual, we must consider some “extended” set of possible worlds that *would* contain both the events of Greek mythology and the real world. We have to especially consider worlds that would be, in some sense, the closest to the worlds of Greek mythology where Hercules appears, but Muhammad Ali could also appear in them. We could consider these worlds, e.g., as possible worlds of “relevant” discussions on Greek Mythology and modern boxing champions.

However, even in this scenario, a new counterfactual is hidden again, namely:

- (2) If it would be permissible to discuss the worlds where the match between Hercules and Muhammad Ali would take place, then the discussions would result in agreeing that Hercules defeats Muhammad Ali.

We need then to presuppose something like the set of possible discussions HA that apply to the match of Hercules and Muhammad Ali, and which would be the nearest to the set of “relevant” discussions on Greek Mythology and the modern boxing champions. In accord with Lewis, we say the counterfactual (2) is true iff all possible discussions of HA agree with Hercules’s defeat of Muhammad Ali.

However, this could not be any “factual” conditional on possible discussions because it has to consider hypothetical discussions on possible worlds that *would (could)* contain Greek Mythology and the real box champions and not only the real possible discussions on Greek Mythology and the modern box champions. So, we need the next counterfactual,

- (3) If it would be possible to discuss the discussions where Greek Mythology and the real world somehow “intersect”, and which would discuss the match of Hercules and Muhammad Ali, then the discussions would result in agreeing that Hercules defeated Muhammad Ali.



This could not be the end of the story. We get the circle of more and more complicated counterfactuals regarding possible worlds of possible discussions, possible discussions of possible worlds, and so on to infinity. Merely the introduction of some “extended” set of virtual possible worlds as such does not help us to break out of this circle.

I think that similar dilemmas can be found in other areas of the logic of conditionals and in deontic logic, which Danilo beautifully presented in his book. At the end of the book, Danilo writes that modal logic is not interested in which possible worlds are close and which are further from reality, but only in what follows when it is determined, what is accessible (i.e., is close) and what is not (i.e., is far) (Šuster, 2023, p. 207). This is true, but often, it is not a simple fact of definiteness but a reference to irreducible counterfactuals that speak of what would follow in a given context of speech from something that we would assume to be possible.

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