ROCZNIKI FILOZOFICZNE
Tom LXXII, numer 1 – 2024
DOI: https://doi.org/10.18290/rf24721.5

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WHAT IS REAL IN VIRTUAL REALITY?

1. THE THESIS OF VIRTUAL REALISM

The expression "virtual reality" has an air of paradox to it. The reason is that the term "virtual" is often used to indicate the opposite of "real". If you plan your budget and rely on some future promised income, a more pragmatically inclined person may correct you by saying that this money is only "virtual", meaning that it is only in the realm of possibility and that you should not treat it as "real". Nowadays, the term is typically used in the context of digital technologies. When I say that I have virtual money in my account, I am not saying there is possible money that I expect to be transferred in the future but rather that the funds are digitally stored. The prevailing association between virtuality and digitality led to another confusion I believe to be especially risky. When people talk about virtual objects they can see on the computer screen, they often conflate them with "fictional" objects. When I say that I slayed a virtual dragon in a computer game, for many people, this indicates that I was fighting with a fictional dragon. This last observation was criticized by game scholar Espen Aarseth (2007), who tried to demask this way of speaking as a conceptual confusion. Even though dragons are fictional, fiction is only a part of computer games. To use a handy expression suggested by another game scholar, Jesper Juul, games are "half-real" (2011). The fictional dragon is a part of the game's narrative that could be entirely ignored by the player, who might, in turn, focus only on the simulation aspect of the software—a three-dimensional model that was pro-

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grammed to act in a certain way and react to the player's actions. This simulated dragon isn't fictional, and its existence constitutes a difference between games and other media. According to Aarseth, it shouldn't be classified as "real" either—it is "virtual", and virtuality should be treated as a separate ontological category.

A similar ontological question has been lately raised by David Chalmers (2017) but his answer differs from Aarseth as Chalmers believes that virtual objects are real and coined a new label for this position—virtual realism. The best way to explain the virtual realism thesis is to distinguish between its two versions. The *weak thesis of virtual realism* claims that virtual objects are real because they are simply data structures in the computer. I called it a "weak thesis", because I consider it much less controversial. Nobody doubts that computers contain structures responsible for what we see on the screen and interact with, be it a computer game or regular utility software. I am typing this article on a computer (as most of us do nowadays), and I would be somewhat disappointed if it were not stored somewhere on the hard disk. This trivial observation has an important ontological consequence. Unlike fictional or imaginary objects, virtual objects are more tangible and less mysterious. Even people who do not have much knowledge about computers do not assume that the existence of virtual objects in the computer is an ontological mystery. This cannot be said about many other categories that are sometimes conflated with "virtual", such as "fictional", "imaginary," or "possible".[1]

The *strong thesis of virtual realism* is more contentious. It states that, at least for some virtual objects, we can say that they belong to the same type as their non-virtual counterparts. To put it differently, the strong thesis claims that some virtual X-s are X-s *simpliciter*. Chalmers gives a few examples of such objects. It seems that virtual clocks or calculators are simply clocks and calculators, and we usually see no reason to make a substantial distinction between these objects and their virtual incarnations. One interesting case where Chalmers hesitates as to whether virtual objects can be described as real concerns computer games. At one point, he discusses an example of a computer game where the player kills a virtual Adolf Hitler (CHALMERS 2017). Can we say that a virtual Hitler is Hitler? It definitely feels wrong as, thankfully, Hitler doesn't need killing anymore. I will get

[1] Still, it is worth noting that the idea that virtual objects are data structures has its critics who typically point out that it becomes less intuitive, once we spell it out in detail (BEISBART 2019; LUDLOW 2019; MCDONNEL and WILDMAN 2019).

back to this example once again in section 5. The only thing we need to keep in mind at this point is that some objects seem to be easier to virtualize than others.

The label of virtual realism is relatively new, but similar intuitions have been expressed in the literature previously. Media philosopher Grant Tavinor who self-identifies as an opponent of virtual realism provides a helpful summary of positions that can be added to the school of thought he criticizes (2022).[2] As pointed out by Tavinor, authors such as Philip Brey (2014) and Peter Ludlow (2019) came close to the strong thesis of virtual realism, but they restricted the list of virtual objects that can be treated as real to social objects. He is also treating my position on the subject as virtual realism (or coming close to it) because in the paper I co-wrote with Marek Pokropski in 2016, we suggested that the user of VR can consciously perform an ontological shift and start treating VR objects and places as real—virtual extensions of reality that we can experience on par with non-virtual objects (GRABARCZYK and POKROPSKI 2016). Some of the ideas I present in the current paper can be seen as a follow-up to this initial thought.

The opposition to virtual realism has been dubbed "virtual fictionalism", and it can be associated with Tavinor himself as well as authors such as Jesper Juul (2019), Jon Robson, and Aaron Meskin (2016) or Neil McDonnel and Nathan Wildman (2020). It is crucial to notice that the usage of "fiction" in the label of this philosophical position can be misguiding, especially in the context of computer games (a sizeable portion of all VR experiences). Both authors do not use the word "fiction" in the sense of narratives but in the Waltonian sense of fiction-as-illusion. We will get back to these distinctions in section 3.

This paper aims to push the thesis of virtual realism a little bit further. On the one hand, I wish to claim that virtual objects and spaces are really more precise. To this end, I need to clarify the understanding of the word "real" in the virtual reality thesis. I disambiguate the notion in section 2 and suggest a new variant of virtual realism called *virtual physicalism*. The second aim of the paper is to offer some criteria for "virtual demarcation". Even if we agree with the strong virtual realism thesis, it still leaves much room for

[2] Confusingly, the term "virtual realism" was first suggested with entirely different meaning by the pioneer of philosophical analysis of VR, Michael Heim, who used it for the title of his book (HEIM 1998). Heim's usage of the term has nothing to do with the thesis discussed here as he used the word "realism" in an ordinary meaning to suggest a humble, pragmatic approach to VR that was supposed to even out the hyperboles often found in this technology's descriptions.

debate. Saying that some virtual X-s are X-s *simpliciter* does not tell us which objects can be successfully virtualized. I will suggest an answer to this question in section 5.

2. VIRTUAL, REAL, FICTIONAL: SOME NECESSARY DISAMBIGUATIONS

All three terms mentioned in the heading above have inspired long debates among scholars, so let me start by saying that my ambitions in this section are quite modest. I do not want to suggest new definitions that I hope others employ or correct the existing usage. The only goal I have in mind is to disambiguate the terms for the sake of my further argumentation to avoid misunderstandings.

Let me start with the difference between virtual and digital objects. In many contexts, the difference between the two can be ignored. As a matter of fact, in his newer take on virtual realism, David Chalmers seems to downplay it most of the time (CHALMERS 2022). I prefer to keep this distinction using a similar principle to Tavinor, who points out that we use the term "virtual" when discussing digital equivalents of something, and that not every digital object falls under this category. Virtual objects are objects that have been digitized—they are not natively digital. We talk about virtual money or virtual spaces because they are digital representations of non-virtual money and non-virtual spaces.

In contrast, we do not call our browsers "virtual" because even though they are digital, they are not meant to replace anything (TAVINOR 2022). I like this understanding of virtuality because it retains the original, pre-digital meaning of the word. Charles S. Peirce defined the term virtual thus: "A virtual x (where x is a common noun) is something, not an x, which has the efficiency (virtus) of an x" (PEIRCE 1974, 261). Needless to say, I cannot simply use this definition because it blocks the strong virtual realism thesis immediately (it claims a virtual x is not an x). Still, I believe it to be a beneficial point of departure. The gist of Peirce's definition is that virtual objects are not identical to their non-virtual counterparts but that they come close because they retain the same "efficiency". We keep the original Peircean intuition whenever we say something is "virtually the same". They are not the same, but they can be treated as such for practical purposes. The word "efficiency" (or power) is not only nicely linked to the etymology of the

word "virtual" but, as we are going to see in section 5, is also crucial to my understanding of the reasons we can claim virtual objects are real. To summarize, I will understand "virtual" as a subset of "digital", referring to these digital objects that can preserve some efficiency of non-digital counterparts.

Going further, even though I will use the term "virtual reality", I cannot help but note that the expression is very unfortunate as it seems either to contradict itself or trivially settle the question about virtual realism. Elsewhere (GRABARCZYK 2021) I suggested that it is much better to talk about virtual environments (or objects) and virtual perception. A short version of this argument runs as follows. Suppose you ignore the literal meaning of "virtual reality". In that case, it is easy to see that it typically refers to a particular technology: head-mounted displays (HMDs) connected to some computational devices. On the other hand, people who researched virtual technologies talked about virtual worlds broadly, regardless of the usage of headsets. There is even a long-running journal *Virtual Worlds* that contains many articles about worlds experienced by users on flat screens. Similarly, philosophers discussing virtual reality can often switch their focus between what ordinary people associate with VR and the digital environments people explore on their monitors. Lastly, software that can be experienced using headsets can often be experienced without the headsets. I don't see any reason why virtual worlds should be ontologically "upgraded" to virtual reality only because they are now experienced in the headset. What changes when we wear the HMD is the type of access to the virtual environment and not the environment itself—instead of participating in it through a glass window of our screen, we are now positioned within it. The bottom line is when I talk about virtual environments, I will be referring to digital, navigable spaces filled with virtual objects whether we access them via virtual perception or not. My arguments apply equally to environments experienced on flatscreens and HMDs.

Let us move towards the more philosophical side of disambiguations that I need to proceed with in my argumentation. I will differentiate between two senses of the word "real". The first one, which I will be calling "p-real", conveys the intuition that to be real is simply to be physical (however, we end up defining the term in physics). Being p-real is the sense we use when distinguishing between real and virtual money. Virtual money that we transfer from account to account is just as good as real money. It is just not physical (or at least this is how we think of it). The second meaning of the word "real" will be labeled as "g-real". This sense conveys the intuition that

to be real is to be "genuine". This is the sense we employ when differentiating between real and counterfeit or fake money. It is essential not to conflate being p-real with being g-real. Many g-real objects are not p-real. Social institutions provide excellent examples of this. It is also perfectly possible to be p-real without being g-real. Fake money we use in Monopoly or toys we play with are examples of physical objects we do not treat as genuine.

The next word I need to clarify is the term "fictional". I suggest differentiating between the two senses of "fictional" using the following labels. I will be talking about objects that are "o-fictional" to refer to objects that belong to a broad ontological category of fiction (for example, literary fiction) and "f-fictional" to refer to objects that are fake or not genuine. An important observation we can now make is that the categories of "g-real and f-fictional" are where the notions of "real" and "fictional" naturally meet. Being "f-fictional" and "not g-real" are one and the same.

The distinctions above allow me to approximate a naive irrealist view on virtual reality and show why I believe it is based on ambiguity. I don't want to ascribe this view to any of the proponents of virtual fictionalism. Still, I believe it is important to spell it out because it explains why virtual irrealism may sound intuitive to many people.

The thesis of naive virtual irrealism:
Virtual objects are non-physical equivalents of physical objects.
This means virtual objects are not real. If they are not real, they are not genuine (fake).

Being a naive virtual irrealist is only a step away from being a naive virtual fictionalist. To make the move to the latter position, we only need to add the following claim:

The thesis of naive virtual fictionalism:
Since virtual objects are fake, they are fictional.

If we employ the distinctions I suggested, both theses do not hold. The naive virtual irrealist establishes that virtual objects are not p-real but wants to say they are not g-real in the following sentence. As we saw in the money example, this move is far from obvious and demands additional argumentation. The naive virtual fictionalists start with the idea that virtual objects are not g-real and swap it for "f-fictional". This is warranted, but the next

step—in which they try to move from "f-fictional" to "o-fictional"—is not. The result is that virtual fictionalists need more argumentation if they want to discuss virtual objects using existing accounts of ontological fiction (such as Waltonian fictions addressed in the next section).

3. VR IS NOT A GAME OF MAKE-BELIEVE

The aims of this section are twofold. On the negative side, I wish to criticize the idea that our experience in virtual environments can be explained using Waltonian fictions (WALTON 1990). On the positive side, I will argue that the comparison with Waltonian fictions help us understand these experiences much better and reveals why at least some virtual objects can be treated as real.

In the previous section, I used the term "f-fictional" to refer to non-genuine or fake objects. Prototypical examples of such objects outside of virtual environments are toys. I want to start by contrasting our experience with toys with the phenomenon of make-believe or pretend play. Consider three scenarios. In the first scenario, a kid picks up a banana and pretends it is a phone they are talking through. In the second scenario, a kid picks up a toy phone and talks to it, even though it is just a plastic shell modeled to resemble a phone. In the third scenario, two kids use a more advanced toy—it looks like a regular phone. Still, it is a very simplified walkie-talkie that allows connections over a very short distance. Let us assume that they talk to each other while sitting in two adjacent rooms. I claim that the first case is a good example of make-believe or pretend play. The key feature of this scenario is that the kid has to perform a complex mental operation that transforms the banana into a phone for the duration of their play. I consider this fairly non-controversial, as pretend play has been widely discussed using the same example (LESLIE 1987; NICHOLS and STICH 2000; RUCIŃSKA 2016). In the second scenario, a part of the pretend play process has been offloaded to the object. The kid still has to pretend to talk to someone, but they no longer need to pretend that the phone has buttons or a small antenna at the top. The toy phone really has these properties, so at least when it comes to them, they are not made up. In the third example, all the properties needed for the play have been offloaded to the physical object. On my account, in the third scenario, there is no more need for pretend play or make-believe. Yet, even in the third scenario, I wouldn't call the objects the kids are playing with

"phones". They remain toy phones because they lack some features—they work only at short distances and are not connected to the phone grid. They are isolated because they can communicate only with each other.

The point of the example above is to illustrate a fundamental difference between playing with toys and indulging in make-believe fantasies. The way I see it is that it boils down to a direction of fit. In make-believe play, we perform a mental operation and project properties on the object we are playing with (if there is even any object to speak of). When we use toys, we perceive and exploit the properties that the toys have. The whole point of the toys industry is to offload the mental process required for make-believe play. From this point of view, make-believe and playing with toys are almost the opposite.

In actual cases of play behavior, we very often mix make-believe and toy play. Even in the third case from my example above, the kids could be using make-believe to pretend that the toy phones are phones and that they are calling each other from different continents. On the other hand, even in the first case where a kid pretends the banana is a phone, they are exploiting some of the features of the banana—its shape. The point I want to make is that these processes are different and not necessarily connected. I could indulge in pure make-believe, using only my imagination and pretend I am a Formula 1 racer. On the other hand, I could play with a remote-controlled car model being fully aware that I am controlling a model of a car on a lawn and not pretending I am doing anything else. In this case, I am not imagining the experience of driving a car. I have a real experience of controlling a model car.

One way to differentiate both cases would be to compare how we describe our experiences. If I say that I drove a car on a track, I utter a false sentence, and we may need some theory of fiction (for example, Walton's) to explain what I mean. If I say that I controlled a car model on a lawn, I am uttering a true sentence, and no theory of fiction or make-believe is needed to explain what I meant.

Let us now think of the ways we make "fake" versions of objects (toys being just one example of them). I believe that the general idea is that we eliminate some of the properties and causal powers of the original objects, creating a simplified or impoverished version of it. Toys share many properties with their genuine equivalents but lack some crucial attributes and, most importantly, some of their causal powers. A toy sword can share the shape and color of a real sword but will typically lack its weight and sharpness. A

toy gun may be a very nice replica of the real one, but it cannot be used to hurt anyone. It is nonetheless possible that in our pursuit of creating realistic toys, we end up making something that blurs the line between the toy and its genuine counterpart. A toy sword may be made to be too sharp or too pointy and then may be used to stab someone to death.[3] Should we still consider it a toy, or has it become a poor sword? I don't think that the answer is clear-cut. Once a toy or a model becomes "good enough" to be used instead of its genuine counterpart, it opens space for social negotiation as to whether it should be considered an instance of the genuine object type.[4]

Let us now see how these findings fit the digital context. I have not talked about virtual objects yet, because I wanted to differentiate between make-believe and toy play on neutral ground, regardless of questions about the ontology of virtual environments. In short, I claim that using virtual environments and objects is akin to toy play and not to make-believe play. Just like toys, virtual environments, and objects are painstakingly made to offload any mental operations needed if I had to imagine some of the scenarios virtual experiences offer. Needless to say, nothing stops us from adding make-believe to the virtual experience. In the same way, I could imagine that I am a real driver instead of playing with a remote-controlled car on my lawn, I may imagine that I am a real driver when I play with a virtual car on a virtual track. The point is, I do not have to. I could just as well be satisfied with my actual experience—the experience of controlling a virtual car on a virtual track. Just like with complex toys, the whole point of virtual experiences is that I don't have to imagine anything.[5]

[3] A similar point can be found in Jesper Juul's definition of games (JUUL 2011). The author points out that natural causal consequences of objects used in games are often diminished or blocked because we wish for all consequences of games to be negotiable (and not fixed by physics or biology).

[4] How good does a toy have to be to be regarded as a genuine object of a particular type? It looks like our classification depends on the purpose at hand. Because of this, it is hard to give a general answer, and I tend to think we need to make our analyses on a case-by-case basis. I disagree with Juul (2019), who seems to require the virtual counterparts of the non-virtual objects to be perfect simulations of their targets. Still, obviously, the more properties are simulated, the better.

[5] In a footnote on page 392, McDonnel and Wildman (2019), whose paper is a good example of a virtual fictionalists' standpoint, say that in cases where VR objects are not representational (whenever they "represent themselves", as the authors put it), VR objects do not have to be construed using make-believe and can be identified with digital objects. This is very close to my position, but the main difference between us is that for McDonnel and Wildman, these cases are outliers. Following Walton, the authors assume that whenever we recognize that the toy was modeled on a real object (for example, that it is a toy car), we start to use this toy as a representa-

Similarly to toys, virtual objects can sometimes be made so well that they are good enough to pass for objects of the same category they are modeled on. This is why most people treat virtual calculators and clocks (I assume fictionalists included) as regular calculators or clocks. The clock in my screen's upper left is not fictional, and I do not pretend it is a real clock. Nothing changes when I use virtual perception and look at the watch on my virtual arm—as long as it shows the correct time, it is "clockish enough". Before we proceed, let us gather all conceptual distinctions that I suggested up to this point and summarize the ontological status of virtual objects.

4. THE ONTOLOGICAL STATUS OF VIRTUALITY: A SUMMARY

Let me start with a question if virtual environments are p-real that is, whether they are physical. My answer may surprise some readers, but I believe them to be perfectly within the physical realm. Their intangible nature may throw some people off, but there is no need to think there is a big ontological difference between virtual objects and physical objects all around us. Virtual objects are not immaterial and no more mysterious than any digital object, including the software I am using now to write this article. They consist of a series of physical states of the computer which makes them physical in a literal sense. It is true that we need advanced technology to experience and manipulate the states in the computer, but this is ontologically irrelevant. The fact I need a microscope to see bacteria does not make them out of this world. At this point, my take on virtuality diverges from Chalmers's. On his account, virtual objects are made of bits. I prefer them to be physically realized.[6] There are several reasons for this choice, but because of space constraints, let me mention only one. I could list the machine code needed to program a real-time clock in the next paragraph, but I still wouldn't say that

tion of cars, and using something "as a representation" necessarily involves make-believe. To me, this is not the case. When I recognize something as a toy car, I can either play along and imagine it is a real car (or a fictional car from a story), or I can play with it "as is" without any mental operations. The sheer recognition that something is modeled on reality does not force me to switch to a make-believe mode, although it may be a solid invitation to do so.

[6] Chalmers' stance on the matter is a bit unclear. He needs the data structures to be realized because he wants them to have causal powers but at the same time, he wants different realizations of the same abstract data structure to count as the same virtual object. In a reply to his critics (CHALMERS 2019) he comes close to my virtual physicalism, but he still does not want to simply identify virtual objects with concrete processes in a particular computer something I am committed to.

I embedded a clock in my article. The code must run on a machine to become a virtual clock. For this reason, I prefer to treat my view as a variant of virtual realism and label it as *virtual physicalism*.

Are virtual objects g-real? If you followed my argument up to this point, the answer should be pretty straightforward: some are g-real, and some are f-fictional (fake). A virtual clock and a virtual account in my bank are g-real (genuine). A virtual car I am driving in a game such as *Gran Turismo 7* is f-fictional—it is a digital toy that I am playing with using a flat screen or virtual perception. In many cases, virtual objects come so close to their non-virtual counterparts that the window for social negotiation opens, and we may decide they are good enough to become g-real.

Are virtual objects o-fictional? In other words,do they belong to the ontological category of fiction? The short answer to this question is "no". Virtual objects are p-real and p-real objects are not o-fictional. The long answer to this question is that they may become intertwined with fiction in various ways. There are two variants of such connection that need to be distinguished. First, some fictions may contain descriptions of virtual objects. Virtual environments depicted in the classic book *Neuromancer* by William Gibson seem to be o-fictional and virtual simultaneously. Still, these cases are not really problematic as they come from our sloppy way of describing fiction. These environments are simply described as virtual. Virtual reality in Gibson's novel is "virtual" in the same sense as the physical objects described in the book are "physical".

The second connection between virtuality and o-fictional objects comes from video games. As I already mentioned, many virtual experiences contain narrative. This presented a dilemma for Chalmers, who hesitated on the ontological evaluation of cases such as killing a virtual Hitler in a game. The solution to this problem is to differentiate between two ontological layers of games. Following Jesper Juul (2011), we could say they are "half-real". On the level of simulation, the player deals with p-real virtual objects such as doors, dragons, and enemy soldiers. At this simulation level, they are digital toys we are playing with. Some of them, such as doors, can be good enough to be proclaimed by some authors as g-real (AARSETH 2007). Others remain to be toys.

The player uses digital toys to enact a fictional narrative on a fictional level. The digital toy dragon may become Smaug from *The Hobbit*, and the door may be seen as letting us into Bilbo's house. I will not discuss what exactly happens when we engage with fiction here, as it is a complex sub-

ject. Walton's make-believe approach seems convincing to many people, but the theory is not the only theory of fiction one can use. The picture I am presenting here is agnostic regarding a fiction theory of choice. In my view, virtual objects are never o-fictional. In cases where they are coupled with fictional narratives, the explanation of the whole experience demands some theory of fiction, but it does not affect the status of virtual objects. In these cases, virtual objects are simply used to represent fictional objects (whatever they are). The fact virtual objects may represent fictional objects does not make them fictional, just like the fact they can represent real objects (for example the Eiffel Tower) does not make them real. They are real because they consist of physical changes in a computer and not because they represent something in reality.

As I explained in the previous section, virtual objects are also not made-up or pretended. I can use all my imaginative power and dream of some future VR, but it does not mean that the virtual objects I imagined started to exist. They are only imagined objects that I described as virtual. Even though Orson Scott Card and Stanisław Lem had a much better imagination than me, they did not create virtual environments by vividly describing the technology.

Lastly, virtual objects can be (and often are) f-fictional because they often lack so many properties of their non-virtual counterparts that they can never be considered good enough to count as instantiations of the same type. They remain to be digital toys.

5. WHAT CAN BE SUCCESSFULLY VIRTUALIZED?

As we saw from my example of swords, toys may sometimes be made so well that they stop counting as toys and become instantiations of the type of objects they were initially designed to mimic. The short answer as to when a toy (virtual or non-virtual) becomes good enough is that it contains enough causal powers to be used instead of the genuine object in the same way it was typically used.

Needless to say, this depends greatly on the material they are made of. It is probably safe to say that a rubber sword will never become good enough to pass for a sword. On the surface, this severely limits what can be virtualized and leads to a serious threat to virtual physicalism that I suggest to call *the dismissive answer*. The reasoning goes like this: if virtual objects are

made from states in a computer, then even if we can get away with some cherry-picked examples, such as clocks and calculators, we will never be able to extend the virtual category to cover things such as doors, guns or hammers. Virtual clocks and calculators work precisely the same as their non-virtual counterparts, but you surely couldn't say the same about virtual guns. You can make a virtual experience as realistic as you want, but a weapon made from states in a computer will never hurt you.

I believe the dismissive answer is not entirely wrong, but I don't think it is fully correct either. Indeed, you cannot shoot a non-virtual target with a virtual gun, but you can shoot and eliminate something—a virtual target you shoot at. Virtual guns differ from regular toy guns in that toys are not designed to eliminate some provided toy enemies. So the problem with a virtual gun is not that it is not capable of firing but that it is capable of firing only in a very limited environment—a virtual space. I believe this limitation plays a much more significant role in our reluctance to call virtual objects "real" than the fact that they are made out of states in a computer.

To explain my reasoning, let me invoke a classic concept of the "magic circle" introduced by Johan Huizinga in his seminal *Homo Ludens* (1949). The magic circle is a metaphor that tries to explain the mechanism people use to shield the events that happen in play and games from their everyday life. The unwritten social agreement is that whatever happens in the game or play stays there. Play and games are embedded in reality but isolated from it. As pointed out by Huizinga, we often use literal boundaries, such as lines or circles, to indicate the boundary of fighting rings or football fields. Another way of creating magic circles is to make clear temporal boundaries—loudly announcing the start and the end of a game or a match. Games are causally neutered, which is why they feel inconsequential, non-serious, or, most importantly, not entirely real to us. They are inconsequential not because of their inherent nature but because we decided to take them out of the whole causal tapestry of our life.[7]

I suggest that a very similar attitude influences our perception of virtual objects. Their causal powers may be deceptively similar to their non-virtual counterparts, but they cannot cross the boundary of their environment. In fact, virtual objects that we can experience in current VR solutions are even more limited. Typically, they can only affect their virtual space—for example, you cannot take a gun from one VR game and use it in another. Moreo-

[7] Note that Juul's notion of "negotiable consequences" of games that I mentioned in footnote 3 is clearly related to the notion of the magic circle.

ver, they are also non-persistent. If I shoot a virtual target and reset the computer, the target will still be there. We could say that their magic circle is exceptionally narrow as they are neutered both in terms of space and time. Note that this suggestion explains why clocks and calculators feel different. Virtual clocks are not causally shielded from the rest of reality—they are synchronized with other clocks and can affect many devices outside of the simulation. Virtual calculators do not have to be causally connected to anything because everything there is to calculation is to have a particular internal structure.

On the surface, this sounds like a strong argument against any meaningful extension of virtual physicalism. Unlike games or play, virtual objects are causally isolated from the rest of reality because of the limited causal powers of their material and not only because of some social convention. Try as we might, we will never remove them from their causal prison. They are inherently local. It seems that the whole detour through Huizinga's concept only strengthened the dismissive answer.

I think there is still a way out for the virtual physicalist. Note that the notion of the magic circle works best only in idealized scenarios of pure play and pure games. In reality, we often allow some consequences of games to break through the causal boundary of the magic circle. The starkest example of this is the world of sports. Anyone who reads about the multimillion contracts of football players or who sees whole cities transformed just because they hold the Olympics would be somewhat surprised to learn that sport is inconsequential. There are numerous reasons sports escaped the magic circle so spectacularly, but I want to focus on two that are important for our discussion. First of all, sports stopped being a collection of isolated events and transformed into a persistent world of its own. The matches are often part of bigger tournaments, and the tournaments are now a part of national histories. Different disciplines are brought together to contribute to a country's overall score at the Olympics. Secondly, sports became firmly entrenched in the world's overall causal structure—a good performance can change the life of a player who gets a new contract, and many people fight over match results all too often.

I suggest that if virtual environments grew in a similar fashion, we would start to look at their ontology more kindly. Imagine a world with a persistent virtual environment that most people use every day, similar to the visions of William Gibson, Neil Stevenson, or Ernest Cline. In addition, imagine that this virtual world is causally connected to non-virtual reality in various

ways. People meet in virtual spaces to make binding decisions, watch concerts that they pay money for, and exchange virtual goods for non-virtual ones. The world contains 3D printers and 3D scanners that let us easily copy objects from non-virtual to virtual portions of the world. Some people can get into non-virtual prisons for violating laws in virtual environments or vice versa—their avatars can be temporarily suspended because of how they acted in non-virtual spaces. Consider a virtual gun that is used in this world. Indeed, it cannot kill anyone in the non-virtual space, but what if it could remove your avatar forever? What if, for some reason, you wouldn't be able to choose a new one and would effectively be banned from the virtual environment everybody spends a lot of time in? In this world, virtual guns wouldn't be treated as toy guns or virtual models of guns but as specialized guns that could be used in a particular environment, akin to guns that could be effective only underwater. We would treat them just like virtual money—as a new subtype of the same thing. These examples provide ground for the following thesis: virtual objects will be treated as instantiations of the same type even if they are causally bound to their environment, provided that the environment itself is *persistent* and *causally connected* to the rest of reality.

There are two critical responses to my description of virtual physicalism that I can envisage. Let me call them the *change of meaning response* and the *artifact response*. The change of meaning response points out that even if a community of speakers decided to call virtual Xs as Xs *simpliciter*, this does not tell us anything profound about ontology. What happened is that people decided to extend the meaning of the original word, creating an umbrella term that started to refer to two ontologically distinct categories of objects.

I don't think this is the case here, as I believe the change in word usage indicates an ontological reflection. To understand what I mean by this, think again about what happened to the word "money" when we started using virtual money. Did the meaning of the word change? Contrast it with the word "server". In the latter case, we took a word that was used to signify someone who serves, and we started to use it to signify a program that serves data to other connected programs. This is reflected in English dictionaries which separate the pre- and post-digital meanings of the term—something you won't find in the case of the "money" dictionary entry. The critical difference is that the invention of virtual money helped us to distill the meaning of money, not simply change it according to a whim or historical circumstances. It helped us understand what "being money" was all along. As long

as virtual money isn't isolated and contains enough causal connections with non-virtual parts of reality while remaining persistent, we won't question its nature. It is just a new sub-type of money suitable for a new type of environment.

Let me proceed to the second critical response that I can anticipate. The artifact response points out that all of the examples I have used up to this point are suspiciously similar—all concern artifacts. Why? Does this mean that natural kind objects, such as trees or apples, cannot be successfully virtualized?

The artifact response is a more difficult one. All the examples I used were indeed artifacts, and I acknowledge that it is not a coincidence. I agree with David Chalmers that the answer to the puzzle of successful virtualization has much in common with the philosophical idea of functionalism. In short, everything that can be fully described in functional terms can be successfully virtualized. The reason for it is rather apparent. Functional description abstracts from the stuff objects are made of and focuses only on the relations between their parts and the role the object plays in the causal network of the world. At least for some objects, we are pretty sure that whenever something is built the same way and functions in the same way, it simply belongs to the same type. Since artifacts can be reduced to their functional description, they are good candidates for successful virtualization.

What I want to add to this picture is an explanation of why artifacts are so easily reducible to their functional description. One of the differences between artifacts and natural kinds boils down to the direction of fit. In the case of artifacts, we start with some functional description in mind and then try to find material that can be used to embody this function. For this reason, anything that can employ a given function can be classified as an instance of a given object type. From this point of view, states in the machine can be seen as yet another material that may play the role we had in mind. Natural kinds are something we discover, and we study them to seek functions they can play. It is pretty common for scientists to find new applications and features, even in the case of the most mundane and well-studied natural kind objects. For this reason, creating a functional description of them always feels like a compromise—a model based on our current understanding of the original object. Treating this model as equal to the original comes at a high risk of losing information that may be important in the future. For this reason, it seems unlikely to me that virtual trees or virtual apples will ever be treated as instances of trees and apples.

The reader may notice that I was slightly cautious in the last sentence as the word "unlikely" leaves some leeway for the successful virtualization of natural kinds. I don't want to take a firm stance here because I can see at least one possible scenario where people may start to accept virtual trees and apples as trees and apples *simpliciter*. Imagine that, at some point, we achieve complete knowledge of trees—we are sure we know everything that can be known of them. As pointed out by David Chalmers (2022), our scientific theories are functional at heart, so this complete knowledge could now be seen as a fully functional description of trees. If we create a perfect virtual equivalent of trees, then at least in this future world, people could treat virtual trees as trees. There are two caveats to this futuristic scenario. The first one is quite obvious—it assumes an idealized vision of science with an endpoint, not to mention an attainable one. The second caveat is that for some philosophers, such as Fred Dretske (1999), even such a perfect functional description wouldn't suffice because virtual trees wouldn't have the same evolutionary history as non-virtual ones—in fact, they would have had no evolutionary history. I don't have a good reply to this concern, and it seems that people who share this intuition could never be convinced that virtual trees can be treated as trees *simpliciter*.

The ontological category I left for the end is the category of individuals. Let us return to the example that led Chalmers to some doubts. Can the virtual Hitler someone kills in a video game be treated as Hitler? I think that this particular example is unfortunate as it is very easy to conflate two problems that it poses. The first problem involves digital games and the fact they can contain a narrative filled with fictional objects. We dealt with this problem in section 4, so we know that I don't see it as an obstacle to virtual physicalism. Games containing narrative are Janus-faced. They have a simulation layer filled with virtual objects and a narrative layer that has to be analyzed separately using some theory of fiction.

The second problem is that the example used by Chalmers deals with fiction that refers to a real person. In this case, the question of whether you can kill a virtual Hitler is reminiscent of the question as to whether you or I could be resurrected in a virtual world, using some very detailed functional description. This reformulation makes the problem of virtual individuals very similar to current debates over the possibility of an upload or the question as to whether a randomly created atomic copy of me should count as me *simpliciter*. I don't think that virtual environments add anything new to the table here, and this can be seen as a good thing because once you set up your

mind concerning these older debates, the resolution for virtual objects should follow immediately.

6. CONCLUSION

Virtual objects are real because they consist of physical states in computers. We cannot access these states without using additional technology, such as flat displays or HMDs, but this does not make them less real than bacteria, DNA, or distant planets. They function as digital toys and do not require us to engage in pretend play or make-believe. As with non-virtual toys, they share many properties with objects they mimic. If they end up sharing enough properties and causal powers to be used instead of their non-virtual counterparts, they may be elevated to being instantiations of the same type of objects. The biggest obstacle for virtual objects to go through this "upgrade" process is the limitation of the causal powers of the computer states they are made of. For many virtual objects, this leads to isolation—they may be considered functionally equivalent to their non-virtual counterparts but only inside virtual environments. One way to diminish this inherent limitation is to make virtual environments important parts of reality. If they become persistent, widespread, and causally connected with non-virtual reality, the objects within them may become treated as genuine specialized versions of non-virtual objects, not just digital toys modeled on them. The focus on the functional similarity of virtual and non-virtual objects makes it easy to virtualize artifacts. Still, it leaves a question mark in the case of natural kind objects and individuals. Fortunately, this also embeds the discussions over virtual physicalism (or, more generally, realism) in the existing philosophical debate about the nature of these categories.

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WHAT IS REAL IN VIRTUAL REALITY?

Summary

The paper discusses the thesis of virtual realism presented by David Chalmers in his paper "The Virtual and the Real" (2017). Here, I suggest an even stronger version of the claim that I call "virtual physicalism". According to this view, virtual objects are not only real but physical as they are identical to the physical states of computers that run VR software. I suggest that virtual objects should have a similar ontological status to toys—they should be treated as models or simplifications of ordinary objects. Just like toys, virtual objects can sometimes be good enough to be used instead of their ordinary counterparts. In these cases, virtual objects start to be treated as instantiations of the same kind. In the last part of the paper, I use Johan Huizinga's notion of a "magic circle" to suggest how different objects could be successfully "virtualized", that is, moved into a digital realm while remaining objects of the same kind as their non-virtual counterparts. I suggest this will happen once virtual reality becomes permanent and causally connected with non-virtual reality. I finish the paper by looking at examples of natural kind objects and individuals, which seem to be the hardest cases for successful virtualization.

Keywords: virtual reality; ontology; virtual realism; virtual fictionalism; magic circle.

CO JEST RZECZYWISTE W RZECZYWISTOŚCI WIRTUALNEJ?

Streszczenie

W artykule omawiam tezę realizmu wirtualnego przedstawioną przez Davida Chalmersa w artykule “The Virtual and the Real” (2017). Sugeruję przyjęcie jeszcze mocniejszej tezy, którą nazywam „fizykalizmem wirtualnym”. Zgodnie z tym drugim poglądem obiekty wirtualne są obiektami fizykalnym w dosłownym sensie — są identyczne z fizycznymi stanami komputera, który uruchamia daną rzeczywistość wirtualną. Argumentuję, że obiekty wirtualne powinny mieć podobny status ontologiczny co zabawki — powinny być traktowane jako modele albo uproszczenia obiektów zwykłych. Tak samo jak zabawki, obiekty wirtualne mogą niekiedy być wystarczająco dobre, aby można było ich używać zamiast ich fizycznych odpowiedników. W tych przypadkach obiekty wirtualne mogą zostać potraktowane jako egzemplarze tego samego typu co ich nie-wirtualne odpowiedniki. W ostatniej części artykułu wykorzystuję pojęcie „magicznego kręgu” Johana Huizingi. Twierdzę, że niektóre przedmioty mogą zostać z powodzeniem zwirtualizowane, czyli przeniesione do świata cyfrowego, pozostając przy tym obiektami tego samego typu. Sugeruję, że będzie tak, gdy wirtualna rzeczywistość stanie się stałą i przyczynowo powiązaną częścią rzeczywistości nie-wirtualnej. Na zakończenie artykułu rozważam obiekty należące do gatunków naturalnych oraz indywidua, które, jak się wydaje, najtrudniej jest poddać skutecznej wirtualizacji.

Słowa kluczowe: rzeczywistość wirtualna; ontologia; realizm wirtualny; fikcjonalizm wirtualny; magiczny krąg.