If Simulation Hypothesis is Possible, Illusionism is False

Abstract

The simulation hypothesis is a view of the nature of reality, suggesting that our world is likely a computer simulation created by an advanced civilization. In contrast, illusionism is a theory about the nature of phenomenal consciousness, arguing that phenomenal consciousness is an illusion and can be fully explained in physical terms. I argue that if our world is a simulated construct, illusionism could be incorrect. Specifically, even if our phenomenal experiences can be explained as illusionism suggests, advanced civilizations could still create subjectively indistinguishable experiences by constructing a psychological system external to our world. Since we cannot determine which scenario we belong to, the illusionist explanation is not universally valid. Furthermore, I argue that even if the simulation hypothesis is impossible, illusionism remains flawed. Consequently, while the simulation hypothesis may function as a mere assumption, it exposes the inherent limitations of both illusionism and physicalism.

1 Introduction

The central thesis of this article is that if the simulation hypothesis is possible, then illusionism is false. To introduce this idea, we start with a fictional story titled "*Rube Goldberg Mind*":

> Grace, a curious girl, was fascinated by the mysteries of consciousness from an early age. Her passion led her to study psychology and cognitive science at university, where she encountered illusionism. This theory posits that subjective experiences can be fully explained by specific psychological processes. Grace adopted illusionism and dedicated her life to researching consciousness. Her groundbreaking experiments offered strong evidence for illusionism, establishing her as a prominent figure in cognitive science. Through her commitment, Grace inspired others to explore the mysteries

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of consciousness, leaving a lasting impact on the field and those she met throughout her journey.

Unbeknownst to Grace, she lives in a simulated world created by an advanced civilization. In this grander context, her beliefs about consciousness were accurate for everyone else, but ironically not for herself. She was an exception—her consciousness is realized by a brain-in-a-vat located outside the simulated world. As Grace continues her work, she remains unaware that she herself embodies the complexity and wonder of consciousness, a mystery that challenges the very theory she passionately advocated for.

If we understand how the advanced civilization can create distinct phenomenal experiences for Grace compared to others, we can refute illusionism with the following argument:

- **A1** *Simulation Anti-Illusionism*

  - **P1:** Our world could be a simulation created by an advanced civilization. In a possible simulation scenario, some people's phenomenal experiences are realized by components external to the simulation.

  - **P2:** Illusionists within the simulated world maintain that specific physical states and processes can fully explain their phenomenal experiences.

  - **C1:** Illusionists within the simulated world are incorrect. *(P1 & P2 → C1)*

  - **P3:** We are not sure whether we are in a simulation created by an advanced civilization.

  - **C2:** Illusionists are incorrect. *(C1 & P3 → C2)*

The specific design employed by the advanced civilization for the simulated universe or the overall simulation system causes Grace's phenomenal experiences to differ from those of others, thereby supporting premise **P1** of the argument. The general idea of this design is that Grace's phenomenal experiences are realized by a psychological system external to the simulated world, which has only a unidirectional causal connection to our world, receiving input solely.

This paper does not assume an explanatory gap between phenomenal and physical properties (Levine, 1983; Chalmers et al., 2003). Instead, it aligns with the claims of illusionists, presuming that psychological processes can effectively explain corresponding phenomenal experiences (e.g., Dennett, 1993; Humphrey, 2011; Pereboom, 2011; Frankish, 2016). Nonetheless, the conclusion demonstrates that even under this assumption, illusionism remains incorrect. (When I mention that a phenomenal experience can be explained by a quasi-phenomenal system, I am merely restating the illusionist's perspective.)

Theoretically, no internal revision of illusionism can effectively address this argument. Therefore, if the argument is correct, it would deal a critical blow to illusionism. This impact would also extend to a broader physicalist stance (e.g., Lamme, 2006; Mashour and Alkire, 2013; Dehaene and Changeux, 2011).

The initial version of the argument involves a limited number of philosophical concepts and is presented in a manner closer to common discussions, potentially making it more accessible and appealing to those outside the field of philosophy. Additionally, this paper can be considered as a contribution to technophilosophy (Chalmers, 2022), as it utilizes new technologies to contribute to addressing traditional philosophical issues.

2 Background

2.1 The Hard Problem of Consciousness

In the hard problem of consciousness, David Chalmers (Chalmers, 1995, 1997) distinguishes between access consciousness and phenomenal consciousness. Access consciousness refers to the ability to use information for cognitive processing, such as perception, attention, memory, and reasoning. It is a type of consciousness that enables us to respond to stimuli, make decisions, and report our mental states (e.g., Baars, 1993; Dehaene and Naccache, 2001). In contrast, phenomenal consciousness refers to subjective conscious experiences. It is a type of consciousness that involves first-person perspectives on conscious experiences, such as seeing red or feeling pain (e.g., Levine, 1983; Chalmers, 1997). Chalmers contends that even if we fully understand the neural processes giving rise to consciousness (access consciousness), we still cannot explain why these processes yield subjective experiences (phenomenal consciousness) (Chalmers, 1997).

Various positions exist in addressing the hard problem of consciousness. At one end of the spectrum lies radical realism, which considers consciousness as real and fundamental, encompassing various versions of panpsychism and neutral monism (e.g., Chalmers, 1997; Tononi, 2008). In contrast to radical realism is the position of illusionism, the focus of this paper. Also known as eliminativism, illusionism posits that physical processes can fully explain all aspects of the mind, with phenomenal consciousness being merely an illusion (Frankish, 2016).

2.2 Illusionism

The core of illusionism's explanation of phenomenal consciousness can be articulated using quasi-phenomenal properties (Frankish, 2016; Goff, 2019), which are non-

phenomenal, physical properties that are often mistakenly perceived as phenomenal due to introspection. For instance, a quasi-phenomenal red corresponds to an introspectable physical property (a psychological state) that triggers the phenomenal experience of red.

Quasi-phenomenal properties are characterized differently in specific illusionist theories (e.g., Dennett, 1993; Metzinger, 2004; Prinz, 2012; Graziano, 2022), but they all converge on the same core explanatory form: the subject's subjective perspective provides a partial and distorted view of the mind, leading us to mistake related physical properties for phenomenal ones. Therefore, illusionism contends that our phenomenal experiences can be fully explained by certain psychological states and processes.

In recent years, the science of consciousness has made substantial advances in both empirical research and computational modeling. Neuroscientists, by studying brain structure and function, have discovered that consciousness is closely connected to multiple neural networks in the brain (e.g., Koch et al., 2016; Mashour et al., 2020; Graziano et al., 2020; Seth and Bayne, 2022). These networks cooperate to generate what we call subjective experiences. At the same time, with the rapid advancement of neural modeling and artificial intelligence, an increasing number of studies suggest that computer models can emulate human thinking and cognitive processes to some extent (e.g., Hassabis et al., 2017; Dehaene et al., 2021). These findings imply that consciousness can be explained as an information-processing process, rather than a mysterious entity. Nonetheless, this paper argues that even if we know everything that can be known through the science of consciousness, illusionism is still flawed. To arrive at this conclusion, we need to introduce a seemingly unrelated topic: the simulation hypothesis.

2.3 The Simulation Hypothesis

According to the simulation hypothesis, our perceived physical reality may not be the ultimate reality; instead, it could be a computer simulation created by an advanced civilization. The idea that we are not in the ultimate reality has historical roots, with traces found in various civilizations and resembling several skeptical scenarios in the history of philosophy (Chalmers, 2022). The modern, classic version of the simulation hypothesis was proposed by Bostrom (2003), who used a trilemma to argue that we are almost certainly living in a computer simulation.

Many objections have been raised against the simulation hypothesis. Some argue that simulations are either technically or practically impossible, with supporting evidence could be categorized as simulation blockers (e.g., Ringel and Kovrizhin, 2017); while others rely on empirical evidence (physical or probabilistic) to claim that our world is not a simulation, with this evidence being categorized as non-simulation signs (e.g., Beane et al., 2014). However, these objections are not decisive, and the debate continues (e.g.,

Chalmers, 2022; Tegmark, 2015; Chalmers, 2017).

This paper does not rely on Bostrom's strong version of the hypothesis; instead, it emphasizes the weaker version that highlights the possibility that our world might be a computer simulation. I will later demonstrate that even this weak version is unnecessary.

If we are indeed a computer simulation created by an advanced civilization, then realms external to our world exist, and our conscious experiences may not be solely determined by things within the world. This possibility challenges the traditional physicalist view. In the next section, I will elaborate on some possible "universe design schemes" that counter the concept of illusionism.

3   Constructing the Simulation Universe

From the perspective of an advanced civilization, I will describe some potential "universe design schemes" for their simulation projects. I refer to such a design scheme as a simulation design. The project executors within these advanced civilizations are modern versions of Cartesian demons, whose purpose is to falsify the views of illusionists in the simulated world through surreptitious means.

3.1   Inside the Simulated World

Within a naturalistic framework, everything in our causally closed world can be explained by a comprehensive account of its physical constituents and their interactions. In physicalist sense, this implies that all facts in the world are ultimately determined by physical facts. Specifically, if we were to grasp the ultimate psychophysical laws (Davidson, 2001), we could specify which phenomenal property is realized by any kind of psychological state, and which types of psychological states can realize any phenomenal property. See Fig. 1.

I term this world the simulated world and refer to the organisms that obtain their subjective experiences in the aforementioned manner as Type-A creatures. It should be noted that due to the separation of access and phenomenal consciousness, both illusionists and their opponents presuppose the existence of a quasi-phenomenal system, which is the physical side of the psychophysical laws. Their point of divergence lies in whether the corresponding phenomenal side can be fully explained by the physical side.

3.2   Simulation Design 1

For demons seeking to challenge illusionists, their objective is to make the illusionists' claims about phenomenal properties false through some means. That is, the demons
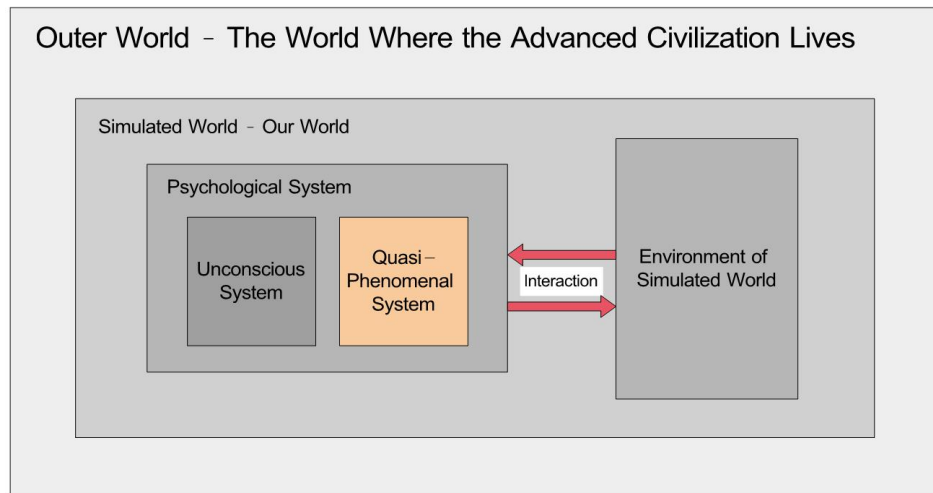
Figure 1: *The simulated world / Our world.* This figure illustrates the causal interaction or two-way information flow between a psychological system and the environment, situated within the broader context of our world as a simulation created by an advanced civilization. The orange part in the figure, as a component of the overall psychological system, represents the mechanism of our subjective experiences, which illusionists refer to as a quasi-phenomenal system. In this case, I assume that the explanation of illusionism is correct; that is, these psychological states and processes can fully explain or eliminate phenomenal experiences in the simulated world. (The psychological system in the figure can refer to either the psychological state of a single individual or the sum of all human psychological states. These distinctions do not have a substantial impact, and the same applies later.)

must render the quasi-phenomenal system unable to fully explain the corresponding phenomenal experiences.

Given the resources available outside the simulated world, the demons can construct a psychological system external to the simulation, which mirrors the psychological system of humans in the simulated world. This system receives the same input as its prototype, but its output does not flow back to the simulated world. In other words, the demons have constructed one or more brains-in-a-vat (BIVs) outside of the simulated world. I refer to them as external brains-in-a-vat or external BIVs. See Fig. 2.

These external BIVs can be realized using different materials or substrates. They could be physical objects, such as brains floating in a nutrient solution as depicted in science fiction works. Alternatively, they might be machine brains composed of electronic components. In the most economical version, they could simply be programs running on a supercomputer.

The external BIVs are mirrors of their original versions, meaning that they also contain the same quasi-phenomenal system. Thus, according to the illusionist theories, they also have phenomenal consciousness. I refer to the organisms that obtain subjective experiences through these external BIVs as Type-B creatures. Since Type-A and Type-B
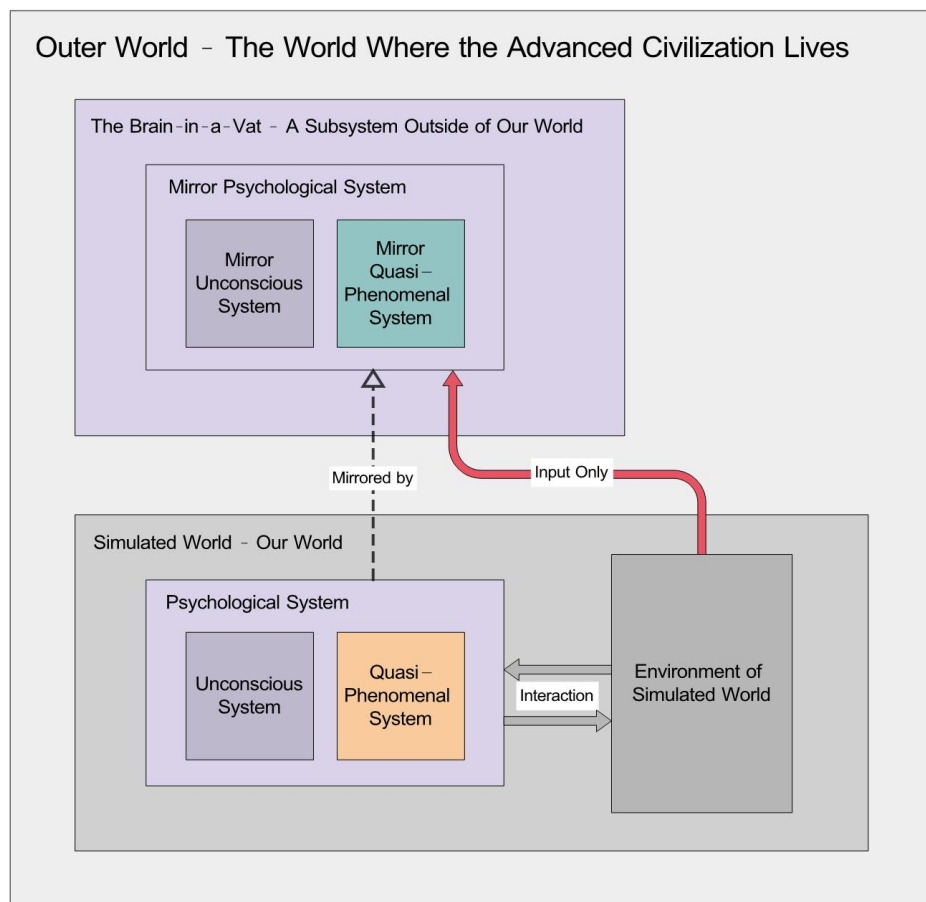
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Figure 2: *Simulation Design 1.* This figure illustrates a potential new type of creature (referred to as Type-B creature). These intricate, artificially created beings are the product of an advanced civilization and possess a subjective consciousness similar to our own, yet based on a different physical foundation. To create such a creature, a civilization needs to select an original creature in the simulated world (i.e., a Type-A creature) and construct a subsystem that mirrors its psychological system outside the simulated world. This subsystem, which is conceptually similar to a brain-in-a-vat, unidirectionally receives input from the simulated world.
The mirror phenomenal system within the brain-in-a-vat generates the corresponding subjective experiences for the Type-B creature. The overall systems involved in the Type-B creature are colored in purple, while the mechanism of its subjective consciousness is represented in blue. Since creatures within the simulated world cannot determine whether they are Type-A or Type-B, this "universe design" challenges the validity of illusionism.)

creatures have the same quasi-phenomenal systems, they cannot distinguish their identities from a first-person perspective. This forms the central supporting point of this paper.

Type-B creatures are peculiar because their "souls" and "bodies" are located in separate places. Their "souls" are "more artificial" objects external to the simulated world, while their "bodies" are the entirety of Type-A creatures. This may seem incredible: if Type-A creatures are a part or "subset" of Type-B creatures, would Type-B creatures

have a double consciousness? However, once we view consciousness as an information processing process rather than a mysterious entity, the dissonance can be diminished. Illusionism can play a further explanatory role: phenomenal consciousness arises from a partial and distorted perspective, and it is due to this perspective that we misinterpret it as a mysterious entity.

3.3 Simulation Design 2

The simulation design provided earlier is sufficient to support the core thesis of this paper. However, to demonstrate the appeal of this approach, I have considered more complex situations where the demons are not satisfied with the current "Rube Goldberg Machine". They made more attempts due to their preference for the bizarre, and we can also observe a clearer separation between Type-A and Type-B creatures from their pranks. (This subsection is supplementary to the main argument and can be skipped)

The demons designed some add-ons for Type-B creatures that connect to their external BIV and receive input from it, but the output of these add-ons does not flow anywhere outside of themselves. These add-ons are capable of influencing phenomenal experiences in the design. Therefore, when they are added to the external BIVs, they can work together with the original quasi-phenomenal system to alter the phenomenal experiences of those Type-B creatures. Add-ons can have many different versions. For example, add-ons can 1) slightly change Type-B creatures' perception of color, or 2) receive input from the external environment in the original simulation system, making Type-B creatures' phenomenal experiences responsive to subtle environmental features. See Fig. 3.

Within Simulation Design 2, Type-B creatures have been trapped in a Stalinesque-mode deception (Dennett, 1993) from the outset, with their phenomenal data subject to tampering at any moment, and they are unable to detect it. These add-ons might seem full of loopholes, but they are quite secure and can even be designed arbitrarily based on the designers' whims: for example, Type-B creatures may experience more intense color perceptions or weaker taste and touch sensations.

To understand this, we can conceive of an ultimate psychophysical bridging law, deduced from the ultimate theory of consciousness in the simulated world (possibly with some addition of other physical facts). These bridging laws take the form of $P \iff Q$ (or $Pi \iff Qi$), where P represents a brain state, and Q is the corresponding phenomenal experience. These connection laws can accurately describe the situation of Type-A creatures. However, for Type-B creatures, the demons can arbitrarily tamper with the phenomenal side of the connection laws. I use A to represent such modifications, so the actual situation of Type-B creatures is $P \iff (Q + A)$.
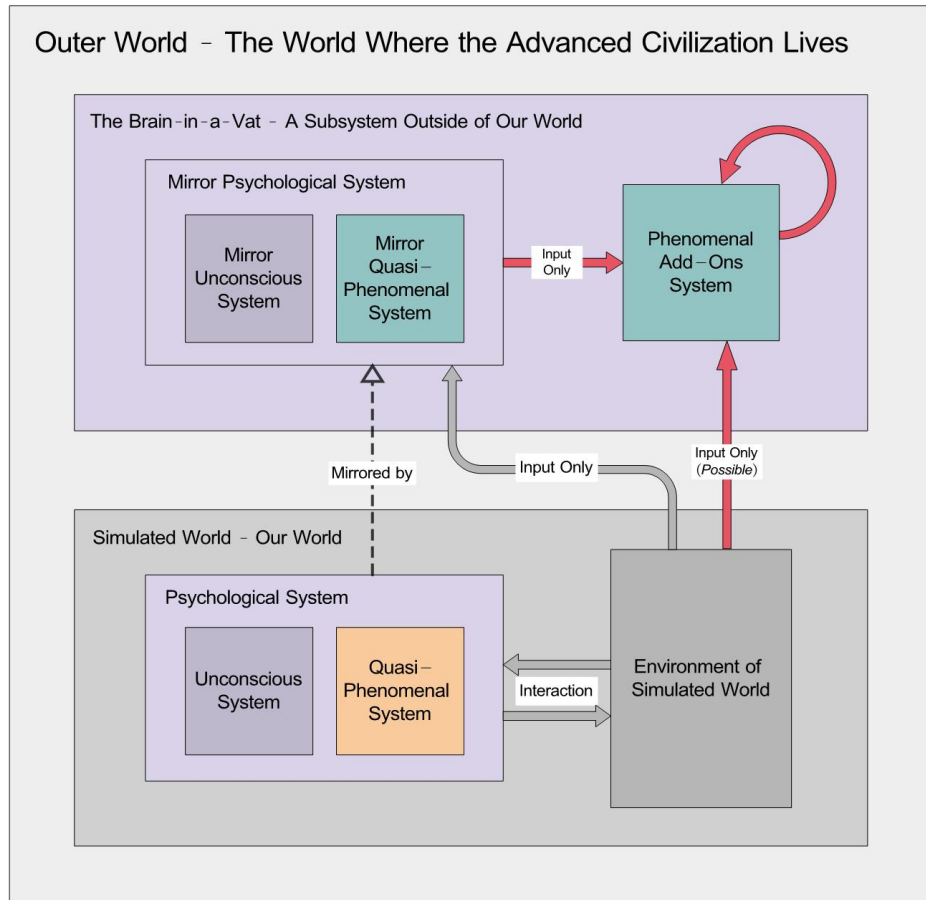
Figure 3: *Simulation Design 2.* This figure presents a more refined design by the advanced civilization: Simulation Design 2, which can more effectively distinguish the consciousness of Type-A creatures from that of Type-B creatures.
Specifically, Simulation Design 2 incorporates add-ons to the external psychological system; these add-ons are supplementary quasi-phenomenal parts that can alter the phenomenal experiences of Type-B creatures without affecting their behavior.

Since psychophysical laws can only be established through experimentation, the demons' tricks can never be discovered by Type-B creatures. This might seem counterintuitive. One might think that if Q is not equal to $(Q + A)$, then they must cause some subjective difference. As a result, it seems that Type-B creatures could report these differences. However, if we correctly understand the meaning of the simulation designs described earlier, we can see that reporting is impossible: reporting as behavior is physical and therefore belongs to the physical realm, while the phenomenal side only contains "pure" subjective experiences.

The fundamental reason the demons' tricks succeed is that the difference between Q and $(Q+A)$ arises from the phenomenal add-ons in Simulation Design 2; however, these add-ons do not transmit information back to the BIV or the simulated world. Therefore,

A cannot have any impact on the simulated world. The existence of Type-A creatures precisely confirms this point: Type-B creatures **actually did not** discover any tricks, because Type-A creatures are precisely a part of Type-B creatures, and these tricks do not exist for Type-A creatures.

At this point, the demons' architectural work is essentially complete. We can see that the subjective experiences of Type-B creatures come from the external BIVs outside the simulated world, so their quasi-phenomenal system cannot fully explain their phenomenal experiences.

4 Simulation Anti-Illusionism and Intuition Strengthening

Now I restate the Simulation Anti-Illusionism Argument introduced at the beginning, which utilizes an approach called the Simulation Riposte (Harrison, 1966, referred to from Chalmers, 2022):

- **A1** *Simulation Anti-Illusionism*

  - **P1:** Our world could be a simulation created by an advanced civilization. In a possible simulation scenario, some people's phenomenal experiences are realized by components external to the simulation.

  - **P2:** Illusionists within the simulated world maintain that specific physical states and processes can fully explain their phenomenal experiences.

  - **C1:** Illusionists within the simulated world are incorrect. *(P1 & P2 → C1)*

  - **P3:** We are not sure whether we are in a simulation created by an advanced civilization.

  - **C2:** Illusionists are incorrect. *(C1 & P3 → C2)*

Based on the simulation designs presented earlier, we can see that **P1** is true. Let's unfold the opening story from a third-person perspective to reinforce this argument intuitively:

> The devil (or advanced civilization) created an ordinary simulated world. However, to satisfy their curiosity, they introduced a twist into this universe by adding a single Type-B creature—Grace. Her phenomenal experiences are realized by an external brain-in-a-vat, a realm separate from the simulated world itself. Unaware of her true nature, Grace continued her pursuit of understanding consciousness, inadvertently exploring the very divide that separated her from the rest of her simulated counterparts. The

devil, observing from a distance, remained fascinated by the outcomes of this unique experiment and the intricate interplay between Grace and the illusory world she inhabited.

5   Is the Simulation Hypothesis Necessary?

The simulation anti-illusionism argument relies on the simulation hypothesis, which emphasizes the possibility that our world is a simulation created by an advanced civilization. However, is the simulation hypothesis truly necessary? In other words, if it were **impossible** for our world to be a simulation created by an advanced civilization, would the previous argument still work? This paper provides an affirmative answer and presents three different lines of reasoning involving: the conceivability principle, simulation capabilities, and the generalization of hierarchical structure.

5.1   Conceivability Principle

We can introduce the conceivability principle as a premise to replace the simulation hypothesis. That is, if a simulated world is conceivable, then illusionism is false.

According to the conceivability principle, if we can imagine a situation in our minds, then that situation is potentially real (Kripke, 1980; Chalmers, 2012). For instance, even if a time-travel device is impossible under existing physical theories, if we can imagine its existence, then it may exist in other possible worlds with different physics.

The conceivability of philosophical zombies is a central issue in the contemporary debate in philosophy of mind (Chalmers, 1997). A philosophical zombie refers to an entity that behaves and appears externally identical to a human being but lacks conscious experience. If the existence of philosophical zombies is possible, then the physicalist view is incorrect, as conscious experience would not be a necessary outcome of behavior and external appearance but an independent phenomenon. However, the conceivability of philosophical zombies is highly controversial (e.g., Dennett, 1993; Kirk, 2005; Carruth, 2016). The argument presented in this section also centers on conceivability, but focuses on the conceivability of simulated worlds rather than philosophical zombies.

Although we may assume that the simulation hypothesis is impossible in the real world, this impossibility might be limited only to the physical level. The simulation hypothesis is still possible in terms of conceivability, as there might be possible worlds with different physical laws and configurations. This is already a fairly reliable assumption, which can replace the simulation hypothesis and form a more general anti-illusionism argument as follows:

- **A2** *Conceivability-Based Anti-Illusionism*

  - **P1:** It is conceivable that there exists a world similar to ours in many aspects, which is a simulation created by an advanced civilization, where human phenomenal experiences are realized by a system outside their world.

  - **C1:** Therefore, there exists a possible world W, which is a simulation created by an advanced civilization, where some human phenomenal experiences are realized by a psychological system outside their world. *(P1 → C1)*

  - **P3:** According to illusionism, for any world that satisfies appropriate conditions, there exist specific physical states and processes that can fully explain the phenomenal experiences of its inhabitants.

  - **C2:** Possible world W is a counterexample to illusionism, thus illusionism is false. *(C1 & P2 → C2)*

In this argument, I have given illusionists a stronger stance **P3** compared to argument **A1**, so they can oppose this stance to reject the argument. That is to say, they may emphasize that illusionism only applies to some possible worlds; for example, the real world or worlds that cannot rule out simulation possibilities. However, this requirement would make illusionism appear quite peculiar: illusionists typically specify a series of psychological states or processes and believe that they can explain phenomenal experiences through these elements. But the states of the world where the subject resides are clearly not among these elements. Consequently, if an illusionist must defend their position by limiting the scope of possible worlds, they should no longer be labeled as illusionists.

5.2 Simulation Capabilities

Arguments based on simulation posibilities (**A1**) and those based on conceivability (**A2**) both follow the core idea that if we can ensure a possible world with a specific simulation design in some way, we can then refute illusionism based on that possible world. In the first argument, we rely on the possibilities that the real world is a simulation, while in the conceivability-based argument, we rely on the conceivability of a specific simulated world. Now, we can shift our focus to another method of ensuring the relevant possible world: the capability-based method.

The simulation hypothesis has recently gained attention, partly due to its portrayal in popular cultures that explore the idea of simulated worlds. These works not only stimulate the audience's imagination but also promote interest in the simulation hypothesis and its potential impacts. In scientific research, numerical simulations have become a common method. Fields such as physics, climate science, and biology all utilize simu-

lation techniques to study phenomena and make predictions. In recent years, computer simulations have become more deeply integrated into our daily lives, from the physics engines in video games to real-time communication platforms in virtual reality. We have already created numerous vast simulated worlds where millions of players can interact. Furthermore, the concept of mind uploading has captured the interest of scientists and science fiction enthusiasts. This concept envisions uploading human consciousness to the digital realm, allowing it to exist indefinitely and live in a world composed of bits.

If we believe that we can create simulated worlds, then we can provide support for the existence possibility of a world with the aforementioned simulation design, as creators rather than actors. In this way, we can construct an argument similar to the one in the conceivability section:

- **A3** *Capability-Based Anti-Illusionism*

  ○ **P1:** In the future, we will have the ability to create some simulated worlds according to our wishes.

  ○ **C1:** We can create a world W with a specific simulation design, where some human phenomenal experiences are realized by a psychological system outside their world. *(P1 → C1)*

  ○ **P3:** According to illusionism, for any world that satisfies appropriate conditions, there exist specific physical states and processes that can fully explain the phenomenal experiences of its inhabitants.

  ○ **C2:** Possible world W is a counterexample to illusionism, thus illusionism is false. *(C1 & P2 → C2)*

5.3 Hierarchical Generalization

The previous approaches all aim to provide possible worlds containing specific simulation designs. However, there is another line of thought designed for illusionists who have already accepted the argument based on the simulation hypothesis (**A1**) but refuse to accept the truth of the simulation hypothesis itself.

In short, it requires illusionists to provide universal evidence to demonstrate that our world will not have a multi-layered structure similar to the aforementioned simulation design in any way, whether in the form of an advanced civilization simulating or not. Since we can construct similar anti-illusionist arguments for any world isomorphic or structurally similar to those simulated worlds, this requirement is reasonable. The specific argument is as follows:

- **A4** *Generalization-Based Anti-Illusionism*

    - **P1:** The simulation designs presented earlier demonstrate a hierarchical structure of a world, and there may exist a non-simulated world W with a similar structure that is otherwise similar to our world.

    - **P2:** Illusionists in world W believe that, in their world, specific physical states and processes can fully explain the phenomenal experiences of its inhabitants.

    - **C1:** Similar to the case of the simulated design, illusionists in world W are mistaken. *(P1 & P2 → C1)*

    - **P3:** We cannot find decisive evidence that our world is not W.

    - **C2:** Illusionists are mistaken. *(C1 & P3 → C2)*

In the argument, the simulation hypothesis is given as an instance within its specific structural category, and we require illusionists to provide evidence that no members of this category exist. If illusionists cannot do this, then we can specify any possible member that cannot be proven (to be non-existent) and use it to construct an argument similar to the simulation anti-illusionism (**A1**).

6 Broader Philosophical Implications

This section discusses the philosophical implications of the arguments presented in this paper in two aspects: 1) the position of the hard problem of consciousness; 2) the epochal significance of philosophical arguments based on the simulation hypothesis.

6.1 Positioning the Hard Problem of Consciousness

In consciousness research, phenomenal data refers to our subjective experiences or inner feelings, which are the "qualia" or "what it is like to be" aspect of consciousness (Nagel, 1974). We obtain phenomenal data through introspection, but introspection itself is a psychological process. As a result, it involves both first-person and third-person perspectives. This overlap sets the stage for illusionism and more broadly physicalism, making introspection the primary battleground for the philosophy of mind. However, this paper does not engage in the debate surrounding introspection. Instead, it maintains a neutral stance and tentatively supports the illusionist perspective. Nevertheless, the conclusions of these arguments indicate that illusionism is incorrect, even without presupposing the simulation hypothesis.

This paper proposes that the "refraction effect" generated by the first-person perspective cannot fully explain the distinction between phenomenal and physical properties. The uniqueness of phenomenal properties cannot be completely resolved by concrete

consciousness science research. Instead, phenomenal consciousness might be connected to a more extensive metaphysical understanding of the world's structure (e.g., Chalmers, 1997; Tononi, 2008; Oizumi et al., 2014).

6.2 Significance of Philosophical Arguments Based on the Simulation Hypothesis

The interaction between humans and the environment has undergone a transformation, from merely being natural explorers to active world creators (e.g., Harari, 2014). In recent decades, rapid advancements in computer technology, the internet, and artificial intelligence have further reinforced our roles as creators and shapers of the world around us (e.g., Tegmark, 2018). The increasing number of believers in the simulation hypothesis may be closely linked to the belief that we could become the "advanced civilization" described in the hypothesis: We find ourselves with unprecedented control in certain aspects of reality, particularly in our own creations, granting us the ability to customize and shape them according to personal desires.

Therefore, employing simulation technology to tackle classical philosophical problems is not merely an eccentric yet inspiring thought experiment. Instead, the simulation hypothesis carries broader implications and highlights new directions for philosophical exploration: In the realm of creation, the world's complexity demands our attention; related philosophical issues bear significant practical implications for both now and the future. For instance, even if we are fortunate enough to reside in a primitive, unsimulated world, these questions remain vital for those who wish to inhabit simulated worlds or the simulated intelligent beings we may create.

7 Conclusion

This paper challenges illusionism by analyzing anti-illusionist arguments based on the simulation hypothesis. I argue that illusionism is flawed due to the simulation hypothesis, even without presupposing the possibility of the hypothesis. These arguments provide us with a new way to investigate phenomenal consciousness. Concurrently, this paper highlights the need for a broader exploration of the world's structure in the creative dimension, suggesting we expand our perspectives and theoretical considerations across various fields. This is particularly crucial for us at a pivotal moment in history.

References

Levine, J. (1983). Materialism and qualia: The explanatory gap. *Pacific philosophical quarterly*, *64*(4), 354–361.

Chalmers, D. J. et al. (2003). Consciousness and its place in nature. *Blackwell guide to the philosophy of mind*, 102–142.

Dennett, D. C. (1993). *Consciousness explained*. Penguin uk.

Humphrey, N. (2011). Soul dust. *Soul dust*. Princeton University Press.

Pereboom, D. (2011). *Consciousness and the prospects of physicalism*. Oxford University Press.

Frankish, K. (2016). Illusionism as a theory of consciousness. *Journal of Consciousness Studies*, *23*(11-12), 11–39.

Lamme, V. A. (2006). Towards a true neural stance on consciousness. *Trends in cognitive sciences*, *10*(11), 494–501.

Mashour, G. A., & Alkire, M. T. (2013). Evolution of consciousness: Phylogeny, ontogeny, and emergence from general anesthesia. *Proceedings of the National Academy of Sciences*, *110*(supplement_2), 10357–10364.

Dehaene, S., & Changeux, J.-P. (2011). Experimental and theoretical approaches to conscious processing. *Neuron*, *70*(2), 200–227.

Chalmers, D. J. (2022). *Reality+: Virtual worlds and the problems of philosophy*. Penguin UK.

Chalmers, D. J. (1995). Facing up to the problem of consciousness. *Journal of consciousness studies*, *2*(3), 200–219.

Chalmers, D. J. (1997). *The conscious mind: In search of a fundamental theory*. Oxford Paperbacks.

Baars, B. J. (1993). *A cognitive theory of consciousness*. Cambridge University Press.

Dehaene, S., & Naccache, L. (2001). Towards a cognitive neuroscience of consciousness: Basic evidence and a workspace framework. *Cognition*, *79*(1-2), 1–37.

Tononi, G. (2008). Consciousness as integrated information: A provisional manifesto. *The Biological Bulletin*, *215*(3), 216–242.

Goff, P. (2019). *Galileo's error: Foundations for a new science of consciousness*. Vintage.

Metzinger, T. (2004). *Being no one: The self-model theory of subjectivity*. mit Press.

Prinz, J. (2012). *The conscious brain*. Oxford University Press.

Graziano, M. S. (2022). A conceptual framework for consciousness. *Proceedings of the National Academy of Sciences*, *119*(18), e2116933119.

Koch, C., Massimini, M., Boly, M., & Tononi, G. (2016). Neural correlates of consciousness: Progress and problems. *Nature Reviews Neuroscience*, *17*(5), 307–321.

Mashour, G. A., Roelfsema, P., Changeux, J.-P., & Dehaene, S. (2020). Conscious processing and the global neuronal workspace hypothesis. *Neuron*, *105*(5), 776–798.

Graziano, M. S., Guterstam, A., Bio, B. J., & Wilterson, A. I. (2020). Toward a standard model of consciousness: Reconciling the attention schema, global workspace, higher-order thought, and illusionist theories. *Cognitive Neuropsychology*, *37*(3-4), 155–172.

Seth, A. K., & Bayne, T. (2022). Theories of consciousness. *Nature Reviews Neuroscience*, *23*(7), 439–452.

Hassabis, D., Kumaran, D., Summerfield, C., & Botvinick, M. (2017). Neuroscience-inspired artificial intelligence. *Neuron*, *95*(2), 245–258.

Dehaene, S., Lau, H., & Kouider, S. (2021). What is consciousness, and could machines have it? *Robotics, AI, and Humanity: Science, Ethics, and Policy*, 43–56.

Bostrom, N. (2003). Are we living in a computer simulation? *The philosophical quarterly*, *53*(211), 243–255.

Ringel, Z., & Kovrizhin, D. L. (2017). Quantized gravitational responses, the sign problem, and quantum complexity. *Science advances*, *3*(9), e1701758.

Beane, S. R., Davoudi, Z., & J. Savage, M. (2014). Constraints on the universe as a numerical simulation. *The European Physical Journal A*, *50*(9), 148.

Tegmark, M. (2015). *Our mathematical universe: My quest for the ultimate nature of reality*. Vintage.

Chalmers, D. J. (2017). The virtual and the real. *Disputatio: International Journal of Philosophy*, *9*(46).

Davidson, D. (2001). *Inquiries into truth and interpretation: Philosophical essays volume 2*. Clarendon Press.

Harrison, J. (1966). A philosopher's nightmare or the ghost not laid. *Proceedings of the Aristotelian Society*, *67*, 179–188.

Kripke, S. A. (1980). *Naming and necessity*. Harvard University Press.

Chalmers, D. J. (2012). *Constructing the world*. OUP Oxford.

Kirk, R. (2005). *Zombies and consciousness*. Clarendon Press.

Carruth, A. (2016). Powerful qualities, zombies and inconceivability. *The Philosophical Quarterly*, *66*(262), 25–46.

Nagel, T. (1974). What is it like to be a bat? *The philosophical review*, *83*(4), 435–450.

Oizumi, M., Albantakis, L., & Tononi, G. (2014). From the phenomenology to the mechanisms of consciousness: Integrated information theory 3.0. *PLoS computational biology*, *10*(5), e1003588.

Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. Random House.

511 Tegmark, M. (2018). *Life 3.0: Being human in the age of artificial intelligence*.
512   Vintage.