Essay

The Many Worlds of Dreams: Exploring Connections between Le Guin's *The Lathe of Heaven* and Quantum Multiverse Theories

Brandon Le *

Posted Date: 29 April 2025

doi: 10.20944/preprints202504.2446.v1

Keywords: Many-Worlds Interpretation; Quantum Mechanics; Multiverse; Wavefunction Collapse; Copenhagen Interpretation; Philosophy of Science; Science Fiction; Quantum Measurement Problem; Quantum Suicide; Taoism; Utilitarianism; Consciousness

 doi:10.20944/preprints202504.2446.v1

Article

The Many Worlds of Dreams: Exploring Connections between Le Guin's *The Lathe of Heaven* and Quantum Multiverse Theories

Brandon Le

Department of Physics, University of Virginia, USA; sxh3qf@virginia.edu

Abstract: This paper examines the intersection of Ursula K. Le Guin's *The Lathe of Heaven* and the many-worlds interpretation of quantum mechanics, reimagining reality-changing dreams as shifts between preexisting parallel worlds. By framing Le Guin's philosophical debate between Taoism and Utilitarianism in terms of the Copenhagen and many-worlds interpretations, the paper investigates profound questions about identity, human control, and the nature of reality. In addition, this perspective connects Le Guin's narrative to modern quantum theories and thought experiments like quantum suicide and offers fresh insights into the quantum measurement problem and the implications of wavefunction collapse. Ultimately, this paper shows how *The Lathe of Heaven* bridges science fiction, physics, and philosophy, presenting a compelling framework for understanding humanity's existence and its place in an interconnected multiverse.

Keywords: many-worlds interpretation; quantum mechanics; multiverse; wavefunction collapse; Copenhagen interpretation; philosophy of science; science fiction; quantum measurement problem; quantum suicide; taoism; utilitarianism; consciousness

---

1. Introduction

What if your dreams didn't just fade into memory upon waking but instead transported you into an entirely new world? This is one of the main questions Ursula K. Le Guin explores in her 1971 novel *The Lathe of Heaven*. The protagonist of this novel is George Orr, an ordinary man with one extraordinary ability: to dream "effectively." Orr's effective dreams appear to reshape reality and plunge him into alternate worlds in which he alone possesses a "double memory" of old and new realities, leaving him uniquely burdened by the consequences of his dreams. His attempts to suppress his ability land him in psychiatric treatment with Dr. William Haber, who quickly discovers that he shares Orr's double memory after inducing Orr's effective dreams under hypnotherapy. Recognizing the potential power of these effective dreams, Haber begins using Orr to try to "improve" the world by eliminating overpopulation, achieving world peace, and eradicating racism. However, his attempts always lead to unforeseen and often catastrophic consequences. Meanwhile, Orr longs to be free of his ability, believing that neither he nor Haber has the right to change reality.

Beyond a discussion of control, morality, and human nature, Le Guin's novel offers a profound exploration of the nature of reality itself. Her depiction of Orr's dreams resonates with the many-worlds interpretation (MWI) of quantum mechanics, which postulates that every possible outcome of every possible event is manifested in different parallel realities. By delving into Orr's struggles, *The Lathe of Heaven* anticipates many of the contemporary philosophical debates tied to the role of consciousness and the ethical implications of inhabiting a universe composed of many worlds.

This paper examines *The Lathe of Heaven* through the lens of MWI, reframing Orr's effective dreams not as acts of creation but as journeys through different branches of a preexisting universal wavefunction. I will consider the competing interpretations of quantum mechanics—the Copenhagen and many-worlds interpretations—and how the pictures of reality they paint are exemplified and challenged in Le Guin's work through the actions and ideals of different characters. As I explore

 doi:10.20944/preprints202504.2446.v1

the interplay between physics and fiction, I will confront bigger questions about identity, continuity, and agency in an infinitely-branching universe. How do MWI and *The Lathe of Heaven* challenge our intuitive belief in a single, objective reality? To what extent does Le Guin's narrative not only explore philosophies like Taoism and Utilitarianism but also ideas in physics like wavefunction collapse and the quantum suicide experiment? In this paper, I will explore how *The Lathe of Heaven* and MWI intertwine with and extend one another, providing insights into mysteries of the human consciousness and the elusive nature of reality.

2. Quantum Mechanics

Quantum mechanics is the study of the very small, describing matter on an atomic scale ([1], 1-1). What makes quantum mechanics interesting to consider in relation to *The Lathe of Heaven* is the strange, counterintuitive behaviour of matter on this scale. Quantum objects do not behave like balls, or clouds, or springs, or water, or anything we ever experience in daily life. To demonstrate this contrast between classical and quantum physics, I will use the example of a single-particle system. Then, I will detail the measurement problem and the Copenhagen interpretation of quantum mechanics. Finally, I will cover the many-worlds interpretation in more detail: its history and what it entails.

2.1. From Classical to Quantum

Every physicist's goal is to determine the state of a system at any given time. For a simple single-particle system, in classical physics (the physics of everyday life), the system's state can be completely described by determining the location of the particle at all times. If a physicist knows all of the forces acting on the particle, they can use Newton's second law to accurately predict how the particle will move.[1] In classical physics, Newton's second law is the all-important equation that can be used to completely determine a system's state.

In quantum mechanics, however, the approach is very different. The state of a quantum particle is described by its *wavefunction*, which I will denote as $|\psi\rangle$ and whose physical meaning will be explained later. While physicists use Newton's second law to determine the evolution of the state of a classical particle, in quantum mechanics, physicists determine the wavefunction of a particle using Schrödinger's equation. Although the details of Schrödinger's equation are not important for the purposes of this paper, it is important to note that the approach to determining the state of a quantum system is very different from the classical approach. This is because the quantum world is fundamentally different from the everyday one, and understanding how it is different is critical to the comparative analysis I will make in future sections.

One aspect of quantum mechanics that is particularly unusual is its probabilistic nature, a property that is built into its very structure. Consider some region of space V, which can be thought of as some volume of three-dimensional space. A postulate of quantum mechanics is that the *probability* of finding the particle in the region of space V at time t, which I will denote as $\mathcal{P}_V(t)$, is

$$\mathcal{P}_V(t) = \int_V |\psi(\mathbf{r}, t)|^2 d^3\mathbf{r}, \tag{2.1}$$

a volumetric integral over the square of the modulus of the wavefunction (Griffiths and Schroeter 131).[2] Although the mathematical details of this are not important for the purposes of this paper, it is critical to note that, on the surface, quantum mechanics is inherently *probabilistic*. In classical mechanics, once a physicist has determined the state of a single-particle system, they will know exactly where that particle will be at all future times. However, in quantum mechanics, even if a physicist

[1] There also exist other equivalent formulations of classical mechanics, such as Lagrangian and Hamiltonian mechanics, which do not rely on Newton's laws, but they are not relevant to this paper.

[2] Here, the assumption is that the wavefunction is *normalized*. This means that calculating this integral over all of space will yield $\mathcal{P}_{\text{all space}}(t) = 1$, that is, the probability of the particle appearing *anywhere* is 100%.

 doi:10.20944/preprints202504.2446.v1

completely determines the state of a system, at best they will only know where it will *likely* appear if they measure it at a certain time.

2.2. The Measurement Problem and the Copenhagen Interpretation

Let us consider the same single-particle quantum system described by the wavefunction $\psi(\mathbf{r}, t)$. Let us say the probability of finding the particle in some region of space V at time t is $\mathcal{P}_V(t) = 0.1$ (or 10%). By chance, say an experimenter measures the position of the particle and it happens to be there. Now, I ask the question of what the location of the particle will be if they measure its position immediately after their initial measurement (say after a very short time Δt). In this regard, quantum mechanics is clear: the experimenter will measure the particle to be in the same region of space V. In other words, after they measure the particle to be in V, it cannot immediately teleport somewhere else. This means that the probability of measuring the particle in the region of space V at time $t + \Delta t$ (immediately after the first measurement) is $\mathcal{P}_V(t + \Delta t) = 1$ (or 100%). This is an extremely important and counterintuitive fact about quantum mechanics: somehow, by measuring the position of the particle, the experimenter *physically changed* the particle's wavefunction $\psi(\mathbf{r}, t)$ so that the probability of finding the particle in V changed from 10% to 100% instantaneously.

The absurdity of this fact has been discussed extensively among physicists. A naive explanation for this is that the particle was actually always in V, even before the measurement, but they just didn't know that until they measured the particle. However, in 1964, physicist John Stewart Bell showed that it makes an observable difference whether the particle had a precise position before the measurement, and all experiments have shown that this naive explanation is actually false (Griffiths and Schroeter 5). The Copenhagen interpretation, the most popular explanation of this measurement problem, instead asserts the following: the measurement causes the wavefunction to *collapse* on V, creating a sharp spike at V so that another measurement taken immediately after will indicate that the particle is still in V. As physicist Pascual Jordan put it, "Observations not only disturb what has to be measured, they produce it . . . We compel [the particle] to assume a definite position . . . We ourselves produce the result of the measurement" ([2], 38).

Although the Copenhagen interpretation has been confirmed to be wholly mathematically and experimentally sound, many physicists have pointed out problems with it ([3], 1100). The main issue with the Copenhagen interpretation is the phenomenon of wavefunction collapse, which does not obey Schrödinger's equation. When a system is not being observed, it will always evolve according to Schrödinger's equation, but as soon as an experimenter performs a measurement, it doesn't. Some physicists believe that this inconsistency is a fundamental problem with the Copenhagen interpretation. Another problem that is often brought up is the ambiguity of the term "measurement," since physics lacks a rigorous definition of what counts and doesn't count as a measurement. Finally, Albert Einstein famously said that "God does not play dice," expressing displeasure with the probabilistic nature of quantum mechanics ([4], 97). He believed it illogical that the rules governing what we can see differ so much from the rules governing what we cannot.

2.3. Is There a More Elegant Alternative? The Many-Worlds Interpretation

Some physicists have invented their own interpretations of quantum mechanics in an attempt to rectify some of the issues arising from the Copenhagen interpretation. One of the most popular of these, now known as the many-worlds interpretation (MWI), was proposed by physicist Hugh Everett III in his 1957 PhD thesis, titled "The Theory of the Universal Wavefunction." In it, Everett put forth the radical idea that there is no wavefunction collapse. He postulated instead that upon a measurement, the universe bifurcates into multiple parallel worlds, each corresponding to a distinct outcome of the measurement. Initially, Everett's ideas were met with scepticism among the physics and broader scientific community. For example, both Nobel laureate Eugene Wigner and philosopher of science Karl Popper voiced concerns about the falsifiability of MWI and argued that it was not a scientifically viable theory. Despite the initial criticisms, MWI gradually gained traction and captured the interest of the physics community. Physicists such as David Deutsch and Bryce DeWitt became

 doi:10.20944/preprints202504.2446.v1

proponents of MWI, viewing it as a promising framework for quantum mechanics, and since Everett's initial proposal of MWI in 1957, much progress has been made by physicists such as John Archibald Wheeler in adapting and refining it into the framework it is today ([5], 3-9).

Due to the mathematical complexity of MWI, in order to introduce the theory as it applies to *The Lathe of Heaven*, I will choose an even simpler quantum system: the famous Schrödinger's cat example. Say I have a cat which I can only measure to be in two states: alive and dead, which I will denote as $|a\rangle$ and $|a\rangle$, respectively. Assume the cat is initially alive. Then, the cat's initial state is $|\psi_i\rangle = |☺\rangle$. Now, assume I put the cat into a box with a vial of poison that has a 50% chance of tipping over and breaking in the next hour, which would kill the cat. After an hour, according to the Copenhagen interpretation, the cat is in a superposition state of being half alive and half dead ($|\psi_f\rangle = (|☺\rangle + |☹\rangle)/\sqrt{2}$) since the vial of poison had a 50% chance of breaking.[3] Then, when I open the box to see whether the cat is alive or dead, this state $|\psi_f\rangle$ collapses to either $|☺\rangle$ or $|☹\rangle$. However, MWI tells a much different story.

In MWI, a *world* is broadly defined as "the totality of macroscopic objects: stars, cities, people, grains of sand, etc., in a definite classically described state" ([6], 268). In other words, at a given moment, a world is a snapshot of the reality we inhabit, with everything we consider real and tangible existing in a specific, well-defined state without quantum uncertainty. To explore this definition further, I will juxtapose it with the layman's concept of a world. To the layman, a world could be everything that exists. However, in MWI, "everything that exists" is the universe, and there is only one universe, which contains many worlds that the layman is familiar with.[4] A layman may also believe that our present world has a unique past and future, but in MWI, a world defined at some given time corresponds to a unique world at some time in the past but possibly a multitude of worlds at some time in the future, each corresponding to a different outcome from an event. By "definite classically described state," Vaidman means that there are no superposition states within a single world, and all states are defined in a way such that we, as sentient beings, can distinguish between them.

Let us say that a given world consists of n macroscopic objects with states $|\psi\rangle_1, |\psi\rangle_2, \ldots, |\psi\rangle_n$, respectively. In order to describe the state of the entire world, the states of these objects must be combined into one state. In quantum mechanics, the standard way to do this is by using a tensor product, denoted by $\otimes$. For the purposes of this paper, $\otimes$ can just be seen as an operation that combines multiple states. Then, the quantum state of the world composed of the n objects with states $|\psi\rangle_1, |\psi\rangle_2, \ldots, |\psi\rangle_n$ is

$$|\Psi\rangle_W = |\psi\rangle_1 \otimes |\psi\rangle_2 \otimes \cdots \otimes |\psi\rangle_n. \tag{2.2}$$

The quantum state of the universe, denoted by $|\mathbf{\Psi}\rangle$, is a superposition of all of the different worlds that it is composed of:

$$|\mathbf{\Psi}\rangle = \sum \alpha_k |\Psi\rangle_{W_k}, \tag{2.3}$$

where Σ represents a sum over all k ([5], 5-6). In MWI, these worlds are *orthogonal* components of $|\mathbf{\Psi}\rangle$, which means that they cannot interact with each other by any physical means ([7], 3). To demonstrate this in practice, I will return to the Schrödinger's cat example.

I will assume that the universe of Schrödinger's cat consists only of the cat and the poison vial, and I will denote the unbroken poison vial by $|○\rangle$ and the broken poison vial by $|⌀\rangle$. Initially, the universe consists of only one world: the alive cat and the unbroken poison vial. Therefore, by Equation

[3] Based on the information I gave, this isn't necessarily the state of the cat because there exist other wavefunctions with a 50/50 chance of measuring up or down, e.g. $|\psi_f\rangle = i(|☺\rangle - |☹\rangle)/\sqrt{2}$, but the state I wrote is the simplest in the sense that everything is positive and real. As another note, the reason why $1/\sqrt{2}$ appears here is that the probability of the cat being alive (or dead) is 1/2. By definition (Equation 2.1), this probability is related to the *square* of the wavefunction.

[4] In popular culture, this universe is sometimes called the multiverse, but I will use the terms world and universe as Everett did in his initial thesis.

 doi:10.20944/preprints202504.2446.v1

2.2, the initial universal wave function is $|\Psi_i\rangle = |☺\rangle \otimes |○\rangle$. However, after an hour, the universal wave function splits into a superposition state:

$$|\Psi_f\rangle = \frac{1}{\sqrt{2}}(|☺\rangle \otimes |○\rangle + |☹\rangle \otimes |⌀\rangle). \tag{2.4}$$

Now, the two terms $|☺\rangle \otimes |○\rangle$ and $|☹\rangle \otimes |⌀\rangle$ represent two completely different worlds, one where the vial didn't break and the cat is still alive, and one where the vial did break and the cat is dead. For this reason, the cat and the vial are said to be *entangled* with one another; the state of one fundamentally depends on the state of the other (Wu 4). Note that in MWI, the Schrödinger's cat system and all quantum systems are completely deterministic, and there is *no wavefunction collapse*. If we add an observer to this universe, they also become entangled with the cat-vial system, meaning that the world they are in is completely determined before they open the box. For example, if the observer is in the world with the alive cat and unbroken vial, the probability that the cat will be alive when they open the box is necessarily 100%.

This example demonstrates that the many-worlds interpretation solves many of the problems that the Copenhagen interpretation creates: in MWI, wavefunctions don't collapse and always obey Schrödinger's equation, measurements do not fundamentally change systems, and the universe is not probabilistic. Despite this, there is no way of proving that MWI is what actually happens (with the exception of one diabolical experiment I will overview in Section 5.2), and it still raises problems at a philosophical level ([8], 63). For example, are there really infinitely many copies of all of us living in slightly different worlds? Does a quantum event billions of light-years away from us really split the universe into two? Who am I, and what is identity in a universe with infinitely many worlds? Despite MWI being currently unprovable and underdeveloped, it is clearly still interesting to examine from a literary and philosophical perspective, which is what I will focus on for the rest of this paper.

3. Orr's Realities as Quantum Branches

In *The Lathe of Heaven*, George Orr first reveals his effective dreaming capabilities in his first appointment with Dr. Haber, which I will use as a starting example to frame with MWI. When Orr is asked to provide an example of an effective dream, he recounts an episode from when he was 17. He describes how his Aunt Ethel came to live with his family and sexually harassed him, making Orr resent her. He explains how he had a vivid dream of Ethel dying in a car crash, and when he woke up, Ethel had indeed died in a car crash six weeks ago. He alone possessed the double memory of Ethel also living in his home. When Haber presses him about why his mother hadn't noticed the shift of reality, Orr replies, "Well, she didn't dream it. I mean, the dream really did change reality, retroactively, which she'd been part of all along. Being in it, she had no memory of any other" (Le Guin 13). This demonstrates that Orr's dreams go beyond changing reality in the present moment; they also change the past so that everyone in the new reality has only ever lived in that reality. Although Orr believes that his dreams are changing reality around him, MWI provides a much more elegant interpretation of this phenomenon. Instead of Orr creating entirely new realities and retroactively changing the past, Orr's realities can be viewed as different worlds that already exist. From this perspective, Orr does not change reality around him; rather, he himself accesses different, preexisting realities of the universal wavefunction.

Viewing *The Lathe of Heaven* through this lens explains many of the counterintuitive aspects of the novel, like how Orr can remember so many realities at once. The worlds that Orr moves away from still exist as part of the universal wavefunction; although his reality changes, reality as a whole doesn't. It also explains how Orr can turn a single dream into a coherent, internally consistent world. For example, in one session, Haber gives Orr the hypnotic suggestion to dream about overpopulation, and Orr dreams of a plague that reduces the population of Earth from seven billion to one billion. When Orr asks Haber if he remembers the Plague Years, Haber gives an extensive description of new memories:

 doi:10.20944/preprints202504.2446.v1

> I was twenty-two when that first announcement was made in Russia, that chemical pollutants in the atmosphere were combining to form virulent carcinogens. The next night they released the hospital statistics from Mexico City . . . And there were the riots, and the fuck-ins, and the Doomsday Band, and the Vigilantes. (Le Guin 68)

Despite the fact that Haber was transported to this new reality just a few minutes ago, he describes the new past with chronological clarity and detail. Orr dreamed of only one specific event (burying the bodies of those who died of the Plague), and yet, real events and organizations like the riots and the Doomsday Band now exist as if the world had played out from the point of Orr's dream to the present. From the perspective of MWI, this intricate history wasn't created by Orr's dream at the moment he dreamed it; instead, it had already occurred in a different world parallel to Orr's original one. Orr and Haber simply entered a world with an Earth population of one billion people that was as real and tangible as their old world of population seven billion.

This Plague dream suggests that Orr dreams about a branching point: a point in time where the new reality and the old reality split into different worlds. For example, in Section 2.3, I discussed the example of Schrödinger's cat, where the one initial world consisting of the alive cat and unbroken vial splits into two distinct worlds during the hour that the vial of poison has a 50% chance of tipping over and breaking. In the example of the Plague, the branching point is when "chemical pollutants . . . [combined] to form virulent carcinogens" (Le Guin 68), which is a clearly atomic and therefore quantum event. In one world, the chemical pollutants didn't combine, resulting in overpopulation, and in another, the chemical pollutants did combine, resulting in the Plague and no overpopulation. Orr always dreams about a branching point between two different worlds, after which he is transported to a different reality.

Another interesting facet of Le Guin's novel is that Haber's true intention almost never gets completely realized through Orr's dream. For example, later in the novel, Haber tells Orr to dream about world peace, intending to stop the fierce war being fought on Earth. However, Orr instead dreams about a space battle, bringing them into a reality where humans have united against Aliens who have taken refuge on the Moon. Orr believes that things never go how Haber wants them to go because he doesn't have the desire to dream effectively: "[M]y total self . . . isn't right for the job. I'm too defeatist, or passive" (Le Guin 86). However, MWI provides another reason that Haber's intentions are not realized. Because Orr only dreams about the branching point between two worlds, he has no control over how the other world has played out. His subconscious does not necessarily pick one of the worlds coexisting in the universal wavefunction, but rather, it transports him to one of the worlds that have sprouted from the branching point he envisioned.

4. Identity and Continuity

Who am I? When MWI posits that there are an infinite number of different worlds, each with a slightly different version of each person, how do we define identity? I propose two different forms of identity to examine characters from *The Lathe of Heaven*: one is the character that appears at a given time in the novel who presides in a particular world with a definite state, and one is a general version of the character that possibly exists in a different world and a different time. At a given point, there are many versions of the same character in different worlds, but only one narrator of the story. A specific version of a character in a given moment corresponds to one version of them in the past, but many versions of them in the future.

Although Orr is constantly moving between different worlds, he still remains the same person with the same moral values throughout the novel. Orr's ideals are revealed at the very start of the novel in his first session with Haber, when he exclaims, "I don't want to change things! . . . Who am I to meddle with the way things go?" (Le Guin 14). This statement reflects Orr's respect for natural order, believing that it isn't his right to impose his will on the world. He believes that he shouldn't be able to dream effectively because it isn't his moral responsibility. Although his view progresses

 doi:10.20944/preprints202504.2446.v1

throughout the novel (which I will discuss in Section 5.1), his belief that he shouldn't actively change the world around him remains relatively the same.

Haber, on the other hand, is a more interesting character in terms of continuity of identity when viewed through MWI. Although Orr believes that it is neither his responsibility nor his right to change things, Haber believes that it is "man's very purpose on Earth . . . to do things, change things, run things, make a better world" (Le Guin 82). Haber continuously applies this utilitarian ideology to try to influence Orr's dreams to change the world into what he views as a better one, even when there are unintended consequences. For example, even after Orr seemingly eradicates six billion people with the Plague, Haber toasts "to a better world" (Le Guin 72). However, Haber's concern for the common good is often blinded by his desire for power. As the novel progresses, he uses Orr's dreams to give himself more and more prestigious positions until he essentially runs the world. In an effort to prevent this, Orr effectively dreams that Haber is benevolent and no longer power-hungry. Although this results in Haber not hiding his intentions from Orr, Haber still remains essentially the same. As Orr puts it, "He only got bigger at every reincarnation . . . Layer after layer might peel off the onion and yet nothing be revealed but more onion" (Le Guin 130-31). This demonstrates the complexity and fundamentality of Haber's identity; no matter what world he is in and what changes are imposed on him, he still remains the same. His character is fundamental to him in a way that despite all the worlds and histories that Orr inhabits throughout the novel, a version of Haber is there with him. Like an onion, Haber changes but does not truly change.

The same cannot be said about the character Heather Lelache, a lawyer that Orr consults to help him get out of his treatment with Haber. On the outside, Lelache is a fierce, aggressive woman, thinking of herself as a "Black Widow" (Le Guin 42). A critical part of Lelache's identity is that she is biracial, with a black father and a white mother. Lelache tells Orr, "Where does that leave me? I never have figured out" (Le Guin 104). In a way, Lelache is also caught between different worlds and a product of different histories like Orr, which is one of the reasons they find a connection and fall in love with each other. However, later in the novel when Haber gives Orr the hypnosuggestion to eliminate racism, he makes everyone in the world have grey skin. Because being biracial is such a fundamental part of Lelache's identity, she ceases to exist. Later, Orr dreams up a more passive, grey version of Lelache as his wife. The character of Lelache demonstrates how the world a version of a character is in can have a drastic effect on their identity. While Orr and Haber are characters of continuity throughout different branches, Heather reflects the fluidity of identity in MWI. Her identity is not self-contained but is instead shaped by the conditions of each world. In some worlds, Heather is brown and bold; in others, she is grey and submissive; and in others, she doesn't exist at all. While Orr and Haber's identities seem to be able to be defined in the broader universal wavefunction, Lelache's identity is tied to the specific world that she is in.

5. Philosophical and Ethical Implications

Now that I have justified the plausibility of viewing *The Lathe of Heaven* through the lens of MWI and analyzed character identities with it, I will explore some of the deeper philosophical and ethical implications that arise from this unique perspective. Specifically, I will first examine the philosophies of Haber, Orr, and the Aliens by framing them in the language of MWI, then I will investigate the complexities of the nature of reality and the new perspectives that MWI provides Le Guin's novel through a discussion of the quantum suicide experiment.

5.1. Haber vs. Orr

One of the main conflicts in *The Lathe of Heaven* emerges from the difference in Orr and Haber's ideals, which I introduced in Section 4. In brief, Haber believes that man has the duty to change the world for the better. When presented with Orr, he does everything in his power to turn the world into his version of a utopia. In contrast, Orr believes that it isn't their responsibility to meddle with the universe and goes to lengths to prevent Haber from controlling him. Lelache describes Orr as "the strongest person she had ever known, because he could not be moved away from the center" (Le

 doi:10.20944/preprints202504.2446.v1

Guin 96). However, Haber traps Orr through legalities and withholding his dream-suppressing drugs, giving Orr "no way out" (Le Guin 75). Both characters being locked to each other in a fight for control over Orr's dreams provides a clear vision into both of their worldviews and the consequences that arise from them. Although Le Guin frames this as a conflict between the philosophies of Taoism and Utilitarianism, from the perspective of quantum mechanics, I will frame this as a conflict between the Copenhagen and many-worlds interpretations, which provides a unique perspective on the relationship between beings and the universe.

Haber's worldview is akin to the Copenhagen interpretation (Section 2.2), where an observer collapses the wavefunction of a particle to a point. Similarly, Haber believes in controlling and shaping reality into what he believes is best, forcibly imposing his ideals upon Orr's dreams. In an open conversation with Orr, Haber says, "we're engaged in a really great experiment, you and I. We're on the brink of discovering and controlling, for the good of all mankind, ... of the will to act, to do, to change!" (Le Guin 139). Here, engaged in his "experiment," Haber takes the role of the experimenter in the Copenhagen interpretation. He enforces his will to change the state of the world, believing that the world can and should be collapsed into one perfect, optimal state. This mirrors the collapse of the wavefunction in the Copenhagen interpretation: out of infinite possibilities, an experimenter deliberately intervenes to force a system into one.

Despite his efforts to make a better world, Haber's forcible control leads him to disregard the unintended consequences of his actions. Orr believes that "things are more complicated than [Haber] is willing to realize ... he's not interested in what's true, in what is, he can't see anything except his mind—his ideas of what ought to be" (Le Guin 101). In this quote, Orr suggests that Haber fails to recognize the complexities of the universe that exist beyond his human control. As Orr says, he is lost in his own ideas of a utopia, not realizing that the world is becoming more and more dystopian as he meddles. When Haber tries to assert a "Copenhagen" influence on the universe by fixing overpopulation, he gets transported to a world with six billion people eradicated. Similarly, when Haber tries to eliminate racism, he gets transported to a world where everyone is grey, which makes humans unable to be racist but doesn't change the underlying human problem that causes racism. Alongside that, he eliminates a large part of human diversity and characters such as Lelache.

In contrast with Haber, Orr's beliefs align more with MWI (Section 2.3), in which the universe always evolves according to Schrödinger's equation and there is no wavefunction collapse. However, Orr's initial worldview is that effective dreaming is always bad, telling Haber that he "came [to him] to be cured. To learn how not to dream effectively" (Le Guin 138). In the language of MWI, this indicates that Orr wants to confine himself to the evolution of one branch of the universal wavefunction. Although Orr never fully understands MWI, he does shift his perspective after some encounters with the peaceful Aliens, who Le Guin illustrates as higher beings who understand the universe and dreams in a way that humans do not.

In the Aliens' language, the word *iahklu'* refers in some way to the act of effective dreaming, which Orr yearns to control. In one of Orr's conversations with an Alien, the Alien informs Orr that the true meaning of *iahklu'* is "incommunicable" (Le Guin 153) but offers the Beatles record "With a Little Help from My Friends" to Orr in an attempt to help him understand dreaming. This leads Orr to the realization that while there is a positive connection between him and the Aliens, his connection with Haber is negative. Orr thinks, "[Haber] isn't in touch. No one else, no thing even, has an existence of its own for him; he sees the world only as a means to his end" (Le Guin 156). This represents the fundamental divergence between Haber and Orr's worldviews and solidifies the conflict between them. As a Copenhagen experimenter, Haber is not in touch with the universe. Even though everything in the world is its own being and has its own state, he sees people and things as "means to his end," forcibly changing the world to his desires. On the other hand, Orr is "in touch" and interconnected with the universe. The Beatles record "With a Little Help from My Friends" is the Alien's way of showing what the Alien word *iahklu'* captures that MWI embodies: the interconnectedness of all things, not only within a world, but throughout the universe. The Aliens and Orr (to some extent by the end

 doi:10.20944/preprints202504.2446.v1

of the novel) embrace the universal balance and harmony of MWI, where every outcome is realized and every being and thing is part of the universal wavefunction, which continuously and inexorably evolves.

5.2. What Is Reality?

Another philosophical idea that Le Guin raises in her novel regards the nature of reality. She theorizes that reality is not as concrete or defined as we experience it to be in everyday life. Orr's reality in the novel is constantly reshaped by his effective dreams, and he even goes as far as to speculate that other people can dream the way he does. He questions Dr. Haber, "Did you ever happen to think . . . [t]hat reality's being changed out from under us, replaced, renewed, all the time—only we don't know it?" (Le Guin 71). Indeed, later in the novel, Orr finds out that the Aliens are also capable of effective dreaming. This mutability is central to the perspective in *The Lathe of Heaven* that reality is fluid. Rather than being a fixed, objective construct, reality in Le Guin's novel is continuous and shifting.

A striking event from Le Guin's novel to examine through the lens of MWI is Orr's recollection of the end of the world, which speaks to the nuances of reality. In an important conversation, Orr recounts to Lelache a dystopian world he once was part of, with starvation, pollution, epidemics, and nuclear war. He saw that he was dying, everything was dying, and the world was ending. Then, he had a dream:

> I dreamed about being home. I woke up and I was all right. I was in bed at home. Only it wasn't any home I'd ever had, the other time, the first time. The bad time. . . . I've told myself ever since that it was a dream. That it was a dream! But it wasn't. This is. This isn't real. . . . We are all dead, and we spoiled the world before we died. There is nothing left. Nothing but dreams. (Le Guin 107)

In this quote, Orr expresses an existential crisis tied to his belief in one objective reality. He states that he tried to convince himself that the first world was a dream, but instead decides that the world he is in now is the dream. Orr can only grasp the idea of one true reality at a time, and therefore, everything else cannot be real. Orr's declaration that nothing is left but dreams expresses his disbelief in the reality of his dreams, refusing to acknowledge the current existence of him or anyone around him. However, in the context of MWI, reality is not confined to one world; every world is separate but equally real. Le Guin's novel blurs the line between dreams and reality, and when intersected with MWI, Orr's dreams and reality are equivalent. From this perspective, Orr is wrong that either world isn't real, but he is correct that "[t]here is nothing left . . . but dreams" because dreams represent the branch points between worlds: dreams are reality.

Continuing to build on Orr's dystopian world with MWI, I will focus on Orr's idea that "[they] are all dead" (Le Guin 107) through a discussion of the quantum suicide experiment. The quantum suicide experiment is currently the only proposed way to potentially determine whether the Copenhagen or MWI is correct, and it requires the "death" of the experimenter ([9], 860). In brief, the idea behind the quantum suicide experiment is as follows: say an experimenter has a "quantum gun," inside which are many quantum particles in superposition states. Whenever the trigger of the gun is pulled, a measurement is made on one of the particles in the superposition state, which has a 50% chance of being measured in state 1 and a 50% chance of being measured in state 2. If the particle is measured to be in state 1, the gun fires, and if it is measured to be in state 2, nothing happens. Now, say the experimenter goes into a room with the quantum gun, and his assistant waits outside. Then, the experimenter points the gun at his head and fires it 20 times in a row. The assistant outside can be basically certain that the experimenter is dead after this; from the assistant's point of view, there is less than a 0.0001% chance that the gun did not fire once. When she enters the room, both the Copenhagen interpretation and MWI say with essentially complete certainty that she will see the experimenter dead. From the view of the Copenhagen interpretation, the experimenter will have a similar experience: every time he pulls the trigger, there is a 50% chance he will die, and once he is dead, he will not be able to pull the trigger anymore. However, according to MWI, when the experimenter pulls the trigger, the universe will split into two worlds: one where the gun fires and the experimenter dies, and another

 doi:10.20944/preprints202504.2446.v1

where the gun doesn't fire and the experimenter remains alive. The counterintuitive fact here is that the experimenter will only be conscious in the world where the gun didn't fire; therefore, he only exists in the world where the gun didn't fire and necessarily only observes that world.[5] According to MWI, from the experimenter's point of view, he will trigger the gun 20 times in a row and survive every measurement because his consciousness will continue to live on only in the worlds where he didn't die. After the experiment, he will know with nearly 100% certainty that MWI is the correct interpretation of quantum mechanics, but he alone will possess that knowledge. In the millions of other worlds where he died, everyone on the outside will have no way of knowing the outcome of the experiment, whether he definitively died by the Copenhagen interpretation or whether he is still alive in another world (Gupta 1-3).

The quantum suicide experiment gives a concrete implication of MWI that can be applied to Orr's memory of the end of the world. In the confines of the old world, Orr is correct that he and everyone he knew died. However, in the broader universe, the quantum suicide experiment suggests that Orr and everyone else are still fully and fundamentally alive since their consciousness necessarily only exists in the worlds where they still exist. Therefore, although Orr claims that "there is nothing left" (Le Guin 107), from Orr's perspective, the worlds in which versions of Orr do still remain are actually *everything* that is left. In fact, Orr seems to be subconsciously aware of this very fact, noting that while other people around him died, "all [he] ever did was survive" (Le Guin 105). This is precisely the experience of the assistant in the quantum suicide experiment: although Orr thinks that the people in his new realities are dead, they are actually fully alive in other worlds. In other words, people that Orr "kills" do not actually die; they only appear to from Orr's perspective. For example, Orr's parents and the six billion people who were killed in the world of the Plague are still alive elsewhere in the universe. This point is further supported by the two times in the novel Lelache is erased and brought back to life; she doesn't exist in some worlds but exists in others. The notion of the quantum suicide experiment further complicates the portrayal of the nature of reality in *The Lathe of Heaven* by illustrating that life and death are relative, not absolute.

Although the idea of quantum suicide further contributes to the juxtaposition between Orr's perceived viewpoint and the perspective of MWI, it also allows us to view Le Guin's novel in a more hopeful light. The "Copenhagen" influence Haber imposes on Orr's dreams does not result in true death, as the apparent dead live on in other worlds. Additionally, towards the end of the novel when Haber induces an effective nightmare on himself and nearly causes the destruction of their world, reality still remains just as intact, untouched by Haber's influence. The perspective of MWI shows the negligible influence that humans can exert on reality and the broader universe. However, Le Guin's portrayal of reality goes beyond the traditional MWI in that dreaming is a natural part of life and the universe. *The Lathe of Heaven* adds to MWI with the idea of effective dreams, creating a shifting reality in the perspective of the dreamer that complements MWI's evolving and non-objective worlds.

6. Conclusions

"[T]he whole world as it now is should be on my side, because I dreamed a lot of it up, too. Well, after all, it is on my side. That is, I'm a part of it. Not separate from it. I walk on the ground and the ground's walked on by me, I breathe the air and change it, I am entirely interconnected with the world." (Le Guin 155)

In this paper, I explored the rich ideas that emerged from the intersection of the many-worlds interpretation and Ursula Le Guin's *The Lathe of Heaven*, envisioning Orr's dreams not as creating new realities, but transporting him to other worlds. Although I have spent most of the paper framing Le Guin's novel in terms of MWI, the discussion of the contrast between the different philosophies in the novel, the continuity of Orr's identity, and Le Guin's portrayal of the fluid nature of reality through dreams all lead to the important conclusion that goes beyond MWI: Orr is part of the universal wavefunction. Although Orr believes that the world is on his side because he "dreamed a lot of it up,"

[5] This thought experiment is under the assumption that there is no afterlife.

 doi:10.20944/preprints202504.2446.v1

he also realizes that he is, in a broader sense, "entirely interconnected with the world" (Le Guin 155). In fact, beyond just a singular world, he is one with the universal wavefunction. As spoken by an Alien, "[s]elf is universe" (Le Guin 142). MWI dictates that different worlds are completely separate, but as part of the universal wavefunction, Orr is "not separate from [them]," he is "part of [them]" (Le Guin 155). In this way, Orr and the Aliens are higher beings, able to glide through multiple worlds when others cannot. This, I argue, is the true meaning of the Alien's philosophy of cosmic balance and living in harmony with everything: objects, beings, and the universe.

References

1. Feynman, R.P.; Leighton, R.B.; Sands, M. *The Feynman Lectures on Physics*; Vol. 3, Addison Wesley, 1971.
2. Mermin, N.D. Is the Moon There When Nobody Looks? Reality and the Quantum Theory. *Physics Today* **1985**, *38*.
3. Stapp, H.P. The Copenhagen Interpretation. *American Journal of Physics* **1972**, *40*.
4. McIntyre, D.H. *Quantum Mechanics: A Paradigms Approach*; Pearson, 2012.
5. Ghosh, A. Revolutionizing Quantum Mechanics: The Birth and Evolution of the Many-Worlds Interpretation. *arXiv:2405.06924 [physics.hist-ph]* **2024**.
6. Vaidman, L. Why the Many-Worlds Interpretation? *Quantum Reports* **2022**, *4*.
7. Wu, B. Everett's theory of the universal wave function. *The European Physical Journal H* **2021**, *46*.
8. Carroll, S.M. Addressing the quantum measurement problem. *Physics Today* **2022**, *75*.
9. Tegmark, M. The Interpretation of Quantum Mechanics: Many Worlds or Many Words? *Fortschritte der Physik* **1999**, *46*.