Aethic Reasoning: A Comprehensive Solution to the Quantum Measurement Problem

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Abstract

The quantum measurement problem is one of the most profound challenges in modern physics, questioning how and why the wavefunction collapses during measurement to produce a single observable outcome. In this paper, we propose a novel solution through a logical framework called Aethic reasoning, which reinterprets the ontology of time and information in quantum mechanics. Central to this approach is the Aethic principle of extrusion, which models wavefunction collapse as progression along a Markov chain of block universes, effectively decoupling the Einsteinian flow of time from quantum collapse events. This principle introduces an additional degree of freedom to time, enabling the first Aethic postulate: that informational reality is reference-dependent, akin to the relativity of simultaneity in special relativity. This reference point, or Aethus, is rigorously defined within a mathematical structure. Building on this foundation, the second postulate resolves the distinction between quantum superpositions and logical contradictions by encoding superpositions in a "backend" Aethic framework before rendering observable states. The third postulate further distinguishes quantum coherence from decoherence using a two-generational model of state inheritance, potentially advancing beyond simpler interpretations of information leakage. Together, these postulates yield a direct theoretical derivation of the collapse postulate, fully consistent with empirical results such as the outcome of the double-slit experiment. By addressing foundational aspects of quantum mechanics through a logically robust and philosophically grounded lens, this framework sheds new light on the measurement problem and offers a solid foundation for future exploration.

1 Introduction

1.1 Mission Statement of Aethic Reasoning

The measurement problem – the question of how quantum superpositions resolve into single, observable outcomes – has been approached over the past several decades through a variety of frameworks, yet all fall short in key areas. The Copenhagen interpretation introduces wavefunction collapse as an unexplained axiom, relying on the Heisenberg cut to delineate classical and quantum behavior [1]. Such an approach, if applied elsewhere, would have spelled doom for any other theory – for instance, if Newton had simply shrugged and supposed that items above a certain height over the Earth magically stopped feeling gravitational attraction toward it, thereby neglecting the powerful inductive argument hiding in plain sight from the empiricism of a falling object on Earth. The many-worlds interpretation, meanwhile, while ostensibly avoiding collapse, lacks a well-defined ontological basis for phenomena like the Born rule, leaving a critical dead end in its explanatory power. Hidden-variable theories face significant challenges from Bell's theorem [2], which fundamentally limits determinism in quantum mechanics. This result scrambles our intuitions on where rationalism ends and indeterminism begins – a titanic unknown that has arguably bled into our broader cultural movement of postmodernism itself. These challenges reveal deep conceptual gaps in our modeling of time, reality, and information – gaps that demand a fundamentally new approach spanning multiple layers of physics and philosophy.

To address these gaps, we propose a new framework called Aethic reasoning. At its heart, this paper presents Aethic reasoning as a graph-theoretic approach that culminates in a derivation of the collapse postulate, so the entire premise herein may be summarized as the pursuit of establishing such a statement, (which we refer to as the third postulate of the Aethus).

However, the fact of the matter is that the ability to even conceptualize this statement is dependent upon roughly three nodes of new mathematics and two or three nodes of new philosophy beyond which humanity has yet written down. As such, the barrier between our world here and now and a

completed measurement problem solution is to be reconciled as contained only within these few nodes which need to be flipped. Naturally, then, we will spend the majority of this paper addressing and flipping these nodes, one by one. This can be viewed as effectively philosophical hygiene, analogously to how general relativity cannot be established until the equivalence principle replaces the notion of gravitational force. We will see much the same with the union principle of Aethic reasoning, being one of the philosophical nodes, for which we argue that humanity has accidentally left an inconsistency unchecked in the very semantic realization of logical conjunctions as encapsulated in the word 'and'. This is a very subtle inconsistency that is hard to spot until it is pointed out, but once it is addressed it takes mere seconds to generalize the classical concept of 'and' versus 'or' to a well-defined superposition of states. The fact that this issue has not yet been weeded out serves as a direct instance of a barrier between modern science and a measurement problem solution, and this is only one of the five or so like it which this paper seeks to address. Effectively, then, the premise of this paper is not to invent new physics — at least not yet — but to merely put us in a position to do so by reformulating a series of axioms at the deepest layers of our preconceived epistemological and metaphysical understanding of the universe.

Note, however, that this paper also requires the creation of new math so as to couple to the advances made in philosophy. To summarize our mathematical nodes, they initiate with the restructuring of the block universe model into a Markov chain, being that very foundational step which unlocks the cascade of Aethic insights to follow – beginning with the establishment of a relativist principle toward the ability to structure such a temporal ontology in mathematical language. We achieve this structural definition of the Aethus using equivalence classes of sets, endowed with a specific condition regarding the instantiation of attributes. This allows us to capture all degrees of freedom in the Markov chain of block universes, effectively extending the classical notion of set membership—where an element either belongs to a set or doesn't—into a richer trichotomy of presence within Aethae. Here, an element can exist in three states: it is present, its logical negation is present, or it is unknown altogether. This allows us to incorporate the Aethic union principle using a resultant ring structure revealed in the set of all Aethae.

We define the operations of traversing this ring of Aethae, being disjunctions as addition and conjunctions as multiplication. With this, we establish the needed structure to express the graph-theoretic major result of Aethic reasoning, the third postulate. Lastly, we create a well-defined rendering mechanism from an Aethus to a realized block universe, allowing us the degree of freedom needed to distinguish superpositions from contradictions within the Aethic structure itself, and from there we have a full theoretical derivation of the collapse postulate, in that Aethae which cannot possibly be physically realized, (namely being those in which a detector or observer is watching and yet an interference pattern still results from the double-slit experiment), are derived as such from the three Aethic postulates, aligning naturally with our observed physical reality.

Without further ado, then, let us begin our traversal through Aethic reasoning, a proposed solution to the quantum measurement problem.

1.2 Listing of Requirements to a Solution

We may begin our analysis at what is perhaps the most natural point of initiation, being the tangible ground which we wish to cover by the end of this paper.

A precise outline of five conditions has already been provided by Sabine Hossenfelder and Jonte R. Hance regarding what would be required for a genuine solution to the measurement problem [3]. As such, let us structure the present paper so as to tailor our claim of a solution directly to this tangible assessment of what would be satisfactory. Here, then, is the statement of the five requirements, which we will refer to through their numbered names.

Requirement 1
Agree with all existing data.

Requirement 2
Reproduce quantum mechanics, including the Collapse Postulate and Born's Rule, in a well-defined limit.

Requirement 3
Give an unambiguous answer to the question of what a measurement device is, at least in principle.

Requirement 4
Reproduce classical physics in a well-defined limit.

Requirement 5
Resolve the inconsistency between the non-local measurement collapse and local stress-energy conservation.

We will refer back to these requirements throughout the remainder of this paper. It should also be noted upfront that we are to partition the solution itself into the notion of the *collapse postulate*, while we will call the "measurement problem solution" and then the notion of the *Born rule* and the remainder of fundamental quantum axioms, which we will call the *Born rule solution*. Through such a thing, we essentially get two layers to three of the five requirements, with the primary layer being their satisfaction as pertains to the measurement problem solution, and the secondary layer as they pertain to the Born rule solution. Here is a quick analysis of which of the requirements tend to hold dual versus single connotations.

Requirement 1 Dual requirement.

- Requirement over the measurement problem solution.
- Requirement over the Born rule solution.

Requirement 2 Partitioned requirement.

- Partition requirement over the measurement problem solution.
  - *That is, we are to reproduce the collapse postulate to completion here.*
- Partition requirement over the Born rule solution.
  - *That is, we are to reproduce the Born rule to completion here.*

Requirement 3 Single requirement.

- Requirement over the measurement problem solution.

Requirement 4 Dual requirement.

- Requirement over the measurement problem solution.
- Requirement over the Born rule solution.

Requirement 5 Single requirement.

- Requirement over the measurement problem solution.

This rendering is not quite deductive given the traversed epistemology attained so far in the paper, so it is merely present as a map of sorts with which to refer back to upon confronting the implied epistemic principles themselves later in the paper. *Importantly, note that we are to specifically partition the measurement problem solution and Born rule solution into two distinct papers, with the present paper corresponding to the former of the two*. The upcoming second paper will consist of the Born rule solution, as such representing a major offshoot of Aethic reasoning which we are to refer to as *active reasoning*. Such a thing will be released as a followup to the present paper.

1.2.1 Aethic Reasoning Through Requirement

It is important to note at this point that there exists something of a *requisite interpretation of Aethic reasoning*, which is inspired directly from Einstein's postulates of special relativity [4]. Let us phrase it as follows.

Principle 1 (Requisite Interpretation of Aethic Reasoning)
Whereas the standard premise behind Aethic reasoning is that it amounts to logically implying the satisfaction of the five requirements, with the requisite interpretation we also hold that the converse of this is true. That is, specifically speaking, we are supposing that the three postulates of the Aethus represent the only logically-cohesive theory which allows the satisfaction of all five requirements at once. Speaking in terms of evidence, we observe that not a single proposed theory of the classical paradigm of ontology has enabled even close to a solution of all five requirements. As such, this can be taken as strong evidence that the precise set of inversions of classical ontological principles that will be seen throughout this paper, is not only one approach to solving the measurement problem with an empirically-classically-consistent world, but is rather the only approach. If a single one of these updated ontological principles were to be switched back to their classical versions, and Aethic reasoning would quickly break down, hence violating at least one requirement again. As such, perhaps the most

compelling argument for Aethic reasoning's correctness is directly centered in how it is the only possible metaphysical paradigm which both allows our macroscopic empiricism, all while enabling the inductive empiricism of the quantum world, (such as quantum superpositions and entanglement).

Notice how the classical paradigm, somewhat famously, correctly reproduces the macroscopic empiricism, all while holding the quantum world as completely foreign and incompatible. The compatibility we arrive at classically, then, in the form of the Copenhagen interpretation, is to simply suppose that the ability for quantum superpositions is essentially just turned on at some point, being a Heisenberg cut [1]. The myriad of implied paradoxes aside, we hold with a simple analysis that the Heisenberg cut is unacceptably poor ontology. Implying such a cut between any two other ontologies would have been unacceptable also, for the reason that ontologies are not meant to mix this way. To give a straightforward example, had we decided to create a hard epistemic dividing line between Newtonian gravity and Einsteinian gravity just beyond the orbit of Mercury, then that would have proved disastrous for later generations of physicists. Moreover, had Newton himself simply accepted that the gravity upon the moon and the gravity upon an apple appear different, then once again we would hold a Heisenberg cut of sorts and a complete stagnation of further ontology. History tells us, then, that such a cut is the very symbol of a failed ontology, so through such a principle we have that the classical paradigm very much does ***not*** *satisfy the requirements. With the further supposition of how not one, but numerously many of its axioms serve to violate the requirements, we then further suppose that the exact inversion of said axioms which generates Aethic reasoning is the exact sole solution to the measurement problem. Just as special relativity was a compelling argument for its sole ability to satisfy the two postulates of special relativity [4], we might now argue the same of Aethic reasoning with these five requirements. Aethic reasoning is correct to the extent at which these five requirements can be solved at all.*

Without further ado, then, let us begin the Aethic argument for the solution to the measurement problem.

2 Philosophical Prelude to the Aethus

Let us begin with a prelude section to the formalization of the Aethus, where we will lay the needed philosophical groundwork which will enable our undertaking of a further mathematical rigor.

2.1 On the Proper Ontology of Time

2.1.1 Elevator Pitch to Aethic Reasoning in the Form of an Analogy

Consider the act of driving your car on a highway which runs along the edge of a forest. Suppose at exactly 2:00 PM, you glance out the window to your left, and see a young tree beside the road. You only glance at it for just long enough to register its existence, but are looking back ahead before you have time to make a reasonable judgment of parallax on account of the car's motion. Now imagine that you spend the next five minutes looking only ahead towards the road, however at 2:05 sharp you glance toward the trees again, and see another tree exactly to your left, but this time much taller and older than the one you looked at earlier. As common sense will tell you, you are looking at two different trees with two different histories, but let us now imagine how this experience would appear different if you regarded those trees the same way in which the Copenhagen interpretation regards quantum particles before and after a wavefunction collapse event.

The Copenhagen interpretation would be like assuming that the car is parked on the highway, such that any change in observation is only isolated to a change in one single tree. You would suppose that in the intermediate time between your first look and your second look, there was a single tree to the left of you, and that single tree has since grown up into a taller and more mature tree. Under this worldview, you could not realize that you were in fact never parked in the first place, and that you had been looking at two separate trees altogether. The single difference between the two possible worldviews, then, comes down to assuming you must be stationary versus assuming you must yourself be moving.

This is the same sort of logic that will serve as the foundation of Aethic reasoning, in the form of what we refer to as *the Aethic extrusion principle* for quantum particles. The main supposition is that never did a single particle change – rather you yourself, as is something like turning the page of a book, have transitioned into a subtly different reality for which the subsequent system to the collapse had been in effect all along.

2.1.2 Inductive Derivation of the Aethic Extrusion Principle

Before we can begin making major arguments in physics, it is good conduct in the face of a task as overwhelming as solving the measurement problem that we might be very clear about our own metaphysical ontology as agents in the universe. As such, let us designate a section to defining our philosophical ontology in just such a way as to have a good baseline for application in the next section. To begin this portion, then, let us look at the debate in the philosophy of time between *the block universe view* and *the growing block universe view*, which it goes without saying has a massive influence over physics.

For a brief explanation of these two stances, we define the *block universe view* as representing a model of time in which the past, present, and future are equally real, so as to represent a statically defined block of sorts for the entire spacetime continuum, (as if all moments in time were like frames to an already filmed movie). The other perspective, then, is a kind of *varying-block universe view*, which takes at least the future to be metaphysically undetermined and perhaps even nonexistent in full, at least from our perspective here in the present. This is a more standard view amongst humans, because it aligns with our intuitive notion that it is the very process of sequentially unfolding time which brings what was before the future into existence in any real sense. Note that this alternative to the block universe view can itself be subdivided into two further stances, in which either the past is also taken as nonexistent, being called *presentism*, or in which the past is taken as fully existing, being called *the growing block view*.

For the sake of clear definition of terms, we are to refer to the block universe view as the *static block universe*, and then will refer to the assembly of either presentism or the growing-block as the *growing block universe*. Of course, presentism itself is technically distinct from the growing-block view, but our primary goal with this section is to philosophically highlight the differences at the boundary of flux between the present and future in the static block view versus the growing block view, so whether we refer to the growing block view as past and present-consistent or only present-consistent will not make any difference anyway. The state of throwing out presentism, then, is merely for explanatory simplicity before anything else, all while asserting that it can be substituted for the growing block term in our analysis without changing our derived conclusion.

Given this setup, we can now open Aethic reasoning by making a key observation about this dichotomy of a static block universe versus a growing block universe: both are in direct conflict with fundamental notions of empiricism in modern physics. The static block universe model is, somewhat famously, outlawed[1] in standard quantum mechanics, because it implies to it the existence of a hidden-variables interpretation. As we know well, this conflicts with Bell's theorem [2], so in the very least the empirical results of quantum mechanics forbid such a static block universe model from truly existing.

Such a happening is often cited as a reason for why a model like the growing block must be correct instead, but we have to understand that the growing block universe also clashes with established empiricism, and thereby is in an equal state of ontological invalidity. This time, we may cite special relativity for the bout of empiricism which the growing block model contradicts. Simply put, the validity of the growing block model is contingent upon our being able to produce a well-defined statement of where exactly each current iteration of the growing block has its outer boundary with the future. That is, we might ask the simply but important question of *where the flux of its growth is occurring*. This itself is where we clash with relativity, because *the relativity of simultaneity demands that there is no such well-defined manifold of the present in spacetime*. Even under a very conservative interpretation of relativity, where the theory itself is still questioned as accurate, this principle of there being no well-defined objective present holds utmost empirical validation. As such, the existence of such relativistic empiricism demands that we discredit the growing block universe to just such a degree as quantum mechanics demands the discrediting of the static block universe. To be very clear on the specific assertions of such a thing, *we are not aligning the static block with special relativity while aligning the growing block with quantum mechanics, because such a thing requires an extra assumption from what we are truly demonstrating. Instead of this, the supposition is simply that special relativity directly contradicts the growing block, while quantum mechanics directly contradicts the static block, and nothing more.*

[1] Note that superdeterminism does indeed satisfy something of a loophole which allows eternalism to coexist with Bell's theorem [3]. In this regard, then, we are going to postulate in this paper that the universe cannot be superdeterministic, with the Aethic model of the ontology of time being regarded as a superior model on account of being more generally revealing to the universe. In essence, then, we still argue against superdeterminism by tracing the requisite interpretation of Aethic reasoning all the way back from the broad solution later in the paper, rather than neatly clipping standard eternalism and presentism out this early on. Either method does the same general job outside of superdeterminism, but this latter one requires a bit more reading.

We now have to come to a very important conclusion: given that our universe does indeed ontologically exist, and given that both of the aforementioned stances on the ontology of time have been invalidated, we must infer that there exists a third option to explaining the ontology of time, such that said third option is the true correct answer.

We are now to produce a hypothesis for what this third option may be, and in doing so will have at least presented the very first model for the ontology of time which is not a swift contradiction to our empiricism. Let us do such a thing now. Simply put, we are to now suppose that in order to build ourselves out of this predicament, we must suppose that there exists another dimension within this block universe, growing the four dimensions of spacetime to four dimensions of spacetime plus one dimension of something else. We will refer to this additional dimension as the *Aethic dimension*. Rest assured, this is no such excuse-driven dimension like we might find throughout string theory, for instance – rather we see from our prior derivation that we have been siphoned here instead, because it is a directed effort to reconcile the issues of the static block and growing block models through an extra degree of freedom beyond their dichotomy.

Remarkably, now, we solve a whole host of paradoxes in one swoop if we simply suppose that as one transitions through time, one must also transition through this extra Aethic dimension. The coordinate in the Aethic dimension, as will be elaborated upon in a few paragraphs, will be the sole signifier of any and all superpositions to a cross-sectional block universe, which allows us to decouple the effects of wavefunction collapse from time itself. The premise of this new model works as follows: we might imagine a long sequence of distinct block universes which an agent will move through in a similar way to how they continuously move through space and time. In a sense, we get a kind of extrusion of the entire block universe along the Aethic dimension. Each little block universe in the continuous sequence might be referred to as a *block universe* still, and the entire structure might be referred to as a *hyperblock universe*. Note that we ought not to think of ourselves as truly leaving the universe as every moment, (which implies some strange sort of discontinuity of motion, perhaps), and instead should suppose that we are simply moving across a continuous path akin to a worldline, with each "block universe" merely representing the cross section to our Aethic coordinate at that particular moment. Note, crucially, that one's actual coordinate along the Aethic dimension is what we will refer to as their *Aethus*. Altogether, the full hyperblock universe can be reconciled as a Markov chain, with each static block universe representing a state in the Markov chain, and each Aethus representing the identifier or index to that state. In essence, we would suppose that the agent has some form of 'Aethic worldline' along the progression of this Markov chain, in addition to their worldline through space and time. Perhaps what we observe as a wavefunction collapse, then, could be taken as the act of progressing to a new block universe.

At this point it is important to note another crucial element of this hyperblock hypothesis: how it structurally relates to quantum superpositions. Let us suppose that superpositions are a keystone constituent element of a given block universe, such that the Aethic coordinate itself of a particular block universe is the signifier of which superpositions are allowed to exist in that particular block universe. If the Aethus deems that some superposition is collapsed in a particular block universe, then it must be so, whereas if it deems that it is not, then the block universe likewise reflects that. Simply put, we are replicating the process of wavefunction collapse with an entirely new interpretation – rather than having to deal with all the fallacies of wiping out superpositions within the direct growth of the growing block universe, hence pointing all such dynamics in the direction of time – we are instead now postulating that the actual best ontology which maps to our empiricism for the wavefunction collapse derives from this notion of an extra dimension altogether, which is orthogonal to the entire block universe rather than in timelike alignment with it.

This implies, notice, that the Aethic dimension itself is not actually a real number line like a spacetime dimension is, because the degrees of freedom of a single real number is entirely insufficient to depict every superposition in the universe.

We can already see from this idea of the Aethic dimension how we get a much richer ontology to superposition collapses than anything in the Copenhagen interpretation. Specifically, given that an Aethus is the sole signifier of a superposition in a block universe, we might suppose that once an agent has transitioned to a subsequent Aethus regarding the wavefunction collapse of an electron's spin, say, it follows that the resulting spin-state, (such as spin-up for example), has been in effect throughout that entire block universe's history, (or at least the entire lifetime of the particle). As such, in the Aethic interpretation, it would be invalid to suggest that a known collapsed superposition was ever non-collapsed in the first place, but this is so only once it has been collapsed. What would really be better to say, then, is that *the particle is in superposition in the prior Aethic coordinate only, but*

never was in superposition in the first place in the subsequent Aethic coordinate. To be more specific about this, consider the following Aethic table to describe this.

Copenhagen Interpretation

	Prior Time	**Subsequent Time**
Timeline	Particle in *superposition*	Particle in *single state*

Table 1: In the Copenhagen interpretation, it is assumed that the prior time should still hold the wavefunction, and that the collapse is an event rooted in time rather than a boundary-manifold which oneself crosses over, (as is the case in the Aethic interpretation).

Aethic Interpretation

	Prior Time	**Subsequent Time**
Prior Aethus	Particle in *superposition*	Particle in *superposition*
Subsequent Aethus	Particle in *single state*	Particle in *single state*

Table 2: In this table, we demonstrate the importance of including the Aethic orientation of an event in Aethic reasoning. Note that this general principle that the Aethus serves as an extra layer of variability to reality, be it in terms of the hyperblock universe or whatever else, is known in Aethic reasoning as *the principle of Aethic extrusion.* Visually speaking, one can consider a timeline in this chart to point left and right, and an Aethic "worldline" to point up and down, such that one's own total path of traversal moves downward and diagonally within the diagram, (with the time boundary being standardized to align with wherever oneself crosses the Aethic boundary).

In effect, we get the following idea: if we consider two Aethae and their corresponding block universes, such as A_1 and A_2, (for before and after the collapse, respectively), then in the block universe corresponding to A_1, we see that the electron is and will be in superposition for all time. That is, in such a block universe, even after you have checked the state of the electron, and you yourself are also in superposition with it, with your reaction being in superposition, etcetera. So in the block universe for A_1, the electron never leaves superposition, nor can it. However, for A_2, the electron never was in superposition in the first place, and was simply always the state that you read it to be upon looking. For example, if it was spin-up, then this was always so since the moment it was generated. In effect, we get all the convenience of hidden variables from this notion, but also the experimental results regarding Bell's theorem, because such experiments are technically only ever done in the prior Aethus. Put in a single statement, *the particle never changed – your Aethus did.* The error of the Copenhagen interpretation, then, would be considered its supposition of how the pre-collapse version of the particle is a timelike extension of the post-collapse version. In Aethic reasoning, we lead by supposing that this is not so, and that they are instead representative of two entirely different histories and futures, which we merely thought were the same by neglecting that one's own Aethic coordinate is also in motion.

Consider the chart below, which visualizes Aethic progression in the form of a Markov chain between block universes. Notice that this is an entirely original idea, and goes beyond just the many-worlds interpretation. This is specifically on account of the past having to change as well when the update is done, with there no longer being the need for future-oriented timeline branching or whatnot. For an intuitive analogy of sorts, if we call *Event A* the outcome of the Americans winning the American revolution, and *Event B* the outcome of the British winning the American revolution, then we have that so long as you yourself have not yet learned about the outcome, and it will still be in superposition relative to you in the prior Aethic block universe. Only once you learn about the event, then, do you in effect become coupled to one of the outcomes, and then transfer into a block universe of only a single state. The immediate difference from the many-worlds interpretation, then, is that in this Aethic interpretation, if you traced back on your own Aethic worldline so as to go back in time five minutes before having learned about who won the American revolution, and now you could just as well phase into a block universe where the British won instead. So we have that objective truths about the past, present, and future, would be held as less a fundamental property of the universe, and instead something of a malleable relative effect of where you happen to be located

in the Markov chain.

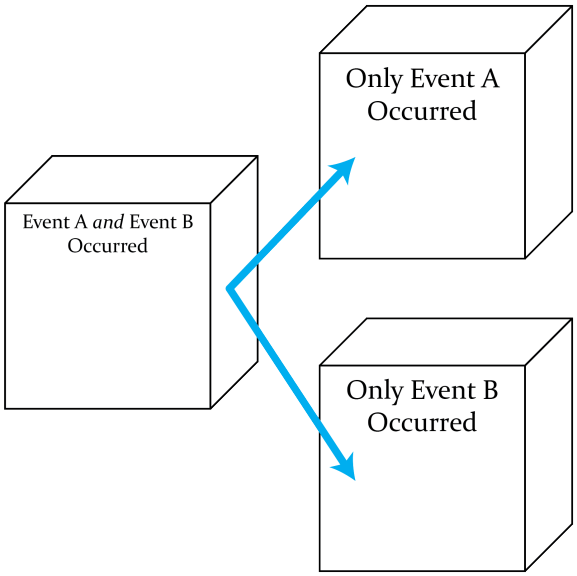


Figure 1: A representation of the Markov chain which corresponds with this Aethic block universe model and the extrusion principle. The title of 'extrusion' itself comes from visualizing an entire block universe as essentially being extruded along the progression of the Markov chain. This idea is indeed in some sort of defiance of common sense, but as we have seen with the relativity of simultaneity before it, the fundamental claim of this principle is that we are effectively forced to conclude something along these lines in order to satisfy both the empiricism of quantum physics and special relativity at once.

A very important result of this Aethic interpretation to the ontology of time is that each Aethic block universe itself indeed turns out to be deterministically defined. That is, each Aethic block universe is itself a static and invariant block, but is distinct from the classical static block universe in that it is also possesses fundamental content of superpositions baked into it, so to speak. In essence, we harness all of the deterministic potential advocated for by Einstein, all while structuring the material contents of our block universe so as to align with the views of Bohr. We then also achieve a definable process of wavefunction collapse by further supposing that oneself can move across the Aethic dimension, and thereby witness a flux of superpositions from one's perspective. In effect, we notice that with the Aethic interpretation of quantum mechanics, both Einstein and Bohr have their fundamental stances realized, hence showing that they never needed to be contradictory in the first place.

Lastly, please note that we can show that the Aethic dimension itself, although mathematically well-defined, (as will be seen later in the paper), is not isomorphic to the real numbers under any operation whatsoever. We can show this quite simply by demonstrating how the Aethic dimension and set of real numbers ultimately fail to be continuously bijective. Consider even a single quantum superposition, which for n possible distinct eigenstates has a Hilbert space of dimension n. As such, with the Aethic coordinate needing to be entirely sufficient to encode the entire superposition content of its corresponding block universe, we therefore clearly have that there exists real-world quantum superpositions whose Hilbert space are of greater dimension than one, so a single real number is consequently insufficient to exhaustively describe all degrees of freedom of an Aethus. Even using vectors or sets for this task will be shown to be somewhat tricky, so we are to actually design an original mathematical structure for encoding an ontological Aethus like the ones we need to depict for this model. The mathematical consequences which may be found about an Aethus are extensive, but among them are that the Aethic dimension satisfies the field axioms, along with other identities of the sort.

Let us now refer to this complete principle as the *extrusion principle of Aethic reasoning.*

Principle 2 (The Extrusion Principle of Aethic Reasoning)
We hold that a pre-collapse quantum superposition of a matter particle is strictly not a timelike extension of the post-collapse version. We instead have that the change from one to other occurs when an agent's Aethus changes rather than anything having directly to do with the Einsteinian flow of time.

Relative to the agent's prior Aethus, the particle must remain in superposition indefinitely, and relative to the agent's subsequent Aethus, the particle must have never been in superposition in the first place. In effect, by collapsing the superposition, an agent moves from a reality in which the superposition exists to one in which it never existed in the first place, and might suppose the two to be timelike extensions of one another's worldlines only by misunderstanding of the underlying effects.

Structurally speaking, the extrusion principle supposes that a spacetime continuum as it is currently defined falls short of the needed degrees of freedom to describe a wavefunction collapse, so we correct this issue by treating the spacetime continuum itself as a block universe, and then extruding such a block universe along an extra dimension called the Aethic dimension, in effect creating a full hyperblock universe. We then make the important ontological assessment that variation of unfolding scenarios need not be encoded beyond the physical span of a block universe by some external timeline branching event, and may instead be encapsulated directly within the confines of a particular block universe in the form of its intrinsic superposition content, itself being derived from its Aethic coordinate in the larger hyperblock universe.

It is also worth mentioning at this point that the upcoming Aethic mathematical structure was actually derived prior to the extrusion principle, with the extrusion principle itself having served as the single adaptation to temporal ontology which enabled the Aethic structure to describe superpositions in a real-world setting. In effect, then, at its best we ought not to picture the extrusion principle as being arbitrary, but rather as operating in an exact conjunction with any idealistically perspectivist model of the universe which is also capable of describing superpositions. Such is why this principle is quite foundational to all further Aethic pursuits.

The most procedurally insightful way to summarize this derivation is that we have shown the static block universe model and the growing block universe model to collectively lack the degrees of freedom required to describe ontological time as it exists in our universe. As such, we are compelled to use Einstein's razor [5] to incorporate the simplest possible extra degree of freedom[2] to our model which is sufficient to describe it. This is the form of the Aethic dimension itself, with the principle of extrusion then being the ontological consequence. Therefore, every further principle which we take to be implied by the extrusion principle in the remainder of this paper can be considered to be consistent with such an Aethic dimensional interpretation to the ontology of time, itself being the ideal model by Einstein's razor.

Speaking personally for a moment, it may be valuable to also describe the extrusion principle in the same terms in which it originally came to me during my epiphany on the subject[3]. Simply put, *the premise is that there are no hard metaphysical barriers between alternate histories, (as we see in the timeline branching model), but instead all alternate histories and indeed all possibilities are occupying the same physical space, with their differences being encoded in the degrees of freedom of Aethic superpositions, (which will be outlined later on in the paper). In effect, then, when an agent moves to a new block universe, it is not that their spatial location changes, but rather that they attain a new perspectivist view on this same physical space in which all possibilities are contained*, (such that a 'block universe' stands for a particular instance of the realized scenarios therein[4]). That is the metaphysical core beneath this principle.

Continuing on, we may briefly note that the extrusion principle has a huge array of favorable consequences, but one of the most immediate among them is that it now allows the hyperblock quantum wavefunction to remain unitary even over wavefunction collapses. This a crucially important result, and is interrelated with the heart of what makes this insight so ontologically powerful. Simply put,

[2]To give a related example of Einstein using just this sort of approach, consider his solution to the photoelectric effect in his annus mirabilis paper on the topic [6]. The fundamental overview of Einstein's insight is that he split one degree of freedom, (being the energy of a macroscale light beam), into two, (being the number of photons and the energy of each individual photon). Crucially, then, the core premise of the Einsteinian way is that in the face of an innavigable paradox – and in that scenario only – one ought to make the directed move of splitting one degree of freedom into two. In Aethic reasoning, then, we open on the idea that temporal ontology possesses just such a paradox.

[3]For reference, this epiphany occurred in a single instant during the week of August 19, 2022, while I was walking across my college campus. Sadly I never wrote down the day and time, so I only know it to have happened sometime during that week. I think it is in the running to be the single most pivotal thought of my life so far. More specifically still, the exact instant of realization occurred while I imagined flipping a coin, (a penny), in my mind's eye, and then watched to see it land heads. In the last moment while it was in the air, the thought came to me, rather like floodgates opening, when it feels like I got but a glimpse behind the curtain of reality for a split second. To this day, perhaps the most remarkable part of the experience is that it almost feels like something was revealed to me, in that I was effectively but watching an animation, and saw the result with my own eyes rather than having invented it.

[4]In other words, the extrusion principle may be initially rendered as the opposite supposition to assuming a separate instance of space to every possible world – rather the space itself is fixed and the Aethic degrees of freedom are allowed to vary.

we now have that a collapse can only ever imply the shifting of perspective to a new block universe, so therefore a single block universe can never house a wavefunction collapse. As such, with wavefunction collapses serving as the sole source of non-unitary evolution in Copenhagen quantum mechanics, we therefore have that any given Aethic block universe must hold fully unitary evolution. It is the illusion of an agent's perspective itself switching between such block universes, then, which creates the supposed breakage of unitarity, but ontologically the breakage is something of an illusion. *Perhaps the epitome of the direct consequences of the extrusion principle onto the quantum mathematics is that now any single Aethic block universe is fully unitarily time-reversible.*

2.1.3 Understanding the Basic Reordering of the Multiverse

A key aspect of the extrusion principle is what is implies about the ordering of scope for the multiverse versus a physical universe. As a matter of fact, it is this very realization that represents the initial epiphany of Aethic reasoning which I underwent while walking across my college campus in August of 2022. The idea is localized in how we might contrast a classical multiverse with an Aethic superposition. With the implication being that we can encode the set of outcomes which correspond to some collection of resultant timelines within a single Aethic superposition object, the key idea is that *unlike in classical metaphysics, where a multiverse contains separate instances of the same space, in Aethic reasoning we instead imply a single space into which all variation in the multiverse is compressed as an Aethic superposition.* In effect, the priority of order reverses, with a block universe encompassing a multiverse rather than a multiverse encompassing a portion of a block universe, (as seen by the growing block universe model, for instance, in which the current realization of the block is to branch into externally determined future possibilities). This is what gives an Aethic block universe its characteristic intrinsic superposition content, as such contrasting it with a classical static block universe.

The important additional point of nuance, then, is that even though a single block universe encompasses all superposition outcomes within the same physical space as oneself, it still follows that we need the Aethic dimension to actually collapse those superpositions, in effect requiring that the true external component to the block universe is the Aethic coordinate itself. In other words, even though a block universe contains superposition objects, there ought to be a one-to-one correspondence between a block universe and a particular superposition configuration, such that variation in superpositions is left purely to the encoding of the Aethic dimension. It is the duality between these two changes which underlies the extrusion principle.

2.1.4 Why the Aethic Model is Original

Let us quickly touch upon why the Aethic model of the ontology of time is not simply the many-worlds interpretation of quantum mechanics, and instead is a fully original idea.

The key difference here is that the many-worlds interpretation is fundamentally an extension of the growing block universe model, such that all deviations to possible outcomes are contained within the branching at the present, and therefore are external to the physical structure of the existing block itself. With the Aethic model, however, we have that there is no intrinsic dependence of the branching of the Aethic Markov chain upon the present moment of the block universe, and furthermore it follows that all possibilities are already encoded into the physical constituents of the immediately prior block universe in the form of superpositions, (as is consistent with its satisfaction of the Markov property anyway).

Let us illustrate this idea with a use of Schrödinger's cat, being the thought experiment in which a cat in a box is either killed or spared depending on the random outcome of a quantum particle's decay. We will use this thought experiment to paint the picture of our next point, but one might just as easily substitute a safer concept like quantum spin state into the following argument if Schrödinger's cat seems to ontologically far-fetched. Now, let us paint the picture of why the Aethic interpretation of the wavefunction collapse is distinct from the many-worlds interpretation. Let us suppose that our agent in question – being the experimenter perhaps – has run the experiment at 2:00 PM, but only checks the state of the cat at 2:30. The Aethic premise, then, is the following: *as is consistent with the extrusion principle of Aethic reasoning, our experimenter's Aethic worldline must lead them into a new block universe at the instant at which they look in the box and observe the state of the cat.* Given this supposition, then, let us now analyze the respective prior-block universe and subsequent-block universe of the experimenter.

In the prior-block universe alone, there is never to be a wavefunction collapse, so we are left with the strange result that the cat will never be able to leave superposition in that universe. Even at 2:30 in the prior-block universe, when the experimenter checks the box, they will have to find a cat in superposition, thereby putting themselves into superposition upon becoming entangled with the cat. This strange outcome, of course, is not what the experimenter themselves will observe, because such a happening may be regarded as that which kicks them into the next block universe along the Markov chain, such that they are never allowed to experience that outcome in first block universe directly. Rather than interpreting this as some nightmarish zombie-like scenario to unfold in the prior-block universe at 2:30, then, we might simply suppose that said block universe is merely an overlay of the two possible outcome block universes, such that in some sense the experimenter is still present there, but without being able to access the other block universe any longer. This may seem somewhat similar to the many-worlds interpretation so far, but the key point of deviation is our next Aethic result: *once the experimenter reaches their subsequent-block universe at 2:30 sharp, it follows that the cat in that universe was never in superposition in the first place, so therefore the effects even at 2:00 PM change with respect to the experimenter's perspective.* This notion may very well represent to heart of the extrusion principle, in that it is a precise reinterpretation of the Copenhagen interpretation: that is, we have that in the subsequent-block universe, it is so that the past changes as well, such that tracing back in time within that block universe does not actually retrace the steps of the experimenter themselves, who has been in the other block universe in the prior moment. Specifically, the 2:00 PM of the subsequent-block universes holds that the cat had survived all along for the 'living' outcome block universe, and that the cat was dead all along for the 'dead' outcome block universe. In the Copenhagen interpretation, we have that reversing time would make the superposition un-collapse, but in the Aethic interpretation we have that this cannot be so, because in the subsequent-block universe we have that there had never been a superposition in the first place.

Now, to be clear on this point, there had indeed been a version of the experimenter in the subsequent block universe all along, so we might ask what becomes of them prior to the experimenter's consciousness following the Markov chain to that universe at 2:30 sharp. The interpretation to this is quite simple: the experimenter of the *prior*-block universe in particular was essentially in superposition of occupying the consciousness of themselves in both subsequent-block universes at once. That is, we might go as far as to 'define' the experimenter at 2:00 in the prior-block universe as equating to the quantum superposition of themselves in each of the two possible subsequent-block universes for which the cat is alive or dead, respectively. Such is how we define the cat in the prior-block universe already, so by induction it follows that we might think the define the experimenter in a similar way. The key difference between the two, however, is that the experimenter has no way of proving or even knowing that they are occupying both versions of themselves at once at 2:00 PM, because, simply put, there are no discernible differences in their environment to tip them off. The cat, however, would obviously be well aware of being in superposition at 2:00 on account of one component of itself being dead, so we would suppose that even though the cat is in superposition relative to the consciousness of the experimenter in that block universe, their own consciousness cannot possibly be located there on account of the perceivable difference in available information to them between the two outcomes of the superposition. With this being something of an inductive argument at this point, let us raise it to the level of a full principle, for which the empiricism we have noted is simply the consequence.

Principle 3 (Aethic Base Principle of Superpositions)
In Aethic reasoning, we have that an agent's consciousness will always occupy whatever block universe in the Aethic Markov chain maximizes the surrounding superposition content of their universe without alerting them to a discernible difference between any two particular states in superposition.

Another way of expressing this is that, where a block universe may be written as the superposition of some number of alternative block universes, in effect putting all differing states between them into quantum superposition, it then follows that an agent's consciousness will occupy whichever block universe corresponds to the superposition of the set of all block universes which they could not possibly be alerted to the variation between in the moment.

Note that this principle will become the second postulate of the Aethus once we assign the right mathematical structure to it. Such will help us define it with a more mathematically objective grounding than merely a supposition of consciousness.

In conclusion for this argument, then, we have clearly shown that the Aethic interpretation of superpositions is distinct to the many-worlds interpretation, because the many-worlds interpretation holds a time-reversal interpretation which matches the Copenhagen interpretation, whereas the Aethic

interpretation has a different perspective on this entirely, as emerges from its supposition that an entire block universe branches with the Aethic Markov chain, rather than only ever the future component of it. Let us now move to more epistemological arguments about this Aethic notion.

2.1.5 Opening of Aethic Reasoning

Given the statement of the extrusion principle, we already attain our first key required condition of the Aethus: it must be a fundamentally subjective concept. We can derive this from the notions shown already just using a simple application of the thought experiment of Wigner's friend, which is a variation of the Schrödinger's cat thought experiment in which the experimenter, Wigner, had his friend check the state of the cat five minutes before him [7]. Just using the definition of the Aethus that we have drawn upon already, it follows that if Wigner's friend has found out the initial particle's state and Wigner has not, then we hold that they must be occupying two different Aethae[5], because a difference in superposition implies difference in corresponding Aethus by the extrusion principle. As such, Wigner and his friend are compelled to exist at two distinct locations along the Aethic dimension. Given this notion, now, we are going to make a very important inductive claim about Aethic reasoning as drawn from this: an Aethus is, fundamentally, some kind of representation of the knowledge of an agent. Because, truly, all that distinguishes Wigner from his friend here is the contents of their knowledge, such that experience is also denoted as a form of knowledge. What we then get from this is that A) not only does knowledge have a genuinely locational-effect on an agent, but that B) it is the driving requirement behind resolving the major systematic issues in each of the static block and growing block universe models. And yes, of course, we see that superpositions are inherently an intimate consequence of one's own access over knowledge.

Let us quickly also imagine a variation of the thought experiment in which Wigner and his friend sit across a table from one another, and the fate of Schrödinger's cat is revealed from behind Wigner in the room so that only his friend can see it. This reveals something of an understandable objection to the extrusion principle, being the question of how Wigner and his friend can possibly be at different locations along the Aethic dimension if Wigner is staring right at his friend, and thereby confirming that they are sitting in the same room and therefore the same physical space. The counterargument from Aethic reasoning to this is rather straightforward: what truly do you mean by physical space in the first place? Is it really that Wigner and his friend are sitting in precisely the same physical space, or might we have missed any of the discriminating characteristics of a physical space when we thought only to define it with three dimensions of space and one dimension of time? That is, given how we are already playing around with the concept of physical reality having an Aethic component in addition to only the spatial components which one is referring by to when they say "physical space," we might then suggest that characterizing a physical space only by its spatial profile is something of an oversimplification. After all, we see from Zeno's paradox [8] that disregarding derivatives in a physical space leads to paradoxes, and we see from special relativity that disregarding time as a dimensional component of a physical space also leads to paradoxes. With it being, generally speaking, a reasonable claim to suppose that there are qualitative elements to a physical space beyond what we first assume is the exhaustive description, we might then ask if the same is true here. The idea, then, is that we might picture the Aethic dimension itself, although physical by some sense, as being primarily qualitative in any practical circumstances. This is indeed somewhat similar to how we already picture time, even though we know from Einstein that it also has a physical component. In the case of the Aethic dimension, then, perhaps we suppose that even as Wigner stares at his friend, his friend is then and there qualitatively infused with his own unique Aethus, whereas Wigner himself is infused with his own Aethus. Comprehension for concepts like these is admittedly underdeveloped in Western philosophy, but the East has been studying them for thousands of years. The closest English word for this kind of qualitative infusion of something is what we might refer to as "consciousness", however we will show in the next few sections that Aethic qualities cannot be justifiably regarded as representing consciousness specifically. Truly what we are looking at is a new form of qualitative assessment altogether, (at least in the West), although one which is strictly correspondent to conceptual philosophy and empiricism of one's tangible life. Regarding what one best ought to picture when engaging with this Aethic material, the recommended idea is that the very degrees of freedom which distinguishes the room as seen through Wigner's eyes as compared with through his friend's eyes are those degrees of freedom

[5]Crucially, we can perform a generalization here to suppose that the Aethus is what we fundamentally mean when we say "quantum observer." As such, we see, by extrapolation, that if two different humans are two different quantum observers, then this now implies that the same human as two different times must, equally so, be two different quantum observers. This is a direct counterclaim to the postulate of static observer.

with which we attain that they are sitting at different spots along the Aethic dimension, even though they are indeed directly in one another's physical company. There is indeed something of a dualist element behind this, but to keep these ideas scientifically respectable we might then cite how without making our exact series of assumptions so far, we would still be stuck with the static block universe versus growing block universe paradox. As such, in some sense Einstein's razor [5] compels us to see things this way.

With our now having described the basic fingerprint of an ontological Aethus, let us engage in a full philosophical discussion of it. This will help us determine just as much about what it is not as compared to what it is.

2.2 Philosophical Makeup of the Aethus

2.2.1 Aethic Knowledge as a Non-Western Epistemology

A key starting point in the process of evaluating the Aethus epistemologically is reconciling it with the modern philosophical landscape. Frankly speaking, however, we quickly come across a few major points of incompatibility between Western epistemology and some of the implied Aethic-type epistemology that we might gather through implication from the Aethic extrusion principle. As such, let us address a few of these points, and in doing so imply an Aethic interpretation of the Gettier problem.

Let us consider the debate between Protagorean relativism and Platonic objectivism throughout the cradle of Western philosophy [9]. The distinction in these two stances arises from how they view the objective nature of truth: Protagoras takes the meaning of truth to follow from the beliefs of a particular agent, (in a sense making truth true so far as how one takes it as true for *themself*), whereas Plato instead views truth as an irrefutable and consistent epistemology of an objective nature. This seems a simple enough distinction, through which Plato is widely considered the victor for his counterargument to Protagoras: essentially speaking, Plato argues that relativism operates on intrinsically unstable ground, because in even arguing that relativism is correct, Protagoras is asserting an objective claim, and moreover for another agent to disagree with the existence of relativism would, according to relativism, render it false anyway. So for relativism to be true or false depends on how oneself considers it, which itself both violates and agrees with relativism – hence rendering it as essentially philosophical meaninglessness. With this argument being stated, let us argue that the debate itself is actually still far from settled. Specifically, even though Plato may very well have invalidated Protagorean relativism, it still may be seen that the debate itself between Platonic objectivism and Protagorean relativism serves as something as a false dichotomy, with the Aethic epistemology itself serving as a clear counterexample to it.

Consider the following thought experiment which attempts to reconcile epistemological knowledge with a more Darwinian approach to mental states, and in doing so helps highlight the non-Western tendencies of Aethic epistemology. Let us picture the life of a rabbit in the forest named Kevin, such that his brain, under the forces of natural selection, represents a sort of processing unit which converts sensory intake into a set of possible actions as weighted by their contribution to his survival. As Kevin hops through the forest, he is constantly scanning for predators in the back of his mind, all while attempting to complete the various tasks of the day like finding food and water. Business is, simply put, operating as usual. But then let us imagine one extra stimulus to occur at this moment: the sound of a loud crashing in the bushes to Kevin's back. There is a fraction of a second between the hearing of this, and Kevin's reaction, so let us zoom in to this one immortal instant and ponder some queries of it. Specifically, let us imagine how the processing unit that is Kevin's brain might respond to the following question: *what is the probability that Kevin is to die in the next minute?*

Quite staggeringly, we might suppose that such a probability, (and a strictly Bayesian form of probability, as we will have it), being what we will refer to as $\mathrm{P}(D)$, has risen by at least a few orders of magnitude from its usual state. This is specifically due to two contributions: A) the usual level of $\mathrm{P}(D)$ is quite low, on account of Kevin holding a life expectancy, on average, which is well beyond one minute, and B) the number of times which such a loud crashing occurs in Kevin's life is actually somewhat low, (with the general proportion involving predation being somewhat high), implying that in this one minute, $\mathrm{P}(D) \approx \frac{n'}{n} \gg 0$, where n is the average number of times per year in this forest in which such a loud crashing occurs, and n' is the average number of times in which such a crashing is followed by the immediate death of those who heard it due to predation. So we see from this basic analysis that the probability of Kevin not surviving the next minute, in such a scenario, is substantially higher than it is during the average moment of Kevin's life. This is so only due to the high correlation between such a crashing resulting in death as opposed to the substantially

lower correlation between a more average moment resulting in death. What we see from this is that, somehow, Kevin's evolutionarily-informed brain is reading an extremely high probability of death from this stimulus, all while not actually knowing the specifics of the situation much beyond the awareness of the sound. If we momentarily imagine putting ourselves in Kevin's shoes, now, there is a natural philosophical question to be asked: *upon what ontological source is this probability drawn from?* Does it originate in Plato's objectivism, or Protagoras's relativism? It would indeed have to cleanly draw from one of the two if they are to be a true dichotomy of fundamental epistemology, after all.

Let us now show why $\mathrm{P}(D)$ itself rigorously cannot be categorized through either Platonic objectivism or Protagorean relativism. In doing so, we may construct a new version of truth altogether, called *Aethic truth*, which is tailored so as to source $\mathrm{P}(D)$. Aethic truth will thus be given to operate outside the objectivist-relativist dichotomy, through the notion of it being incompatible with both such options.

Platonic objectivism can be immediately discounted as the cause of $\mathrm{P}(D)$ with something of a straightforward argument: we can change the perspective in the forest. Rather than asking how Kevin reads his probability of death in the next minute, we can instead request the same probability of Kevin dying, but from the perspective of a bird in the sky. The bird, Gretchen, has the ability of viewing the unfolding events on the forest floor from the more objective standpoint of the air, so if there is indeed a predator on the approach to Kevin, they will be almost sure to see it. At the very least, Kevin has his back to the source, whereas Gretchen has a direct vantage point. As such, Gretchen's reading of $\mathrm{P}(D)$ will likely be of a different nature, either much higher if they spot a predator, or much lower if they do not. But even this bird, we can argue, does not have a perfectly objective standpoint. She is susceptible to human error, (or, perhaps bird error), and furthermore she cannot perfectly predict if the predator will successfully catch Kevin in the next minute, even if they are present. Birds cannot see the future, so therefore Gretchen lacks some levels of objectivity. We can continue on, then, with our hypothetical iterations of creatures who have even more objectivity than Gretchen, such as some infrared satellite in outer space or another hypothetical addition of the like, but the important matter of this is the nature of such an inductive chain itself: that is, no matter which agent we take the perspective of, there is always another possible agent with higher objectivity. Such a more-objective agent need not physically exist, but the point is that Kevin, as an agent, will always lack some layers of his own objectivity, which we might imagine being filled in by a more hypothetical perspective. But even this more hypothetical perspective, on account of being described with physical abilities, is then less objective than an even more objective viewer, who by such measures is even closer to uncovering the deterministic nature of $\mathrm{P}(D)$. We can write a fundamental principle of Aethic reasoning using this claim, so as to use it in our epistemological construction.

Principle 4 (Objective Principle of Aethic Reasoning)
For any agent[6] *who views a situation, we can always imagine a more objective agent yet. Hence, no agent's net epistemology matches the objective world.*

There is an explicit message which we seek to portray with this notion: when we request the probability of Kevin's death from himself, we are taking such a result in terms of merely the sound, for which we know there is a high correlation to death. However, from the perspective of Gretchen, we can no longer claim that we are drawing our probability from the sound alone, for her ability to see the predator or not is far more decisive. Gretchen has still inherited the property of the sound which Kevin holds, but has also appended a further property which brings its resultant calculation of the probability far closer to a deterministic system of zero or one likelihood. It is from this notion, then, that we draw the following important claim: *due to every agent always lacking some property of information onto the system that another agent might possess, we hold that every single value of* $\mathrm{P}(D)$ *which each one of them takes is based upon their own subjective informational assessment of the situation, which is always a distinct property of themselves.* For example, if Kevin takes his probability of death as being directly associated with the sound, then such a supposition is to be different with respect to Gretchen, who instead takes the probability of Kevin's death as arising more from the added layers of properties which she is in possession of. Had she claimed that the probability of

[6]This is so where the claim that an agent can see a deterministic universe is itself a contradiction to their being an agent in the first place, specifically because such a deterministic viewpoint has no literal or describable grounding in reality, (with one's ability to even accurately describe such an agent, perhaps, then implying that one is actually just such a deterministic agent oneself). More specifically put, we might imagine one's claim that some other agent, even if imaginary, views a deterministic universe, is itself a philosophically meaningless statement, in that it cannot be decomposed or related to any physical claims. This is somewhat analogous to claiming one has solved the Riemann hypothesis by returning the text: "*solution to the Riemann hypothesis.*"

Kevin's death was associated with the sound in the same way, (hence amounting to something of an objective-based extrapolation from Kevin's perspective), and we would nonetheless claim, through the Aethic stetting of truth that we are now constructing, such a thing would be a contradiction with Gretchen's own assessment of the situation. So we have that an objective extrapolation actually yields a contradiction between two exchanged truths of this type, rather than an intrinsic compatibility as the objective paradigm might expect at a glance.

As such, *if we assumed that* $\mathrm{P}(D)$ *itself is drawn from Platonic objectivism, and it would follow that every single one of these measured values of* $\mathrm{P}(D)$ *would contradict every other value.* Through both lenses of simply supposing they are objective and then directly spotting many contradictory values, or by instead assuming them objective and then applying an extrapolation to find them contradictory in another agent's frame of information, and we find an inevitable proof by contradiction within such a supposition. In total, we ought not to even regard $\mathrm{P}(D)$ as being expressive through Platonic objectivism. The next immediate claim, then, can be to further suppose that every value of $\mathrm{P}(D)$ is just as real as any other value, with there being no fundamental favoring from one perspective against another. This can be seen as somewhat analogous to the principle of relativity in special relativity, which does not give preference of realism to any one reference frame over another.

Principle 5 (Aethic Principle of Relativity)
As is akin to the principle of relativity from special relativity, we hold in Aethic reasoning that the degree of correctness to how one agent evaluates an Aethic truth versus another cannot ever be solely measured by the respective objectivities of the agents themselves. Simply put, an Aethic truth ought to have an independent value of correctness to every agent and to them alone, with the very truth value of the correctness being agent-dependent. (The first postulate of the Aethus can then be thought of as a yet even stronger equivalent to this base principle).

In such a picture, then, the Aethus itself can be thought of as analogous to the informational reference frame of an agent. This occupies a kind of ontological definition of the Aethus, with the coming mathematical definition satisfying more of a generalized mathematical structure which is able to depict such an ontology formally.

One might argue against this principle by supposing that there is in the least a more objective viewer to any given agent, who as such can be argued to hold a superior stance, but even the supposition of which observer is more or less objective is an assessment that cannot be reliably stated from the perspective of any single agent, who by the objective principle of Aethic reasoning already does not possess the objectivity needed to establish such a thought. We then see that at least from the perspective of any particular agent, that which is objective is only so in dependence with the epistemic perception of what is objective. As far as an agent is concerned, this will never not be circular logic.

With the combined suppositions that every value of $\mathrm{P}(D)$ undergoes its own principle of relativity, not instating an objective ordering of validity to different values under different agents, and also that the very supposition that $\mathrm{P}(D)$ can not be Platonically objective, then we hold that it is at least possible to define a hypothetical system of ontology in which every value of $\mathrm{P}(D)$ is fully and fundamentally real with respect to its corresponding agent. The very ability of ours to state such a stance without contradiction, then, is proof that there exists an alternative representation of truth beyond Platonic objection itself. Remember that we need not even prove this alternative system yet, but the simple ability of it to exist and be stated is reason enough that, in the least, there is a formulation and interpretation to ontology of truths which is not encompassed in Platonic objectivism. We need now to simply show that this is also beyond Protagorean relativism, and we would have developed a stance beyond the Western dichotomy of philosophical truth.

Let us now consider the compatibility between our proposed interpretation of truth against Protagorean relativism. The simple answer to this might be that given how Plato has already shown Protagorean relativism to represent a false stance, we therefore have to conclude that Protagorean relativism cannot be the ontological source of $\mathrm{P}(D)$ on account of $\mathrm{P}(D)$ being empirically true while Protagorean relativism is ontologically false, but let us test it nonetheless against $\mathrm{P}(D)$ to analyze where it specifically fails in this context. Our approach into this should work as follows: we can note that the value of $\mathrm{P}(D)$ itself is entirely independent of Kevin's opinions. This is the part that becomes a bit philosophically tricky, but it is crucial information toward reconciling this. So, simply put, we can show that at no point was Kevin's felt experience of $\mathrm{P}(D)$, on account of the information presented to him, truly a mental function of his reasoning or even emotions. That is, for the sake of analogy, such a processing is subliminal to the entire mind in a similar fashion to how the subconscious mind is subliminal to the conscious mind. That is, we have to picture $\mathrm{P}(D)$ as somehow being completely

distinct from Kevin's own agency or capacity of interpretation, simply because if we assumed the alternative, then it would be possible for Kevin to change the value of $\mathrm{P}(D)$ just by willing it to be so. Even more basically, we can deliberately assess that when Kevin is in that moment when he assesses danger, his mind itself tells him that the cause of such danger is external – as in that it did not choose to put the danger there or choose to hold it as existing – rather it simply inherently holds it as existing in response to an unalterable external truth of sorts. That is, even though Kevin mentally chooses to react to the danger, as would be in more the Protagorean relative scope, he nonetheless has a clear external component to the intake of the sensory information itself which triggered such a mental assessment. Let us remember that this value of $\mathrm{P}(D)$ itself, while not being fully Platonically objective, is sourced from a compilation of information that is not willed into existence by the mind, nor is intentionally viewed by the mind. The ontological blip of truth which is accessible to Kevin through his Bayesian degrees of belief in that instant is both strictly characteristic of his subjective experience, all while being triggered by and perhaps contained in forces just outside his conscious sphere, as is the skin of an apple to its flesh. Through such things, then, this avenue of philosophical analysis must lead us to conclude that whatever the ontological source is of $\mathrm{P}(D)$, it cannot be Protagorean either, (at least through the lens in which Plato describes it, where Protagorean relativism is fundamentally opinionated). As such, we have essentially accomplished two things here: we have both shown that this $\mathrm{P}(D)$ is decidedly not Platonic or Protagorean, and in doing so we have come up with our first concrete example of a piece of Aethic information. It is the generalization of such information to the entire array of Kevin's life that will serve as the backbone of Aethic reasoning.

One final important note to make at present is a more nuanced analysis of why exactly Protagorean relativism was invalidated through Platonic objectivism. Let us consider the following further principle of Aethic reasoning.

Principle 6 (Dual Logic Principle of Aethic Reasoning)
In Aethic reasoning, we hold logical causality and practical or physical causality as two distinct notions which require separate ontological assessments. We shall refer to these as ***abstract logic*** *versus* ***causal logic****, respectively. The specific Aethic supposition, now, is that while abstract logic is still not allowed to be contradicted between the Aethae of two agents, on account of it being somewhat intrinsic to an Aethus anyway, we can now very much hold different representations of causal logic between two Aethae. To put it another way, causal logic allows Aethic manipulation, whereas abstract logic does not, and is rather a source of manipulation onto an Aethus if anything, (through its use in the Aethic mathematical framework).*

A more inductive way of expressing this principle is that "each instance of abstract logic has a fixed truth value across all valid Aethae, whereas each instance of causal logic does not have a fixed truth value across all valid Aethae." Notice that this representation should be cautioned against as the base definition of abstract versus causal logic, and instead should only be used as a subsequent corollary of notice after one defines the Aethic mathematical structure. This is meant to help avoid any circular logic, as Aethic attribute relations are themselves given to be instances of abstract logic per their definition.

The premise of the dual logic principle, then, is that the mere supposition of categorizing abstract logic and causal logic together under the same category of a "claim" is an arbitrary linguistic artifact that has no ontological grounding whatsoever. In this way, it is akin to inventing a new word which specially denotes either an apple tree or the planet Saturn, for example. The ontology behind it is baseless, to the point where forming an argument which is rooted in that fallacy may automatically be disregarded. At its core, then, the dual logic principle is a semantic one, which highlights that Plato's argument against Protagoras is merely arbitrary when used against the relativism of Aethic reasoning.

To state this explicitly, we can suppose that the direct epicenter of Aethic reasoning's resistance to the Platonic argument against relativism is the state of existence of invalid Aethae. For an Aethus to be able to be objectively unrealizable, then, means we have a place to store all of the conflicts with abstract logic without being obliged to keep said Aethae valid. In effect, we have a fully relativist structure, (being the collection of all possible Aethae), which is endowed with a validity operation, (being perhaps not so much objectivist as relational itself, given that it is merely a function of an Aethus), and from such a thing we have constructed direct resistance to the argument which befell Protagorean relativism. The state of invalid Aethae having to play a role in Aethic reasoning, then, is mathematically existent as a direct corollary to the dual logic principle. Our choice of using them for mathematical claims throughout the remainder of this paper, then, (be it Aethic Bayesianism of the third postulate), might be considered to be justifiably induced from this very node of the argument.

To put this into practical application with the current analyses again, we can suppose that Kevin's

own determined value of $\mathrm{P}(D)$ in the moment of hearing the sound represents a form of causal logic, allowing Aethic manipulation.

However, switching gears to the Platonic invalidation of Protagorean relativism, now, we can see that Plato is specifically arguing that Protagorean relativism is false on the account of it referring to itself as objectively true all while asserting a subjective evaluation of truth in all cases. We can now argue that such an argument is only directly valid in two cases: either Protagorean relativism implies truth-relativism over abstract logic as well as just causal logic, or the stance of Protagorean relativism as being true in the first place is an instance of causal logic. By De Morgan's theorem, we need to find a counterargument against both points in order to uncover a workaround to Plato's argument, (which can be put into direct use in Aethic reasoning). The second of the true is more straightforward, which argues that the truth value of Protagorean relativism could be an instance of causal logic. We can immediately counter-argued this with the coming corollary of Aethic reasoning that *no ontological paradigm is permissible with holding a truth value which is not abstract logic.* As such, that second point is checked off as definitively false under the presence of the dual logic principle. Regarding the other notion, being that Protagorean relativism implies a truth-relativism over abstract logic, we can simply now argue that this is not so! That is, we can assert that Protagorean relativism is to only hold truth-relativism over causal logic, and strictly never over abstract logic. If we simply incorporate such a principle into the abstract logical-foundation of Protagorean relativism, and under the dual logic principle we hold that this new rendition of Protagorean relativism is no longer applicable with Plato's counterargument. This notion can also be put into effect for Aethic debates of validity, if need be. The main supposition, however, is that the entire issue of the strongly objectivist-leanings of modern Western society may, in part, be traced back to the initial assumption by Plato and others that abstract logic and causal logic might be one in the same. For all we know, Protagoras may have been arguing for something more akin to the dual logic principle of Aethic reasoning, but due to his being a lifetime older than Plato such a dialogue may have only been taken from Plato's perspective [9]. Of course that is mere brute speculation, but it is worth pondering over due to the vast ripple effects that it may have contributed to. In short, we hold that the Platonic-versus-Protagorean dichotomy of logic is not only a false dichotomy by itself, but we also hold that the very assessments of logical ontology upon which they both depend are interpretive at best. That is, the neglection of anything akin to the dual logic principle here described is a sign of oversimplification, if only to an initially subtle degree. Of course, Western thought is otherwise known for its nonprejudicial assessment of people and ideas. Right? More like not by a long shot. Western thought has made something of a habit of forgetting the important details, but who am I to say anything about it?

Let us now switch gears to give examples of each of abstract logic versus causal logic. To give an example of a certain piece of abstract logic, to begin with, we might suppose that the property of existence of De Morgan's theorem itself, (as was just mentioned, for example), is clearly an example of abstract logic, because for it to be otherwise would spell a myriad of issues throughout Aethic reasoning and any single logically cohesive notion. (To be clear, we need not even agree with the truth value of De Morgan's theorem to categorize it as abstract logic – merely the stance of it being both at once causing a directly perceivable paradox will do. Here that paradox is that logic will no longer function, which we know not to be the case through axiom. And yes, said axiom will still be an example of abstract logic). The general categorization of a property as abiding by abstract logic versus causal logic is usually somewhat simple: we do so by assessing whether it logically implies the truth value of any single ontological paradigm, and if but a single one can be named with validity of formulation, then said property is an instance of abstract logic. As for whether something is instead causal logic, the categorical procedure is also somewhat easy – one must simply decide whether its truth value tends to be an approximation or not – especially in a physical sense. For instance, when one claims that *an apple seed causes an apple tree*, we can clearly categorize such a thing as causal logic. Specifically, the logical implication being made here is not really logical at all – it is experiential, and or practical in a tangible sense. This intuitive distinction itself can be seen as the backbone inspiration for thinking in terms of the dual logic principle: that is, an apple seed only approximately causes an apple tree – because the seed might fail to grow – and an apple tree only approximately implies an apple seed – because through random chance there is a list of alternative sources to the tree, as rare as they may be. (For example, a quantum fluctuation is on this list. It may be practically inconsequential, but its very possibility in an ontological light is already sufficient proof that seed-to-tree causality, and its converse are both examples of causal logic). It is the distinguishment of properties into either abstract logic or causal logic which will form a foundational role in the logical intuition of Aethic reasoning.

Notice that this distinction of abstract logic versus causal logic never directly assesses the intrinsic

states of the involved objects themselves, and instead is merely relational. This contrasts it with distinctions like the abstract versus concrete dichotomy, which is categorical toward objects themselves rather than relations between objects. To give an example of why the same property object can engage in both abstract logic, consider the statement, *there is only an apple on the table.* We can show that this statement is connected to the statement *there is not an orange on the table* definitively through abstract logic alone, because such a thing is itself a logical consequence of the former statement. When we suppose that the former statement *implies* the latter statement, our specific use of the word "implies" is in reference to abstract logic. As will be seen Aethically, for us to imply the falsehood of this total statement of implication would be an Aethic contradiction, which is a stronger form of contradiction unique to Aethic reasoning. This tells us that such a total statement of implication is itself an instance of abstract logic, specifically because its truth value is fixed across all valid Aethae. Such a usage of abstract logic will become important once we rigorously define the Aethus, specifically because Aethic attribute *relations* are given to operate under strictly abstract logic, even though Aethic attributes themselves are instances of causal logic, (due to Aethic truths fundamentally being instances of causal logic, as per their ability to be manipulated under causal logic via the dual logic principle). Regarding a statement that is connected to *there is only an apple on the table* using causal logic, we might consider the statement *someone will have eaten the apple by tomorrow.* This can be considered causal logic, this time, for two reasons. 1) it is clearly not a logical guarantee in the first place, and more rigorously, 2) its truth value is not fixed across all valid Aethae. It is also crucial to note the difference between the implication's truth value, versus the truth value of the items within the implication themselves. For A to logically imply $\neg B$ may very well be in effect, hence holding that A and $\neg B$ are connected by forward implication with abstract logic, and yet such a statement does not itself tell us whether A or B is true – merely that they cannot both be true. As such, in this example, $A \rightarrow \neg B$ would be a statement of abstract logic, whereas A itself could be abstract logic or causal logic, depending on its context of application[7]. This all being said, then, we can indeed instantiate relations of abstract logic or causal logic themselves, forming a kind of second-order object which encodes a relation of the proper type. For instance, De Morgan's theorem itself can be seen as an instantiation of abstract logic, specifically where it serves as a kind of proposed equivalence relation between the Boolean statements with which it corresponds. An instantiation of causal logic, alternatively, could instead be the phrase "leads to" in the context of the sentence "lack of water leads to thirst" to give an intuitive example. This helps highlight the fundamental notion of abstract logic and causal logic being entirely distinct as concepts, with our supposition of their holding like structural framing being merely an artifact of our language.

To describe these notions in the specific Aethic terms which we will engage in later in the paper, *even the supposition that we can put the truth value of Aethic reasoning in Aethic superposition is a paradox, for Aethic reasoning would be applicable to itself and not applicable to itself at once. This is very foreign from the directed and logically-cohesive notions of Aethic superpositions, because this state of two properties at once is not logically-constructible. In a word, it is very logically poor. As such, we can assert that even the supposition that the truth value of Aethic reasoning can be put in Aethic superposition begets an invalid Aethus, hence hiding it forever outside one's ontological scope. Therefore, by extension we have that the truth value of an ontological paradigm can never be regarded as causal logic, otherwise we have to imply the existence of invalid Aethae. We instead nip this in the bud, then, and suppose that some properties are just without the ability of inward Aethic manipulation. Such properties are what we might identify with abstract logic.*

Math errors ought not to count toward Aethic knowledge themselves, even if one is unaware that an error was made. For example, if you approximate at a glance that 1/40 is less than or equal to 1% instead of the more accurate 3%, then your previous knowledge of how the range from 0% to 1% does not contain 1/40, however vague in the moment, (on account of drawing from higher-order thinking), should still be sufficient to Aethically derive this fact, (satisfying the condition of Aethic knowledge that the set of all derivable properties based upon some set of Aethic truths is also an Aethic truth relative to the same Aethus), hence showing that mathematical identities, in the broad sense, are always present in one's Aethus by default. We can consider it something of an axiom to the Aethus

[7]Importantly, we will see with further Aethic arguments that $A \rightarrow \neg B$ never holds a different truth value between any two valid Aethae if it is asserted to be abstract logic, even if A and B are in superposition of being both true at once in that Aethus. The key is that we get away with this by setting both of them to blank within that Aethus, however if we had ever truly stated A in an Aethus, then B would always hold a deterministic fixed value as a function of the assigned value of A – with this notion itself being logically equivalent to the prospect of $A \rightarrow \neg B$ being an instance of abstract logic. If we leave both as blank, though, then the supposition that such a thing still has anything to do with the truth value of that logical implication would merely be an instance of the blank-stated fallacy.

that such broad mathematical identities tend to fall under the umbrella of derivable statements, hence implying that they spread from one's static Aethus to their Aethus upon taking the Aethus equivalence operation, (as is essentially the mathematical phrasing of the notion). This helps deduce, at least in part, some of the motivation behind defining abstract logic as being fixed across all comprehensible Aethae, and thus why it ought to be distinguished from causal logic in the first place.

Also please quickly note that one's choice of whether the objective principle of Aethic reasoning is ontologically deeper than the dual logic principle, or vice versa, is up to the interpretation of the epistemic thinker in question. Either direction of implication, (under a strictly abstract logic sense on account of them being ontological principles), is perhaps acceptable, so long as one remains consistent with it. Let this be a topic for further philosophical analysis, if need be. Moreover, the parallel between the two is indeed a very important part of the picture, because the trichotomy we have supposed between subjectivity, Aethic truths, and objectivity is only really applicable in the space of causal logic. Abstract logic itself, then, we might still refer to as "objective", but of course of a very different form from the causal logic notion of objectivity discussed earlier. We then see that these two very distinct concepts, being the abstract logical truth objectivity versus the higher-causal logic-awareness objectivity are in fact two totally distinct notions under this dual logic principle of Aethic reasoning. Our very supposition of equating the two, then, has occupied the state of one very large barrier between us and our measurement problem solution. But yes, abstract logical objects occupy one partition element of what we might refer to as "objective", whereas the objective category of causal logic occupies another. All of the context clues will be provided in the remainder of this paper, at least, for discerning these two epistemic objects.

A major area of fallout from the classical association of objective abstract logic and objective causal logic lies in the interpretation of the field of epistemology itself. Considering how it concerns the philosophy of knowledge, the immediate question now is *whether it associates more with objective abstract logic, or instead with causal logic.* As will be something of a loose terminological system for this paper, we will primarily use the term *epistemological* to denote strictly objective abstract logical systems, (so as to hold the proper connotation of a paradigm which comes with the word), and then *epistemic* to denote causal logical systems, (be them objective, Aethic, or subjective).

2.2.2 Outlining the Consequences of Aethic Subjectivity

Given the nature of Aethic knowledge now introduced, where it is neither quite subjective nor quite objective, let us provide it with a loose philosophical analysis of its own. We may begin with a thought experiment. Suppose Charley is a chef who bakes a pie for himself and his roommates, Alice and Bob. Just after Charley has completed the pie, having placed it on the stove to cool, he briefly exits the kitchen to put his apron in the wash. Upon returning to the kitchen, he finds that the pie is gone. However, he is of course unaware as to who took the pie. Was it Alice, or was it Bob, who were the only ones in the house with him at the time? Let us take a moment to analyze Charley's Aethic knowledge at this very instant. If we assume two things of the situation, being *1*) Charley is truly unaware as to who took the pie, and *2*) he does not have sufficient clues at present to deduce it anyway, then we can conclude that he is truly Aethically unaware of who took the pie. To be clear, we specifically know that he holds no Aethic information on the subject by a proof by contradiction: if he did hold Aethic awareness as to who took the pie, then it would be possible for him to sway the intrinsic probabilities one way or the other; so because we know he has not done this so as to deduce who took the pie, we therefore have to conclude that he holds no Aethic information on the subject. Note that the presence of Aethic knowledge implies the presence of all respectively deductive Aethic knowledge by line of derivation, so this is why point *2* must be false as well as just *1* in order for Charley to hold no Aethic knowledge as to who took the pie.

Given this setup, then, let us now undergo something of an analysis of possible worlds. Specifically, we might imagine generating a full objective world to align with each possible world. In many of the possible worlds, Alice took the pie, and in many others, it was Bob. For the sake of simplicity, we will analyze these as two possible worlds, labeled A and B respectively. The key to notice here is that since we know these possible worlds are given to be the same in all other respects other than who took the pie, (as is something of an implication of phrasing it from the node of when Charley reenters the kitchen), then we can therefore conclude that all of Charley's Aethic information is further contained in each of A or B. That is, for an item of Aethic information to be contained in Charley's Aethus also implies that it is intrinsically present in both A and also B. However, the converse cannot quite be stated. Specifically, we know that in A for example, Alice definitively took the pie, so if we treat A itself as an Aethus, then we see that A is clearly in possession of some information that Charley is

simply not. Likewise, B holds that Bob took the pie, but Charley cannot know this either, otherwise he would contradict his stance of not knowing who took the pie. As such, we see that every item in Charley's Aethus is present in A and B, but they each contain items which are unknown to Charley. Now consider the following supposition: *if we treat A and B as objective worlds specifically, then Charley will have exactly the same Aethic knowledge under both objective worlds.* That is, his Aethic knowledge is completely indistinguishable under both possible worlds. So, to the truest extent, we have that Charley's Aethus is not exactly coupled to one of these possible worlds any more than the other, because such a thing would imply that it holds preference in Charley's Aethus, which we know that it does not. As such, with the most basic rules of the Aethus having been outlined, we have to configure something of a symmetric principle. Consider the following epistemic statements.

1. For Charley's Aethus to know if it is in A or B, it is therefore implied that he must be in that corresponding A or B.

2. The objective postulate of Aethic reasoning implies that there is something of a distinction between an objective reality and an Aethus, therefore implying that they ought not to arbitrarily coincide in their epistemological properties.

3. If Charley's Aethus coincided with either A or B even without his possession of Aethic knowledge regarding which of the two he was in, then that would imply that an Aethus tends to coincide with a specific possible world. Rather than the default of unknowing being unbiased, it would instead favor one possible world over another, hence implying that the Aethus is not really an independent and distinct epistemological entity than a possible world itself. Instead, it would unavoidably connect to one of them independently of its own information and in a respectively arbitrary fashion.

4. Therefore, Charley's Aethus itself cannot be in favor of either of scenario A against B by any measure.

The general form of such a conclusion can be written as a referential principle.

Principle 7 (Indiscriminate Scenario Principle of Aethic Reasoning)
As we see from the above derivation, it follows that in a purely epistemic light, an Aethus cannot favor one fully fleshed out outcome scenario over another while still being definable without extra arbitrary information.

Another way of expressing this idea is that given an ensemble of possible Aethae which the agent in question may traverse the Aethic dimension to upon learning more information, we hold that no single one of these Aethae is to be given as intrinsically more objective than the next with respect to the original Aethus in question of the agent, (at least to the extent of epistemic analysis).

We can see from this derivation that in order for Aethic knowledge to remain independent from Platonic objectivism, we have to hold by a basic symmetry argument that Charley's Aethus is not in objective reality A to the exclusion of B or objective reality B to the exclusion of A. As such, the supposition of Aethic reasoning is to situate the Aethus upon *both objective realities at once.* In a sense, then, we can consider an arbitrary Aethus to be analogous with some corresponding set of possible worlds. Such a view of the Aethus is a basic intuitive way of grasping it. That is, in addition to having an epistemic connotation, it also holds an ontological connotation, such that it always corresponds to a physical reality of sorts, (with the world "real" in this context essentially applying to any connotation for it which one chooses, from philosophy to theoretical physics to the arts). Such a thing is the basic seed for our first major postulate of Aethic reasoning, which we will elaborate on further in the coming sections.

For now, though, we need to make a clear decision in our epistemic analysis of the Aethus: given that an Aethus can be equated with a set of possible worlds in the informational sense, are we then to suppose that a possible world itself is a more fundamental unit to reality, hence rooting the ontology from the more standard possible world-to-Aethic truth direction, or are we instead to suppose that Aethic truth itself is more fundamental, with possible worlds themselves being an emergent ontology based upon it? We are to make a clear assertion in Aethic reasoning, which is to choose the latter of the two choices. Let this be known as *the Aethic reversal principle* of ontological-informational direction as compared with the standard paradigm of metaphysics.

Principle 8 (Epistemological Reversal Principle of Aethic Reasoning)
Rather than treating an Aethus as a set of possible worlds, such that a possible world is defined by information down to every last specific detail, in Aethic reasoning we reverse the priority of things. In the more standard "set of possible worlds picture for metaphysics", we inadvertently prioritize the unending collection of information to a possible world as a unit of physical reality, but in Aethic reasoning such a supposition is viewed as a construct. Instead, we are now to reverse the prioritization so as to instead regard the basic unit of information as the fundamental unit to reality, such that we are viewing the spectrum of unit information to expansive information from the Aethic side rather than the classical side.

As such, we now argue that for any set of possible worlds we might wish to describe, we can substitute it in Aethic reasoning with the Aethus of consistent information across that set, and then generate the remainder of reality through the corresponding Aethic means instead[8].

Regarding the motivation between asserting the Aethic reversal principle as opposed to the alternative, it is essentially to allow our reliance to be on finite numbers of Aethic knowledge attributes rather than an unending number of attributes to each and every possible world. Such an unending degree of specificity is to be considered not only epistemically insufficient, but also somewhat restrictive to the mindset of Aethic reasoning. As such, rather than making the weaker philosophical claim of supposing and incorporating all the properties of a possible world, with Aethic reasoning we instead initiate our analysis with a much more straightforward and Occam's razor-compatible framework, which is to simply note which Aethic attributes are known, and then to localize them to a corresponding Aethus. To explicitly state what caused me to make this shift in my own philosophizing, it happened while I was working on a project where I combined probabilities from many possible timelines, and I realized that it would be far more efficient for me to interpret said probabilities from the shared-attributes side rather than the specifically defined possible worlds-side. In effect, I developed the basic mathematical structure of the Aethus, as will be seen in the coming sections, in order to complete this task intuitively. Of course, such a thing was only a literal example of putting the Aethic reversal principle into effect, but the larger notion behind it is to further associate this with the physical reality itself, and then its corresponding metaphysics.

One may also note some of the parallels between this rendition of the Aethus, and existing philosophies like two-dimensionalism. In two-dimensionalism, we have a distinction between a primary intention, representing an agent's practical perception of an object, versus a secondary intention, representing that object's background objective being [10]. In a sense, we have that a primary intention is very similar to Aethic knowledge, whereas secondary intention is very similar to the objective nature behind that. The reversal principle, in such a context, can be thought of as the supposition that the Aethic knowledge is actually the more ontologically fundamental of the two, simply out of there being no alternative ontological system which is still non-arbitrary in at least one way. Even though the background objective world is perhaps undoubtedly more physically real than one's abstract Aethus, we nonetheless have, through the reversal principle, that the Aethus is necessarily to be treated as more ontologically fundamental out of representing the windshield to one's mind, so to speak. Any single perception of reality that one ponders which is decidedly different than their Aethus in at least one way is a perception of reality that is thereby arbitrarily associated with them, hence supposing that one can never truly escape or otherwise see beyond the provided epistemological boundary that is their Aethus, quite by definition. Notice that this is by no means a form of solipsism, because where solipsism declares that the external world to oneself does not quite exist, instead with the Aethic reversal principle we are arguing a notion of a completely different nature: that is, we are simply pondering a more geometric notion of an agent, being that their particular rooted node of reality tends to be their Aethic layer rather than their objective reality layer.

From this epistemological reversal principle, we might then immediately think to derive an ontological reversal principle, which seeks to answer the question, *but then where are we, really?* If we have shown that an Aethus is epistemologically more fundamental than a possible world, then we might also ask if it is more ontologically fundamental. For it not to be so would directly violate Occam's razor, after all, because our ontology would rely on an arbitrary epistemological system. As such, we might suppose the following extension of the base reversal principle.

[8]However, even in stating it like this, we must remember that a possible world is considered epistemically fallible as a concept in Aethic reasoning, for its incompatibility with certain coming Aethic principles like agreeing superpositions, so a possible world's applicability begins and ends as an intuitive stepping stone to comprehending Aethic ontology.

Principle 9 (Ontological Reversal Principle of Aethic Reasoning)
Given that an Aethus is epistemologically more fundamental than a possible world, as is the claim of the base reversal principle, then we might further suggest that an agent themselves is fundamentally and directly attached to an Aethus in the metaphysical sense, with their association with one or more corresponding possible worlds being merely tangentially relevant.

In making this claim, however, we lose the objective footing of a possible world in describing the stuff of the universe. That is, the postulate that any two humans in communication share a possible world is a luxury of our metaphysical paradigm, because it allows us to express notions of realism in an objective sense, and without having to always cite the reality in which such a notion is true. That is, I might remark to a friend that "*that three is tall!*" and without explicitly saying it, we both immediately understand that I am really saying "*that tree is tall relative to our current possible world!*" I never have to express that I am talking about our possible world, because we always default to assuming so anyway, and through such a thing the specificity of realism begins and ends with what is *actually* real rather than what is *not* real. Or perhaps more specifically, *actually real things fall in our possible world*, whereas *not real things fall outside of it.*

As we said, this is remarkably convenient for the purposes of conveying language, however that does not mean that it has to be *accurate* to the true way of things. We already have the tools within Aethic reasoning, relying only on the principles thus far stated, to derive such a system as arbitrary. This is quite a simple line of deduction, actually: given how we have shown a possible world to be ontologically secondary to an Aethus, at least according to the suppositions of Aethic reasoning, it then follows that the fixed assumption that only a specific possible world is "the real one" quite truly goes out the window. Consider the question of which possible world *you yourself* are in. According to what we supposed with Charley's pie, we have to conclude that you are never attached to only one possible world if you are attached to an Aethus. Accordingly, for us to assume that one possible world is "the real one", thereby implying some sense of inability to exit that possible world, then we immediately contradict the very supposition that oneself is already situated across many other options. As such, we wrap this proof by contradiction back to the surface, and are forced to conclude that the very supposition of a "real" possible world is a construct – at least according to Aethic reasoning. To replace this, we have only the tools of the Aethus to work with. As such, we can decide to mark an Aethus itself as the fundamental arbiter of what is or is not real, given that a possible world would have lost this title. But rather than simply assuming some kind of "one real" Aethus, we instead find it advantageous to the prospect of Aethic relativism that all Aethae are equally real – just with respect to themselves.

The supposition here, then, is that the very notion of defining something as "real" is and always has been a two-node system: "what is the object" against "what is the reality." In the classical paradigm, we get to fix the reality node, but in Aethic reasoning we cannot do this any longer. So it is the very act of placing the reality node onto an Aethus which reveals to us our fundamental insight: *the realism of an object is dependent upon which Aethus we measure said realism with, and an Aethus is a fundamental ontological object.* Therefore, *realism itself is not a fixed property of an object, but is merely a statement of relation between it and a given Aethus.*

First Postulate of the Aethus
Any attribution of realism is a statement of relation to a particular Aethus.

Put more simply, *anything may only be real relative to an Aethus.* This insight about reality is of utmost importance to the remainder of Aethic reasoning, because it asserts that a reality and an Aethus are essentially two sides of the same coin[9].

We already have something of a clear avenue into reconciling the basic statement of the second postulate of the Aethus, given this insight in combination with the notion that oneself never attaches to a single possible world, but instead is upon many of them. Epistemologically speaking, this is a notion of simply having an undetermined possible world to attach to, and through such a thing existing along many possibilities of them. However, it is upon interpreting this ontologically that a fascinating trend comes into view. Let this be described as *the Aethic unity principle.*

[9]Importantly, regarding why the first postulate of the Aethus is not just the extrusion principle itself – the difference is that the three Aethic postulates require that the structural and ontological definition of the Aethus has already been stated, whereas the extrusion principle requires no such condition, (on account of its perhaps being axiomatically lower in ontology).

Principle 10 (Aethic Unity Principle)
Just as we have to suppose that the Aethus is never attached to a single possible world, we also now have to conclude that an agent themselves never tends to attach to a single possible world, and instead is better ontologically described as, in the most metaphysical sense, occupying multiple possible worlds at once.

Or, to put it in more colloquial terms, oneself tends to occupy several timelines at once rather than ever occupying only one timeline. Such a perceived flux in the timelines presents oneself with elements from multiple realities at once within their own current block universe with them as they move down the Aethic dimension. For an intuitive example, if you are somehow upon two timelines at once, such that you stand outside a blue house in one and a red house in another, then you yourself will see a purple house with respect to your own perspective from your Aethic vantage point. From the intuition of timelines, then, we will expect that an agent who happens to exist on multiple timelines will, in fact, perceive superpositions around themselves from their own perspective. They will not see themselves in superposition, but rather that which fills their apparent block universe around them from strictly their own perspective. This most general form of superposition is what we will refer to as ***Aethic superpositions****, which distinguishes them from the special case of quantum superpositions. (Also note that the use of the word "see" in this context refers to one's scope of mathematical inference, rather than their physical sense of sight).*

With the unity principle, we hold that no agent ever occupies a single timeline[10]*, so therefore they tend to constantly be present in perspective-driven block universes which hold numerous superpositions within them. Such a definer to their particular content of superpositions, then, is simply their Aethus itself. (We also have to remember by the reversal principle that it is more accurate to think of the background flux of superpositions to the agent as not strictly being composed of possible worlds themselves, if only due to desired model flexibility).*

This mindset, although quite shocking at first, serves as the foundation of Aethic reasoning. It can be seen to draw in part from the mindset of how oneself exists upon all future possible worlds at once – out of the future being undetermined – so now the generalized supposition of this can be considered to extend this to the past and present as well. Rather than the flow of time having anything to do with variability of possible worlds, with the past and future in a sense being locked down in their possible world content, and the future being permanently in flux, we instead have that the Aethus itself is the fundamental unit of what is fixed in reality, with the variability of possible worlds instead extending more radially from it, to give an illustrative analogy. (Notice the helpful compatibility between this general mindset and the aforementioned Aethic extrusion principle).

To quickly illustrate this seemingly unintuitive idea that past events can occupy multiple states at once in much the same way as future events are often thought to, (in that the future is regarded as housing multiple possible worlds), the major idea is that that which is outside one's present Aethus – and through such a thing occupies all possible states at once from one's perspective within their Aethus – operates completely indiscriminately from the ordering of things in time. If you have never heard about some obscure historical battle, then to your Aethus it is in the same degree of undetermined flux as some distant future event. The future events are understandable to be in such a flux of possible worlds – but the idea is that this is a fundamental property of unknowns in general, and not just of the conceptual future. It is one's motion down the Aethic dimension, then, which fills in the gaps of their Aethic unknowns and translates them out of that flux of many possibilities, such as reading a history book about that historical battle and changing your vantage point in the Aethic dimension accordingly.

Principle 11 (Indiscriminate Time Principle of Aethic Reasoning)
In classical metaphysics, we hold that the future is represented by something of an unknown cloud of possibilities, such that it is the act of one's progression through time which allows said cloud of possibilities to collapse into single happenings.

In Aethic reasoning, however, as per its major tenets, we instead hold that such a cloud is not restricted to the future at all, and instead is indiscriminately spread across the entire past and future of the universe. As such, the gaining of knowledge about a present event, a future event, or a past event are ontologically indistinguishable happenings with respect to the foundation of the Aethus. This is a crucially important insight of Aethic reasoning, perhaps on the level of the principle of extrusion.

Note that this also couples to what we might call *the Aethic extrusion-consequential principle.*

[10] Intuitively, this is similar to how every point in a continuous probability distribution has zero probability of housing a random sample – it is merely because the breadth of specificity which defines them is far too fine.

Principle 12 (Aethic Extrusion-Consequential Principle)
The ability for the indiscriminate time principle to hold in the first place is a direct consequence of the Aethic extrusion principle. Without the Aethic extrusion principle, the reliance on possible worlds becomes much stronger, which is reflected in classical metaphysics accordingly. This is because when Aethic uncertainty is considered to collapse along the direction of time, it follows that designated "timelines" or "possible worlds" have to be brought about to individually house any conflicting properties about how the world might have been. Such designations themselves imply their list of consequences, among them being that timelines only branch in the future, so therefore ontological uncertainty can only be collapsed in the future direction. If we were to even suggest, then, that past ontological uncertainties not only exist, but can be collapsed without discrimination from future uncertainties, then we could demonstrate a contradiction between this and the notion of a timeline. If the arrow of time solidifies events in the timeline upon its passing them, then for an event to be changed at all from a later time would imply a change to a past event, which is contradicted by the very fact of it sitting on the same timeline as oneself. Notice how this paradox is only in effect so long as we do not imply the principle of Aethic extrusion. Once we do, however, in a few short logical deductions we see that the original need for designated possible worlds dissolves entirely, and instead we get a model based on Aethae themselves. This, naturally, is the form of the ontological reversal principle. Rather than possible worlds being necessary, they now become arbitrary in their unchecked assertions of where the boundaries between Aethae fall. As such, it truly is that Aethic reasoning is born with the extrusion principle, and the extrusion-consequential principle captures such a notion.

This now argues for something of a direct equal-and-opposite tradeoff between knowns and superpositions. This is what we call *the second postulate of the Aethus*, as will be elaborated upon later in the paper. The importance of this idea cannot be overstated.

Explicitly speaking, consider the specific philosophical motivation for declaring the second postulate of the Aethus given our knowledge of the first postulate.

Principle 13 (Philosophical Derivation of the Second Postulate of the Aethus)
From a purely philosophical stance, we can notice how the existence of the first postulate of the Aethus at all implies something of a odd change in the very epistemic manifestation of unknowns in one's Aethus as compared with classical metaphysics. This may be used to motivate a basic form of the second postulate of the Aethus itself.

The idea is that given the indiscriminate scenario principle together with the first postulate of the Aethus, we are able to perform the following derivation. Suppose we have an agent, say Kevin, who has an Aethus in the moment of A. If we imagine the vast ensemble of possible Aethae which he may traverse the Aethic dimension to upon learning new information, then according to the indiscriminate scenario principle, no single one of these outcome Aethae should be intrinsically more objective than the next with respect to Kevin's initial Aethus A. In effect, we get a different alternate reality for every one of these outcome Aethae by the first postulate of the Aethus, and we then have that all such realities are equally real with respect to that original Aethus due to the indiscriminate scenario principle's supposition about their indiscriminate epistemic sway over it. The key, then, is that any attribution made about Kevin's original Aethus from within any of these alternate realities is to be equally valid to any other attribution made from any other such alternate reality. What this tells us is that, at least from this basic epistemic perspective, we ought to consider leaning toward something adjacent to the second postulate of the Aethus so as to agree with the nature of the first postulate of the Aethus as has already been described.

We have, of course, already deemed possible worlds an ontologically shallower concept than Aethic knowledge through the Aethic reversal principle, so the Aethic unity principle is not specifically meant to imply properties of possible worlds themselves, as that would be ontologically inconsequential via the principles thus far stated. Instead, then, we had best interpret this principle as outlining a fundamental principle of nature: quantum superpositions, it seems, are not so far removed from the macroscopic world after all. That is, this notion of state superposition can be considered to be the natural state of reality, with the notion of collapse simply following from adding a state to one's Aethus. Of course this is a bold claim, and there are troves of evidence which seem to oppose it, (specifically in why quantum coherence does not then empirically survive to the macroscopic world), but the purpose of the next few sections is to find a very specific pathway which holds the mathematics as compatible with the underlying philosophy which we are proposing. The majority of such work will be localized in what we call *the Aethic union principle* which is to be discussed in more detail throughout the coming sections. To summarize what its claims are, we are essentially due to reinterpret quantum

decoherence as actually still representing a superposition of quantum eigenstates, just of a different variety. This also allows us to partition quantum measurement and quantum observation into their proper ontological roles. Measurement simply determines the grade of superposition, but it is still always observation, on account of the Aethus, which determines the single lingering state.

2.2.3 Inductive Motivation for Aethic Decoherent Superpositions

Let us now consider one of the major inductive claims of Aethic reasoning. So far, we have been able to express quantum superpositions through the Aethic block universe model, where both outcomes occur in the prior-block universe whereas only one occurs in each subsequent-block universe. The key next step we can make, now, is to suppose that a bout of inductive reasoning may be immediately drawn from this interpretation of the realization of happenings. That is, if quantum superpositions do indeed operate under this model, and macroscopic objects are composed of quantum objects, then by induction we can justifiably claim that macroscopic events themselves, through decomposition, are to be modeled as following that same pattern of realization that we saw for quantum objects with the extrusion principle, where a superposition maintains indefinitely in a prior-block universe, and never existed in the first place in a subsequent-block universe. For example, macroscopic crossroads like *which team will win the next World Cup tournament* would themselves be modeled by the extrusion principle. And, by the indiscriminate time principle of Aethic reasoning, we further would have that even a historical event, like the outcome of the American revolution, would have to be *both* relative to the Aethus of a given agent up until they directly learn about or are otherwise given the ability to deduce the outcome.

So we are already well aware that macroscopic phenomena trivially ought to obey the extrusion principle due to their quantum subcomponents doing so, but such a statement turns out to only be a red herring against this section's actual fundamental inductive claim. That is, given how we have already taken the fundamental step of modeling macroscopic phenomena as distributing across block universes to no less an extent than quantum particles, *we might then think to suggest that such macroscopic crossroads may not actually be ontologically decomposable into quantum coherent effects in the first place, but instead are to induce as an entirely original elemental form of superposition, being what we will now refer to as a 'decoherent superposition'.* This is a major inductive leap on two fronts, because it both infers that macroscopic properties follow the same guidelines of the extrusion principle, all while supposing that they do so without reliance on the induction from quantum coherence specifically. The major claim here, then, is that Occam's razor actually supports this position for the flexibility it allows us in the expression of quantum decoherence through the Aethic mathematical structure. We will indeed discover that both of these steps turn out to be quite fruitful with regard to their heightening of our capacity to solve the measurement problem in the coming sections.

Regarding how we think to define a decoherent superposition, now, let us simply suppose that they place multiple states into an ontological superposition of all happening at once, all while disallowing their interference in the vein of quantum superpositions. In effect, it is a less complicated form of superposition, which begins and ends with a real-valued linear combination of states, all without including the extra layer of details which regards having to apply the Born rule to actually gather probabilities. Instead, we merely pull the real-valued coefficient already present on the state in question. In general, let us suppose that quantum superpositions and decoherent superpositions are instances of the wider class of *Aethic superpositions*, being whatever the exhaustive ontological generalization of a quantum superposition is to be.

Intriguingly, the mere supposition that decoherent superpositions ontologically exist avails to us a fundamental reinterpretation of the onset of quantum decoherence as opposed to what is suggested by the Copenhagen interpretation alone. To begin with, we immediately see that quantum states, while still unobserved, must be in an ontological Aethic superposition regardless of whether they are still coherent. We already know how quantum coherent superpositions operate, being simply a linear combination of two wavefunctions, themselves operating as linear combinations of linearly independent quantum eigenstates. Upon collapsing this wavefunction, now, we are already in possession of a subtly different interpretation: the Aethic supposition, now, is that rather than all eigenstates dissipating with the exception of a single one, we instead have that the eigenstates remain in superposition in full, but simply transfer from a coherent superposition that is a quantum wavefunction to instead a strictly decoherent superposition. It is there where they remain, then, until an Aethus physically observes one of the states, at which point said Aethus truly collapses the decoherent superposition into but one eigenstate. This Aethic interpretation can be seen to fundamentally sift out the Copenhagen measurement process into characteristic effects of strictly measurement versus observation. Measurement,

see, triggers the transfer to a decoherent superposition, whereas observation physically collapses that decoherent superposition to a single state.

A quick additional important principle to grasp, now, is that decoherent superpositions will naturally be real-valued rather than complex-valued like their coherent superposition-analogues. Furthermore, it follows intuitively that the weights on the eigenstates in a decoherent superposition will simply be the square magnitude of their weights under the coherent superposition, as is the premise of the Born rule anyway.

Let us now move to gathering some of the ontological consequences of Aethic decoherent superpositions, specifically as relates to the extrusion principle again.

2.2.4 Motivation for Aethic Superpositions as an Inductive Argument

This next point is a direct instance of induction from quantum mechanics, being perhaps the primary inductive argument in all of Aethic reasoning. It is effectively a restatement of what we just deciphered with decoherent superpositions, however this method arrives at the same result without relying on the extrusion principle, and as such we will refer to this as *the tricky-principle approach to inducing Aethic superpositions.* This approach, in fact, comes from a very simple metaphysical identity – being the realization of the problem of induction – so for that reason it may be considered to lie at a deeper compatibility with Occam's razor than the more technical derivation through decoherent superpositions. Of course, the primary point of intrigue at play here is that both approaches result in the came conclusion, being that Aethic superpositions ought to exist. To begin with, let us compose something of a philosophical insight which we may refer to as *the tricky principle.*

Principle 14 (The Tricky Principle)
We cannot know whether the induction of reality's operation to outside one's observation follows the same understood rules as within one's observation or not. Furthermore, either answer to this question is unfalsifiable, (at least until the discovery of quantum mechanics).

This is a version of the problem of induction, except it applies specifically to directly unobserved or unobservable phenomena in one's Aethus or reality, rather than to time or future extrapolation. That is, it could apply right now, in the past, or in the future, with the unknown being favored in its application over any state of being unprecedented. This also shares ties with the notion of epistemological realism or the lack thereof, except without necessarily implying a nonexistence of reality outside one's observations, but instead an unfalsifiability to whether its rules follow from the rules you expect it to.

Given this tricky principle, a fundamental claim of this paper will be outlined. That is, *given that we know the quantum world operates as it does, and that our current notions of continued rigid objectivism beyond the realm of observation have thus far never yielded a solution to the measurement problem, in effect leaving it logically unhelpful to understanding reality, it becomes substantially more preferable to induce this unknown of beyond observation using the quantum world, which at least we have further properties about, than to induce from our biased perspective of the macroscopic world.* This follows from a more general philosophical razor that one should select a conclusion only based on the option with the most abundance of information given the option – and this is only emphasized by the continued failure of the objectivist interpretation of what lies beyond observation to reproduce quantum phenomena, (as is the measurement problem itself).

The heart of the procedure of this paper, then, is this: as is sort of obvious, in the classical world, the tricky principle remains strictly unfalsifiable, and as such looms beyond the scope of the scientific method. That is, until now — because the trick is that we can still peer into its inner workings, by using quantum effects themselves. The idea, then, is that if we suppose that the metaphysically-based laws of physics are themselves invariant across all scales[11], then we can reason that given how quantum effects are the sole known system which we can directly interact with that which lies beyond the curtain placed by the tricky principle — then it follows that we have two main outcomes. Either, A) what we observe in quantum mechanics directly matches our classical interpretation to the phenomena behind the tricky principle, which are the postulates of compete reality and static observation themselves, or B) there is a disconnect here, which, by our postulate of uniformity[12] of physics from before, is a direct avenue into making tweaks to the classical interpretation of what

[11]... Which is an optimally satisfying assumption to make, because, after all, it is the very assumption that led Newton to gravity, and not to mention has been keystone to perhaps all of successful scientific history.

[12]There is an argument to be made that the postulate of uniformity is itself unfalsifiable, and so therefore this unfalsifiability extents to the tricky principle, hence holding it as unfalsifiable anyway. So be it, as this is technically

lies behind the tricky principle. Keeping all else the same then, the heart of the procedure of this paper, in a sentence, is to record how phenomena work behind the tricky principle using the quantum world as an aid, and then render it general to all scales by induction. And, sure enough, when we do this, by honing in on the two unprecedented facts of quantum mechanics that wavefunctions are both unobserved, and known to operate by a precise mathematical framework therein, we find that not only does the classical interpretation of behind the tricky principle not apply, but we have a myriad of new conditions to change it with[13]. So just by this procedure, we find that the solution to the tricky principle sat outside the scope of the scientific method at any point in history before the discovery of quantum mechanics, but the same, intriguingly, can no longer be said of the world of right now. What we have is that in the pre-quantum world, where the macroscopic world was all we had for empiricism, it would indeed follow that Occam's razor ought to demand the solution to the tricky principle that is classical metaphysics, being consistency in the rules of metaphysics which observed versus unobserved items follow. But the key, now, is that *simply because we have uncovered with quantum coherence that but a single object outside one's scope of observation will have not operated by the same rules as within one's observation, it now follows that Occam's razor demands the reverse solution to the tricky principle, being that whatever lies outside one's scope of observation has to follow different metaphysical rules than what happens inside one's observation, and in more ways than one.*

This now being said, there is a right way and a wrong way to inductively generalize quantum effects — with the right way being to make all layers generalize in the scope of what best fits with their scales — rather than just bluntly applying the Born rule or whatnot to everything — itself being less induction and more a misunderstanding of relations. The name of the game, then, is to expand upon relations before objects themselves, as that would not make ontological sense anyway. So, even more specifically, we would *generalize* the Born rule, tailoring it to everything, rather than just scaling it up. If that were acceptable, then we might scale up the seemingly flat slice of planet Earth that is the human scale, and then mistake the whole Earth for being flat and having no curvature rather than being round and having minimal apparent curvature at the scale of a point on its surface only. As such, we know there is always going to be nuance in the correct way of generalizing inductions, and in the face of the present concept we know that quantum coherent effects cannot simply be applied everywhere, as of course that would violate empiricism in droves. Given such a setup, let us now look to the specific solution which Aethic reasoning proposes to the tricky principle.

Explicitly speaking, the claim of Aethic reasoning in the face of this induction of the tricky principle is that *there must be a broad ontological kind of superposition, of which quantum superpositions are merely a flavor*, and then that *even properties of the universe which are probabalistically disjoint, such as the unseen other side of a wall being painted one color versus another, ought to be under ontological superposition to no less a degree as which effects like quantum interference represent ontological superposition.* Of course, we know that wall color and interference effects are two very different qualities, specifically on account of the former representing quantum decoherence and the latter representing quantum coherence, so the major claim of Aethic ontological superpositions, then, is that whichever distinguishing factors come into play regarding these two cases are only extra to the base state of there being an ontological superposition, all without affecting the sheer existence of the ontological superposition itself. Put explicitly, then, *quantum decoherence is to represent a form of ontological superposition which is no less an ontological superposition than quantum coherence, it just simply follows that the distinguishing factors between the two come in as further properties on said background ontological superposition.* This is a very different result than what classical metaphysics does in the face of quantum decoherence. Where the classical interpretation implies that the event of decoherence immediately implies that now only one state *or* the other occurs, in Aethic metaphysics we claim that it is still the case that one state *and* the other has to occur right up until direct observation of the outcome. The key is that we are allowed to make such a claim in the first place thanks to the work we have done with the extrusion principle, where our restriction of having to use timelines has been alleviated. By extrapolation of this principle of Aethic metaphysics, we then have that when an agent

valid. Nevertheless, we, as humans in a scientific world, cannot exactly come up with a better explanation, because even if there was one, that would, in a way, just be able to be rephrased in terms of the postulate of uniformity of physics but with a different lens. As such, it seems more or less given that this postulate is essentially the best possible conclusion we can possibly make per stage of scientific history, past, present, or future.

[13]The reason that it does not apply follows simply from some of the key quantum tenets, such as superposition and collapse. We can postulate with the Aethus that a human is two different quantum observers at two different times, (that way wavefunctions make ontological sense), and so the postulate of static observation is violated. Furthermore, the postulate of complete reality is clearly violated due to the existence of superpositions themselves, where wavefunction collapses cannot be predicted to precision beforehand, (thus implying that that preceding reality does not directly imply the following circumstances – or in other words classical determinism is violated).

is truly unaware of some property or another, such as the paint color on the other side of a wall, it then follows that we have to take their reality in the moment as holding said paint color in all possible states at once as per our inductive claim from quantum coherence.

Principle 15 (Inductive Derivation of the Second Postulate of the Aethus) *A hugely important induction we have to perform in Aethic reasoning is how we approach the tricky principle in the face of having, as a species, decidedly discovered the existence of quantum coherent effects. The base idea is that since we have demonstrated a quantum superposition of multiple states as implying that one state and the next occurs at once, it therefore follows from Occam's razor that we might expect any instance of an unknown feature as occupying one state and the next at the same time. We know that a known feature will occupy whichever state is the known state, and now we also have that an unknown feature, no matter what it is, will occupy all possible states at once in a kind of ontological superposition. The distinction from pure quantum coherence might be reconciled in how the states are or are not allowed to interact with one another in such a setup. What we get from this is that we can indeed make a direct assessment about daily unknowns like what is happening behind a closed door, so as to remain consistent with this Aethic framework. According to this induction which we have drawn from quantum coherence, we have that all possibilities should be unfolding behind that door at once relative to one's Aethus, however once the door is opened, it follows that oneself moves to an Aethus in which only whatever one observes had been in effect all along.*

In effect, we are led to the second postulate of the Aethus given the nature of the exact empiricism we have about reality.

Let us take a moment, now, to look back to the supposition of Aethic reasoning in which for two unknown states, it follows that one *and* the other occurs at once, rather than only one *or* the other as would be more expected in classical metaphysics. We may imply that it is this very decision, here and now, which will lead to quantum interference effects no longer having to be ontologically jarring later on. In classical metaphysics, we have to essentially layer the ontology of quantum coherence onto the base paradigm independently, which we know from history is a risky business. It is by the exact claim which we make now, then, in which quantum coherent effects will later be seen to be but an aspect of a general underlying phenomenon, being that unknown states simply always exist altogether at once. All we will need to do is then describe why the states also interact with one another in quantum coherence, and we will have a genuine ontological explanation for it through integration into a wider framework. But the key is that that cannot happen unless we make this precise claim here and now, so therefore we must imply that the second postulate of the Aethus is in effect, no matter how initially jarring, so as to proceed with Aethic reasoning.

2.2.5 Stating the Aethic Union Principle Philosophically

There is a very important property to be understood about how a possible outcome is realized in Aethic metaphysics as compared with classical metaphysics. In classical metaphysics we have that a possible outcome's realization is put through an 'or' operation with the remaining states prior to the realization. For example, perhaps we suppose that *it will be sunny tomorrow* ***or*** *it will not be sunny tomorrow.* In Aethic reasoning, however, on account of the extrusion principle, we now have a very different nature of outcome realization. In the prior-block universe to the agent realizing whether it will be sunny tomorrow, we naturally have that it will both be sunny and not be sunny in decoherent superposition, simply on account of the agent existing in superposition across both block universes at once. What this tells us, then, fundamentally speaking, *is that even though the prior-block universe is logically a disjunction between the subsequent-block universes which correspond to the outcomes, semantically we would have to refer to it as 'and' still on account of both outcomes physically being in effect in that prior-block universe.* This is something of a fascinating claim which turns out to be central to Aethic reasoning. The supposition, to state it in terms of Aethae this time, is that unions and intersections over Aethae hold an ontological distinction in that regard, but must nonetheless both align with the semantic definition of 'and' rather than the semantic definition of 'or', which itself then becomes a construct for its lack of correspondence to any ontologically real phenomenon. This turns out to be a crucially important result for the inductive consequences of Aethic reasoning, because *it directly tells us that quantum superpositions do indeed align with a logical disjunction or union over an Aethus, even though they clearly correspond to multiple happenings at once, and as such a semantic 'and' over states.* This supposition then is to merely become a special case of the wider identity of the Aethic union principle, being that both disjunctions and conjunctions over Aethae or

block universes still all represent cases of what we mean semantically when we say 'and'. Here are some tables which help illustrate this.

Semantics of Disjoint Real-World States

		Logic	
		Epistemic And	**Epistemic Or**
Semantics	**Ontological And**	Contradiction	Aethic Superposition
	Ontological Or	*NA*	Possibility Over Distinct Outcomes

Semantics of Non-Disjoint Real-World States

		Logic	
		Epistemic And	**Epistemic Or**
Semantics	**Ontological And**	Aethic Intersection	*NA*
	Ontological Or	*NA*	*NA*

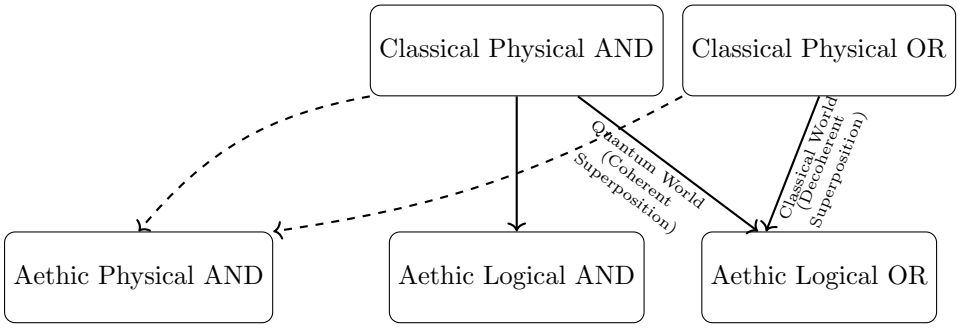


Figure 2: Representative mapping of the reinterpretation of the classical metaphysical 'or' (Aethic union) and 'and' (Aethic intersection) under the treatment of the Aethic union principle.

Principle 16 (Philosophical Aethic Union Principle)
Regarding real-world states, the semantic 'and' is in place for both Aethic unions and Aethic intersections. As such, a quantum superposition will correspond to an Aethic union, (or disjunction), even though it does not correspond to a semantic 'or' over the relevant states.

For an analogy, this principle is something like the equivalence principle in general relativity, because all it really does is highlight a philosophical misstep which we have been engaging in all along.

Importantly, it follows from this principle that there is a needed extra degree of freedom behind the word 'and'. That is, every time we say 'and' in the English language, (in reference to a physical state), we do not specify whether we are referring to an Aethic union or to an Aethic intersection, which are now both options. It now follows that quantum superpositions and quantum coherence fall under Aethic unions with decoherent superpositions, even though decoherent superpositions are always referred to with 'or'. Aethic intersections, however, are aligned with what we mean by 'and' when we refer to direct conjunctions, as in that 'the blue book and the red book are on the table'. For the blue book 'or' the red book to be on the table, semantically speaking, we now declare with the Aethic union principle would still be an ontological 'and' on account of the Aethic block universe model, even though it would be a decided Aethic union rather than an Aethic intersection.

Crucially, we cannot just redefine our semantic definition of 'or' to correspond to Aethic unions, because we have already established that quantum superpositions clearly correspond to an ontological 'and'. As such, in order to induce from quantum superpositions being 'and', induce from Aethic decoherent superpositions being Aethic unions, and then satisfy the basic identification of macroscopic 'or' states under event unions and 'and' states under event intersections as seen throughout all probability theory, our only avenue which does not conflict with these requirements is that we ditch the semantic 'or' for an ontological construct, (relabeling them all as Aethic unions), rephrase everything in terms of current Aethic unions and intersections, and then come to terms with the profound conclusion that every use of the word 'and' up until this moment needs to be reassessed under this new partitioning system.

Put simply, the Aethic union principle tells us that we need to find a way to associate instances of real-world physical 'and' versus 'or' statements into the corresponding logical 'and' versus 'or' of Aethic reasoning. We first state that classically physical 'and's and 'or's need to both go to Aethic physical 'and's, since in either case Aethic retrieval will cause the states to physically share the same block universe, (being due to attribute conjunction for 'and's, and due to blanks becoming superpositions by the second postulate for 'or's). However, this being said, we have that all classical physical 'or's go to logical 'or's in Aethic reasoning, although 'and's are a bit more specific. That is, classical-world-involving classical physical 'and's are to go through to Aethic logical 'and's, but quantum-minded classical physical 'and's are actually to go through to logical 'or's instead, but are still characteristically different than that other batch of logical 'or's because this time they involve coherent (agreeing) superpositions rather than decoherent (disagreeing) superpositions. Note that Aethic logical 'and's are just Aethic intersections, whereas Aethic logical 'or's are Aethic unions.

Very importantly, let us now consider the notion of applying iterations onto Aethic unions and intersections. Using the same notation of unions and intersections which we use for probabilistic events, consider an exercise in which we have n states, which we will mathematically denote with the Aethae A_1 through A_n. The simplest possible form of combining these in superposition might just be to apply an Aethic union to them, which we now know is to represent the Aethic generalization of a quantum superposition. Such an Aethic union, which we might refer to as C_1, is known in Aethic reasoning as the 'agreeing superposition' of A_1 through A_n.

$$C_1 = \bigcup_i A_i \tag{1}$$

Now imagine that we instead create n new Aethae, being B_1 through B_n, such that they are defined as the following Aethic operation over these initial states.

$$B_i = A_i \cap \bigcap_{j \neq i} \neg A_j \tag{2}$$

Verbally speaking, this takes an Aethic intersection over all the initial states, but turns all of them off, (i.e. states that they are decidedly not realized), except for a single one, which we take as Aethically realized in that block universe. For each possible realized state, this compilation creates a corresponding B_i. Then, we take the Aethic union–not an Aethic intersection this time–over all the states of B_1 through B_n, which we call C_2, perhaps.

$$C_2 = \bigcup_i B_i = \bigcup_i \left(A_i \cap \bigcap_{j \neq i} \neg A_j \right) \tag{3}$$

Such a doubly-iterated combination is what we refer to in Aethic reasoning as a 'disagreeing superposition' of A_1 through A_n. The highly important key, then, is that by the Aethic union principle,

standard English will have referred to either of these as 'and', because it lacks the degrees of freedom to distinguish an Aethic union from an Aethic intersection. In effect, we need the Aethic union principle as it stands in Aethic reasoning to characterize states such as these, *and of course we see with the infinite possible iterative structures of Aethic unions and intersections that there is now a vast degree of furthered Aethic specificity behind what we initially would have only called 'and'.* The key, now, is that quantum coherent superpositions will be assumed to be categorized under agreeing superpositions, whereas quantum decoherent superpositions will be categorized under disagreeing superpositions. We have just created the very iterative structure which we will need to derive the double-slit experiment from scratch, and thereby solve the measurement problem.

Another fundamental consequence of the Aethic union principle becomes that we may indeed rigorously distinguish contradictions from superpositions in Aethic reasoning. An 'Aethic contradiction' is what happens when we take the Aethic intersection of two disjoint Aethae, whereas an 'Aethic superposition' is what happens when we take take the Aethic union of two Aethae, disjoint or not. Importantly, this means that contradictions very much still exist in Aethic reasoning, just they follow from encoding conflicting states directly within the underlying Aethic mathematical structure. Aethic superpositions, on the other hand, are indirectly generated in a reality by withdrawing states from the Aethic underlying structure, as will essentially trace out the 'backward Aethic progression' from the typical knowledge-gain of adding states to an Aethus. Withdrawing states from an Aethus will cause them to occupy all possible values at once in the physical block universe which corresponds to that Aethus, with this fundamental interplay between superpositions and the lack of information amounting to the coming second postulate of the Aethus.

2.2.6 Aethic Interpretation to the Gettier Problem

Aethic reasoning implies something of an unexpected solution to the Gettier problem, but a solution nonetheless.

Let us picture the example of the stopped clock case of Bertrand Russell [11]. The premise is that our protagonist, Alice, looks up at a clock on the wall and sees that it is two o'clock in the afternoon. However, unknown to Alice, the clock stopped exactly twelve hours ago due to a mechanical error, so it is merely a coincidence that it reads two o'clock, the correct time, at the instant when Alice looks at it. The question, then, is by what procedure can we deduce the intuitive consequence that Alice indeed does *not* know the time in that moment. Such a procedure, in its completion, will have solved the Gettier problem. Note, also, that we are refer to the general case of knowledge like that of Alice in this thought experiment as "lucky true belief", with the statement of the Gettier problem solution then being the prospect of how to reliably derive lucky true belief as a form of unknowing according to some axiomatic system or another.

To begin with our Aethic derivation, now, consider the causal channel of sorts through which validation of the clock having been broken is regarded as realizable in the first place. Simply put, either a third-person onlooker becomes aware that Alice is looking at a broken clock in the moment, or perhaps Alice later realized this herself by one avenue or another. The point of the matter is that we can only ever make a judgment about Alice having been ignorant in the moment by referencing an independent Aethus. This, now, is a very important insight, because it highlights a fallacy in the suppositions of the thought experiment themselves, at least according to Aethic reasoning. For us to assume these external properties to Alice's Aethus in the moment as being objectively real with respect to it is a violation of the first postulate of the Aethus, because it would force the reality of her original Aethus to be dependent on degrees of freedom which are not directly incorporated into its Aethic content.

What this tells us, now, is essentially two major things. First, that Alice's Aethus in the moment ought to have no ontological preference toward corresponding to the clock working versus being broken, and second that any assessment made by an outsider Aethus about the validity of Alice's clock reading fails to actually be relevant to Alice's original Aethus in the first place. After all, such an assessment takes her clock reading as fully valid only if the clock is working, but as we noted, such a state is not to be baked into her original Aethus. This is the precise notion by which we break from classical metaphysics, because while the classical view supposes that there is perhaps the affect of association by inevitability between the state of the clock being broken and the original Aethus of Alice, Aethic reasoning instead takes such a supposition as a violation of the extrusion principle. More specifically, we take that relative to purely the degrees of freedom of that original Aethus, for Alice to have moved into a reality where the clock was broken all along, versus for her to have moved into a reality in which it was never broken at all are each plausible outcomes of her Aethic motion, with the supposition of

her being locked into going to the broken-clock reality merely being an affect of the timeline-oriented paradigm of metaphysics. What we see then, under the purely Aethic notion, is that any attribution which we can make about Alice's original Aethus from either outcome of the clock having been broken all along versus the clock having been working all along is to have no more sway over that direct original Aethus than an attribution taken from the opposite outcome. On that note, then, we are obliged even to accept all possible such attributions as equally true of that original Aethus, which can be considered a form of the philosophical derivation of the second postulate of the Aethus itself given the first postulate.

What we are left with, therefore, is that even though the passive onlooker, Bob, or for that matter even the future version of Alice are to assess that Alice in the original moment had lacked the knowledge of the time upon looking at the broken clock, we might also note that the assessments made of Bob and future Alice in the Aethic alternate reality where the clock had been working are equally true as well to Alice's Aethus in the moment. In the broken-clock outcome, we know as per the prescribed intuition on the subject that Alice in the moment should not have been aware of the time, but the key is this: *the first and second Aethic postulates physically forbid us from declaring this result as a sole intrinsic property of Alice's original Aethus in the moment for the reasons discussed.* Therefore, by this alone we see that, at least under the tenets of Aethic reasoning, there does not exist a well-defined philosophical mechanism in the first place by which we can make such an intrinsic assessment of Alice's original Aethus like the one described by the Gettier problem. So it follows that just like how the internalist stance does not possess a reliable pathway with which to gauge Gettier-adjacent knowledge states of Alice's original Aethus[14], we now have that even externalism itself, to the full hypothetical capacity to which it can be mobilized, does not possess a well-defined pathway to assessing Gettier-adjacent knowledge states either. This, then, is almost akin to Gödel's incompleteness theorem, in that it is an assessment of the sheer impossibility of even drawing an assessment about the Gettier knowledge of Alice in the moment, regardless of the resources we have at our disposal.

Naturally, then, this is indeed a solution to the Gettier problem, being that *according to Aethic reasoning, the supposition of there existing an algorithm through which unknowing reliably characterizes lucky true belief in the first place is itself an unsolvable end.* Simply put, the solution to the Gettier problem[15] is that we cannot do what it asks in the first place, so therefore we might have to reassess our preconceived notions about systems like this in full. And yes, the statement we've all been waiting for – we can indeed state that in the moment of looking at the broken clock, *Alice knows and doesn't know the time at once*, at least relative to her own Aethus.

2.2.7 Aethic Reasoning as Relativism Instead of Anti-realism

It is important to mention upfront that Aethic reasoning should not be perceived as a notion of anti-realism, specifically due to a key piece of nuance surrounding its suppositions about reality. The idea is that *any argument which posits that Aethic reasoning is a notion of anti-realism can be explained away as it instead being a notion of relativism.* With Aethae themselves being the informational analogue to a reference frame, note that this is just the same argument as what happens in the theory of relativity, where we strictly suppose that *for all reference frames to be equally valid, even in the case of their differing of perspective, is not to be taken as claiming anti-realism for its lacking of an objective frame, but instead is merely a supposition of how the ontological activity of reality is to manifest with respect to one's subjective perspective.* This same argument, then, is to be argued within Aethic reasoning, as specifically draws from the correspondence between a relativistic reference frame and an Aethic reference frame, as described by the Aethic principle of relativity.

Let us now consider a supporting example for this in the form of a thought experiment. We would like to provide a warning upfront that this is going to sound bizarre, so we have to ready ourselves to grapple with things accordingly. This is one of those moments where you have to essentially unlearn everything you think you know about reality to even entertain the upcoming thought. But as the requisite principle of Aethic reasoning puts it, either we learn to live with this understanding, or the

[14]Note that this supposition already is perhaps a bit arguable, but it is very likely that any externalist philosopher which you ask this of will be in agreement with it. Even an internalist philosopher themselves must agree with it in a purely objective frame, as after all the inability of mental states to link every two objective events is a well known axiom of Western philosophy.

[15]Note that to engage with the Gettier problem in the form originally stated by Edmund Gettier [12], being the correspondence of conjunctions and disjunctions on states, we are going to need more advanced Aethic reasoning – namely the Aethic union principle. Such can be an exercise for the reader.

measurement problem is truly unshakable. Only you may be the judge of what is right.

With that out of the way, let us get to the actual story. Emily grew up in the suburbs outside Boston, Massachusetts. When she turned twenty, she decided to travel Europe in search of adventure. She visited Paris, London, Florence, and Geneva. On her last week of travel, she was in Prague, and it's there that she met the love of her life, Sam. They had an immediate connection, and by the end of their first conversation, Emily learned something incredible: Sam had lived right next door to her childhood home in Massachusetts, and they just happened to never meet. With laugher and embrace, Emily tells Sam how she came halfway across the world to meet a special someone who was next door all along. To that Sam remarks, "we could have known each other from the beginning."

There are some layers to Sam's statement, and they turn out to have inadvertent dependencies on classical metaphysics. Let us unpack this now. We might think to as ourselves, *even though Emily is aware that Sam lived next door in her current Aethus, it would contradict the extrusion principle to imply that such a thing was exactly true of her prior reality in which she actually lived in her childhood home.* Let us look not to Emily's past from the reality in which she sits in Prague with Sam, and instead put ourselves back in Emily's shoes from her original reality, in which she stands outside her childhood home on a cold March morning twelve years earlier. While the eight year old Emily waits for her father to start the family car and bring her to school, she stares blankly at the house next door, mind wandering. In there at this very instant is the young Sam, *but only from the perspective of Emily's Aethus in Prague.* That, of course, is not the precise reality in which young Emily stands now. We might think to ask ourselves, then, *does Sam live in that house at all right now?* If Emily were to promptly walk to the door and knock, who would answer it? Would it be Sam's caretakers, or someone else entirely?

The idea is that we might make use of the second postulate of the Aethus here. Emily is clearly unaware at the moment of who lives in the house, as she only learns it was Sam while in Prague at the age of twenty. Therefore, by the second postulate, we hold that *a uniform random set of every possible human lives in that house at once, right behind the outside wall which Emily now stares at.* We have to picture this not as all the billions of potential humans being crammed in there spatially, but rather occupying something of an overlay. Speaking in terms of the classical terminology of timelines, the point in spacetime that is that house's living room is, from Emily's perspective, essentially a bustling multiverse at which a vast density of timelines are bundled, all unbeknownst to one another. For each possible family, there are pictures on the wall and laundry in the wash and food in the kitchen. But to Emily's Aethus, we cannot know which of the options is realized, so therefore within the confines of that house is all such families at once, fading over one another without any knowledge whatsoever of the others.

This is, of course, quite maddening to think about, so the key assessment we have to make here is how everything that was just stated is fundamentally a property of *Emily's Aethus* itself, in that it is a relativist claim with her Aethus as the reference. Perhaps Emily's father, as he turns the key to the car, has met the parents in the house next door, so to his Aethus there is a fixed, single family living there at that very moment. And yet before Emily can request such information of him, the very contents of his mind represent a bundle of timelines which all occur at once relative to Emily's present reality, because the specific family which he knows to exist in that house is itself unknown to her, and therefore in Aethic superposition.

As such, the only accurate assessment we can make about Emily's Aethus in this very moment, at least with regards to the family next door, is that if she indeed walks to the front door and indeed knocks, then a random person from the set of all families in Aethic superposition will in that moment answer the door, in effect branching Emily to a new Aethus in which they were the lone family in the house all along. Naturally, then, the likelihood that Sam is one of those people is essentially next to nothing, even though the specific random future version of Emily in Prague will have had it be him.

The claim, then, for why this entire Aethic supposition does not count as anti-realism, is because of a nuanced but key implication about Sam himself as he sits in that house from young Emily's Aethus. Sam very much *does exist* to Emily's Aethus, and he very much *is in that house*, which is of stark contrast with any kind of supposition that either he *does not exist* or *is not actually in that house.* The latter, see, would be effectively epistemological solipsism on account of Emily meeting him later in Prague, whereas the former is a very particular Aethic assertion: *just because all the other families are there too does not discredit Sam's state of being there.* Such a thing is itself a consequence of many-at-once states being indeed permitted to exist in an Aethic reality. This, then, is the fundamental root of the derivation for why Aethic metaphysics, in all its absurd glory, is not actually a claim of solipsism, and thereby anti-realism. Instead, it is in some sense the exact opposite,

because rather than the existential reality of the unknown being limited, here it is exaggerated as compared to the suppositions of classical metaphysics. This is why Aethic reasoning is fundamentally a claim of relativism rather than anti-realism.

2.2.8 Deliberately Meeting *Requirement 5* for the Measurement Problem Solution

Let us take a brief moment to look more deeply at the consequences of the indiscriminate time principle of Aethic reasoning, specifically as pertains to the preservation of locality. Note that so as to not violate locality, we might think to assert that Aethic information can only ever be directly gathered from events within the past or future light cones. This being said, however, we hold that the unknowns are not to be all concentrated in the future light cone, and can just as well be gathered from the past light cone, such that standing unknowns are as metaphysically underdeveloped in the past light cone as they would be in the future light cone. Furthermore, also notice that there is no expression even in the analysis we have undergone so far that unknowns might lead to a lack of existence – something which would be a rather more solipsistic perspective. Instead of this, we hold that said unknowns are concentrated under many possibilities rather than being concentrated under none, (which would be unintuitive in the face of how we defined the correspondence between Aethae and possible worlds), and this is what begins to give rise to the statement of the second postulate of the Aethus. Regarding retrocausality issues surrounding the wavefunction collapse, furthermore, notice that these are in sweeping strokes solved by the principle of extrusion alone, which posits that the seeming transmission of information back in time is merely a consequence of misinterpreting one's change of Aethus as affecting the past time of the past Aethus. A genuine breakage of locality would be represented by an agent possessing Aethic knowledge about events which are beyond the scope of either their past or future light cones, so given that we do not imply this anyway with the Aethus, under that regard at least locality is surely preserved.

This still leaves the question, however, of how the indiscriminate time principle is allowed to exist at all in the face of such a fundamental metaphysical ideal as classical alternative. We have to realize, though, that the classical perspective only reigns supreme so far as we do not assume the principle of extrusion. In the classical perspective, whenever an agent collapses a wavefunction with time, such a collapse event is capable of sending information back to points in the last cone so as to make them change in just such a way to enable the collapse. Of course, such a thing is itself a violation of locality, so it must be done away with in Aethic reasoning. The extrusion principle itself is the proposed solution to this, because it has us now imply that upon undergoing a wavefunction collapse, an agent is to travel to a new Aethus altogether, rather than messily causing their own past universe to update in one messy way or another.

Consider a setting in which Alice and Bob are checking the states of entangled particles. Let us demonstrate why *Alice cannot pass information to Bob faster than the speed of light* (as according to Aethic reasoning), hence confirming *Requirement 5* accordingly.

So the idea there is that in a standard entanglement setup, if Alice checks the state of her particle prior to Bob in one reference frame, then since they're causally unconnected we have that Bob actually checked first in another reference frame. A defining element behind Aethic reasoning, then, is to address this issue directly. The pitch was just the alternate block universes themselves, (being the extrusion principle), which are separated by a change of Aethus instead of having to rely on a dividing line manifold in spacetime to serve as the instant of the quantum update. Now we have that the entire prior block universe can never collapse the quantum state, whereas the entire each subsequent block universe had it collapsed all along. So, fittingly, it's almost like the subsequent one is a hidden-variables model, all while the prior one is this strange un-collapsible domain, (to an extent, at least). The main idea of all of this is that now when one of them measures the particle, they move into the new block universe, and that means they do not have to synchronize the move with the other one at all. (Note that an older version of this Aethic reasoning paper had the following explanation instead for this[16], which I believe might have respectively failed to capture the nuances of the Aethic

[16]To begin with, consider Bob's Aethus before he has checked his particle, such that he is at a distance further from Alice than a beam of light can traverse, hence making the two causally unconnected. By the principles of special relativity, we have that information can only ever travel at the speed of light or less, so by extension this includes Aethic information. As such, we have to suppose that relative to Bob's Aethus of then, even whether Alice has or has not checked her particle must be nonpresent, and therefore in superposition. As such, relative to Bob's Aethus, Alice is in superposition between having collapsed the wavefunction relative to her Aethus and having not yet. We therefore have that Alice cannot be implied to pass information faster than light to Bob, because that would assume an objective frame – something which we forbid Bob's Aethus from being as according to the Aethic principle of objectivity. In short, the premise is rather similar to that of relational quantum mechanics, (RQM) [13], in that Aethic reasoning asserts that

argument in its most fundamental form). In short, then, Aethic reasoning meets *Requirement 5* itself by allowing the collapse to occur without having to partition spacetime at all – we simply infer two entire block universes, with each holding a predetermined content of Aethic superpositions. The extrusion principle itself, in this context, may then be viewed as a direct move toward establishing such a result in the simplest possible way.

Regarding the interplay between this Aethic solution and the general Einstein–Podolsky–Rosen (EPR) paradox [14], consider John Bell's statement of "When the Queen dies in London (may it long be delayed) the Prince of Wales, lecturing on modern architecture in Australia, becomes *instantaneously* King" [15]. By removing the objective Aethic frame, we show this to be not only a misrepresentation of information, but also a factually false statement. To that we might say, "but relative to which Aethus does the queen die?" According to the Aethus, the queen operates just like Schrödinger's cat, being surely dead only relative to that Aethus which observes so via any chain of information. (Such as, for instance, hearing about it on the news). Therefore, the prince of Wales only becomes king relative to his own Aethus when he hears news of the queen's death, and he only becomes king relative to the Aethus of an onlooker once they themselves receive news of the queen's death. The moral of the story is that due to this vital necessity of information to be transferred before Aethic superpositions may collapse, it follows that the light barrier need not ever be broken.

To finish off this philosophical section, now, consider firstly the practical intuition behind Aethic superpositions, (being, broadly speaking, the general form of quantum superpositions to operations over any Aethic knowledge), and secondly consider the Aethic interpretation to the Gettier problem, including perhaps why it was ever a problem in the first place.

2.2.9 Aethic Interpretation of Quantum Epistemic Antirealism

There is something of a common philosophical stance with which our modern paradigm approaches quantum mechanics, so let us describe such a stance now. It can be referred to as *quantum epistemic antirealism*. The notion here comes from mainly two categories, but which together are arguing essentially the same thing.

1. The human brain, on account of the setting and context to our evolution, is fundamentally incapable of understanding a notion which is so far removed from it as an ontological quantum effect. As such, something about the very structure and or functionality of our brain is missing sufficient scope to comprehend a quantum phenomenon. Through such a thing, we then imply

even for Alice to have checked the particle in fact does not immediately imply presence of that information in Bob's Aethus as well, and moreover that such information will only ever reach Bob's Aethus at speeds slower than the speed of light anyway, thereby perfectly preserving locality. It should also be mentioned, however, that Aethic reasoning takes this as step further as well by use of the Aethic extrusion principle, thereby allowing a well-defined mechanism by which the superposition of Alice with respect to Bob, or vice versa, is able to transition into the post-observation state of afterwards. As we know, the key to the extrusion principle is that even an individual agent ought not to account for a single relational quantum reality, but instead ought to be split into a before Aethus and an after Aethus. In the case of Alice and Bob, then, what this tells us is that since Bob does not inherit Alice's Aethic information about having checked the spin state while they are outside one another's light cones, such tells us that Alice's spin state must be in Aethic superposition to Bob if he is yet to check his own particle. By deduction, then, between then and the later moment when Alice and Bob are exchanging information, we have that Alice's state of being in superposition relative to Bob's reality must have subsided, and it is the extrusion principle itself with which we assert that such happened due to a change to Bob's Aethus rather than a superluminally-affected change to Alice as triggered by Bob. In short, then, the key to this Aethic approach is that Bob's subsequent Aethic reality is effectively a deterministic and hidden variables-abiding lens on the particle after all, all while Bob's prior Aethic reality is very much non-hidden variables abiding. Locality is preserved in the prior Aethic reality because Bob did not inherit Alice's collapse event anyway, and locality is trivially preserved in the subsequent Aethic reality because it is effectively under a hidden variables model anyway. Part of the intrigue of the Aethic approach, then, is that is no longer forces us to choose between the hidden variables versus non-hidden variables dichotomy anyway – rather they are different aspects, almost like components if you will – of the larger Aethic circumstance. And, of course, locality is fully maintained, which it goes without saying is an utter necessity for any serious ontological interpretation of the universe.

The ability for the two to meet up later and check the timecodes of when they checked their particles, then, is not actually representative of their having broken the light barrier upon performing their measurements, with such a supposition itself being a construct. Notice how they would be comparing the two prior Aethae from the perspective of their later Aethae, well after the point at which ambiguity within the system, like who checked first, has been resolved and added to their Aethae. As such, they are making assessments about Aethic superpositions from the lens of different Aethae, which epistemically violates the principle of Aethic extrusion. In contrast to this, remember that to Bob's prior Aethus, relative to which we are actually performing the analysis of whether the light barrier is broken, we strictly have that the properties of Alice are totally non-present, therefore implying that he must not have received such information in the first place, not to mention faster than lightspeed. Essentially, then, we simply hold that the flaw in the classical argument was to suppose that there was an objective and non-Aethic frame to the system in the first place. We are to resolve the paradox quite quickly by assuming the Aethic alternative in the place of this supposition.

that the quantum world itself is incapable of being constructed in a rationalist ontological framework.

Consider the following quote from physicist Carlo Rovelli which argues for such a mindset.

> "We have to accept that the universe is not made to be understandable by our brains. It doesn't have to fit our personal intuition. The further we go, the less the universe cares about our daily experiences and personal perspective." [16]

2. The quantum world itself is fundamentally indescribable with a rationalist framework of any sort. In this way, the quantum wavefunction not only epistemically unobservable, but is representative of an ontological black box through which rational comprehension is physically incapable of traversing. That is, the inability of an agent to actually trace the intermediate procedural ontic logic between two times in a quantum system with a personally[17] inductive analysis is a fundamental inability no less real than quantum uncertainty itself.

   Here is an example quote from Niels Bohr which would fall under this phrasing of quantum epistemic antirealism. Of course it seems like a reasonable enough statement from an epistemic standpoint, but we have to understand that it's ontologically void, because simply inventing a non-realizable epistemic system of happening is the epitome of the failure to be ontologically well-defined. Therefore, asserting that this follows through to the ontology is to assume a paradox of such ontology.

   > "Those who are not shocked when they first come across quantum theory cannot possibly have understood it. The classical view of reality collapses, because in quantum mechanics, things are not simply in 'either-or' states. Superposition forces us to abandon classical logic entirely—it defies the categories of 'both,' 'neither,' or any logical characterization we can construct. We must invent new ways of understanding existence." [17]

Notice how the truth of either of these would essentially imply a solution to the measurement problem – because the solution would simply regard there being no such rationalist system to quantum mechanics. However, let us notice the clear difference between *a lack of ontological applicability for the standard rational system* versus *a lack of ontological applicability for any rational system at all.* We are going to make the strict argument in this paper that the latter statement is something of an absurdity, even to the degree of being logically paradoxical. Such a position on its validity will be termed the *forbidden-epistemic antirealism principle.*

Principle 17 (Forbidden-Epistemic Antirealism Principle)
In Aethic reasoning, we hold that a general supposition of epistemic antirealism is both a construct gathered out of an epistemological misinterpretation of the brain, and through such a thing is reliably false as a stance in abstract logic. For instance, we argue that the extrapolation from the quantum uncertainty principle to quantum epistemic antirealism is in direct conflict with the dual logic principle of Aethic reasoning, specifically on account of it confusing an uncertainty principle over causal logic with one over abstract logic. In Aethic reasoning, we directly counter this by supposing that arguing for epistemic antirealism is effectively arguing for a paradox, due to its position in abstract rather than causal logic[18]*.*

Furthermore, in our current society at least, it tends to associate by connotation with a kind of scientific pessimism and lacking of motivation for further research. In the specific case of quantum epistemic antirealism, it is often a doctrine held by a person on account of their not putting much value in the measurement problem, (out of it either being to them unsolvable or otherwise irrelevant), hence contrasting it with direct scientific motivation of progress. In this way, it is quite analogous to a Premodernist thinker deciding not to pursue a truth because "god made it so."

Through such a thing, the very notion of Aethic reasoning's stubborn assertion of a solution to the measurement problem can be directly contrasted to the doctrine of epistemic antirealism. This

[17] Personally inductive arguments are meant to mean those which can be induced from the most practical possible axioms, which can be contrasted with the second-order inductive reasoning of the Copenhagen interpretation, where none of the quantum phenomena can be described without the single intermediary of the known quantum empiricism. Einstein himself demonstrates for us something of a masterclass in favoring personally inductive derivations, as seen by his instinct to relate the physics of time to his own experiences during his thought experiments instead of directly postulating them in an impersonal way. We might go so far as to argue that the modern conception of the quantum world being impersonal is a major part of the problem.

[18] As such, we might consider deriving the forbidden-epistemic antirealism principle directly from the Aethic corollary that an ontological paradigm ought not to go in Aethic superposition of correctness.

makes for an intriguing round of insight into the interplay between Metamodernism and Aethic reasoning. Even though Aethic reasoning asserts the advancements of human thought associated with Postmodernism, such as the state of reality being quantum-compatible in the first place, it also holds an interesting connotation which is more reminiscent of Modernism, where it asserts stubbornly that said quantum-compatibilities are very much of a rational configuration, if only we can find it. If Aethic reasoning, then, can be considered something of a template by example to the belief structure of Metamodernism, then we might define Metamodernism itself as "the structural capacity of Modernism together with the philosophical advancements of Postmodernism."

As a direct alternative to epistemic antirealism, then, we are to argue that an ontological system ought to possess a rationalist correspondence. Note that this does not conflict with Gödel's incompleteness theorem, because an inability to construct a completely descriptive mathematical system is not equivalent to the prospect of describing an ontological paradigm. The incompleteness theorem will of course be applicable to the level of completeness of information which is accessible within such a paradigm, but it says nothing about the ability to establish the paradigm in the first place. As such, we might once again argue that epistemic antirealism is not only unsupported, but entirely paradoxical as even a supposition. It is by properly denying the potential for epistemic realism to exist that we will be able to accurately partition the universe of counterintuitive logical barriers, from Gödel's incompleteness theorem to quantum uncertainty, into their proper ontological stances. This does not mean appeasing the classical paradigm itself, note.

We may refer to the notion of quantum epistemic antirealism by two major names as we continue with the paper.

1. First-order epistemic antirealism is the supposition that as we stray into ever deeper physics, there is a heightening falloff between each new discovery and one's tangible life. That is, each new discovery is considerably more impersonal than the last, as if by the will of some underlying ontological trajectory.

   Personally speaking, I am in fierce opposition to such a statement as this. Is it not a direct betrayal to the very heart of science? Even though it is ontologically milder than the following two orders, it seems philosophically more potent. Notice how over the centuries, the observed empirical patterns of interpretation which associate with this view are more a question of human ignorance than any kind of ontological trajectory to the universe.

2. Second-order epistemic antirealism is the supposition that human intuitions and or mental capabilities prove insufficient in dealing with effects of quantum superposition.

   Note that perhaps the entire mission statement of Aethic reasoning is to combat this assumption through counterexample[19].

3. Third-order epistemic antirealism, (or more colloquially, "full-blown epistemic antirealism"), is the supposition that the paradigmatic structure of quantum superpositions themselves is irreconcilable by a thinking agent of our mortal human variety. This is perhaps most commonly illustrated in the point expressed in the above quote from Bohr, where it is supposed that no truly tangible logical system can also be made to encapsulate quantum effects.

   This statement almost feels like the sirens of Odysseus, where it tempts you to comply with it for its surface-level elegance. Yes, it is fascinating, and yes, it is convenient, but it will never not lack an ontological support. We have to realize that for this statement to be true is in direct conflict with the possibility of ever solving the measurement problem, so in that regard it is rather like the teeth of that siren as well. In general, we have to combat it to proceed with any sort of solution.

Note that one might counter our rendering of first-order epistemic antirealism by supposing that physics merely does what it does anyway, with our human opinions about what is or is not scientific being immaterial. However — this is not consistent with what we are arguing in the first place. What we mean to argue on the topic is that first-order epistemic antirealism is not some external observable circumstance, but rather a predictable psychological consequence of *a paradigm's epistemology significantly outpacing its ontology*, and nothing more. To illustrate this, consider what would happen in a scenario where Planck's theory of black-body radiation was not immediately superseded by Einstein's

[19] Such a mission statement might be phrased as "*even the quantum superposition becomes existentially intuitive under the right paradigm.*"

ontological interpretation. Perhaps Einstein was fifteen years younger, for example. Intuitively, we can assess that Planck's quanta, as a mathematical construct, would become rather mystical for their ontological elusiveness, perhaps to the point of being considered ontologically inaccessible in full. It is hard to ignore the similarities between this example and our own situation with the measurement problem. And, for another example, think of how we would interpret gravitational lensing if we had somehow detected it before general relativity could be established. Would we not think of it as mystical and in defiance of human reason? The point of all these examples is that the physical circumstances which physics attempts to comprehend are perfectly compatible with a human's intuition and scope of reasoning, so when we argue that the physics has fallen off in its epistemic realism, what we are really measuring is our own temporary lacking in ontology. Intuitively, we might expect that if all the finished theories of physics were to be written out in full before us, they would all have a natural and effortless connection to our everyday lives and experiences, as after all that is what they explain in the first place. When we lose sight of this, we have lost sight of what we were after with physics in the first place: a relevant explanation for the nature of reality. Would the conclusive explanation of everything not be relevant with that everything? Of course not! It would be the ultimate expression of interrelatedness within it, not some divisive and ontologically incomprehensible mess. As such, from this line of reasoning we have that the stance of first-order epistemic antirealism is not much more than an inevitable consequence of somebody existing in the time directly before the ontology takes on its next wave of progress.

What we get from all this is an important principle of human thought, which we might bold accordingly. ***Scientific progress is only ever as good as its ontological content***.

3 The Aethus as a Mathematical Object

3.1 Motivating the Choice of Aethic Mathematics

3.1.1 Distinction Between Ontology and Epistemology

Let us now begin to construct the mathematical structure behind the Aethus. It is important to note, to begin with, that *the Aethus as a mathematical object is a distinct entity than the Aethus as an ontological object*. This sort of property is consistent across all quantities in physics, even though it is not always explicitly stated. Consider, for instance, the distance between the Earth and the sun. Whenever we describe such a quantity, we may be referring to one of two particular epistemological objects.

A. The physical distance from the Earth to the sun, in the connotation of being a Platonic ideal. Such an object is a feature of the universe itself, and cannot be grasped in its direct form by humans.

B. The Earth-Sun distance as an epistemological object which is constructed within our mathematical structure. It is based upon our axioms and composed of whichever structure we ascribe to it.

One quick way of proving that A and B are indeed two separate objects, is through the use of defining a different mathematical structure altogether, and then attempting to measure the same physical object, A. Under B, being a result of our own paradigm of mathematics and measurement, we might consider a few axioms which its structure is based upon. Distances draw from real numbers, which are compact under every closed interval, and from there we suppose that real numbers can be endowed with operations which make them a commutative ring, and then our measure of distance can be derived from that given a definition of base unit, be it the meter or something else. Notice that this process is in possession of a distinct mathematical structure, which we might think to change for the measurement of the Earth-Sun distance, if only for the sake of a thought experiment. For instance, perhaps we somehow define an entirely different system of encoding value than exists in the real numbers. Whether or not such a different system is as useful aside, we know that it can surely be done. Perhaps we pick the rational numbers instead, for instance. Then, from there, we might suppose that linear distance itself is not our preferred quantity, but instead some form of logarithmic scale, such that we add one unit for every time we double a distance with respect to the polar circumference of the Earth. Under such a system, the Earth-Sun distance would be 11.9 units, which we of course know to be a very different structure to our own, with regard to the addition of distances, and so on.

We might call this particular object some C, being an alternative means of encoding the Earth-Sun distance. The point of the matter here is that our particular way of encoding the Earth-Sun distance is entirely dependent on mathematical structure, and there are innumerably many alternatives which change the very structure of the math as well as just units. As such, we will very readily state that this alternative structure, C, is very distinct to our own structure, B. We thus have that $B \not\equiv C$. However, if we were to declare that the ontological distance is the same as the epistemological distance in the first place, being $A \equiv B$, then we would also have to declare by that logic that $A \equiv C$. However, we immediately see that this forms a contradiction through the transitive property of equality, because $A \equiv B \wedge B \equiv C \Rightarrow B \equiv C$, which then contradicts our assertion that $B \not\equiv C$. Thus, through proof by contradiction, we have that every ontological structure of a quantity has to be a distinct object to any of its corresponding epistemological structures.

The idea with the Aethus is that it also satisfies such a quality. Its ontological form is the one we have been discussing primarily in the philosophical section, and it entails properties like being primarily attached to an agent or living being. However, this is so merely because it is the most direct way of gaining a deductive entry into the Aethus mathematical properties, but such a mathematical form of the Aethus, (being the epistemological form), itself is a much broader concept. Whereas the ontological Aethus often does have the connotation of being correspondent to life, the mathematical Aethus is more general. The goal of defining such a mathematical Aethus is strictly to capture all degrees of freedom and the entirety of the relational structure which is present in the ontological Aethus, (as is the same goal for any mathematical quantity with respect to its corresponding ontological quantity), but we see from such a picture that once the Aethus structure is indeed defined, it can be applied to many ares outside the scope of the specific ontology which it was originally drawn from. That is, the mathematical structure of the Aethus is highly dynamic and capable of describing many different systems, to the point where we should better understand it as a fundamental system of encoding rather than something which sustains the intrinsic biological connotation of the ontological Aethus. The ontological Aethus still holds all the properties which we endowed it with, but the mathematical Aethus, in being an epistemological object, is naturally going to be more analytic than physically tangible in the same way. To draw an analogy using distance again, once one creates a system of measuring distance, being the real numbers, they do not then declare that real numbers hold all the connotations of distance – rather they suppose that they are a broader notion in general, and can be applied to a myriad of separate fields even outside of distance itself. Had this distinction not been made, and we would of course be significantly more limited in our mathematical understanding as a species.

3.1.2 A Proper Avenue Toward Defining the Mathematical Aethus

Now let us move to the consideration of how we might construct the mathematics behind the Aethus. We can start by stating the fundamental difference between how the Aethus stores knowledge versus how knowledge is stored in standard modern approaches such as epistemic modal logic. These subtle differences will be pivotal to successfully defining the postulates of the Aethus.

Let us begin by considering how we might denote knowledge with the Aethus if it were to follow the same rules as epistemic modal logic. Naturally, we would make use of the epistemic modal operation, being the K-operation. Specifically, we might denote our Aethus as some agent a, and then suppose that for a to know a property φ is given in the following form.

$$K_a\varphi \tag{4}$$

If φ is simply the property that "it is raining", for example, then $K_a\varphi$ would be read as *a knows that it is raining*. Furthermore, we might consider the notion where a knows that it is not raining, being the logical complement of the state of it raining. This would be written as $K_a\neg\varphi$. Instead of either of these, however, we might negate the modal operation itself, K, and write the following: $\neg K_a\varphi$. Such a statement is read as *a does not know if it is raining*, which can itself be phrased as *if it were not raining, then a would not be aware of it*, and then that *it is consistent with the knowledge of a that it might not be raining.* This particular kind of mathematical object, being a, is what we can refer to as a *1-Aethus* for the purposes of this paper. In a similar fashion to how increasing the dimension of an n-sphere increases the conceptual complexity of it, we will allude to such an increase in n with our definitions of each n-Aethus.

Definition (Definition of a *0-Aethus*)
A 0-Aethus is defined so as to be consistent with the agent object of epistemic modal logic, but specifically in cases involving the K-operation only.

The first major change we need to make to epistemic modal logic when considering the Aethus, (so as to transition to a *1-Aethus*), is that *now we are dealing with class instantiation rather than Boolean variables*. That is, φ itself is no longer of type Boolean, but rather is itself a signifier of a particular class. Specifically, in Aethic reasoning we refer to it as an object called an *attribute*. An attribute is defined as a tuple of three objects. Ignoring the third item for the moment, (as we will

Components of an Aethic Attribute
1. An identifier.
2. A class.
3. A relation set.

Table 3: An Aethic attribute is defined as a tuple of these three objects.

explain it later), we can focus specifically on the first two. The first item is merely an identifier, which encodes whether a given attribute is equivalent to another attribute or not. Such a thing is standard in mathematics, at least through implication, so we are to use it here too. For instance, when we write $x = 1$ and $y = 1$ for two variables x and y, we are supposing that even though their values are equivalent, they still hold different identifiers on account of describing different things. Notationally, the identifier of x is simply the letter x, and of y is the letter y. This difference in identifiers is how we regard logically equivalent statements to still be practically inequivalent, such as a Boolean statement versus its representation under De Morgan's theorem, to give an intuitive example. Regarding the class aspect of an attribute, now, we are to simply suppose that the attribute in question, φ is assigned a particular class to be incorporated into it. Let us consider the following example of an attribute.

$$\varphi = (\text{“Ajax's home state”}, \textit{ Class State}, \varphi_R) \tag{5}$$

We may consider the Aethus, then, a, to simply hold an instantiation of this attribute. Specifically, an Aethus is allowed to hold an attribute through a special object called a *stated-attribute*, which is defined simply as a tuple of its corresponding attribute, and its instantiated value of the class of that attribute.

Components of an Aethic Stated-Attribute
1. An Aethic attribute.
2. An instantiation of the Aethic attribute's class.

Table 4: Importantly, note that an Aethic stated-attribute is also referred to as *an instantiation of an Aethic attribute*, in the same way as an object instantiates a class.

Here is an example of just such a stated-attribute.

$$x = (\varphi, \text{ Massachusetts}) \tag{6}$$

We may now think to define a *1-Aethus* as essentially representing an Aethic stated-attribute.

Definition (Definition of a *1-Aethus*)
A 1-Aethus is simply another name for an Aethic stated-attribute.

Crucially, now, we may consider how the Aethus stores such a piece of information. Specifically, the idea is that *the Aethus consists of a set of stated-attributes*. Referencing the analogy with epistemic modal logic, we might rephrase the concept of knowledge from a Boolean possibility to a class-based possibility as follows.

$$K_a\varphi = x \tag{7}$$

The specific difference here, now, is that rather than the knowledge operation determining whether an Aethus is aware of a particular truth value, it instead encodes whether the Aethus is in possession of a precise instantiation which corresponds to the attribute in question. Notice that such a thing is conceptually identical to how a hash table works in computer science.

Definition (Definition of a *2-Aethus*)
A 2-Aethus is defined as a function between a domain of attributes and an image of corresponding instantiations of those attributes, (with an instantiation of an attribute being referred to as a "state.") The three major conditions for a well-defined 2-Aethus is that the every item in the domain must map to only one item in the image, (being the definition of a function), that each attribute, φ, in the domain must map to a state of the correct class.

Given this definition of a *2-Aethus*, we might consider a *1-Aethus* to simply be a *2-Aethus* for which only Boolean classes are allowed in the domain of attributes. While this does not exactly mirror the structure of a *1-Aethus* as we defined it to correspond to epistemic modal logic, the two are still mutually expressible in terms of one another, thus accounting for a kind of logical isomorphism of sorts between them.

We may incorporate a stated-attribute, now, by supposing that a stated-attribute is taken as the tuple of an attribute, ϕ, and the item to which it maps under a *2-Aethus*, being some $f(\phi)$. The set of all such stated-attribute tuples to a particular *2-Aethus* is known as the *static Aethus* to that *2-Aethus*.

Definition (Static Aethus)
The graph of a particular *2-Aethus* is its static Aethus.

Let $f : X \to Y$ be a *2-Aethus*. We thus define the static Aethus of that *2-Aethus* as its graph, where said graph itself is defined as follows.

$$\text{Graph}(f) = \{(x, f(x)) \mid x \in X\} \tag{8}$$

Notice that every element of such a static Aethus is a corresponding stated-attribute to whichever attribute it references.

Also note that this definition of a static Aethus implies a one-to-one correspondence between any static Aethus and its corresponding *2-Aethus*. This further implies that a static Aethus must also inherit the function-oriented limitations of its *2-Aethus* – that is, no two nonequal stated-attributes in a static Aethus are allowed to correspond to the same attribute, as that would imply that the corresponding *2-Aethus* fails the definition of a function. Such static Aethae, although they can be mathematically described, are referred to as *invalid static Aethae*.

Now let us move to providing an example of a *2-Aethus*. Hopefully this will help build the intuition for how it is structured and how it operates. Consider the following system of three shapes, which we will attempt to describe with a *2-Aethus*.

We see that in such a case, we have entirely depicted the relevant properties of the shapes at hand, (such that we suppose that additional properties like location and size are not actually present in said system, similarly to how we might neglect the notion of ordering in a set, for example). However, we might ponder over what the state of implied attributes are, even if they are not directly present themselves. For example, consider the following attribute.

$$\varphi_5 = (\text{“Is B a triangle?”}, \textit{ Class Boolean}, \varphi_{5R}) \tag{9}$$

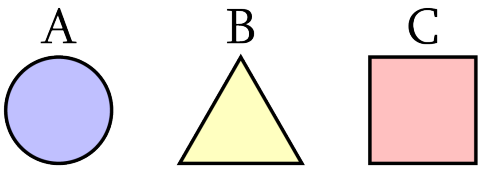
We might ask ourselves, *is such an attribute present within this 2-Aethus?* Intuitively, we know that knowing the items listed in the *2-Aethus* is more than sufficient to deduce the state of this attribute – it is simply to be set to *true*. However, it would be beneficial to explain why exactly we know this. There are essentially three possible avenues through which we might deduce the state of one attribute given another, in the most intuitive sense of deduction. Specifically, suppose that φ_a is within our *2-Aethus*, and we claim that we can deduce the state of $v\varphi_b$ accordingly. We then have three possible avenues of doing so.

1. Perhaps φ_b is implied by φ_a, as if to suppose that φ_a itself represents the combination of φ_b with some other line of information.

2. Perhaps φ_b is equivalent to the assembly of several attributes in the *2-Aethus*, and not just φ_a alone.

3. Perhaps φ_b represents another way of expressing the exact same information which φ_a associates with.

Example of a *2-Aethus*




```
A2 = {
  ("A, B, C are in our system.", Boolean, r1):
        true,

  ("Is A a circle?", Boolean, r2):
        true,

  ("B is not a triangle.", Boolean, r3):
        false,

  ("What shape is C?", Shape, r4):
        "Square",

  ("What color is [A, B, C]?", 3-Tuple of Colors, r5):
        ["blue", "yellow", "red"]
}
```

Table 5: This is an example of writing a particular *2-Aethus* as a mapping function, almost akin to a json file. In this example, we have encoded the information of the diagram within a *2-Aethus*, and in the process have demonstrated the various methods of defining a quality of a system.

In order to accurately express all of these added conditions, we will need a *3-Aethus*. Specifically, the supposition is that a *2-Aethus* can be taken to *generate* a corresponding *3-Aethus*, where every possible stated-attribute which can be derived from its contents must also be present within it. That is, explicitly speaking, consider the following difference between a *2-Aethus* and a *3-Aethus*.

A 2-Aethus, through its simple definition, can be given to hold any arrangement of stated-attributes, so long as it does not break the definition of a function. A 3-Aethus, however, is substantially more restrictive, and further implies that every deducible stated-attribute to those within it must also be within it.

So, regarding the example at hand, we might suppose that even though φ_5 is strictly not present within the example *2-Aethus*, it very much is required to exist in the *3-Aethus* to which said *2-Aethus* generates. Specifically, it would be present there with the state of *true*, because of course we know that for B's not being a triangle to be false, it must therefore be a triangle. Consider, now, the general definition of a *3-Aethus*.

Definition (Definition of a *3-Aethus*)
A 3-Aethus is defined as a 2-Aethus for which three major limitations must be met.

1. *For every stated-attribute in the graph of a 3-Aethus, it follows that every possible decomposition to it must be a subset of the graph.*

2. *Every combination of stated-attributes in its graph must also exist in its graph.*

3. *Every congruent stated-attribute to a stated-attribute in its graph must also exist in its graph.*

The crucial intuition of what this is telling us is that unlike a 2-Aethus, we have for a 3-Aethus that every possible attribute which can be deduced in any way from any attribute within it must then also exist in its domain. It is like the maximized possible object of deduction to be generated from any subset of its domain. However, we know still that it cannot contain every possible attribute when generated from a finite subset, because some attributes will merely be unable to be derived from any of its items.

This distinction between derivability versus non-derivability is the fundamental characteristic of a 3-Aethus.

Now would be important to define these terms of attribute combination and attribute congruence. Furthermore, we should provide a sufficiently rigorous definition of the relation set to an Aethic attribute. We may start, then, with the relation set. For every Aethic attribute, its relation set consists of all possible valid Aethic relations which include said Aethic attribute as an element. Intuitively speaking, it is where we encode all of the other attributes to which our attribute is related, as well as how it is related to them.

Components of an Aethic Relation

1. The owning Aethic attribute, φ_A.
2. The related Aethic attribute, φ_B.
3. A function, f, *which implies that the entire Aethic relation is valid if and only if the following three conditions are satisfied.*
   (a) The domain of f is the set of pairs of compatible instances between φ_A and φ_B. That is, considering the set of pairs of instances between φ_A and φ_B, we subtract from this set the set of pairs of instances which we deliberately assert are invalid as per the contextual definitions of our φ_A and φ_B. Such a resultant set ought to precisely equal the domain of f.
   (b) The function f must be non-trivially dependent on its two input values.
   (c) The image of f has to contain only one value, hence making f a constant function.

Table 6: An Aethic relation is defined in terms of two Aethic attributes as follows.

To give an intuitive example of an Aethic relation, we might consider two Aethic attributes as follows.

$$\varphi_A = (\text{“Whether B is a triangle.”}, \textit{Class Boolean}, \varphi_{AR}) \tag{10}$$

$$\varphi_B = (\text{“Whether B is not a triangle.”}, \textit{Class Boolean}, \varphi_{BR}) \tag{11}$$

We might then imagine the following valid Aethic relation between them.

$$\rho = (\varphi_A, \varphi_B, f(a,b) = a \oplus b) \tag{12}$$

Where $\oplus$ represents the exclusive or operation, we have that every compatible pair of instances between φ_A and φ_B, on account of their being negations of one another, has to be of value *true*, because every XOR value of two Boolean negations must be true. In other words, for there to exist a value in the image of this $f(a,b)$, where a and b are strictly instances of φ_A and φ_B respectively, it would follow that either both of them would be true or both of them would be false, (so as to allow the XOR operation to return false for said instances). Such a thing contradicts the assertion that φ_A and φ_B are negations of one another, which is implied by their very definitions, so therefore we have to declare that all valid combinations of the instances of φ_A and φ_B through the function $f(a,b) = a \oplus b$ must map to a single constant, being *true* in this case. Thus, we have created a technical means of expressing a more intuitive idea: *for there to exist a valid Aethic relation between φ_A and φ_B implies that they must be related in some way, so as to at least in part be dependant upon one another.* Hence the idea of this being called a *relation* in the first place. Given this, then, we assert that every Aethic attribute's relation set must consist exactly of the set of all valid Aethic relations between it and any other Aethic attributes in existence.

Let us now move to rigorously defining attribute combinations.

Definition (Aethic Attribute Conjunction)
For some set of Aethic attributes, $S = \{\varphi_1, \varphi_2, \varphi_3, \cdots, \varphi_n\}$, their Aethic conjunction, (also called Aethic combination), is denoted in the following form.

$$\varphi_0 = \sum_{\varphi \in S} \varphi \tag{13}$$

Let us now consider how the class item and relation set item of φ_0 are defined. To begin with, consider the set of possible class instantiations which correspond to the class of some arbitrary Aethic attribute, φ. We may denote such a set of possible instances of this class as $C(\varphi)$. Given such a set of possible instances, we may define such a set for φ_0 as consisting of the Cartesian product of all such sets for its constituents by conjunction.

$$C(\varphi_0) = C(\varphi_1) \times C(\varphi_2) \times C(\varphi_3) \times \cdots \times C(\varphi_n) \tag{14}$$

Whichever class has a set of possible instances which is precisely equivalent to this set is defined as the class item of φ_0. Often times we are constructing such a class specifically in terms of these conditions, note, so it is not about finding some external class which does this so much as declaring a new one altogether. To give a direct example of this process, we might suppose that we have two classes, being c_1 = "First Name" and c_2 = "Last Name". We might then define the conjunction of these two classes to be c_0 = "First Name, Last Name". Practically, this is what we might call a "Full Name", so through such a thing we see how this works. Simply put, the possible instances of a full name would consist of the of possible first name-last name pairs, hence satisfying its relation through a Cartesian product. The only further addition when considering such a thing over Aethic attributes rather than classes themselves is to include the state of identifier and relation set in addition to these class dynamics.

Regarding the relation set of φ_0, we can define it as being the set union between the relation sets of all attributes in S, specifically where we declare that φ_0 itself is to transform in the same way under any and all operations which involved each φ_k as that corresponding φ_k did. So, for instance, consider each element of the conjunction which formed φ_0, being some φ_k. It follows from φ_0 being expressible as a conjunction of φ_k with any other attribute that when φ_0 is inputted in place of φ_k into any of its Aethic relations, (as will happen within φ_0's own intrinsic set of relations), that any such functional outcome should equivalent to whatever outcome would result for φ_k itself. As such, consider how this might be phrased notationally.

$$\forall_{\varphi \in S} \forall_{r \in \varphi_R} f_r(\varphi_0, b_r) = f_r(a_r, b_r) \tag{15}$$

This is so where φ is given to be the set of relations to a given attribute φ, with a_r, b_r, and f_r representing the owning attribute, related attribute, and function constituents respectively for some Aethic relation of r. The idea is that we can define the function which φ_0 will encounter upon referencing this relation itself by virtue of swapping out the original owner parameter of the function with φ_0 itself, and then asserting that the function is to achieve the same output. This is particularly how we might think to regard relation inheritance over attribute conjunctions.

One last crucial note for attribute conjunctions is what happens when we take a conjunction over stated-attributes rather than attributes themselves. Such a thing simply finds whichever instance of the conjunction of the corresponding attributes perfectly matches the instances of the involved stated-attributes, and then declares a new stated-attribute with that class and instance. It is a requirement in a 2-Aethus and 3-Aethus that any conjunction of attributes within it must also take the conjunction of its corresponding stated-attributes on either side of the function, otherwise we will imply that multiple stated-attributes are mapped to by a single attribute, which of course contradicts the definition of a function in the first place.

Through this definition, we readily see that if we consider the domain of a particular 3-Aethus as a set, then where the set of all combinations of those attributes is given by the attribute conjunctions onto every possible subset of the domain of said 3-Aethus, it follows that such a set of all combinations has to be a subset of the domain of the 3-Aethus itself.

We can now also define Aethic attribute congruence.

Definition (Congruent Aethic Attributes)
Two Aethic attributes, φ_A and φ_B, are congruent if and only if either of them can be substituted into any of the other's relations and still result in a constant relation function. If but a single valid relation function of the other changes upon swapping out one of these two Aethic attributes as its own function for the other, and we would imply that such two attributes are not congruent.

Intuitively, whether Aethic attributes are congruent is a rather customizable concept, in the majority of cases at least. For instance, in the case of an attribute of "First Name" and "Last Name" again, we might build an attribute "Full Name" such that we define it as being congruent to the conjunction of attribute conjunction of the "First Name" together with the "Last Name", and also with perhaps

an attribute of "Ordering" to ensure that the First Name appears first, (with such a property being encoded within the Ordering attribute, specifically regarding which set of combinations of itself with the other two attributes is to yield a valid relation by its measurement).

Also please note the definition of the *decomposition set* of a particular attribute.

Definition (Attribute Decomposition Set)
For some Aethic attribute, φ_0, its decomposition set is the set of all sets of attributes whose conjunction is congruent to φ_0. We may also define the decomposition set of a stated-attribute, x, as the set of all sets of stated-attributes whose conjunction is congruent to x via its attribute and state.

Note that a decomposition of an attribute or stated-attribute merely refers to some item of its corresponding decomposition set.

Now that we have outlined some of the settings of an Aethus all the way up to a *3-Aethus*, it is time to propose the last major edit to the standard way of performing epistemological logic. Specifically, we are to refer to an intuition which is keystone to the history of mathematics: the equivalence class. We may consider any basic mathematical structure as being composed as a tangible signifier, and then an abstract equivalence class to said signifier. Consider, for instance, the difference between the following three representations of numerical digits.

$$10 \tag{16}$$

$$010.0 \tag{17}$$

$$9.9999\cdots \tag{18}$$

The key thing to notice, here, is that all three of these objects, as symbolic representations, are entirely distinct. Frankly speaking, if you were to physically write the first of the three on a notepad, then you would of course strictly *not* be physically writing either of the second two. While these objects are decidedly distinct as symbolic representations[20], we know, naturally, that they are all *numerically* identical: each one represents the number ten, (in the conventional base ten, that is). In essence, then, by instating such a system of mathematics in which a number can always be represented by a finite object, (being a symbolic representation), we therefore have allowed ourselves to not be lost in the infinity of symbolic representations which map to each single number – instead we merely assert that one of them will do. The procedure behind this is to perform two key points of setup to our system. The first is that we define a number, and we define it as an equivalence class of digit representations, and the second is that we assert that a number may be denoted in its entirety by any one of its corresponding digit representations. Instinctively, we do not look at 10 and perceive a digit representation – rather we convert it into the Platonic ideal of ten on sight. We exploit digit representations for the purposes of compact expression, and we know that they are distinct from numbers in type, but we nonetheless treat them as numbers in next to all practical applications.

Notice, also, that such a procedure is not unique to numbers. We also do the same thing with geometry, as well. We might imagine drawing many possible triangles on a sheet of paper, and no single one of these triangles is itself a triangle – rather it is merely a collection of atoms of ink or graphite which is arranged into a perceptually three-sided shape. So, like with numbers, it is through the notion of equivalence classes do we truly harness the concept of a "triangle" in a mathematically viewable way. Every such shape of three sides and three points now becomes a triangle. Furthermore, we might also define similar triangles through the use of an equivalence class, or perhaps we define congruent triangles with a different equivalence class still. The point of the matter is that we still hold this consistent process of A) defining an equivalence class, and B) referring to the item within this equivalence class purely through the items which generated it, rather than by some abstract and intangible structure which it uniquely holds.

Consider the following exercise to help motivate why the latter would be somewhat infeasible. Suppose we wanted to describe the number 1000 not through its symbolic representation, but through the assembly of the infinite properties which it satisfies.

$$\tau_k = \big(\text{An abstract object whose cube root is nine greater than one, } \textit{and} \text{ which divides } 57^4 - 1, \textit{ and } \cdots\big) \tag{19}$$

[20] We can also quickly prove, as before with the Earth-Sun distance, why the symbolic representations strictly are not the same as the numbers themselves. If we implied that they were the same, then two different symbolic representations which we take as different would have to be different from one another while both equalling the corresponding abstract ideal. By transitivity, this implies that they themselves must equal each other, which forms a contradiction with their being given non-equal. As such, through proof by contradiction, we hold that the representations cannot equal the ideals.

Without ever referring to the compact shorthand, the procedure of alluding to any number would be something of a nightmare. Even the use of the word "nine" in there would require recursion, because we would then have to define nine within the definition of one thousand. At the very least, any means of attempting to express this mathematical object has a substantially higher danger of contradiction than is typical while expressing a number. Even a single accident when writing a part of it down would spread like a ripple effect, and essentially violate the entire string through contradiction. In a sense, then, writing one thousand as 1000 is concise, and holds a kind of accident-proofing both in the realm of making an accident in the first place, as well as minimizing the falloff should one be made anyway. The main idea, then, is that the prospect of describing a number from the direction of *all complexity* toward *base complexity* is entirely avoided throughout the history of mathematics when describing some of our fundamental tangible objects like numbers, shapes, and physical quantities. We might then notice the issue with a *3-Aethus* just from this – it quite literally is defined as the total accumulation of each and every property which it is in possession of. This is something of a rapidly unfolding infinity of edges and nodes, if we were to write it down tangibly as a graph. As such, our issue here is that we are taking what should be a very simple and straightforward mathematical object, and artificially making it far less tangible by virtue of going against the typical means by which fundamental mathematical objects are described – through equivalence class.

To fix this issue with the formulation of the Aethus, now, let us mimic the more standard pattern for defining fundamental mathematical objects, and declare two mathematical objects: first will be the representation object, and the second will be the equivalence class of that object. Note, for the record, that there are a couple orders of tangibility of representation objects. There is indeed the version of them where they must be physically expressible, but this seems less interesting for its rigid and restrictive nature. Therefore, let us use a better form of representation object, which is defined merely for the purposes of its representation, but is still abstract. In the example shown earlier, we might imagine extending the set of possible symbolic representations of numbers so as to allow an item in which $9.9999\cdots$ truly does repeat infinitely. Of course, such an object itself cannot be expressed on paper, however we can still allude to its existence, as after all it does follow from the basic axioms we set up for defining a symbolic number without contradiction. What we need for the Aethus, then, is an abstract-representation object of the right sort, as well as an equivalence class of these representation objects, which will serve as the Aethus mathematical object itself. A great pick for such an abstract-representation object, then, can be a static Aethus itself. An Aethus, then, is defined as an equivalence class of static Aethae as pertaining to the equivalence relation which we will assign to it.

Given how we are already in possession of the definition of a static Aethus, let us now move to defining the *generation* of a static Aethus. Intuitively speaking, the idea of a static Aethus generation is that we are to find the most restrictive possible *3-Aethus* which extends the stated-attributes of our static Aethus while still being a valid *3-Aethus*. This can, in a sense, be seen as analogous to generating a group in abstract algebra from a generator. Here we are simply generating a *3-Aethus* from either a static Aethus, or its *2-Aethus* counterpart.

Definition (Generation of a Static Aethus)
Let $\mathcal{F}_3 = \{f_i : D_i \to C_i\}$ be the set of all *3-Aethae*, where $\text{Graph}(f_i)$ is the graph of a corresponding f_i from $\mathcal{F}_3$, and X is some static Aethus. We define $G(X)$ as the *generation* of the static Aethus X, such that it satisfies the following.

$$\mathcal{T} = \{\text{Graph}(f_i) \mid f_i \in \mathcal{F}_3, X \subseteq \text{Graph}(f_i)\} \tag{20}$$

$$G(X) = f_j \mid \text{Graph}(f_j) = \inf(\mathcal{T}) = \bigcap_{I_i \in \mathcal{T}} I_i \tag{21}$$

That is, the generation of a static Aethus is given as that *3-Aethus* whose image is the infimum with respect to set inclusion of the set of all *3-Aethus* images which hold said static Aethus as a subset.

Note that another commonly used term for the generation of a static Aethus is its *attribute cascade*, which is merely meant to depict the cascading effect of all possible combinations and congruences which are taken upon a single static Aethus so as to generate such a *3-Aethus*.

We may also define the Aethic equivalence relation in terms of this.

Definition (Aethic Equivalence Relation)
Some number of static Aethae are equivalent if and only if their generations (i.e. attribute cascades) are equivalent.

Defining the Aethic equivalence relation in terms of *3-Aethae*, (being the attribute cascades) is a rather more technical approach, but we may note that there is a much more intuitive way of understanding this definition as well. Such a thing works as follows.

Theorem 1 (Fundamental Theorem of Aethic Equivalence)
If there exists some stated-attribute, x, in either of static Aethae φ_A or φ_B which is not derivable based upon the stated-attributes of the other static Aethus from which it is contained, then we hold that φ_A and φ_B project to non-equivalent attribute cascade objects.

It is specifically the use of the contrapositive of this statement which enables us to prove that two static Aethae are equivalent, which can be of great use in most cases, because it allows us to gauge Aethic equivalence without having to resort to the complexity of *3-Aethae* directly. This theorem draws from the notion of *derivability* in Aethic reasoning, which may be given a definition of its own.

Definition (Attribute Derivability)
A stated-attribute, x, is derivable based upon the set of stated-attributes, A, if and only if there exists a subset to A for which its stated-attribute conjunction is congruent to x. Furthermore, an attribute X is derivable in terms of a set of attributes S if and only if for every possible stated-attribute to X there exists a 3-Aethus with domain equaling S for which it is derivable based upon the image.

Given this setup, here is an example of practically attaining the equivalence of two static Aethae, written in the form of three stated attributes.

$$(\text{(“My shape is a square.”, } \textit{Class Boolean}, \cdots\text{)}, \text{ True}) \in A \tag{22}$$

$$(\text{(“My shape is a rectangle.”, } \textit{Class Boolean}, \cdots\text{)}, \text{ True}) \in B \tag{23}$$

$$(\text{(“My shape is a rhombus.”, } \textit{Class Boolean}, \cdots\text{)}, \text{ True}) \in B \tag{24}$$

(Note that in the example, the relation set has not been explicitly written due to it being redundant based upon the context given in the identifiers. It may be tedious to always write out the relations in full, so a shorthand may often be used to exploit common context so as to fill it in through implication. In general, the spirit of static Aethae is to write only so much as is needed to derive everything else, but nothing more). In this example, we have that A and B are decidedly of the same Aethic equivalence class if they only contain the properties listed. In order to demonstrate this, we need to show derivability in both directions. Firstly, we have that every stated-attribute in A is derivable by those in B, because, well, if a shape is a rectangle and a rhombus, then it must be a square. We can also show that every stated-attribute in B is derivable by those in A, because for a shape to be a square implies that it must be a rectangle, *and* that it must be a rhombus. Hence, we have shown that even though these are two distinct static Aethae, they are nonetheless Aethically equivalent, and so are both representations of the same underlying Aethus. We also could have shown this through the use of their attribute cascades, but that would have been more tedious, if also more rigorous.

At this point, we may finally define the Aethus itself, (which we may also refer to as a *4-Aethus*, though this term is more rare).

Definition (Aethus)
An equivalence class of static Aethae under the Aethic equivalence relation.

Highly importantly, let us please explicitly note what conceptual mathematical intuition and motivation this more rigorous framing is meant to correspond with, now that we have reached as far as the technical definition of the Aethus: *put into simpler terms, a static Aethus is a list of the properties describing part of a system, and an Aethus is an equivalence class of lists of properties which can be fully derived from one another. The use of mappings in the formal mathematical definition is meant to wring out any ambiguity, but the conceptual idea is quite the same.*

Also note the existence of an *Aethic Template*, which is considered to be the analogue to an Aethus of what an attribute is to a stated-attribute.

Definition (Aethic Template)
The Template, $\widetilde{A}$ of a particular Aethus, A, is its corresponding attribute where we treat A itself as a stated-attribute. Where an Aethus is defined as an equivalence class over a set of stated-attributes, a Template is defined as an equivalence class over a set of attributes instead. As such, then, we assert that for any Aethus, A, its Template can be defined as being an equivalence class over the set of all *2-Aethus* domains which map to each image equaling a static Aethus under the equivalence class of A itself. Here is this statement written symbolically.

Let $\mathcal{F}_2 = \{f_i : D_i \to I_i\}$ be the set of all *2-Aethae*, where D_i is the domain and I_i is the image of a corresponding f_i from $\mathcal{F}_2$, and A is some Aethus which is written in the form of being a set of all static Aethae to which it serves as an equivalence class. We define $\widetilde{A}$ as the *Template* of the Aethus A, such that it satisfies the following.

$$\widetilde{A} = \{D_j \mid I_j \in A\} \tag{25}$$

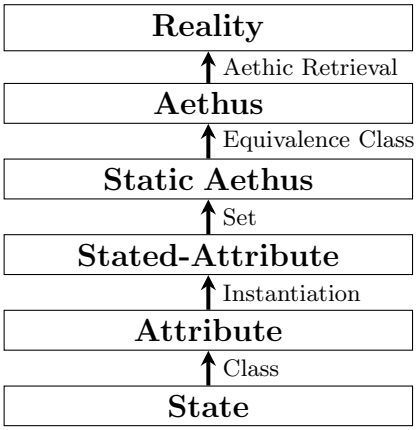
Notice the assertion in the defining of Aethic Templates that an Aethus itself can be treated as a stated-attribute. Such a stated-attribute can be referred to as an *Aethic recursion* for its connotation of implying Aethae which contain further Aethae. We will allow more interesting operations over Aethic recursions in the coming sections, (with perhaps the most intriguing being that we are to apply the second postulate of the Aethus to Aethic recursions and their Template objects in no different a way than to other stated-attributes and their own attributes), but for now the basic identity of theirs to comprehend is that *for us to append an Aethic recursion into a static Aethus is Aethically equivalent to appending the entirety of any static Aethus of that Aethic recursion instead.* This notion can be known as *the attribute-template equivalence theorem.*

Theorem 2 (Attribute-Template Equivalence Theorem)
Any Aethus can be stored in another Aethus as a stated-attribute, with its corresponding Aethic template then being stored as its corresponding attribute. Notice that adding an Aethus to another as a stated-attribute can be taken as generating the equivalent Aethus of that which corresponds to taking the union of two of their respective static Aethae.

Through these notions, we have fully encapsulated the nuance of the Aethus, specifically regarding how it innovates the basic ideas of epistemology. Let us now move to listing the iterative structure of the Aethus more directly, before starting the analysis of it in full.

3.2 Aethus Definitional Hierarchy

3.2.1 Mathematical Prelude



Shown here is the proposed mathematical hierarchy for defining the Aethus, as is to be described in this paper. Let us traverse the hierarchy in its proper causal order.

3.2.2 Aethic State

An Aethic state can be considered to be the lowest layer of Aethic reasoning. It is to be regarded as an instance from the collective class of all states which an Aethic attribute might be in possession

of. Similarly to how eigenstates are regarded in quantum mechanics, we might regard an Aethic state with respect to an Aethus, with it forming a building block of sorts toward forming a wider picture.

3.2.3 Aethic Attribute

An Aethic attribute can be seen as a class, (with instances of Aethic states), which is equipped with an identifier and a set of Aethic relations to other attributes. Let us attempt to visualize Aethic attributes intuitively. To put it simply, they are, in a sense, the Aethic analogue to what we might call a *question*. For example, consider the question of *what is Tim's favorite ice cream flavor?* Just as we could align an Aethic state with a particular base state of our world and universe, we can now align an Aethic attribute with such a question. The attribute would consist of the set of all ice cream flavors, (with each flavor being an Aethic state), in a sense being cued up for when an answer is to be selected.

3.2.4 Aethic Stated-Attribute

If an Aethic attribute was like a question, then an Aethic stated-attribute[21] is like an answer. Specifically, the notion of this is to equip the corresponding Aethic attribute with a particular single state within it, which is to serve as its "answer." Or, likewise, instantiating the Aethic attribute's class. For example, in our world at least, we might suppose that the answer to *are non-avian dinosaurs extinct* is a decided *yes*. Hence, we have the corresponding stated-Aethic attribute to the question itself.

Also note that there is a possibility of defining stated-attributes which do not hold information about their attributes at all. For example, the Aethic attribute corresponding to, *what is my friend's favorite movie* might very well correspond to an Aethic stated-attribute with an answer of "I don't know," which we are asserting in Aethic reasoning is an acceptable answer. In the case where a stated-attribute does not possess a state to its attribute in the first place, we assign to it a very special universal Aethic state called the *blank state*. We would then form the stated-attribute as a tuple of its attribute together with an instance of the blank state, which would signify that the stated-attribute, in a sense, *does not know* the state of its attribute.

3.2.5 Static Aethus

A static Aethus is simply defined as a set of stated-Aethic attributes. The idea is that where an Aethus represents a catalogue of knowledge, there ought to actually be many different ways of representing that same knowledge, as based on one's choice of included attributes. That is, we ought to count all derivable information as part of the deeming of equivalence, rather than what is just physically present in a particular static Aethus. So long as one static Aethus does not imply more or less information than another in any categories, and we ought to take the two as Aethically equivalent, and hence as part of the same Aethic equivalence class.

3.2.6 Aethus

The Aethus is, somewhat clearly by now, the fundamental object of Aethic reasoning, such that whatever analysis we do over Aethae will be, as we will postulate, entirely descriptive of our reality. An Aethus can be thought of as the Aethic analogue to concepts like *possible worlds*, *timelines*, or *alternate realities*, in that it is the chief discriminator between what is physically real in a way, versus what is fake, different, or whatever else in distinction. Also, however, we are to suppose in Aethic reasoning that the Aethus itself is fundamentally rooted to the knowledge of some agent, at least in the case of its empirical presence. Nonetheless, however, we can very well describe our own Aethae just using the techniques now provided, so the notion of flexibility with the Aethus is to suppose that we may very well describe an Aethus at any place where we see fit, even if our own physically present Aethae just so happen to be rooted to a conscious mind. This being said, however, it is still important to note that Aethae are not limited to a human or to a mind in particular, for the reasons of paradox-avoidance outlined in the previous section.

Mathematically speaking, one can visualize an Aethus simply as an ontological container of knowledge. It consists of all attribute presences, and as such can undergo mathematical operations to no less a degree than a static Aethus. To highlight the key difference between thinking of ontology in sets versus in Aethae, for a set we might have just skipped the intermediate layers of the hierarchy

[21] Note that these may be called Aethic stated-attributes *or* stated-Aethic attributes.

and put those raw states into the set – however with an Aethus the procedure is more precise, being that the Aethus simply declares the state of a given Aethic attribute. That is, one does not check if a state is in an Aethus, but rather must go through the medium of attributes in order to check on the contents of the Aethus. They come with a prepared attribute, and simply ask which state is present in the particular Aethus under that attribute, (i.e. calling the corresponding stated-attribute to that attribute within the given Aethus). As such, we see that the Aethus is fundamentally built from this unit of an Aethic attribute, in effect making its ontology precise, non-combating[22] across types, and resistant to absurdities which arise in unchecked set theory like Russell's paradox. (As was explained in the prior footnote, one can visualize the Aethus like an array of many small doors in front of many small slots, just large enough to hold a melon or something. Every time someone wants to retrieve an item from the Aethus, they look up the correct door, (being the Aethic attribute of choice), and then open it so as to find the proper state behind it. The contrast with sets, then, is that a set is more like throwing all the states into one big bag and then losing track of them – but in an Aethus we are more organized, and just enough so to accurately describe the Aethic dimension).

3.2.7 Reality

This notion of "reality" in Aethic reasoning is to mean a few things. Namely, it means to represent the array of superpositions which are present in an individual's instantaneous Aethic coordinate block universe, but the notion of reality can also extend to other applications. For instance, the notion of *realism* in quantum versus classical mechanics ought to, as was explained with the first postulate, follow directly from this Aethus hierarchy as well as from within the "reality" node. And, moreover, essentially all the the various definitions of realism throughout philosophy can, in some way at least, be regarded in Aethic reasoning as being configured within this node, too. As such, the notion to be built here is that whatever it is that we identify as our physical reality, being either the mathematical dimensional construction we associate with it, or perhaps instead just the root perception which we undergo in interacting with it, and either way such a thing will correspond to this particular layer of the Aethic definitional hierarchy that is our "reality."

3.2.8 Conclusion of the Hierarchy

With the hierarchy now being broadly defined, let us move to describing the applicable and relational picture of Aethic structure.

3.3 Base Mathematical Analysis of the Aethus

3.3.1 Defining Blank Aethic Attributes

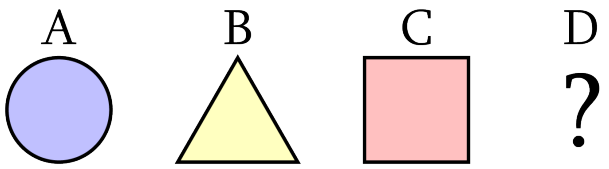
Consider a special object of Aethic reasoning, which we will refer to as *the blank state*. Simply put, this object is somewhat like the null object in object oriented programming languages, where it is both universal and considered to be analogous to the absence of information. That is, we will hold that the blank state is of type Aethic state, and that all two blank states are equivalent, (so as to represent the same single instantiated object rather than two objects of the same class). We may denote the blank state with the symbol $\emptyset$, or simply the written term "blank."

Definition (Blank State)
The blank state is to be defined as a single state object which is unique in its ability to be applied as the state to any Aethic attribute, so as to form its corresponding stated-attribute. This is due to the blank attribute being the identity state, in a sense being analogous to zero or otherwise nothingness. Similarly to how any numerical physical quantity can be added with zero, regardless of consideration of units, we also have that any attribute can be stated with the blank state, regardless of attribute class. We may notationally denote the blank state with $\emptyset$.

Let us now elaborate upon the key role of blank states in Aethic reasoning, starting with their depiction as a lack of information.

[22] That is, I cannot put completely incompatible states into an Aethus like I can a set. I could put the number three and my car into a set, but with the Aethus we have resistance to such an arbitrary ontological ugliness. With the Aethus, instead, I would have to look behind the doors, so to speak, labeled for those things, and even then could only draw states which are tailored to the corresponding doors, (being attributes). In short, anything goes with a set, but not with an Aethus.

Example of Attribute Blankness




```
A2 = {
  ("A, B, C, D are in our system.", Boolean, r1):
        true,

  ("Is A a circle?", Boolean, r2):
        true,

  ("B is not a triangle.", Boolean, r3):
        false,

  ("What shape is C?", Shape, r4):
        "Square",

  ("What color is [A, B, C]?", 3-Tuple of Colors, r5):
        ["blue", "yellow", "red"],

  ("What shape is D?", Shape, r6):
        *blank
}
```

Table 7: For this *2-Aethus*, we have acknowledged the presence of an additional shape in the system as compared to what we analyzed earlier. However, we do not know which shape such an additional shape is, and as such are obliged to set the attribute encoding its shape to blank.

In this example, we add an extra shape, being D, to our Aethus, all while not knowing which particular shape it actually is. In such a case, it would be sufficient to write its static Aethus without an attribute for the shape, but the key idea is that we can perform the same job by simply including the stated-attribute in our static Aethus, but setting it to the blank state, which we denote in this mapping depiction with "*blank".

The key idea which we are to draw from this, now, is that *for any stated-attribute set to blank, whether we include it or exclude it in a particular static Aethus is to maintain Aethic equivalence to the same Aethus.* Another way of putting this is that *the inclusion of any number of additional stated-attributes set to blank in a static Aethus does not change the Aethic equivalence class of said static Aethae.*

Principle 18 (Blank Identity Principle of Aethic Reasoning)
For any static Aethus, X, the prospect of adding an additional stated-attribute set to blank to it, so as to make the static Aethus Y, implies that $X \equiv Y$ under the Aethic equivalence relation.

Given this blank identity, let us define the vocabulary word which helps us tell if a stated-attribute is blank in an Aethus as opposed to but a single static Aethus of it.

- Attribute Containment
  - Attribute containment is a property of an attribute with respect to a static Aethus. If the attribute is contained in said static Aethus, it means that the set that is the static Aethus itself physically contains a stated-attribute to that attribute for which the state is *not blank*. If either the stated-attribute is contained but set to blank, or not contained in the first place, then we declare that said attribute is *not contained* within that static Aethus.

- Stated-Attribute Containment
  - A rather more simple terminology is containment of a stated-attribute within a static Aethus. Such a thing is a direct application of set containment, where we directly test if a stated-attribute is present in the set that is a static Aethus.
- Attribute Presence
  - Unlike attribute containment, which is fundamentally a relation between an attribute and a static Aethus, we have that attribute *presence* is instead a relation between an attribute and an Aethus. As such, in Aethic reasoning we conventionally reserve the word "contain" for attribute-static Aethus relations, and "presence" for attribute-Aethus relations.
  - Attribute presence, therefore, can be defined as being in effect when a given attribute is contained in any static Aethus to the Aethus in question. That is, *for an attribute φ to be present in the Aethus A, it follows that there exists a static Aethus to A for which φ is contained in it.* More specifically, as references the definition of attribute containment, this would mean that there is a static Aethus to the Aethus in question for which the attribute in question is both contained in a stated-attribute of the set, which is at once not set to blank.
- Stated-Attribute Presence
  - Stated-attribute presence, again being a property of relation between a stated-attribute an an Aethus rather than a static Aethus, is in effect when there exists a static Aethus to our Aethus in question for which the stated-attribute in question is contained within it.

3.3.2 Introduction to Aethic Retrievals

One of the most important aspects of Aethic reasoning is the concept of the Aethic retrieval. Let us describe it as follows.

Definition of Aethic Retrievals
As is a fundamental tenet of Aethic reasoning, *an attribute's state is never accessed directly from an Aethus, but instead is called from a function on the Aethus called an Aethic retrieval, that way the Aethic structure can manipulate what is allowed to be passed from the inner contents of the Aethus.* In effect, then, a retrieval function is nothing more than the querying function of an Aethus, (specifically in the context of physically or ontologically gathering a result from the Aethus as opposed to depicting the inner contents of the Aethus itself).
As such, an Aethic retrieval is considered to be a function of an attribute and an Aethus, and its role is to return the state associated with that attribute within said Aethus. For instance, we might denote the Aethic retrieval, ρ, which corresponds to the attribute φ and the Aethus A as follows.

$$\rho(\varphi, A) \tag{26}$$

The key, now, is how we define such a function. We can consider this to follow from a conditional, (otherwise known as a piecewise function). The rule which such a piecewise function follows is itself the statement of the second postulate of the Aethus. Note that we are to neglect one condition in our base definition of such a rule, which we may refer to in the meantime as *the basic second postulate of the Aethus.* We are doing this for good reason, as explaining it this way will help solidify the intuition for how this principle truly works. The added condition will simply be tagged on as we progress through the paper.
To define the conditional function that is attribute retrieval, consider an operation which queries the state of the attribute, φ, from the Aethus, A, by quite literally mapping φ to a corresponding state with the *3-Aethus* which corresponds to A itself. We will also take $\overline{\varphi}$ to represent the set of possible states which correspond to the attribute φ, (on account of whatever its class is). Given these things, the statement of the basic second postulate of the Aethus is the following.

$$\rho(\varphi, A) = \begin{cases} q_A(\varphi) & \text{if } q_A(\varphi) \not\equiv \emptyset \\ \overline{\varphi} & \text{if } q_A(\varphi) \equiv \emptyset \end{cases} \tag{27}$$

Put verbally, this is expressing that *if an attribute is present in an Aethus, then its retrieval returns its corresponding state, but if said attribute is blank in the Aethus instead, then its retrieval returns the set of all states which correspond to the attribute.* The key idea here is that this is fundamental nature of what we call *Aethic superpositions*, being as simple as that when an Aethus is unaware of an attribute's state, then upon physically retrieving said attribute, we are to get the set of all states which correspond with that attribute.

The consequences of the second postulate of the Aethus are, of course, of vital importance to Aethic reasoning. Consider our diagram once more in which we depicted a blank stated-attribute (7). The idea now is that for any of the attributes listed about shapes A, B, and C, as well as the attributes which can be fully derived from them, it follows that retrieving said attributes will return a genuine state, for after all those attributes are present in the Aethus. However, we of course have a very different case for the attribute corresponding to what shape D is, being denoted simply with "what shape is D?". We hold that such an attribute, in being blank in that Aethus, will retrieve the set of all possible shapes if and when it is retrieved. The immediate consequence to physical reality, then, (should said Aethus correspond to a physical reality in the first place), is that that shape quite literally will be occupying all possible shape states at once, akin to *Schrödinger's cat*, (but with the implication of a general Aethic superposition rather than the special case of a quantum superposition). In the basic sense, (so without regard to the further nuances between general and quantum superpositions, which will be discussed with the third postulate), we have that we could encode Schrödinger's cat within an Aethus by simply adding two attributes to a static Aethus of it.

Encoding Schrödinger's Cat With an Aethus

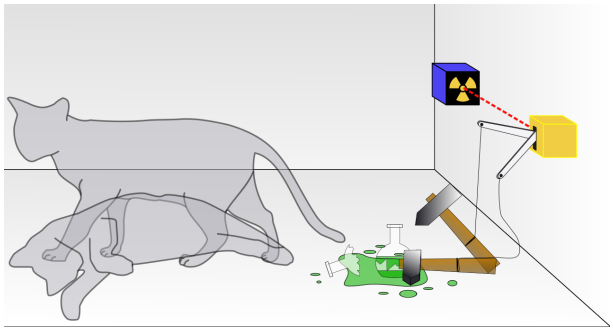


Table 8: Source: Wikimedia Commons. [18]

```
{
  ("Schrodinger's cat is in our system.", Boolean, r1):
        true,

  ("Schrodinger's cat is alive rather than dead.",
     Boolean, r2):
        *blank
}
```

Table 9: An example of depicting Schrödinger's cat with an Aethus. Note that this explanation is targeted at demonstrating the wide depictive powers of the second postulate of the Aethus, rather than commenting on the ontology of Schrödinger's cat directly.

In this case, we clearly see that the state of Schrödinger's cat being alive is blank. Had this attribute been set to *true*, then naturally the cat would surely live, and if it were set to *false*, then of course the cat would be dead. The interesting concept here, then, is that we might also think to set the attribute to *blank*, hence operating outside both possibilities, in which case the Aethic retrieval is to put the cat in Aethic superposition between both states. The key idea here is that *this Aethus perfectly maps to the real-world system of Schrödinger's cat, however the attribute is never itself encoded within the interior of the Aethus as both possible states.* Instead, we hold that attributes beget real-world superpositions only by being strictly blank within the Aethus, with the prospect of their directly holding multiple states in the Aethus at once being both a separate concept entirely, not to mention an Aethic contradiction. Where we picture an agent's moving across the Aethic dimension, and thus continuously reaching new Aethae as being characterized by their filling in the blank attributes of each previous Aethus, (by virtue of leaning the corresponding things), it follows that blankness is fundamentally a past-oriented notion in Aethic time, whereas filling attributes is fundamentally future-oriented. So the bulk of the issue with quantum superpositions in the Copenhagen interpretation not directly being discriminated from general contradictions is that such a notion holds contradictions, (being excessive information), versus superpositions, (here being the lack of information), as one. But in Aethic reasoning, we firmly assert that superpositions are rooted in the past-Aethic time direction, whereas greater or even excessive information is rooted in the future. So in short, the issue with the Copenhagen interpretation, among other things, is that it faultily assumes the equivalence between two concepts on entirely different ends of the Aethic progression, being superpositions in the low-information direction and contradictions in the excessive-information direction.

Consider the statement of such things in what we might call *the contrast principle of Aethic reasoning.*

Principle 19 (The Superposition-Contradiction Contrast Principle)
In Aethic reasoning, we hold that superpositions and contradictions are fundamentally separate objects within the structure of the Aethus. A superposition is to be brought about indirectly by a blank attribute being retrieved from an Aethus, (so in the purely direct mindset the ability of such a happening would go unnoticed), whereas a contradiction, at least in the Aethic sense, is directly brought about by putting two disjoint states under two instances of the same attribute within a single Aethus, which of course

we know to be impossible via a 3-Aethus needing to be a function. In general, it follows that blank states are past-oriented in Aethic time, as they represent the lacking of Aethic information, whereas contradictions instead represent excessive-information, thus putting them at the polar opposite side of things. This notion helps illustrate how they are more akin to opposite than equivalent objects.

One may also note something of a fascinating tendency of Aethic superpositions on account of their stance of representing blank information in the Aethus: the amount of Aethic content operates in a fundamentally antiparallel sense to the amount of content in its corresponding reality, because by the second postulate of the Aethus, for an Aethus to pick up information is for the corresponding reality to lose superposition content. This is a major point of contrast with the more parallel sense of the classical paradigm.

To summarize the idea of Aethic reasoning, then, we are to encode Aethic superpositions within the Aethus using strictly blank attributes, such that superpositions come about indirectly, (through retrieval), rather than directly upon the attributes within the interior of the Aethus. For an Aethus to contain multiple states within its attributes directly, then, is disallowed entirely, and will serve as our direct reformulation of a classical contradiction within Aethic reasoning. Through this separation of superpositions and contradictions, then, we now allow a fundamental level of logical realism to be reinstated to the quantum paradigm.

Given this setup of Aethic contradictions, let us take a moment to describe them explicitly. After that, we may discuss how to finish the second postulate of the Aethus to its rigorous form, out of attaining the last condition to it.

3.3.3 Aethic Contradictions and Invalid Aethae

It is important at this point to declare what constitutes an Aethic contradiction, that way we can rigorously define where the classical law of non-contradiction applies in Aethic reasoning versus where it is deemed obsolete. As such, an Aethic contradiction can be defined as follows.

Definition 1 (Aethic Contradiction)

1. *Attribute X will be an Aethic contradiction in Aethus A if and only if there exists a static Aethus to Aethus A which contains two or more disjoint stated-attributes of X.*

2. *An Aethus A itself will possess an Aethic contradiction if and only if there exists such an X which is an Aethic contradiction in A.*

Also note the use of the term *disjoint* in this context. For two stated-attributes of the same attribute to be disjoint is something of a given property for them – that is, it is postulated rather than deduced. This is not to be confused with *disjoint Aethae*, which instead regards two Aethae whose intersection is an invalid Aethus. Such a more complicated concept is to be discussed later on. Intuitively put, *if a contradiction happens inside an Aethus, (i.e. with present attributes), then that amounts to an Aethic contradiction, however if a contradiction happens outside an Aethus, (i.e. with non-present attributes), then no problem is triggered at all relative to that Aethus.*

Also please note, by the way, that a blank state can never directly contradict another state of its same attribute, because it cannot ever satisfy that condition of being disjoint[23]. As such, one can very well put a non-blank stated-attribute in an Aethus and then also add a blank-state of the same attribute, and a contradiction can never be directly triggered by such a thing, (in a sense being analogous to adding zero to a number, with no change being made in the first place). More rigorously put, *the operation of adding a blank stated-attribute to any static Aethus is itself an identity operation over the Aethic equivalence relation of static Aethae.*

The next important thing to state about Aethic contradictions, is that they imply that the Aethus in question now becomes an *invalid Aethae*. Also note that the converse of this is not necessarily true, as there are many other means of creating an invalid Aethus, (with these other means perhaps serving as the backbone of Aethic reasoning's descriptive power). Generally, though, an invalid Aethus is to be considered the truest Aethic analogue to the logical contradiction from classical logic, in that it is, by definition, considered to be that which disallows realism.

[23] We can prove such a statement through the use of the associative property, where we imply that a blank-stated attribute for a given attribute can be written as the Aethic union of all possible stated-attributes to that attribute. As such, any bijection on the set of stated-attributes to an attribute which constitutes the Aethic intersection with that blank stated-attribute must be an identity map, itself implying that there are no invalid Aethae in the image.

Definition 2 (Invalid Aethus)
An Aethus which is defined as being impossible to physically realize, specifically as the Aethic generalization of classical "contradictions." However, we may more accurately suppose that Aethic contradictions are direct Aethic analogues to classical contradictions in terms of procedure, and invalid Aethae then generalize Aethic contradictions to systems which possess their property of metaphysical invalidity while also allowing alternative avenues into establishing them, (i.e. so we can state that every Aethus in possession of an Aethic contradiction is an invalid Aethus, but not the converse). Note that there is something of a postulate in the definition of invalid Aethae, being that they have to be assumed as metaphysically disallowed all while not explicitly stating where that applies tangibly, (because doing such a thing would imply that they are in some form metaphysically allowed in the first place). This is a bit of a headache, and as such is area for philosophical speculation.

One possible method of bringing metaphysical rigor to the definition of an invalid Aethus might be to empirically suppose that *oneself may never occupy an invalid Aethus*, such that their Aethus can and will place them in a valid alternative instead each and every time. This also has some flaws, of course, because then the question might be *is it that one's own potential to occupy an invalid Aethus is the exhaustive span of what is disallowed, or are there further disallowed possibilities beyond what can be directly implied by one's own specifically-oriented empiricism?* Whatever the ontological specifications may be, an Aethic contradiction is epistemically analogous to the direct logical connotation of a classical contradiction, in that it means states are logically conflicting, but an invalid Aethus is analogous to the remainder of the connotation for classical contradictions, being that they defy all realism and as such are imperceptible. This is the nature of invalid Aethae.

3.3.4 Aethic Operations

Next, consider the Aethic union and intersection operations.

Principle 20 (Secondary Aethic Union Principle)
There is an important immediate nuance of Aethic unions to consider. In defining the Aethic union, one has the choice of either representing it as the union of two static Aethae to an Aethus, or instead as the union of two events as might be seen in a probabilistic statement. We see something of a peculiar outcome, however, which is that the very way in which an Aethus has been defined means that the union of events actually corresponds to the intersection of static Aethae, whereas the intersection of events corresponds to the union of static Aethae. It goes without saying that such an issue is somewhat tricky with regards to intuition-building as one learns the Aethic mathematics. Luckily, however, it gets much better with practice.

In total, the Aethic union and intersection operate in reverse to their respective functionality on sets, such that unions tend to remove items from static Aethae, and intersections tend to add them. We will see that such a phenomenon will actually result in Aethic retrieval superpositions, (when treated as sets), lining up with the normal intuition of unions and intersections. Such is a convenient outcome at least in the case of our physical world and all.

Given this decision, let these two operations now be defined as follows.

Definition 3 (Aethic Union Operation)
*Consider some $C = A \cup B$ for Aethae A, B, and C. Any given stated-attribute must therefore be present in C if any only if it is present in A **and** B.*

$$\exists C_0 \widetilde{\in} (A \cup B), x \in C_0 \Leftrightarrow \left(\exists A_0 \widetilde{\in} A, x \in A_0\right) \wedge \left(\exists B_0 \widetilde{\in} B, x \in B_0\right) \tag{28}$$

Note that Aethic unions have been defined so as to coincide with the unions of probabilistic events rather than the unions of static Aethae directly. Such a confusion is unfortunate, but superior to the alternative of defining the Aethic union as corresponding to the union of static Aethae. On account of this, note that the union of two Aethae corresponds to the intersection of their static Aethae. The reasoning for this will be discussed in more detail during the statement of the Aethic union principle.

Definition 4 (Aethic Intersection Operation)
*Consider some $D = A \cap B$ for Aethae A, B, and D. Any given stated-attribute must therefore be present in D if any only if it is present in A **or** B.*

$$\exists D_0 \widetilde{\in} (A \cap B), x \in D_0 \Leftrightarrow \left(\exists A_0 \widetilde{\in} A, x \in A_0\right) \vee \left(\exists B_0 \widetilde{\in} B, x \in B_0\right) \tag{29}$$

Like Aethic unions, Aethic intersections have been defined so as to correspond with the context of the intersection of probabilistic events rather than the intersection of static Aethae. In effect, the intersection of two Aethae is akin instead to the union of their static Aethae.

These equations are so specifically where $X_0 \,\widetilde{\in}\, X$ specifically denotes that some static Aethus, X_0, is within the equivalence class represented by Aethus X. In essence, then, we are stating that for a stated-attribute to be present in the total Aethus, (being the left-hand side), it must also hold the corresponding presence as seen in the right-hand side. (This is so where we specifically make use of the definition of stated-attribute presence where presence in an Aethus is defined by being present in at least one static Aethus to that Aethus).

Notice that the Aethic intersection is somewhat more dangerous than the Aethic union, in that the Aethic intersection of two valid Aethae has the capacity to be invalid, while the Aethic union of two valid Aethae does not. As an example, consider the case where the attribute X is present in Aethus A as 0, and in Aethus B as 1. We immediately have that the Aethic intersection of A and B is an invalid Aethus, because X is an Aethic contradiction within it, holding both states of 0 and 1.

Another highly important operation of an Aethus is the taking of its *Aethic complement*. Again borrowing from sets, we might think to merely represent this with a prime. That is, for an Aethus A, its complement is A'. We may now define Aethic complements as follows.

Definition 5 (Aethic Complement)
For an Aethus, A, its complement Aethus, A', can be defined such that for every stated-attribute, φ_x which is present in A, there exists a conditional attribute in A' which disallows the state of φ_x. Furthermore, every stated-attribute which is blank in A remains blank in A'.

$$B = A' \Leftrightarrow \forall \varphi, \varphi \in A \leftrightarrow \neg\varphi \in A' \tag{30}$$

Note that this expression makes use of a notation in which $\in$ represents Aethic presence of an Aethic attribute, φ. Furthermore, $\neg\varphi$ may considered to depict, at least to the degree of attribute congruence, the instance of a Boolean conditional attribute which disallows a corresponding φ.

Also note that we can define *disjoint Aethae* as follows through the use of invalid Aethae and Aethic intersections.

Definition 6 (Disjoint Aethae)
Two Aethae are disjoint if and only if their Aethic intersection is an invalid Aethus.

Definition 7 (Disjoint Stated-Attributes in the General Sense)
Generally speaking, (so as to be inclusive of the case of stated-attributes under different attributes), two stated-attributes are disjoint if and only if their own Aethic intersection, (that is, under the Aethic intersection operation for stated-attributes), is an invalid Aethus.

Regarding the analogous statement of invalidity for Aethic unions, consider the following principle, which is the *valid union principle of Aethae.*

Principle 21 (Valid Union Principle of Aethae)
Given any set of disjoint Aethae, the union of all the Aethae therein is Aethically equivalent to the union of the valid Aethae only.

This reasoning for this comes from Aethic weighting. If we consider the union of two disjoint Aethae, $A = B \cup C$, where B is valid but C is invalid, we can show that $A = B$. This is not to be proven by attribute presence, but rather with a separate intuition entirely: as stated, weighting. If we were to practically picture the Aethae A, B, and C, we might suppose that if one's own Aethus is A, then they have a certain chance of updating their Aethus to either B or C. However, for them to update to C would be impossible by the definition of an invalid Aethus, so therefore B *is the only possibility of Aethic update given* A. Through such a thing, we have that $P(B \mid A) = 1$, so the weight of B in A is one. Because it also follows that the weight of A in B is one, because A is a parent Aethus to B, we therefore have that $A = B$. Lastly beyond this, we can use the associative property and mathematical induction to demonstrate how for the union of an entire set of disjoint Aethae, such a union can be rewritten as the union of the unions of every valid-invalid consecutive pair, (supposing that consecutive invalid Aethae are themselves combined into a unioned invalid Aethus), which itself can be written as merely the union of the valid components of such pairs. Hence, the valid union principle is derived.

To draw on a tangible example, here are the tables for the Aethic union and intersection operations, respectively, as taken on the simple case of a Boolean stated-attribute. Specifically, 'o' stands for *blank*, '$-$' stands for *false*, '$+$' stands for *true*, and 'x' stands for *invalid*[24].

$\cup$	o	$-$	$+$	x
o	o	o	o	o
$-$	o	$-$	o	$-$
$+$	o	o	$+$	$+$
x	o	$-$	$+$	x

Table 10: The Aethic union operation over a Boolean stated-attribute.

$\cap$	o	$-$	$+$	x
o	o	$-$	$+$	x
$-$	$-$	$-$	x	x
$+$	$+$	x	$+$	x
x	x	x	x	x

Table 11: The Aethic intersection operation over a Boolean stated-attribute.

Regarding the Aethic complement operation, it may be found by doing the following to any static Aethus of that Aethus. First, of course, take one particular static Aethus, A, for the Aethus in question, then generate a new static Aethus, A', which is empty, (meaning empty of excess included attributes), except for one condition for each attribute of A, which simply disallows its corresponding attribute on each. Then, of course, the complement of our original Aethus is the equivalence class of A'.

3.3.5 Procedurally Understanding Blankness in an Aethus

Up to this point, we have assembled a basic perception of blankness to Aethic attributes, however we have to notice something of an edge case in our current definitions which compels us to add a further condition to true blankness. We might localize such an update in a needed elaboration on how blank attributes are fundamentally used in the Aethus. To begin with, consider a distinction between two major characterizations of an attribute being blank. We are, to each of these notions, assign to them both an *apparent definition*, (which we will do now), and later also assign to them a resultant *procedural definition*, (which we will of course take to be logically equivalent). To begin with, here are the apparent definitions.

- Physically blank attributes
  - For an attribute to be physically blank with respect to an Aethus, we simply have that it is physically encoded as blank within said Aethus. More rigorously, we have that the exact instance of the attribute itself is not contained within any static Aethus to said Aethus.
- Conceptually blank attributes

[24] In this case, such an invalidity is to be triggered by an Aethic contradiction, as we can see in the case of contradictory Aethic intersections shown here.

– Conceptually blank attributes, on the other hand, are specifically those attributes which we determine will return the set of all possible corresponding states when called by an Aethic retrieval. That is, where the second postulate of the Aethus implies that blank attributes retrieve with the set of all possible states, this is just such a blank attribute that it is referring to.

– By the basic second postulate of the Aethus, we are assuming the equivalence between these two ideals, but it turns out that we can write up an example where such an equivalence is paradoxical. This is not ill news for the second postulate of the Aethus – rather we just have to be careful about what we mean when we define it.

– Importantly, note that just due to this apparent definition alone, we already see that *a conceptually blank attribute is a special case of a physically blank attribute*, and this identity will also be important for the statement of the procedural definitions. The opposite way of phrasing this, also, is that *a physically blank attribute is a weaker condition than a conceptually blank attribute.*

The distinction between physically blank and conceptually blank attributes is rather straightforward, so perhaps it would be best illustrated with an example.

Consider, for a moment, an Aethic attribute which depicts a normal distribution. Given that such a thing is an Aethic attribute, and not merely an object or a class, we therefore also need a signifier to it. In other words, such a normal distribution has to be applicable with a particular ideal, so perhaps we will choose the distribution of human heights for our example. As such, consider such an attribute which depicts this.

$$\varphi = (\text{“The height distribution of humans.”},\ \textit{Class Normal Distribution},\ r_\varphi) \tag{31}$$

The key to understanding blank attributes in the procedural sense, now, is to consider what might happen if we peer under the hood, so to speak, of such an attribute, and rewrite it as a congruent decomposition of attributes. Specifically, let us imagine a particular stated-attribute of φ, being some φ_x, and then take a decomposition to it.

$$\varphi_x = (\varphi,\ x) \tag{32}$$

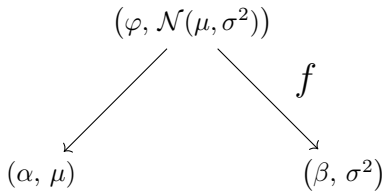
Notice that for this stated-attribute, it follows that x itself is a normal distribution object, so intuitively we can picture it as being an instantiation of the class of normal distributions. The question, now, might that *what do we know of the degrees of freedom of normal distributions?* Well, intuitively, we know that a normal distribution can be written with two real number-degrees of freedom, being merely the mean and variance of said normal distribution.

$$x \sim \mathcal{N}(\mu, \sigma^2) \tag{33}$$

Accordingly, then, the crucial idea is that *there exists a decomposition transformation which maps φ_x onto two stated-attributes, α_μ and β_{σ^2}, which depict the mean and variance of that same normal distribution of heights.* The crucial idea is that because such a decomposition is exhaustive with regard to encoding all degrees of freedom of the original stated-attribute, it then follows that this is a fundamentally *invertible* decomposition, which is a key requirement for valid stated-attribute decompositions in general. Had we been missing one or more degrees of freedom – such as the decomposition only consisting of μ, for example – then we would find that we had insufficient information to imply the original normal distribution again through the inverse of the decomposition. Hence, it follows that attribute decompositions, when done well, will be exhaustive of the degrees of freedom. We might also note at this point that *stated-attribute decompositions also ought to have mutually exclusive elements, such that one of them is not dependent upon the other.* This is clearly true of μ and σ^2, because changing either of them does not imply a change in the other. Hopefully that is quite intuitive already, as per their role in statistics. This requirement of mutual exclusivity is more a convention of Aethic reasoning than anything, because not satisfying it would make the math significantly more elusive than it has to be. As such, we will suppose it to be the case on those grounds. These two properties, in combination, tell us that stated-attribute decompositions ought to merely be partitions, then, of the degrees of freedom of the wider attribute. Also note, crucially, about which items *are decidedly not allowed to be taken in a decomposition.* As a rule, whatever features are baked into the attribute itself are not to be put into a decomposition, because that would contradict the structure of the attribute itself. A quick example of doing that here would be *creating a decomposed attribute*

which depicts whether the normal distribution is pointing to anything besides human height. Notice the key difference between disallowed decompositions like this as opposed to allowed decompositions like pulling the mean and variance of the distribution as new attributes. In those allowed cases, we see that changing the μ attribute's state to any possible real number still allows us to imply that said attribute is a component of the wider normal distributions of human height attribute. However, had we instead created a supposed decompositional element in which the ontological property associated with φ was to be encoded in such an attribute, and we would find that changing the state of this attribute away from "human heights" would force it to no longer associate with the proper version of φ at all, which is an immediate sign that such a thing would be an invalid decomposition, (and instead would actually point in the conjunction direction accordingly). These are a few errors to watch out for when performing stated-attribute decompositions.

Let us now actually write the valid decomposition of φ_x into its two components.



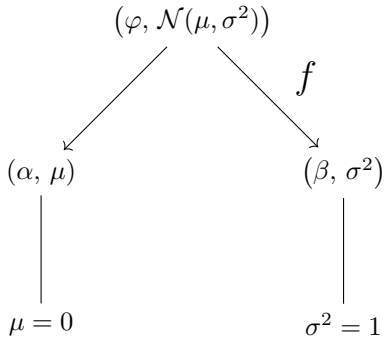
Notice the implied existence of the attribute α and β, which we may naturally give an incorporative form to with regard to our wider picture of depicting heights.

$$\alpha = (\text{"The mean of the height distribution of humans."}, \textit{Class Real Number}, r_\alpha) \tag{34}$$

$$\beta = (\text{"The variance of the height distribution of humans."}, \textit{Class Real Number}, r_\beta) \tag{35}$$

The idea, now, is we might treat the attributes α and β as quite literally being a part of our Aethus, because of how a *3-Aethus* must contain every decompositional attribute of its attribute contents, after all. Because of this, then, we have the freedom to set either one of α or β to a state, or instead choose to leave them as blank. Whatever we decide, it will follows that the state of φ will have to update accordingly, as it must exactly mirror what they infer it will be so as to prevent an Aethic contradiction[25]. Let us look at a few interesting cases of such possibilities.

Case 1: Stated-Decomposition



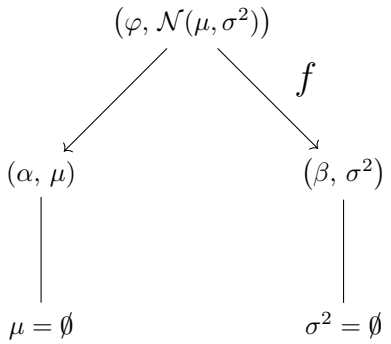
In this example, we have set both μ and σ^2 with non-blank states. Particularly, we have chosen $\mu = 1$ and $\sigma^2 = 1$, which of course is the form of the standard-normal distribution. In such a case, then, the implication is that we will set φ, being the attribute which encodes the distribution of human heights, to a standard normal distribution. Such a result leads us to only a single state, as is the outcome of all stated-decompositions such as this. Notice that generally speaking, a stated-decomposition process consists of decomposing a stated-attribute, setting all such resultant attributes to non-blank states, and then wrapping the whole thing back up again, via the inverse transformation to the decomposition, so as to encode the corresponding state back in the original attribute. Just as

[25]Technically blank attributes cannot bring about Aethic contradictions anyway, but the main premise here is that we are supposing that the degrees of freedom of α and β are given to imply all the contents of the given Aethus, anyway, so the motivation is not to arbitrarily clash with such a thing.

we might decompose an attribute holding an n-vector into n-real number attributes, and then result in a single vector upon giving all such components fixed state values, the same is naturally true of any stated-decomposition.

Now let us look at the blank-analogue to stated-decompositions, being a *blank-decomposition*.

Case 2: Blank-Decomposition



In the case of blank-decomposition, we have that all possible components of the attribute in question are blank, so therefore the attribute itself must be blank. As such, when we retrieve α, we will get the set of all possible real numbers due to the second postulate, when we retrieve β we will get the set of all possible real numbers due to the second postulate, (or perhaps the set of all possible positive numbers if you wish to define β itself as a positive number rather than a real number, with it being a variance and all), and naturally when we retrieve φ, we will get the set of all possible normal distribution objects as well. As a rule, we have that when the entire decomposition hierarchy of an attribute results in all blank attributes altogether, (being what we accordingly call blank-decomposition), it then follows that the full attribute in question must itself be blank, and must therefore itself retrieve with the set of all possible states to it. The key thing to notice, here, is that we have to assert that all of the decomposed attributes to our φ must decidedly be blank in the Aethus, because for any of them to be present would fail the conditions of blank-decomposition. Even in making the diagram above, therefore, we are inferring that the entire Aethus in question is void of any states to these attributes, both directly and implied. Because of this, for an attribute to be blank in a static Aethus is not a strong enough condition here – rather it follows that every attribute in the entire decomposition set has to be strictly blank on the Aethic level instead.

As such, we have that if for all attributes in every possible decomposition set to an attribute in an Aethus, we hold that each one of them is blank with respect to said Aethus, then the decompositions themselves are valid blank-decompositions, and we then get to denote the full attribute in question as *conceptually blank with respect to that Aethus*. This, then, will be our formal definition of conceptually blank attributes.

Procedural Definition of a Conceptually Blank Attribute
An attribute, φ, will be conceptually blank to the Aethus, A, if and only if there exists a possible attribute decomposition to φ which is a blank-decomposition with respect to A. This may be written in mathematical notation as follows, where $\mathcal{D}(\varphi_x)$ represents a valid decomposition set of the stated-attribute φ_x, $\mathcal{B}_0(\varphi_x)$ represents that the stated-attribute is conceptually blank, and $\mathcal{B}_+(\varphi_x)$ represents that the stated-attribute is physically blank.

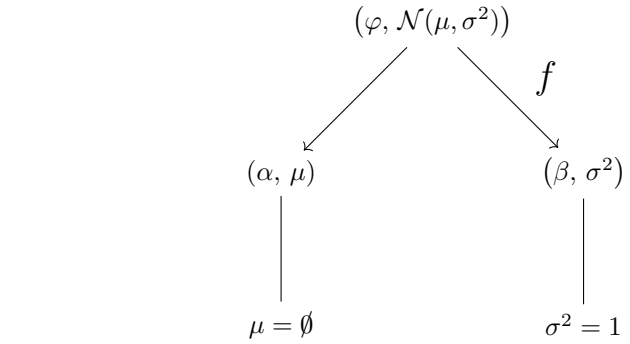
$$\mathcal{B}_0(\varphi_x) \Leftrightarrow \exists\, \mathcal{D}(\varphi_x)\,, \forall \alpha \in \mathcal{D}, \mathcal{B}_0(\alpha) \tag{36}$$

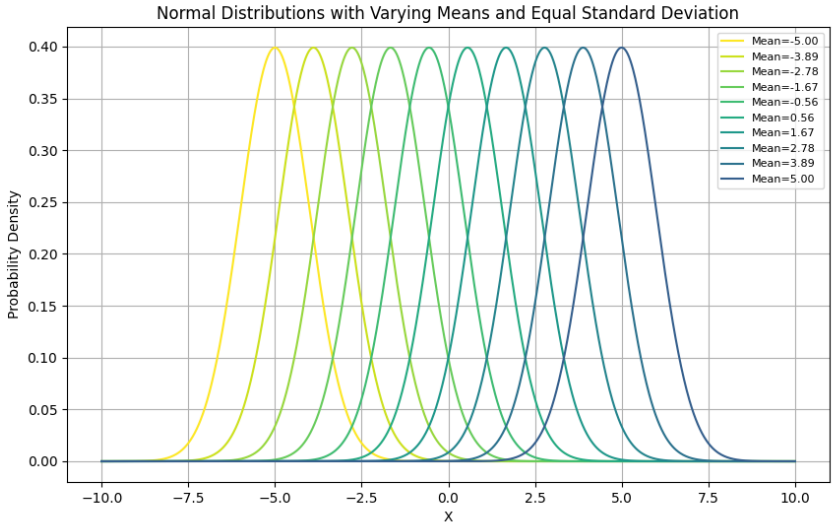
$$\mathcal{B}_0(\varphi_x) \Leftrightarrow \forall\, \mathcal{D}(\varphi_x)\,, \forall \alpha \in \mathcal{D}, \mathcal{B}_+(\alpha) \tag{37}$$

Note that there are two ways of checking that an attribute is procedurally blank with respect to an Aethus. The first is that if there exists a decomposition set to the attribute for which all attributes therein are conceptually blank with respect to the Aethus, then the attribute in question is conceptually blank with respect to that Aethus. The second method is that for all decomposition sets to that attribute, if all attributes therein are at least physically blank with respect to the Aethus, then the attribute is also conceptually blank with respect to that Aethus. The key here is that with conceptual blankness already being a stronger special case of physical blankness, we need only a "there exists" argument over conceptually blank decompositions, whereas we need a full "for all" argument for physically blank decompositions. Given these two modes of defining conceptually blank attributes, let us suppose that a valid blank-decomposition object itself coincides with the former option, being the *there exists* statement. That is, a blank-decomposition of an attribute can conventionally be taken as representative of any of the guaranteed existent cases of decompositions to a conceptually blank attribute in which the elements of that decomposition are also conceptually blank. Notice that there is no issue of circular logic here, because we as the constructors of a mathematical Aethus may simply choose to assert that the decomposition attributes of a particular attribute are satisfactorily procedurally blank as a sort of axiomatic given, from which the properties of other attributes may be implied relationally. This is what we did in the above example anyway, where we declared that there are no other attributes in the Aethus in question which allotted more information about μ and σ^2, after all. Through such a thing, then, we assert already that such decomposed attributes can only be conceptually blank, as there are no options beyond this anyway in that context. However, if one only wants to deal in physically blank attributes anyway for the decomposition attributes, then one can simply prove that all decomposition sets of the attribute consist of purely physically blank attributes, through that prove that the attribute is conceptually blank, and then from there hold that it can thereby be written as a decomposition of conceptually blank attributes anyway, (which remember is the conventional characterization of a valid blank-decomposition). We might express this ability of an attribute to be written as a blank-decomposition as its being *blank-decomposable* with respect to a given Aethus. As such, for an attribute to be blank-decomposable with respect to an Aethus is for that attribute to be conceptually blank with respect to that Aethus.

The next thing we may note, now, is what happens when *some stated-attributes of the decomposition set are blank, while others are stated.* This is the final possible case, and it is what we might call a *mixed-decomposition.* Consider an example of just such a mixed-decomposition in the context of the same height distribution attribute.

Case 3: Mixed-Decomposition





This is an accompanying graphic which demonstrates the presence of all possible linearly shifted normal distributions in the context of this particular mixed-decomposition of the normal distribution attribute.

The key about how we define mixed-decompositions, now, is that they are categorized as *physically blank*, but definitively not *conceptually blank*, (because for them to be conceptually blank in the first place would require that they be blank-decomposable, which we know that mixed-decompositions are not, by definition). It is important to understand what it truly meant by this, because there is something of a technical reason to it.

Consider the prospect of actually procedurally depicting a blank decomposable attribute in one's Aethus. We might immediately touch on something of a right way and a wrong way to express such a thing, through the statement of the following *corollary of attribute directedness*.

Corollary (Corollary of Attribute Directedness)
In Aethic reasoning, we hold as a corollary of the contrast principle that Aethic information is fundamentally additive, but never subtractive in the notational sense. As such, we hold that when depicting an Aethus, one is allowed to describe the filling in of blank attributes, but never the reversal back to blank attributes once the state has already been attained.

In a sense, then, the directedness component itself implies that an Aethus may only be notationally constructed in the blank-to-stated direction, but not the other way around.

Due to the directedness corollary, now, we might see an interesting pattern in the way in which mixed-decomposable attributes are described in the mathematical framework of the Aethus. Given that Aethic information, to a particular static Aethus, needs only to be just sufficient enough to imply the entire remainder of the Aethus through attribute cascades, we might then argue that for a given mixed-decomposable attribute in an Aethus, *we need only to write an instance of a corresponding decomposition set to it in its place within a static Aethus so as to imply it in full.* This is a natural

consequence of the notions of static Aethae anyway, but the interesting result to it happens when we look at the state of said mixed-decomposable attribute itself: it will, naturally, be encoded in said static Aethus with the blank state. In fact, for it to be encoded with a state at all would be a fundamentally inaccurate notion to its being a mixed-decomposable attribute, because then its corresponding blank attributes of the decomposition would be implied to be stated as well, in that the entire mixed-decomposable attribute was given a single state and all. What we see, then, is a direct consequence of the directedness corollary: for us to depict a mixed-decompositional attribute in a static Aethus, our only option is to leave said mixed-decomposable attribute itself out of the static Aethus, (or in other words register it as blank), and then fill in its decomposition elements, one by one, with their proper states, be them blank or not. In short, *we have to first undershoot the state of the blank-decomposable attribute itself, and then fix the error term with it the states of its decomposition set.* Or, put in the equivalent form due to the antiparallel notions of the contrast principle, *we have to first overshoot the superposition of the blank-decomposable attribute itself, and then subtract certain elements of that superposition via the act of stating some, (but not all), of the attributes in its decomposition set.* In the case of the normal distribution example, where we see all possible means with a fixed standard deviation, the idea here would be to first take the mixed-decomposable attribute in question, (being the entire height distribution itself), as blank in a static Aethus, which would itself correspond to the superposition of all normal distributions, and then after that fix the standard deviation attribute of the decomposition set, thereby "collapsing" that component of the superposition in the process. We are to follow just the same procedure when defining all mixed-decompositional attributes in an Aethus, merely because there is no other way to do it.

The key insight to note, here, is that *the mixed-decomposable attribute is then decidedly not contained in all static Aethae to the Aethus in question, because for it to be stated in but a single one of them would imply that it was present and thus state-decomposable in the entire Aethus, which we know to be disallowed by its being mixed-decomposable.* This is specifically where mixed-decomposable attributes may be seen as an exterior case to both present attributes in an Aethus and conceptually blank attributes in an Aethus: *they are somehow both not contained in any static Aethus of the Aethus in question, while at once decidedly not being conceptually blank in said Aethus on account of their not being blank-decomposable.* Such a case is why we need the term "physically blank", which we might now think to define as follows.

Procedural Definition of a Physically Blank Attribute
An attribute, φ, is taken as *physically blank* with respect to the Aethus A is and only if it is not contained in every static Aethus to A.
This can be seen as a weaker alternative to the definition of a conceptually blank attribute, for which all of its decompositional attributes in that Aethus are also blank in every static Aethus. As such, we see that only blank-decomposable and mixed-decomposable attributes will be physically blank, such that mixed-decomposable attributes are physically blank without being conceptually blank. State-decomposable attributes, naturally, will decidedly not be physically blank at all.

We might also, at this point, come up with a term for attributes which are physically blank without being conceptually blank, which naturally would just be another term for mixed-decomposable attributes. Perhaps we refer to those as *semiblank attributes.* Here, then, is a list of all the terminologies now discussed.

- **Conceptually blank**
  - Blank-decomposable attributes.
  - The other major term for such attributes is "**nonpresent**."
- **Semiblank**
  - Mixed-decomposable attributes.
- **Physically blank**
  - Bank-decomposable *or* mixed-decomposable attributes.
- **Impartially blank**

- A special case of physical blankness for which the Aethic intersection of any state of the attribute with the Aethus in question is not an abject invalidity.
- Useful for generalizing the second postulate of the Aethus to more advanced iterations of superpositions beyond what conceptual blankness can imply directly[26].
- Note that conceptual blankness is itself a special case of impartial blankness.

- **Stated**
  - State-decomposable attributes.
  - The other major term for such attributes is "**present**."

3.3.6 Demonstrating the Applicative Power of Mixed-Decompositions Through Example

Before we proceed, let us briefly come up with a typical example which we might see of where a mixed-decomposition of an attribute can be taken with respect to an Aethus.

For the example, consider the following *2-Aethus*, from which we will declare our Aethus in question.

```
{
  ("Does Tim own a dog?", Boolean, r1):
        true,

  ("What breed is Tim's dog?", Breed of Dog, r2):
        *blank,

  ("Does Tim own a Dalmatian?", Boolean, r3):
        false
}
```

Table 12: An example Aethus, defined through the static Aethus which corresponds to the graph of the above *2-Aethus*.

Consider the second attribute of the three listed above, which we will name as φ.

$$\varphi = (\text{“What breed is Tim's dog?”, Boolean, } \cdots) \tag{38}$$

Let us now perform a mixed-decomposition of φ with respect to the present Aethus, so as to form the following two attributes.

$$\varphi_a = (\text{“Set of dog breeds which Tim's dog is known to not be.”, Set, } \cdots) \tag{39}$$

$$\varphi_b = (\text{“Which dog breed does Tim have out of the set of dog breeds set minus the state of } \varphi_a\text{.”, Set, } \cdots) \tag{40}$$

In this example, we demonstrate the use of a set minus in order to define φ_b relative to φ_a. In effect, this Aethus will have filled φ_a with the breed of Dalmatian, which then would have restricted φ_b to the set of breeds other than this breed. We then need only to set φ_b to conceptually blank within our Aethus, with φ_a being stated.

Please note that as we get into some more advanced Aethic reasoning, we see that the inclusion of sets within an Aethus is something of a tricky prospect, because once they are stated, adding to them further becomes impossible. This means that a better approach is to simply individually include all respective elements in the Aethus, and perform reasoning over them that way. Regarding the ability or lack thereof to add sets to an Aethus in the first place, such things will be addressed as part of the third postulate, but for now the example need only illustrate how essentially any physically blank attribute can indeed be decomposed, if need be.

[26] As will be seen with agreeing versus disagreeing superpositions, we can suppose that an attribute in disagreeing superposition is impartially blank with respect to the relevant Aethus, so we can essentially imagine an alternative generalization of the second postulate of the Aethus where we regard impartially blank attributes as being in the 'general form of superposition' which is inclusive of disagreeing superpositions, whereas the main second postulate only directly regards a superposition over stated-attributes which serves as an agreeing superposition. This is merely another way of linguistically describing the same general interplay between the second and third postulates.

3.3.7 Stating the Second Postulate of the Aethus

Now that we have defined the three styles of decomposition, (being state-decomposition, mixed-decomposition, and blank-decomposition), we may proceed to rigorously defining the second postulate of the Aethus.

Second Postulate of the Aethus

If an Aethus is valid, then any given attribute will be in Aethic superposition relative to it if and only if it is nonpresent to it.

There are many consequences to such a statement, and we will go over them in detail in the coming sections. Also note that the second postulate is itself compatible with mixed-decompositional attributes as well as just blank-decompositional and state-decompositional attributes, but we simply need to transform them into a form it can understand before doing so. Such a thing will be the purpose of the coming *Aethic dichotomy theorem*, which will enable us to reliably make such a transformation.

3.3.8 Aethic Tree Relations

Next, take a child Aethus and a parent Aethus. A child Aethus of an Aethus is the Aethus for which we additionally assert the presence of some attribute in that Aethus. For a static Aethus, that is, we might simply include the new attribute and then take the equivalence class. More rigorously, we might define it as follows.

Definition 8 (Child Aethus)
The Aethus B is a child Aethus of A if and only if it can be written as the Aethic intersection of A with some other Aethus.

As for the parent Aethus, it is the conceptual inverse operation of this, such that we additionally assert that an attribute is blank in said Aethus.

Definition 9 (Parent Aethus)
The Aethus A is a parent Aethus of B if and only if it can be written as the Aethic union of B with some other Aethus.

Note, also, that every Aethus is its own parent and child Aethus. This is because any Aethus can be written as the Aethic union with itself, and can be written as the Aethic intersection with an Aethus of all blank attributes. Such an Aethus, by the way, which consists of all blank attributes, and through such a thing can be defined as an Aethus which is a parent to all Aethae, is called the *Null Aethus*.

A proper child Aethus, nextly, serves as an additional constraint for a child Aethus. Specifically, consider the following definition.

Definition 10 (Proper Child Aethus)
The Aethus B will be deemed a proper child Aethus of A if and only if B can be written as the Aethic intersection of A with the stated-attribute of an attribute which is ***physically blank*** *in A. Interestingly, we do indeed see that the restriction need not be as strong as full conceptual blankness, but rather is satisfactory with physical blankness.*

Please note that every Aethus ought to be its own proper child Aethus, just as it ought to be its own child Aethus. Perhaps we reconcile this case within the wider definition of proper child Aethae by simply also allowing the intersected physically blank attribute to itself take the form of a blank stated-attribute, which we know of course to be reflexive in Aethic equivalence.

Definition 11 (Doubly-Proper Child Aethus)
The Aethus B will be deemed a doubly-proper child Aethus of A if and only if B can be written as the Aethic intersection of A with the stated-attribute of an attribute which is ***conceptually blank*** *in A. This can be seen as the stronger alternative to a proper child Aethus itself.*

Furthermore, as was the case with proper child Aethae, we must also imply with doubly-proper child Aethae that every Aethus is its own doubly-proper child Aethus, on account of the feat of there existing a blank stated-attribute which may be intersected with it.

Regarding the concept of statistical independence between two Aethae, it is simply a notion of each Aethus deriving no information whatsoever about the other, or, in other words, for the two Aethae to share no common information.

Definition 12 (Aethic Statistical Independence)
Two Aethae are statistically independent if and only if every Aethic attribute which is present in one is physically blank in the other. Such a thing is also equivalent to every Aethic attribute which is present in one being conceptually blank in the other, but due to the presence of the "every" condition we have that the requirement of physical blankness alone is sufficient to demonstrate this. Note that we may also refer to this property as the two Aethae being "Aethically independent".

We may also define Aethic statistical independence as occurring when for two Aethae, A and B the Aethic template of one Aethus is taken as nonpresent to the other Aethus. In effect, then, Aethic statistical independence is effectively the analogue for two Aethae of what nonpresence is between an Aethus and an attribute or Aethic template.

An intriguing aspect of Aethic statistical independence is that if A is statistically independent to B, then B must also be statistically independent to A, because for one to not be statistically independent to the other implies that there is shared information between them, which would then imply that neither is statistically independent to the other in the first place. As a simple proof by contradiction of sorts, then, we indeed get that Aethic statistical independence is commutative.

The property of Aethic statistical independence being commutative yields something of a striking corollary of the second postulate of the Aethus, which we may write as follows.

Corollary (Aethic Superposition Commutativity)
An interesting corollary of the second postulate of the Aethus is that if a given Aethus, B, is statistically independent to one's own Aethus, A, it then follows that not only is B's Aethic template in superposition in one's Aethus, but also one's own Aethic template is in superposition in the Aethus B. This is something of an odd but insightful relational identity to take note of in Aethic reasoning.

Lastly for parent and child Aethae, note that any number of generations of a child Aethus, (being a descendent Aethus), is in fact just another form of a child Aethus, and that any number of generations of a parent Aethus, (being an ancestral Aethus), is in fact just another form of a parent Aethus. This fact is a corollary of the concept of how an Aethic attribute may very well have type Aethus. Suppose we have an Aethus, A, for which $X_n : n$ from n ranging between 1 and 100 inclusive. If we create an ancestral Aethus, B, which is the result of removing X_1 through X_{10} inclusive, then we may note how this is also a parent Aethus of A as well. The reason for this is because we may very well create a new Aethus, C, which is defined through the static Aethus of including X_1 through X_{10} inclusive, and then simply remove C from A. Note that this also simply generates B, because we have done the entire ten parent operations in only one parent operation. Note, however, that this is not as simple as an iterative loop of removing attributes, as that would perform the fallacy of inaccurately conflating static Aethae with Aethae. The reason this works is only because we can write the Aethus A as a static Aethus for which C is an element in the form of an attribute. Then, given that we have removed it, B is the only Aethus which is ancestral to every possible static Aethus of A for which we do this. Be careful, by the way, because we may very well write a static Aethus for A for which we contain every of the hundred individual X attributes, *and* also include C. Note that this is still very much within the equivalence class of A, because even though information is being doubled up, it is never contradicted. As such, when we remove C, we wind up with just the Aethus A again, so this will not suffice for the parent Aethus. The parent Aethus, then, is only that for which this operation is done on every possible static Aethus of A and still returns an Aethus for which all its attributes also imply their presence in A. Note that that exploits another satisfactory definition of a parent Aethus – one for which the presence of an attribute therein implies its presence in its child as well. So, to explicitly state what was said, we may very well suppose that A may be written as a static Aethus of C and all remaining X attributes, because it follows that such a static Aethus may derive every needed attribute of A in every one of its static Aethae. Be careful, however, of mistaking a possibility of derivation later on when it will become more nuanced.

3.3.9 The Notion of Aethic Time

As is given by our prior property of Aethic extrusion, it would be beneficial to define a system of actually logging how oneself moves through the Aethic dimension, (as, after all, we supposed that oneself requires motion in the Aethic dimension as well as through spacetime in order to accurately bring about our reality).

Given this, consider a possible descriptive agent for one's own displacement through the Aethic dimension, (thus being strictly non-inclusive of spacetime movement along a worldline or whatnot). We will refer to this as *Aethic time*.

Definition 13 (Aethic Time)
Any real-numbered parametrization of the Aethic dimension can be regarded as being a system of Aethic time, that is given that it satisfies one major condition:

$$\tau_0 \leq \tau_1 \Leftrightarrow A_T(\tau_0) \supseteq A_T(\tau_1) \tag{41}$$

That is, given two Aethic times of τ_0 and τ_1 of the same system, with $\tau_0 \leq \tau_1$, we have that this must mean that the corresponding system's mapping, A_T from an Aethic time to the Aethic dimension, (as is characteristic of the given Aethic time system), follows the property that the mapped Aethus of τ_0 must be a parent[27] *Aethus to the mapped Aethus of τ_1. Note that we may also write this in terms of Aethic presence as follows.*

$$\tau_0 \leq \tau_1 \Leftrightarrow A_T(\tau_0) \in A_T(\tau_1) \tag{42}$$

With this being the definition of Aethic time, (which should be thought of as an additional concept from what we typically regard as time), the more standard present definition of time, (being what we see in relativity), can then simply be referred to as "dimensional time" so as to distinguish it from Aethic time, (with Aethic time itself not really being "time," but rather an empirical illusion of it, perhaps).

3.4 A Mathematical Framework to Aethic Superpositions

3.4.1 Aethic Dichotomy Theorem

Let us now mention an important theorem over mixed-decomposable Aethic attributes, being what we will call *the Aethic dichotomy theorem.*

Theorem 3 (Aethic Dichotomy Theorem)
For any attribute X and any Aethus A, it follows that X may be rewritten as the attribute conjunction of some X_1 and X_2 such that X_1 is present in A and X_2 is nonpresent to A.

Regarding the derivation for this, all we need to notice is that Aethic attribute conjunctions follow the commutative property, so therefore we may rearrange the order in which we take them. For a given attribute, then, if we decompose it to the extent that all attributes in the decomposition set are either strictly present or strictly nonpresent to the Aethus A, and it follows simply that we may then take the Aethic conjunction of the present attributes to form one attribute, and then take the Aethic conjunction of the remaining nonpresent attributes to form another. The former formed attribute is clearly state-decomposable in the A, and the latter is clearly blank-decomposable in A, so in effect we have proven the Aethic dichotomy theorem. Note that through similar processes, we may also define a kind of *generalized Aethic dichotomy theorem*, which is to operate over present and impartially blank attributes rather than simply present and conceptually blank attributes. However, due to its direct compatibility with the second postulate of the Aethus, the standard Aethic dichotomy theorem is perhaps more outwardly useful in most contexts.

Let us visualize this by using the Aethic dichotomy theorem to find the union and intersections of ternary attributes rather than just Boolean attributes as has been seen. We will refer to the three states as 1, 2, and 3 in this case, with the o and x holding their same respective values as before. Notationally speaking, we can write our actual desired attribute to be retrieved as the first index of a tuple, with the second index of that tuple serving as our supplementary helper attribute. Specifically, the helper attribute is to contain the set of states which will trigger an invalid Aethus for our desired attribute in question. Given this, the base framework looks like the following for Aethic unions.

(To my readers, please refrain from simply following these tables to calculate Aethic unions and intersections, because, frankly, it is only going to get more complex, so actually understanding the processes behind them is far more important than just memorizing specific outcomes. What I have done here in this table is simply return a stated-attribute's own self for cases where it is unioned with itself, and then for the pair cases, simply created the triplet with the o, before then subtracting out the required disallowed state for that particular operation in the form of the extra helper attribute. For generalizing this to larger and larger spans of attributes, the procedure is just the same, however of course we will then have more possible permutations of the states, so the helper sets should reflect that accordingly. The goal is simply to exploit the Aethic dichotomy theorem so as to find a way of

[27] Yes, this also implies that the symbol of $\supseteq$, in reference to Aethae, stands for "is a parent Aethus to," with $\subseteq$ then being "is a child Aethus to."

$\cup$	o	1	2	3	x
o	o, {}	o, {}	o, {}	o, {}	o, {}
1	o, {}	1, {}	o, {3}	o, {2}	1, {}
2	o, {}	o, {3}	2, {}	o, {1}	2, {}
3	o, {}	o, {2}	o, {1}	3, {}	3, {}
x	o, {}	1, {}	2, {}	3, {}	x, {}

Table 13: The Aethic union operation over a ternary stated-attribute.

expressing the desired superposition state using only the Aethic framework as one's tool, and nothing more).

Furthermore, in case one is curious about how one might then take the unions of some these output Aethae in the cells of that table, the base procedure is just the same: find all attributes which are present by the same state, and pass only those ones to the union. For example, if we were taking the union of the Aethus corresponding to [o, {1}] and [o, {3}], then we are not to simply take the union of the helper sets or something like that, because such a thing is too specific to one attribute, and hence not general. Instead, as before, we are to look across all possible attributes for this Aethus, and then pass them as according to their similarity between these two Aethae. For instance, if we consider the attributes of "is 1 forbidden", then we get *true* for the first Aethus and *false* for the second, so by the Boolean attribute union formula, the result of both is to become blank. At this point we are indeed left with a further required nuance, being *are blanks for this attribute to be registered as a superposition, or should it instead default to false or something else*, but this nuance will be talked about in more detail during the types of superpositions section. For now, we might suppose that there was a further attribute present in both of the original two Aethus such that this attribute causes the retrieval of "is 1 forbidden" to default to false if and only if it is blank. By the union principle, this attribute is therefore passed to the union as well, so in the case of this union, the result is that, altogether, none of 1, 2, or 3 are forbidden, so we resultantly just achieve [o, {}] as the answer.

Here is a simple algorithm, written in python code, which explains how the retrieval from an Aethus essentially only comes down to if-conditionals.

```
class Attribute:
    # The class of Aethic attribute and its mathematical structure

class Retrieval:
    # The class of Aethic retrieval and its mathematical structure

class Aethus:
    # The mathematical structure of the Aethus would be encoded up
       here

    def retrieve(self, attribute: Attribute):
        if self.is_present(attribute):
            # The simple case where retrieval is just a key lookup
            return Retrieval(self[attribute])
        elif self.is_nonpresent(attribute):
            # This is the second postulate of the Aethus
            return Retrieval(attribute.set_of_all_states())
        elif attribute is None:
            # Lack of an attribute retrieves nothing
            return Retrieval([])
        else:
            # This is an application of the Aethic dichotomy theorem
            interior, exterior = self.split(attribute)

            # Note that retrieval addition is an attribute conjunction
            return self.retrieve(interior) + self.retrieve(exterior)
```

Listing 1: An illustration of the fundamental algorithm behind Aethic retrievals through python code.

From a purely mathematical standpoint, (regardless of consideration of philosophical implications, which of course is naturally going to be stronger), *the underlying structural motivation is that with Aethic retrievals being set up the way they are, we get the intriguing identity that unioning two Aethae effectively gives the union of their respective retrieval possibilities to a given attribute.* Such is the mathematical reasoning behind why the second postulate and Aethic dichotomy theorem have their particular form, with such a premise very well being a contender for the base principle of Aethic reasoning in and of itself. That is, the premise is that where the union of sets adds their elements together into a larger set, the union of two Aethae ought to manipulate their contained attributes in just such a way so as to take the union of their retrieval states within the resultant object. In effect, by defining Aethic retrievals in just such a way as this, we allow a proper generalization of the probabilistic union of events to Aethic reasoning. Please also note, furthermore, that *with this notion of tailoring Aethic retrievals so as to complement the Aethic structure in this way being taken as a base principle, the extrusion principle – being the starting premise of this paper – may itself be considered inductively consequential under such a lens.* In fact, it is by this very avenue that I derivationally came upon the extrusion principle in the first place. The very first thing I derived was the Aethic structure, then immediately followed by the epistemological reversal principle and Aethic retrieval notion as per the second postulate, and it is only after all this that I struck upon the extrusion principle as the exact metaphysical understanding of time which allows compatibility between such Aethic notions and the physical world. This is also precisely why the extrusion principle came about as a direct alternative to the timeline-branching model – it is simply because the system of Aethic structure and retrievals cannot be readily reconciled in terms of a timeline-built universe. Such is what provided me with a subconscious uneasy feeling upon staring over items as seemingly obscure as weather predictions and the inability of probabilistic hazard rates to be negative, etcetera. I grappled with this for a little over six months, but then it is the direct instance of developing the extrusion principle which freed me from this fog, hence giving it the justifiable title as the moment of birth of Aethic reasoning. Altogether, then, I am speaking very explicitly when I state that the extrusion principle is that which enables all of Aethic reasoning to a level of metaphysical consistency. Let this serve as the direct reasoning behind why it is not itself arbitrarily thrown together, but instead is to serve as the ontological counterpart to the Aethic framework of structure and retrieval.

3.4.2 Types of Aethic Superpositions

Before diving into the next concept, note at this point that the Aethic superposition operation over several attributes or Aethae is in fact the same as the Aethic union operation as has already been discussed. The two are simply two names for the same operation. This is important, because it visually follows that the operation-generated Aethus is in a sense composed of its unioned Aethae, such that they can be again retrieved by themselves by adding the proper attribute to that Aethus through the child operation[28]. (Note, also, that the term "Aethic concatenation" will refer to this operation as well). Let us posit this in the form of a principle.

Principle 22 (Aethic Union Principle)
The base premise of this principle is that an Aethic superposition is to be defined as the Aethic union of the whichever Aethae are being put into that superposition.

This being said, however, we find that defining Aethic superpositions as corresponding to the union operation brings about something of a semantic issue, for which the resolution of this issue represents the second major insight of the Aethic union principle. The issue, simply put, is that due to the classical semantic paradigm not acknowledging a difference between abstract and causal logic, we find that the state of Schrödinger's cat being dead and alive is automatically assumed to imply a logical conjunction

[28]This should serve as a crucial insight into the ontological nuance through which superpositions function that is not offered by quantum mechanics explicitly. When we consider superpositions, the immediate property that is deciphered is the "and"-ness to them, however it is never specified whether this is a conjunction or a disjunction in nature. Of course, typically with "and" we refer to a conjunction, as it functions in logic — however the intriguing note here is that superpositions themselves ought to be taken to represent a disjunction of reality objects rather than a conjunction. We may very well refer to this as an "and" operation in the empirical sense, however such a conclusion is more vague than is ontologically helpful. As such, a key tenet of Aethic reasoning is to assert that a superposition occupies the disjunction analogue from logic to Aethic reasoning, whereas operations like Aethic inclusion operate the alternative conjunction analogue. To gain an intuitive comprehension, one can think of superpositions as pushing in the parent Aethus direction, and as such associating with disjunctions, whereas Aethic inclusions push in the child Aethus direction, as such associating with conjunctions. However, technically the Aethus ought to occupy a third exclusive system beyond its analogues in either set theory or classical logic, so naturally the states which have analogues in those two already should have a third analogue in this new system of reasoning.

over both abstract and causal logic. Such a thing is perhaps the root of it being a paradoxical statement in the first place, because we have no clear way of seeing it to not be a contradiction in both cases. In Aethic reasoning, however, we make a major shift, which is to suppose that the word "and" in that context is truly a logical conjunction as we intuitively approach it, but only in the realm of causal logic. The extra component of whether the abstract logic is a conjunction as well, then, is lost in the classical paradigm on account of its being supposed equivalent to the causal logic analogue. Explicitly put, in distinguishing abstract logic from causal logic in Aethic reasoning, we are now allowed to analyze both components independently and to the full extent of the degrees of freedom needed.

Importantly, we then make the specific claim that the abstract logical conjunction is the definition of an Aethic intersection, whereas an abstract logical disjunction is the definition of the Aethic union. Such is the first premise of the Aethic union principle. The second premise, then, is that the notion of a causal logical disjunction actually turns out to be a construct altogether, as is something of a corollary of the extrusion principle of Aethic reasoning.

So as to visualize these innovations, consider the earlier representative table which considers all combinations of the words 'and' versus 'or' under abstract versus causal logic, and then maps them onto their base semantic meaning. Remember that the classical paradigm only relies on causal logic for real-world states, in effect losing the nuances of abstract logic which Aethic reasoning provides. Similarly to the extrusion principle, then, we may consider the classical paradigm as only taking note of the main diagonal.

The key realization for the disjoint states table is that, on account of the classical semantic paradigm not having a concept of abstract logic 'and' versus 'or', it follows that a contradiction and an Aethic superposition cannot be readily distinguished. In Aethic reasoning, however, we perform this distinguishment as simply as supposing that there is a further component beyond the states being represented with the causal logic word 'and'. It further follows that Aethic reasoning takes the causal logic 'or' concept as a construct, thus asserting that the "Possibility of Distinct Outcomes" cell is itself a construct. As it turns out, such an immediate supposition about that cell is essentially the statement of the extrusion principle of Aethic reasoning itself, because as we know, in Aethic reasoning we have that both events occur at once in the prior Aethus, but only one occurs in the subsequent Aethus, which we know is a very different interpretation of reality than for there to be some form of epistemological 'or' of the statements beforehand, but not afterwards. Such an ontology is perhaps needed if we are obligated to keep all events along a single timeline with no change of reality, but in Aethic reasoning we are no longer under that obligation on account of the extrusion principle.

Even with this all being said, the ontological supposition of there being a conjunction over two or more states which are in superposition is well-placed. After all, during quantum coherence it would be rather absurd to suppose that the interfering particles in question are only selecting a single state of realization, as an ontological disjunction would imply. The brunt of what we have to understand with the Aethic approach, then, is that states may very well physically be both happening at once, as per the ontological conjunction, all while being structured under an epistemological disjunction. All it takes to accept this is the supposition that ontological conjunctions and epistemological conjunctions are in fact representative of two different phenomena, and this is what the dual logic principle of Aethic reasoning tells us.

One final piece of information regarding the tables is what it exactly means that an Aethic intersection is an instance of an ontological and an epistemological conjunction. This is simply a note of how our linguistic word 'and' being the ontological 'and' with regards to real-world phenomena will indeed correspond to the intersection of two Aethae. For example, perhaps we suppose that Joe is tall, and that Joe has a mustache. We then linguistically write that "Joe is tall and has a mustache." The 'and' in that sentence is then to represent an Aethic intersection. If we are speaking of disjoint states, however, then the word 'and' automatically switches to depicting an Aethic union in Aethic reasoning in order to maintain validity, as in the sentence that "Schrödinger's cat is dead and alive." Such is a mildly confusing consequence of our language having arbitrarily constructed the word 'and' this way without knowing it, but we have to make do with the consequences anyway in Aethic reasoning. In conclusion, then, it is a valid supposition that the classical paradigm puts all the distinction in only the causal logic-component of conjunctions versus disjunctions, whereas Aethic reasoning puts all the distinction in the abstract logic-component of conjunctions versus disjunctions instead, in that it implies the causal logical distinction be be a construct and all. We get away with this because of the extrusion principle, which allows us to rewrite any would-be causal logical disjunction statements with a corresponding abstract logical conjunction or disjunction. In effect, we do have that the causal logical 'and', with all its connotations of a myriad of things happening at once, is the only degree of freedom

we require in that department to describe reality, so long as we have the abstract logical distinction between conjunctions and disjunctions to work with. This is intriguing for its implication that reality is fundamentally constructed with its constituents being combined via 'and' interactions, all without ever relying on an ontological disjunction at any level.

Perhaps the best way of capturing this point is that a genuine quantum coherent superposition is of the same cell of the table as a macroscopic possibility like which team will win the World Cup next tournament, and this is how it must be as per the inductive derivation of the second Aethic postulate. The distinguishing factor between the two examples, as we know has to be in effect so as to distinguish quantum coherence from quantum decoherence, can be thought of as being brought about by the additional nuances of the respective superposition, of which it will be our goal to explain in the next part of this section with agreeing versus disagreeing superpositions.

Next, let us begin to consider Aethic retrievals themselves as a kind of mathematical structure which in many places is analogous to the Aethic structure. Without going into the full axiomatic derivation which we supplied for the Aethus, the basic premise is that Aethic superpositions in their ontological form are encoded in Aethic retrieval objects, which themselves, of course, are derivable from a given Aethus should we have the right tools to do so. An important aspect of an Aethic retrieval object is that it holds an analogue both to an Aethic union and an Aethic intersection. From this principle we may attain something of a shortcoming of quantum superpositions as they stand in the classical paradigm, being that they only operate more-or-less over retrieval unions, and therefore lack some of the generational-iterative properties of Aethic retrievals. Our Aethic supposition, simply put, is that we may think to apply both retrieval unions and retrieval intersections over an Aethic superposition to any iterative degree we wish. In total, then, a helpful analogy is to picture Aethae themselves as backend functionality, whereas Aethic retrievals operate as frontend functionality, all while holding no less mathematical nuance in their full realization. The cardinal difference between Aethae and retrieval objects, however, is due to the second postulate of the Aethus itself, being that an Aethus may not hold two disjoint states within its contents at once, whereas an Aethic retrieval is fully capable of doing so. This means that rather than having to define a rigorous mathematical makeup to retrieval objects as we did with the Aethus, we might instead think only to relay the properties of a retrieval object through the use of its corresponding Aethus. We know already with the second postulate of the Aethus how a basic retrieval functions, so by inferring only the additional axiom that there ought to exist a retrieval intersection operation as well, we may then map an Aethus to a retrieval object, and then manipulate it as we wish from there. If we can even reach a point where a given retrieval object can be reverse-engineered back to its generating Aethus, then such will represent a successful logical foundation to Aethic reasoning.

Let us take a moment to emphasize the importance of the Aethic *retrieval intersection* operation, so as to serve as the inductively-gathered partner to the *retrieval union* operation. We know, of course, that a retrieval union is the direct Aethic generalization of a quantum superposition, (because such is effectively the main claim of the Aethic union principle), but understanding the intuitive source of the retrieval intersection is also very important for the task at hand. The rough quantum analogue to the Aethic retrieval intersection, naturally, is to be the quantum tensor product, '$\otimes$', but there are a fair amount of differences as well. The main difference between the quantum superposition and the Aethic superposition is somewhat more straightforward, being that the former operates over quantum states only, whereas the latter is allowed to operate over the full extent of Aethic abstractions. With retrieval intersections, however, we also accumulate some major differences through the ability to turn other states of the same attribute on or off at once, which is of course is lost on the base tensor-structure of quantum states. In general, the attribute-based structure of Aethae helps motivate a higher range of operations over retrieval states than what a base quantum superposition and tensor product can do alone, with Aethic notions like disagreeing superpositions arising from these extra degrees of freedom.

With our having at least defined Aethic retrievals as being constructible through the operations of retrieval unions versus intersections, let us provide an alternative method of doing the same, which is hopefully substantially more intuitive. Specifically, we are to define two major operations over Aethic superpositions, being an *agreeing superposition* versus a *disagreeing superposition*. With an agreeing superposition of states being defined as simply the retrieval union of those states, which we know already to simply result from said states being statistically independent to an Aethus, we may then define a disagreeing superposition as a more intuitive alternative to using retrieval intersections, specifically where any given combination of retrieval unions and retrieval intersections may also be expressed as a combination of agreeing superpositions and disagreeing superpositions. Given such a premise, let us define each of these now.

Definition 14 (Aethic Superposition)
The attribute φ is in Aethic superposition to some extent relative to an Aethus if it is physically blank in said Aethus. For it to be stated in that Aethus implies it will not hold any superposition component as per the Aethic dichotomy theorem.

Definition 15 (Agreeing Aethic Superposition)
The attribute φ is in an agreeing superposition relative to some Aethus if it is conceptually blank in said Aethus. Such is the most elemental form of superposition on account of being a direct application of the second postulate of the Aethus over blank-decomposable attributes. In the mathematical structure of Aethic retrievals, then, an agreeing superposition is the analogue to what an Aethic union is over Aethae themselves.

Practically speaking, an agreeing superposition of some number of states is characterized by their all being effect at once in the retrieval.

Definition 16 (Disagreeing Aethic Superposition)
Consider the attribute φ, whose possible states make up the set S. Given this, it follows that a disagreeing superposition of φ relative to the Aethus A is characterized by a superposition for which every state of φ automatically implies that each other state is not in effect within the retrieval in question.

If we specifically consider $\vee$ to represent an agreeing superposition, $\wedge$ is to represent a retrieval intersection, and $\neg$ is to represent a retrieval negation, (being the act of specifically disallowing the realization of a state), then we may construct the following as a disagreeing superposition of φ.

$$\bigvee_{x \in S} x \wedge \bigwedge_{y \in S | y \neq x} \neg y \tag{43}$$

Practically speaking, a disagreeing superposition is characterized by fully disallowing the realization or perhaps interaction of multiple states at once within a given system of an Aethic reality. As will be seen later in the paper, such a concept is what will be argued to underlie quantum decoherence as opposed to quantum coherence.

Given this base premise, let us look to some visual representations of how agreeing superpositions might manifest as opposed to disagreeing superpositions. Consider, first, an agreeing superposition of several retrieval states, being W, X, Y, and Z, (such that they necessarily come from the same Aethic attribute just by the definition of Aethic retrieval). The resulting net retrieval state, then, being some A, might take the following form. Note here how we are specifically yielding all such

Makeup of an Agreeing Superposition

	State W	**State X**	**State Y**	**State Z**
Compilation A	1	1	1	1
$\uparrow$ Net retrieval is A $\uparrow$				

Table 14: A demonstration of an agreeing superposition, in which genuinely all states are ontologically realized at once. Note that "1" stands for a value being *true*, (i.e. "real") within a reality.

retrieval states at once, in effect putting them all into existence at the same time, just as we see with quantum phenomena. Aethically, then, this is just a natural effect of an attribute being retrieved in an agreeing superposition, with, in this case, the attribute corresponding to whichever attribute W, X, Y, and Z come from in whichever Aethus corresponds to their table of retrieval.

A disagreeing superposition serves to resolve what is seemingly a paradox, being how we are to have retrieval states be disjoint and in superposition at once. In Aethic reasoning, we make short work of solving this by simply introducing disagreeing superpositions. In the classical world, it might seem to be the epitome of a contradiction, but in Aethic reasoning it is a perfectly natural statement. Simply designate a separate retrieval for each state in which all other states are strictly implied to be non-realized, and then combine all such retrievals in Aethic superposition. Mathematically speaking, we are enabled to do this on account of retrieval unions and retrieval intersections representing fundamentally different mathematical operations, to the point where we cannot just simply blend their states arbitrarily. Such a consequence allots to us a layered interpretation of Aethic superpositions, in which one state may be fully isolated from the effects of another. The groups of states which form

Makeup of a Disagreeing Superposition

	State W	**State X**	**State Y**	**State Z**
Retrieval Intersection A	1	0	0	0
Retrieval Intersection B	0	1	0	0
Retrieval Intersection C	0	0	1	0
Retrieval Intersection D	0	0	0	1
↑ Superposition onto rows ↑				

Table 15: A demonstration of a disagreeing superposition. Here we are putting W, X, Y and Z in a disagreeing superposition, all while putting A, B, C, and D in an agreeing superposition. Note that "1" stands for a value being *true*, (i.e. "real") within a permutation, whereas "0" stands for a value being *false*, (i.e. not real) within a permutation. (Note that it does not mean blank, but rather legitimately false, because after all blank states cannot be directly passed to retrievals).
The fundamental premise to understand about Aethic disagreeing superpositions, then, is that all states therein imply the falsehood of one another, yet they are still all in superposition. Such is the nuance of what retrieval unions and intersections enable.

a collective Aethic retrieval via the retrieval intersection operator, then, may themselves be put into Aethic superposition upon one another via the retrieval union operator.

In case this premise still seems a bit foreign, let us cite both the second postulate of the Aethus and the Aethic union principle for the reasoning behind it. Explicitly speaking, we know that Aethic unions represent the loss of Aethic information as per their operating in the parent Aethus direction. Alternatively, we know that Aethic intersections represent the gain of Aethic information as per their operating in the child Aethus direction. The same, then, will be true of Aethic retrievals on account of their being dependent upon the Aethae which generate them. Naturally, then, we see that creating an Aethic intersection in which only one state may be true is fundamentally consistent with the notion of gaining information, however we also see that putting different such rungs of Aethic intersections into Aethic superposition, as per the Aethic union principle, must then represent the loss of information. At the most intuitive of layers, we indeed might assess that for one state to be in effect but certainly not others is representative of the subsequent side of choosing an outcome rather than the prior side, so therefore we must use the subsequent-pointing operation – the Aethic intersection – rather than the alternative. It is this exact sort of approach that allows us to represent superpositions in Aethic reasoning, although it is admittedly hard to swallow at first on account of its dependence on the ingrained nuances surrounding the Aethic union principle.

3.4.3 Aethic Partitions and Set-Based Epistemologies

Let us also briefly mention some procedures for converting between Aethic reasoning and classical probability theory notation and ontology. Regarding Aethic partitions, they do not quite have the same ontological significance as Aethic unions or intersections due to their reliance on sets, but they may nonetheless have a few epistemological uses when converting between Aethic insights and set theory insights. We can define an Aethic partition in the following way so as to create a direct analogue to a set partition.

Concept 1 (Aethic Partition)
For some Aethus, A, it follows that the set S will be an Aethic partition of A if and only if the following conditions are held by it.

- *All Aethae in S are valid, (with invalid Aethae being the analogue to empty sets).*
- *The Aethic union of all Aethae in S is Aethically equivalent to A, (with the corresponding weights of the Aethae in S being somewhere stored, such as in some isomorphic S_w, for example).*
- *The Aethic intersection of any two Aethae in S is an invalid Aethus, (with, again, an invalid Aethus being the Aethic analogue of an empty set).*

Regarding the actual epistemological use of Aethic partitions, an example might be in mapping S onto a probabilistic sample space, with a corresponding probability mass function associating with the isomorphism from S to S_w. A direct use of this concept will, for an example, come into play in the paper on Nexic reasoning, when the Nexic mediocrity principle is defined through a preset mediocre

quantile being present for some child of an Aethus. In the meantime, however, we can regard Aethic partitions through their simple property of being fundamentally epistemic rather than ontic.

3.4.4 Basics of the Aethic Field Operations

Let us take this moment to declare that the Aethic tree, once we define it in the coming *weighted* sense, will form a mathematical field. In such a field, the Aethic union operation, $\cup$, is to represent the addition operation, and the Aethic intersection operation, $\cap$ is to represent the multiplication operation. As such, we are to use $\cup$ and $+$ interchangeably when referring to Aethae, and furthermore will use $\cap$ and $\times$ interchangeably for Aethae. Such a thing is to only be conjectured at the moment, but will be rigorously proven in a devoted section to the field axioms later in the paper. The intuition behind it, of course, is that it indeed perfectly mirrors the addition and multiplication rules or probability anyway.

4 Incorporation of Aethic Weighting

4.1 Practical Motivation of Weighting Aethae

We might see something of a major issue brewing in the way we have defined an Aethus thus far, where we are unable to define more nuanced states between instantiating an Aethic attribute versus leaving it perfectly blank. Even the dichotomy theorem, so far at least, implies the hard subdivision into present versus blank attributes. This model does not fit with how we know our universe to exist, where probabilities are far more dynamic than this dichotomous mindset. From both philosophical and probabilistic lenses, this simply will not do.

As such, let us consider the notion of adding intermediate weighting to Aethic attribute presence, which will ultimately prove vital to our accurate procedure in describing the nuance of reality. Notice that the innovations which we are about to make, although not technically directly expressible in the mathematical framework thus far depicted, are nonetheless extremely natural to the mathematics which we have been building in the form of an extension. That is, rather than clashing with what we have designed thus far, these approaches will instead help amplify their accordance with the philosophical background from which they are based. Let us, then, proceed with some of these ideas.

To begin with, consider what is perhaps the primary appearance of weighted Aethae in our day-to-day lives: *the notion of how we move along the Aethic dimension.* At present we have no rendition of the "kinematics" of sorts for how one moves on the Aethic dimension, so in the very least we need an evident mathematical formulation which depicts such things. Such a framework is what we will refer to as *centric unfolding*, which can be considered our chosen interpretation for the rules which an agent's correspondent string of Aethae must follow. Here is such a principle written out in language.

Principle of Centric Unfolding

Centric unfolding is what we will refer to as the *default interpretation of Aethic reasoning*, although we must note that it is only a convention. In this way, it might represent the current outer boundary of Aethic reasoning with regard to its ontological footprint, because while we know that it agrees with our current understanding of the empiricism, we nonetheless have to acknowledge that it operates on substantially shakier ground than something like an Aethic postulate. That is, it holds a similar risk of invalidity to what the classical interpretation of the tricky principle held when we changed it to the second postulate of the Aethus. In much the same way, a future generation of scientists may very well view this stepping stone as archaic, but at present it is the best supposition we are able to make given our current understanding of where Occam's razor is to be best applied.

This now being said, the convention of centric unfolding can be expressed as the assumption of the two following axioms.

1. Every past Aethus which an agent inhabited is to serve as a parent Aethus to their current Aethus.
2. Upon adding a new attribute to one's Aethus, its state is drawn from its standing superposition at random.

This assumption can be seen as a tool for our approaching the agent-based Aethic interpretation of reality, but through its relative empirical flimsiness can only ever be a hypothesis at present. Also please quickly note that for an agent to move across the Aethic dimension in a way which is consistent with these axioms can be referred to as said agent "centric unfolding." That way we are able to use the term both as a noun, (designating the principle), and a verb, (designating the act of doing it oneself).

Given this stance, and important question becomes available to us: *what then is probability?* Consider some particular agent, whose current Aethus is A_1, with some past Aethus to that being A_0. Accordingly, we might suppose that there is no particular difference between whichever Aethus directly succeeded A_0 being drawn from it at random, and any future Aethus like A_1 being drawn from it a random. Speaking inductively, we might simply imagine this A_1 as the accumulation of whatever intermediate attributes separate it from A_0 anyway, so in effect we gather from centric unfolding the further corollary that *any particular proper child Aethus of another Aethus holds a probability of being realized which is proportional to its weight within the superposition of possibilities.* In the case of A_1, we know that the superposition of possible child Aethae that might be drawn from A_0 can itself be represented with the Aethic union operation. Specifically, consider the set of all child Aethae to A_0, and call it some C. (Notice how the Aethic superposition of the set is simply A_0 again). Where such a set represents the superposition of all possibilities which follow from A_0, then we know that for A_1 to be drawn from such a set at random should, by centric unfolding, match in probability the weighting that A_1 holds in such a set. Because the superposition of the set is just A_0 itself, then, we hold that *the probability of A_1 being centric unfolded to from A_0 is equal to the weight of A_1 in A_0.* Remember, this is so where weight itself is merely a representation of, in the most practical sense, what proportion of an Aethic superposition implies a particular Aethus. Let us write this equivalence between probability and Aethic weighting as a principle.

Principle 23 (Aethic Equivalence of Weights and Probabilities)
In Aethic reasoning, we hold that the weight of one Aethus in another is ontologically equivalent to the probability of said Aethus with respect to another.

$$\mathrm{P}(A \mid B) = W_B(A) \tag{44}$$

Note that this also serves as the *formal definition of probability in Aethic reasoning.* We further require that all probabilities in Aethic reasoning must be conditional, because marginal probabilities violate the first postulate of the Aethus.

Let us now address how we might install the required mathematical formalism needed for Aethic weighting, that way we can satisfy this empirical condition.

4.2 Generalizing Aethic Presence Operations

To begin with, consider how we might add an attribute to a unweighted Aethus. Specifically, suppose we have the Aethus A, and we wish to add the attribute φ to it in the form of the state x, so as to make the proper child Aethus B. With the basic model of unweighted Aethae, the procedure is as simple as to append such a mapping to the Aethus in full, and thereby imply an Aethus for which it is present. The issue, however, is that this creates a hard cutoff between A and B, such that the attribute is either fully blank in one or fully present in the other. Even if we decomposed φ into several subattributes, such that we made some of them present and some of them absent, and we would still only ever have a discrete number of possibilities. And yet even in this case, our product would be far removed from the intuition of lowering or heightening the presence of φ in its entirety, where we would instead refer to it by partitions. This is a most Cartesian intuition, and is not exactly ideal as an ontology.

This can be seen as our base motivation for defining intermediate presence states to an attribute, rather than the hard cutoff between blankness and presence. Speaking personally for a moment, when I was first developing Aethic reasoning, I remember stumbling upon Wheeler's "it from bit" idea [19], and although I firmly hold that Wheeler is a brilliant thinker, and that the idea itself is rich with merit, I cannot shake the feeling that its discrete phrasing of reality seems unnatural as an ontology. Through such a thing, I developed Aethic reasoning – specifically through its culmination with weighted Aethae – as following a fundamentally continuous process rather than a discrete one.

Let us describe the distinction between unweighted Aethae and weighted Aethae as follows: with the set of unweighted Aethae specifically being taken as a subset of the set of weighted Aethae, we might suppose that we can generate the entire set of weighted Aethae through the use of a generalization over the operations of unweighted Aethae, together with an assertion that the set of weighted Aethae must be closed under said generalized operations, just as the set of unweighted Aethae is closed under the base versions of those operations. Notice the similarity in procedure to how we define the rational numbers given the set of natural numbers. We will also explicitly make use of the principle by which a stated-attribute can be declared from an Aethus itself, which will serve useful in this endeavor.

Consider, simply put, how we have understood already to interpret an Aethic union in the context of Aethic weights, being but a linear combination of Aethae, which may be expressed as follows, (for real valued α_i variables, and Aethae A_i and B).

$$B = \sum_i \alpha_i A_i \tag{45}$$

This insight is important on three immediate fronts. To begin with, it demonstrates that Aethic unions are indeed equivalent to Aethic addition, because after all the unweighted Aethic union serves as a special case of a linear combination for which all involved coefficients are one. Secondly, this of course allows us to define and structure probability as that which corresponds to the values of the weights specifically, and thirdly we then attain a direct well-defined explanation for what happens when an Aethus and a real number are multiplied. For instance, had we run a linear combination of a single Aethus with a fractional weight value, then such falls under the umbrella of linear combinations anyway, and through such a thing may both be interpreted as a form of Aethic union, all while having an intrigue degree of applicability to further linear combinations in such a form. For one such example, consider a linear combination of the Aethae A_1 and A_2 with a weight of one-half to each.

$$B = \frac{1}{2}A_1 + \frac{1}{2}A_2 \tag{46}$$

Intriguingly, now, we might both interpret this as a weighted union of A_1 and A_2, or instead as an unweighted union of $\frac{1}{2}A_1$ and $\frac{1}{2}A_2$, as after all the weights for the latter linear combination are both one. As such, these intuitions of treating fractional Aethae as Aethae themselves is both the seed by which we may develop the full set of weighted Aethae, and also a highly important ontological premise to concepts like probability, Aethic linearity, and the applicability behind Aethic structure itself.

Given these base premises, the next insight we ought to gather is what happens when disjoint Aethae are run through a linear combination. For an example, suppose we have two Aethae, A and B, which are disjoint to one another. Recalling the definition of disjoint Aethae, this simply means that their Aethic intersection is an invalid Aethus.

$$\neg\mathbf{V}[A \cap B] \tag{47}$$

Now let us gather a fundamentally important insight of weighted Aethae, being the stronger form of disjoint Aethae which we are to refer to as *orthogonal Aethae*. Simply put, for Aethae to be disjoint may also be referred to as their being orthogonal.

Definition 17 (Orthogonal Aethae)
Two Aethae, A and B, will be orthogonal if and only if their Aethic intersection is an invalid Aethus. Note that this the same as their being disjoint Aethae, but is used typically more in the context of weighted Aethae rather than unweighted Aethae.

Importantly, let us now also take a moment to define a heavily related concept to Aethic orthogonality, specifically on account of the taking of an Aethic intersection between two orthogonal Aethae. Specifically, let us define an Aethus which can be expressed specifically as an Aethus and its complement as a *hyperinvalid Aethus*.

Definition 18 (Hyperinvalid Aethus)
An Aethus, A, is hyperinvalid if and only if it has no valid parent Aethae besides the Null Aethus itself.

Note that hyperinvalid Aethae are typically denoted with Ψ. Hyperinvalid Aethae are to play a highly important role in the analysis of weighted Aethae, because they do indeed turn out to represent the additive identity of the set of all weighted Aethae. Effectively, then, we have from this notion that any two hyperinvalid Aethae are indeed Aethically equivalent.

Importantly, we have that the any Aethus besides the Null Aethus, when intersected with its Aethic complement, will indeed yield a hyperinvalid Aethus, with such being effectively the most straightforward mechanism of arriving at one directly. This is so, remember, where we define an Aethic complement specifically as whichever Aethus, to a given unweighted Aethus, holds all the same attributes as present, but with disjoint stated-attributes to each.

As such, an *orthogonal linear combination* of Aethae can be defined simply as a linear combination of orthogonal Aethae.

Let us now take a moment to demonstrate the importance of hyperealized Aethae through some examples. Specifically, with their being the additive identity to the set of weighted Aethae, we might suggest the following identity, which will be referred to as *the fundamental identity of hyperinvalid Aethae*.

Definition 19 (Fundamental Identity of Hyperinvalid Aethae)
If Ψ is a hyperinvalid Aethus, then it may be expressed as Aethically equivalent to any Aethus, A, and the real number of zero.

$$\forall A, \Psi \equiv 0A \tag{48}$$

Note that this insight may be considered equivalent to the notion of a hyperinvalid Aethus being the additive identity of the set of weighted Aethae, specifically because a weighted Aethae A, when subtracting itself so as to make $A - A$, may naturally be written through distributivity as $(1-1)A = 0A$.

This gives to us a very important insight, being that *the unweighted Aethic union of any Aethus and the hyperinvalid Aethus returns itself, akin to adding a number to zero.* This may be written as the following general premise.

$$\sum_i \left(\alpha_i A_i + \beta_i \Psi\right) \equiv \sum_i \alpha_i A_i \tag{49}$$

Furthermore, we can now express what is essentially *the fundamental theorem of orthogonal Aethae* as follows.

Theorem 4 (Fundamental Theorem of Orthogonal Aethae)
If the Aethae A and B are orthogonal, then we often might find it advantageous to perform the following decomposition onto them.

$$A = C_0 \cap C_1 \cap A_0 \tag{50}$$

$$B = C_0 \cap C_1' \cap B_0 \tag{51}$$

This is so where C_1' represents the Aethic complement of C_1.

Given this setup, now, if we intersect these two Aethae, then we are to attain the following.

$$A \cap B \equiv C_0^2 A_0 B_0 \left(C_1 C_1'\right) \tag{52}$$

$$A \cap B \equiv C_0^2 A_0 B_0 \Psi \tag{53}$$

Clearly, then, we have that the Aethus $A \cap B$ is a child Aethus of the hyperinvalid Aethus Ψ, which itself may be given to represent an alternative definition of an invalid Aethus according to weighted Aethic reasoning. Altogether, then, we might think to suppose that just such an expression as this represents the effective 'orthogonal decomposition' of the Aethae A and B given their orthogonality.

The theorem itself is merely the statement that the two Aethae are orthogonal if and only if such a decomposition as this may be performed. If it cannot, then that means their Aethic intersection is not invalid after all, so through that we also gain an inductive definition for an invalid Aethus through the lens of the hyperinvalid Aethus itself, being that an Aethus is invalid if and only if it is a child Aethus to the hyperinvalid Aethus.

Lastly for the talk on hyperinvalid Aethae, let us discuss a process which we will call *weighted reduction* of an Aethus.

Definition 20 (Aethic Weighted Reduction)
Simply put, weighted reduction in the act of postulating that a hyperinvalid Aethus may be directly replaced by the real number zero while engaging with a query of Aethic reasoning. This specifically means that whenever we are performing an Aethic derivation, we have to clarify either directly or indirectly whether we are in the frame of assuming the allowance of weighted reduction, or instead assuming the disallowance of it. Effectively the point of the matter is that this decision will influence the style or perhaps school of Aethic reasoning with which one is engaging. For practical circumstances, assuming weighted reduction is usually rather justified, but in more abstract settings it may lead to paradoxes if not handled with care, similarly to dividing by zero in basic real analysis.

Just for reference, then, we will typically assume a disallowance of Aethic weighted reduction in most cases – as is the default stance for the purposes of this paper – but at other times we may allow it if stated explicitly.

Let us now move on to an important flipside of sorts to hyperinvalid Aethae, being what we will refer to as a *unit Aethus*. The main goal behind both concepts, then, will be to dynamically express any weighted Aethae as a linear combination of unit Aethae, with the fundamental identity of hyperinvalid Aethae serving as our aid toward gather the outcome of realization.

4.2.1 Acknowledging the Mathematical Existence of Improper Aethae

Please note that where we have defined weighted Aethae as being representable as a real-valued linear combination of nonweighted Aethae, we now also open the door to a few extra instances of Aethae which cannot directly associate with a real ontology. The most obvious such case regards weighted Aethae which can be written as a linear combination of disjoint Aethae such that the sum of the coefficients is greater than one, which we know immediately to be invalid Aethae through the use of an Aethic contradiction. However, there are a myriad of other cases as well, while not quite as extreme, which are not quite realizable either.

To begin with, let us consider an operation which we will call the *Aethic norm*. We may define it as follows.

Definition of an Aethic Norm
For any Aethus, A, if we write it as a linear combination of orthogonal Aethae, then the norm of A will be the sum of the coefficients in said linear combination.

$$\|A\| = \sum_i w_i \mid \left[A = \sum_i w_i A_i \right] \wedge [\forall i \neq j, \neg \mathbf{V}[A \cap B]] \tag{54}$$

We may also apply to this an important corresponding theorem, being the *Aethic norm theorem*.

Theorem 5 (Aethic Norm Theorem)
We hold that for any Aethus A, we will gather the same Aethic norm for it regardless of which linear combination of orthogonal Aethae we use to define it. This means that the Aethic norm is indeed an intrinsic property of an Aethus.

Given concept of an Aethic norm, now, let us define what we will call a *proper weighted Aethus* as follows.

Definition 21 (Proper Weighted Aethus)
Quite importantly, let us suppose through definition that unless otherwise specified, every time we refer to an Aethus from now on will be referring to not only a weighted Aethus, but also a proper weighted Aethus. A proper weighted Aethus is rigorously defined as an element of the set of weighted Aethae whose Aethic norm is between zero and one inclusive.

$$\mathbf{P}(A) \Leftrightarrow \|A\| \in [0, 1] \tag{55}$$

In general, now, we have that all possible realizable Aethae have to be proper Aethae, because for any improper Aethus to exist in the real world would violate the law of total probability, (with there existing Aethic orthogonal linear combinations to that Aethus whose coefficients do not sum to one). As such, improper Aethae are only directly useful as an epistemic tool toward constructing proper Aethae, but beyond that cannot be ontologically realized themselves. For instance, invalid Aethae themselves are an example of improper Aethae, however they are only a special case of such a category.

Let us now think to define a trichotomy of terminology which might help identify the various Aethae with weights zero to one inclusive, in case it is ever of use.

Norm-Based Aethic Categorization

1. For the first major categorization, let us consider some Aethus, A, whose norm is on the range of zero to one inclusive, thereby representing proper Aethae. We might think to subcategorize such Aethae as follows.
   - If the norm of A is equal to zero, then A is referred to as a hyperinvalid Aethus, or alternatively as a *transparent Aethus*.
   - If the norm of A is equal to one, then A is referred to as an *opaque Aethus*.
   - Lastly, all the remaining cases of A, (such that its norm is between zero and one exclusive), might be referred to as *translucent Aethae*.
2. For the second major categorization, consider an Aethus, A, whose norm is strictly greater than one. Such an A will then be referred to as an *Aethic contradiction* by the generalized definition of such a thing to weighted Aethae.
3. Lastly, consider the third major categorization, being that which applies to any Aethus, A, whose norm is strictly less than zero. We can refer to such an Aethus as a *negative Aethus*. Note that the prefix of "negative" can also be applied to the other categories, so as to imply their analogue where the sign is changed. Here are the possibilities.
   - A negative-transparent Aethus has a norm of negative zero, so of course is just another term for a transparent Aethus.
   - A negative-translucent Aethus has a norm from zero to negative one exclusive.
   - A negative-opaque Aethus has a norm of negative one.
   - A negative-contradictory Aethus has a norm which is less than negative one.

Lastly for the notions of weighted Aethae in general, consider an important theorem which we can say of any improper Aethus.

Theorem 6 (The Improper Aethic Representation Theorem)
For any Aethus, Q, proper or not, it can be written as the product of an opaque Aethus, A, and a real valued coefficient, α, in the following form.

$$Q = \alpha A \tag{56}$$

Note that so long as Q does not have a norm of zero, then there is exactly one such value of each of α and A for which this is true. Specifically, α represents the norm of Q, and A represents what we will call the "unit Aethus" of Q. Such a unit Aethus may be found by dividing Q by its own norm.

$$A = \frac{Q}{\|Q\|} \tag{57}$$

As such, we have that for all non-transparent Aethae, the ratio of itself to its norm is an opaque Aethus.

4.2.2 Deriving the Multiplication Rule of Probability

Suppose that two opaque Aethae, A and B, are disjoint. Given this premise, we want to ask the question of what the probability of A is according to some Aethus X, defined as follows.

$$X = (\alpha A + B)(\beta A + B) \tag{58}$$

In order to attain this, we simply need to express X as a linear combination of A and an Aethus which is disjoint to A, and then pull the weight coefficient from A as per the Aethic definition of probability. We may proceed, to begin with, by performing some needed decomposition onto A and B. Specifically, let us suppose that A can be expressed as the Aethic intersection of the opaque Aethae A_0 and A_1, such that B itself is expressible as $A_0 \cap A_1' \cap B_1$ accordingly, with B_1 representing the Aethus of any additional stated-attributes which are incorporated into B.

$$A = A_0 A_1 A_2 \tag{59}$$

$$B = A_0 A_1' B_1 \tag{60}$$

We may now substitute and solve, all while allowing weighted reductions.

$$X = (\alpha A_0 A_1 A_2 + A_0 A_1' B_1)(\beta A_0 A_1 A_2 + A_0 A_1' B_1) \tag{61}$$

$$X = \alpha\beta A_0^2 A_1^2 A_2^2 + (\alpha + \beta) A_0^2 A_1 A_1' A_2 B_1 + A_0^2 {A_1'}^2 B_1^2 \tag{62}$$

We may now use the identity of opaque Aethae that they equal their own squares to simplify this a bit.

$$X = \alpha\beta A_0 A_1 + (\alpha + \beta) A_0 A_1 A_1' A_2 B_1 + A_0 A_1' B_1 \tag{63}$$

Now is when we can gather our first step of weighted reduction, specifically from the notion of how $A_1 A1'$, being the Aethic intersection of two Aethic complements, comes out to the hyperinvalid Aethus, Ψ. Such allows us to perform weighted reduction, and remove the term for which it is a coefficient entirely. (With such being a direct consequence of the fundamental identity of hyperinvalid Aethae).

$$X = \alpha\beta A_0 A_1 A_2 + (\alpha + \beta) A_0 \Psi A_2 B_1 + A_0 A_1' B_1 \tag{64}$$

$$X = \alpha\beta A_0 A_1 A_2 + A_0 A_1' B_1 \tag{65}$$

$$X = A_0 (\alpha\beta A_1 A_2 + A_1' B_1) \tag{66}$$

Next up, we can make the important supposition of linearly decomposing $A_1' B_1$ into a linear combination of two copies of itself, specifically so as to pair up one of the copies with the A_1 term.

$$X = A_0 (\alpha\beta A_1 A_2 + \alpha\beta A_1' B_1 + (1 - \alpha\beta) A_1' B_1) \tag{67}$$

Intriguingly, this renders the law of total probability merely as effectively a pairing process as this. The spirit of this approach, then, is that we ought to picture a linear combination such as this as really just a linear combination of the hyperinvalid Aethus and some other Aethus. That it, it is not truly that a linear combination of disjoint Aethae always has to be decidedly invalid itself – instead it is more akin to their being a hyperinvalid scenario in Aethic superposition against alternative scenarios in which each Aethus conflicting is turned off altogether. The way in which we achieve this mathematically, then, is we simply extract the same weight out of one disjoint Aethus which is conflicted by the other, and then essentially 'annihilate' them into a hyperinvalid Aethus. As an intuition, the premise is quite like having ten kilograms of matter and fifteen kilograms of antimatter – when we combine them the net sum of one annihilates exactly that much of the other, but the larger original sample gets to remain in the end with the extra five kilograms or whatnot. Let us implement this accordingly, by factoring out the $\alpha\beta$ and turning the term to a hyperinvalid Aethus.

$$X = A_0 (\alpha\beta ((A_1 A_2) + A_1' B_1) + (1 - \alpha\beta) A_1' B_1) \tag{68}$$

Next, because the distributive property holds over both unions and intersections, we can also allow it over Aethic addition and multiplication accordingly.

$$X = A_0 (\alpha\beta (A_1 A_1' A_2 + A_1 B_1 A_2) + (1 - \alpha\beta) A_1' B_1) \tag{69}$$

$$X = A_0 \left(\alpha\beta \left(\Psi A_2 + A_1 A_2 B_1\right) + (1 - \alpha\beta) A_1' B_1\right) \tag{70}$$

$$X = A_0 \left(\alpha\beta A_1 A_2 B_1 + (1 - \alpha\beta)\, A_1' B_1\right) \tag{71}$$

$$X = \alpha\beta A_0 A_1 A_2 B_1 + (1 - \alpha\beta)\, A_0 A_1' B_1 \tag{72}$$

$$\boxed{X = \alpha\beta A B_1 + (1 - \alpha\beta)\, A_0 A_1' B_1} \tag{73}$$

We have finally been able to express X as a linear combination of A and a disjoint Aethus to it, $A_0 A_1'$, which allows to us the final total result for the probability.

$$\mathrm{P}(A \mid X) = \alpha\beta \tag{74}$$

Intriguingly, now, this exactly corresponds to the multiplicative rule of probability, where the probability of some A occurring in the intersection of both involved Aethae, $\alpha A + B$ and $\beta A + B$, naturally coming out to the product of its probability in each individual one. Such is an insightful notion to the ontology of probability, to say the least.

4.3 Further Notions of Probability In Aethic Reasoning

We have already defined the formal definition of probability in Aethic reasoning, so let us now consider an example of Aethic probability intuition in action. Suppose we have an Aethus which is to encode whether a particular coin lands heads or tails. Normally we might add the full stated-attribute of the resulting state into our Aethus, but for this exercise we are only to add such a property with weight 50%. By the implicit definition of a weighted-Aethus, we attain the following form of such an Aethus, where x is our particular state to be added.

$$A = 50\%\, A_0 + 50\%\, x \tag{75}$$

If, for example, we have that x corresponds to the state heads, then we might imagine retrieving the attribute of "What is the state of the coin" from A. If A_0 were to return this, it would send $(\text{Heads}, \text{Tails})$ due to the second postulate of the Aethus, and we also of course have that x itself would return (Heads). As such, we might consider what A would retrieve by taking the corresponding linear combination of both notions.

$$50\%\ (\text{Heads}, \text{Tails}) + 50\%\ (\text{Heads}) \tag{76}$$

Upon distribution of the factors, then, we get the following result.

$$75\%\ (\text{Heads}) + 25\%\ (\text{Tails}) \tag{77}$$

So, since we have expressed our Aethus as a linear combination of two linearly independent stated-attributes, we can therefore gather the probability of either Heads or tails accordingly from that Aethus.

$$\mathrm{P}(\text{Heads} \mid A) = \frac{3}{4} \tag{78}$$

$$\mathrm{P}(\text{Tails} \mid A) = \frac{1}{4} \tag{79}$$

Such is due to the equivalence of weightings and probabilities in Aethic reasoning.

Rather than using the ugly and limited notation of $W_B(A)$, let us now transition toward standardizing $\mathrm{P}(A \mid B)$ as our new notation for Aethic weightings, for we know it to be quite a beautiful notation already. A major benefit of this weight-probability equivalence principle is that we might also now depict agreeing superpositions, or whatever else in Aethic reasoning, through the use of this standard probability notation, $\mathrm{P}(A \mid B)$.

Given this probabilistic-formulation of Aethic reasoning, a few useful insights become available. For instance, here is a new method of establishing Aethus equivalence between the Aethae A and B.

Theorem 7 (Probabilistic Identity of Aethic Equivalence)
Two Aethae have a weighting of one with respect to one another if and only if they are Aethically equivalent.

$$\mathrm{P}(A \mid B) = \mathrm{P}(B \mid A) = 1 \Leftrightarrow A \equiv B \tag{80}$$

This identity will come into great use later on in the paper – particularly for deriving the third postulate of the Aethus.

4.3.1 Denoting Weighting Schemes With an Aethic Attribute

Consider the *Nexus principle of Aethic reasoning*, which helps distinguish physically existent Aethae from mathematically existent Aethae.

Principle 24 (Nexus Principle of Aethic Reasoning)
Any physically existent Aethus, for every blank attribute within it, has to contain a weighting scheme for that attribute, be it direct or removed from it by several iterations of intermediate blank attributes.

Notice that there is no such restriction for mathematically defined Aethae, because we may simply choose to neglect this property. However, with physically existent Aethae, we hold that in order for centric unfolding to occur at all, there must be some mechanism of defining the weights of all possible stated which a particular blank attribute can hold, and its superposition accordingly. Just such a weighting scheme is what we refer to as a *Nexus*. We will deal more with Nexae throughout the remainder of the paper.

4.3.2 Two Definitions of Probability

Please note that in Aethic reasoning, with probability having been associated with Aethic weightings in the way in which it was, we now have access to two different definitions of probability, which are quite useful when used together in Bayesian arguments. Let us describe these as follows.

Definition (Realizable Definition of Probability)
In Aethic reasoning, the realizable definition of probability only counts valid Aethae in all arguments of Aethic weighting, such that invalid Aethae are set to zero probability, and any surrounding valid Aethae are normalized in probability accordingly. Crucially, note that this is the definition of probability that is exactly consistent with our world of physical observables, because after all, invalid Aethae are not physically realizable.

Notice that this is indeed the exact type of probability which we normally mean when we talk about probability.

Definition (Hyperealizable Definition of Probability)
In Aethic reasoning, the unrealized definition of probability is that which attempts to also take invalid Aethae into account during probability arguments, such that they have nonzero weights. Note that performing this can serve extremely useful in various analyses, such that we do our analysis over hyperealizable probabilities, and only project the result back to realizable probabilities at the end of the derivation. In fact, the supposition of Aethic Bayesianism is that it is the nature of such a projection which gives rise to the Bayesian school of probability from Aethic reasoning itself.

Note that hyperealizable probability weights can be arranged in many possible ways while still projecting to the physical system, simply due to hyperealizable probabilities possessing more degrees of freedom than realizable probabilities can attain. With this being said, it is wise to define a well-suited convention for hyperealizable probabilities when using them, otherwise there is not much of a gain over realized probabilities themselves. If there seems to be an ontological tendency to the underlying hyperealizable probabilities, then that is usually a good place to start when defining the question-specific convention.

4.3.3 The Aethic Partition Theorem

Theorem 8 (The Aethic Partition Theorem)
For any Aethic partition, S, the union of the Aethae in S is Aethically equivalent to the union of only the valid Aethae in S.

We can derive this statement using the probabilistic identity of Aethic equivalence together with an argument of mathematical induction. Let us perform this derivation now.

Proof of the Aethic Partition Theorem
Consider some Aethic partition of the Aethus A, which we will denote as S_0. The procedure of our proof will be to take the Aethic union of the valid Aethae in the set S_0 and establish that as some A_1, and then to also take the Aethic union of the invalid Aethae in the set S_0, and establish that as A_2. We know that the Aethic union of A_1 and A_2, then, ought to equal the Aethic union of all elements in the set S_0, (which holds due to the Aethic union operation being both commutative and associative), so we therefore need only to prove that the Aethic union of

all items in S_0 is Aethically equivalent to A_1 itself, and we will have found our solution.
To begin with, note how the set $S_1 = \{A_1, A_2\}$ is itself an Aethic partition of A, because it satisfies both properties that its union equals A, (as we know already), and that its intersection is an invalid Aethus, (on account of it being a child to an invalid Aethus, A_2). Let us show that such a union of an Aethic partition of two elements, being A_1 and A_2, such that A_1 is valid but A_2 is invalid, will always be Aethically equivalent to A_1 only. This may be expressed as follows.

$$A = A_1 \cup A_2 = A_1 \mid \mathbf{V}[A_1] \wedge \neg\mathbf{V}[A_2] \tag{81}$$

Let us prove this particular statement with a simple use of the probabilistic identity of Aethic equivalence. To begin with, through the use of the law of total probability we see that the following identity is in effect, (due to A_1 and A_2 also being disjoint, on account of S_1 being an Aethic partition).

$$\mathrm{P}(A_1 \mid A) + \mathrm{P}(A_2 \mid A) = 1 \tag{82}$$

Hence, through the weight-probability equivalence of Aethic reasoning, we hold that *the weight of A_1 in A is one minus the weight of A_2 in A.*
Next, we can simply show that the realizable probability of A_2 in A has to itself be zero. This is a fundamental claim that we can make as based on the definition of an invalid Aethus, where they are never physically realizable. Through this, we gather that even though A_2 is a child Aethus to A, we still must hold as an intrinsic property of it that its weight in A is to be zero.

$$\mathrm{P}(A_2 \mid A) = 0 \tag{83}$$

This then yields us the probability of A_1 in A through substitution.

$$\mathrm{P}(A_1 \mid A) = 1 \tag{84}$$

This is our first part of the implication, and we may also show that the second part is true as well, being that the weight of A in A_1 is one. Such a property is rather more trivial, and it specifically derives from A_1 being expressible as a child Aethus of A itself, due to A being expressible as a parent Aethus of A_1 and all, (as per the union expression from which it was generated). We now have the following.

$$\mathrm{P}(A_1 \mid A) = \mathrm{P}(A \mid A_1) = 1 \tag{85}$$

We may now apply the probabilistic identity of Aethic equivalence, to make the following claim.

$$\mathrm{P}(A_1 \mid A) = \mathrm{P}(A \mid A_1) = 1 \Leftrightarrow A = A_1 \tag{86}$$

Therefore, we have shown that in such a setup of A_1 being valid and A_2 being invalid, we indeed attain that $A_1 = A_1 \cup A_2$. This then completes our proof that the Aethic union of the valid Aethae in a set equals the Aethic union of all the elements in the set.

4.4 The Set of Weighted Aethae as a Commutative Ring

We can show that the set of weighted Aethae is actually a commutative ring by outlining a few of its key properties. Let us set the Aethic union to our multiplicative operation, and the Aethic intersection as our additive operation for such a procedure.

4.4.1 Property of Distributivity

Let us begin by showing that, like multiplication over addition, Aethic intersections over Aethic unions do in fact follow the distributive property. Let us do this by showing the truth of the following equation.

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C) \tag{87}$$

Given how we can define[29] the Aethic intersection such that $x \in A \vee x \in B \Leftrightarrow x \in A \cap B$, (where $\in$ here means "*is a parent Aethus of*" or alternatively "*is present in*"), and the Aethic union such that

[29] Remember how the intuition on subsets and logic-to-sets is backwards here from what we are used to in set theory – and this is because we are applying the "in" notion predominately to static Aethae, whereas we are applying set unions and intersections to their direct Aethic analogues onto the Aethae themselves.

$x \in A \wedge x \in B \Leftrightarrow x \in A \cap B$, it then follows that for some x to be present in the Aethus $A \cap (B \cup C)$ means that it is present in either A or $B \cap C$, which itself implies that if $A \cap B$ does not contain it, then $A \cap C$ certainly will. Therefore, we can trivially see how this equates to $(A \cap B) \cup (A \cap C)$ according to such an identity.

4.4.2 The Set of Weighted Aethae as an Abelian Group Under Unions

To begin with, we want to argue for the hyperinvalid Aethus as the identity of the union operation of the set of weighted Aethae, thus making it the additive identity accordingly. Remember that if a single contradiction is present, then that would make the Aethus invalid – but in this case we have a stronger version even than that, which is that to be a hyperinvalid Aethus, for all present attributes in the Aethus, there must exist a contradictory alternative state in that same Aethus. Furthermore, we can assert that all such Aethae actually hold Aethic equivalence[30] for the sake of present intersection derivation.

Note that such a hyperinvalid Aethus can intuitively be given as the identity element of the set of weighted Aethae under unions, because we clearly see that the union of any Aethus with such a hyperinvalid Aethus must be simply itself. We can prove such a supposition using the Aethic partition theorem. Specifically, let us consider how if A is some Aethus, and Ψ is the hyperinvalid Aethus, then it follows that Ψ can be written as $A \cap A'$, where A' is the Aethic complement to A, such that $A \cap A' = \Psi$ and $A \cup A' = N_0$. As such, we may substitute accordingly.

$$A \cup \Psi = A \cup (A \cap A') \tag{88}$$

This is where we can apply the Aethic partition theorem, because we know that the invalid Aethus $A \cap A'$ is clearly a child Aethus of A, so the Aethic partition of A that is $A \cup (A \cap A')$ can be rewritten as A itself.

$$A \cup \Psi = A \tag{89}$$

This shows that the hyperinvalid Aethus, Ψ, is a valid choice of the multiplicative identity of the set of weighted Aethae.

We must now show closure of the set of weighted Aethae under unions. Quite simply, we know that the union of any two Aethae on the same set of weighted Aethae must itself be on that set of weighted Aethae. This comes from the corollary that the union of two child Aethae to an Aethus is itself a child Aethus to such an Aethus, and we see that all Aethae on an set of weighted Aethae are child Aethae to the Null Aethus of that tree, hence arguing that all Aethic unions are also a child Aethus to that Null Aethus, (itself then implying their presence on the tree). Regarding associativity and commutativity, we can again inductively extrapolate from the nature of these things on set unions and the weights therein. Because sets under probability are commutative and associativity, we also see that the weights stay the same regardless of the order or groupings onto which several Aethae are unioned. Therefore, the set of weighted Aethae is an Abelian monoid under unions.

Given this, we may now imply the existence of the additive inverses to Aethae simply as a consequence of the induction to linear combinations of Aethae that marked the initiation of weighted Aethic reasoning in the first place. Specifically, we need only to gather negative coefficients in order to carry out the creation of an Aethus's additive inverse, such as in the following example.

$$A \cup (-A) = A - A = \Psi \tag{90}$$

In this example, we have that by induction from the notation of linear combinations alone, the mere supposition about the existence of this $-A$ implies that it ought to directly serve as the additive inverse to the Aethus A. In effect, we have that the additive inverse of an Aethus simply consists of flipping the coefficient signs on any and all linear combinations which express it. As discussed earlier, this kind of Aethus is what we specifically regard as a *negative Aethus*, and due to its difficulty of being ontologically realized outside of a construct, we might then refer to it as a kind of *improper*

[30] Given then how we are supposing that an Aethus which can be written in terms of only blank and invalid attributes, (being a hyperinvalid Aethus), (but also not only blank Aethae – which is the additive identity of the ring), is itself Aethically equivalent to all other such Aethae, we can attempt to model Aethic equivalence itself to affirm this property. Specifically, we can write up the following generalized lemma: *for any two invalid Aethae, A, and B, they are to be Aethically equivalent if all valid parent Aethae of one are also valid parent Aethae of the other to the same weights.* Or, more general still, we might suppose that the same is true for all Aethae as well. Given how the Null Aethus is the only valid parent for hyperinvalid Aethae, they are all therefore Aethically equivalent for having this one same parent.

Aethus in the process. Note that we may denote such a negative Aethus as sharing a unit Aethus with its additive inverse, but holding an oppositely signed Aethic norm.

Given all of this, we have shown the set of all Aethae to be an Abelian group under Aethic unions, thereby serving as our additive piece of the puzzle.

4.4.3 The Set of Weighted Aethae as an Abelian Monoid Under Intersections

Let us show that the set of weighted Aethae is an Abelian monoid under intersections. Specifically, we will begin by showing that such a group is in possession of an identity element, thereby being the additive identity of the set of weighted Aethae. Such an identity element, very simply, is the Null Aethus itself. The reasoning for this is rather trivial. That is, consider an Aethus, A and the Null Aethus, N, for a particle Nexus of N.

$$A = A \cap N \tag{91}$$

Of course, the operation of adding all attributes from the Null Aethus to A will leave A unchanged, so therefore we have that the act of intersecting the Null Aethus with any given Aethus will result in that same Aethus. This immediately proves that the Null Aethus is the additive identity of the set of weighted Aethae.

Next, we may see rather quickly that Aethic intersections satisfy both associativity and commutativity, because after all such extends from their analogous identities as unions taken probabilistic events. Furthermore, in the least, the set of weighted Aethae is clearly closed under Aethic intersections, simply because because intersecting two Aethae will still yield a child Aethus of the Null Aethus and all.

In effect, we have shown thus far that Aethic intersections at least stray as far as accounting for an Abelian monoid, thereby completing enough of a derivation to render the set of all weighted Aethae as a commutative ring in the process.

4.4.4 Pondering Over an Aethic Field Structure

What is a bit stranger, to say the least, is a concept of a multiplicative inverse to an Aethus. This part of things is still rather raw in my mind at present, specifically because it is both unturned and has not been directly applicable to anything as of yet. However, this is crucial crossroads where a wrong move could stunt Aethic reasoning down the line, so as Newton would put it, *we ought not to feign hypotheses [20] here.* I consider myself something of a conservative on these kinds of matters, because even an innocent speculative dialogue on the subject runs the risk of spiraling into a impenetrable paradigm if not treated with a certain threshold of outright artistry in the first few crucial moments. It is something like an entropic viral spreading due to the simple mechanics of human communication. As such, I may be thinking out loud a bit, but I caution you, the reader, to drop this next topic entirely sooner than to lose your center of balance while engaging with it. Do tread lightly.

Moving on, now, so far I have devised but a simple trick to visualize what a reciprocal Aethus might look like. While this is far from a completed assertion to its behavior, (if it can be justified to exist at all), it nonetheless at least occupies the current frontier.

Let us start with an intriguing more general identity of Aethic complements, being that $A \cap A' = \not\Psi$ all while $A \cup A' = N_0$. We might think to refer to these as the *complement identities of the Aethus.* Written in the notation of addition and multiplication, this creates the following.

Definition 22 (Complement Identities of Aethic Reasoning)
The following two equations represent what we might call the complement identities of Aethic reasoning.

$$\boxed{\begin{aligned} AA' &= \not\Psi \\ A + A' &= N_0 \end{aligned}} \tag{92}$$

$$\tag{93}$$

Now we may think to solve for A' in both cases.

$$A' = \frac{\not\Psi}{A} = N_0 - A \tag{94}$$

Rather strangely, such an identity gives us an opportunity to define $\frac{1}{A}$ directly in terms of the relationship between A and the additive and multiplicative identities of the set of weighted Aethae.

$$\frac{1}{A} = \frac{N_0 - A}{\not\Psi} \tag{95}$$

For further generality, we might also suggest denoting $\frac{1}{A}$ as $\frac{N_0}{A}$, in the least due to the establishment of N_0 already as the multiplicative identity.

$$\boxed{\frac{N_0}{A} = \frac{N_0 - A}{\not\Psi}} \tag{96}$$

Interestingly, *we might argue that we will not get quite the same divide-by-zero error with the hyperinvalid Aethus as with zero itself, specifically in a disallowed weighted reduction frame.* This is simply due to factors of other Aethae not disappearing when multiplied onto the hyperinvalid Aethus, which serves as a direct distinction from how zero behaves with numbers. To give an intuitive example, if we multiply both sides of this equation by some alternative Aethus B, then we might attain the following.

$$\frac{B}{A} = \frac{N_0 - A}{\not\Psi} B \tag{97}$$

$$\frac{B}{A} = \frac{N_0 - A}{\frac{\not\Psi}{B}} \tag{98}$$

Notice that the term of $\frac{\not\Psi}{B}$ itself may be substituted with the complement of B, which then yields the following strange identity.

$$\frac{B}{A} = \frac{N_0 - A}{N_0 - B} \tag{99}$$

Written strictly in terms of complements, this holds an intriguing form as well.

$$\frac{B}{A} = \frac{A'}{B'} \tag{100}$$

Another interesting generalization we might consider is the notion of selecting an arbitrary Null Aethus, say as the Aethus B. Such turns the division formula into the following generalization.

$$\frac{B}{A} = \frac{B - A}{\not\Psi} \tag{101}$$

Such gives us an intriguing proposed identity of Aethic division.

$$\frac{B/A}{B - A} = \not\Psi^{-1} \tag{102}$$

As such, the premise here is that if we choose to allow reciprocal Aethae within the set of weighted Aethae, then under that premise we may define the new closure for the set of weighted Aethae accordingly. If we do not want to allow reciprocal Aethae in the set of weighted Aethae on account of their strange property of backtracking along the Aethic tree, then we might simply think to suggest either including them in an extended set of the weighted Aethae, or perhaps we might assert that they cannot exist altogether. Regarding my immediate intuition on the topic, however, I suspect that the metaphysics underlying all of this ought to be circular in some way, more akin to modular arithmetic than the linearity found in integer subtraction. The reason I say this is because Aethic reasoning parallels Eastern philosophy quite naturally up until the point of this question, at which point Eastern philosophy goes on to imply some form of reincarnation at the far edge of an Aethic worldline while Aethic reasoning is still scratching its metaphorical head. In the very least, the mere existence of Aethic reasoning serves as a testament of validation to the core of Eastern teachings, so Occam's razor suggests that it ought to in some way or another be anticipating future stages of Aethic reasoning as well. What those stages are, however, is an open question which we have to be quite careful about prematurely putting to mathematics, as represents the brunt of my cautioning from earlier.

4.4.5 Conclusion for the Discussion of the Set of Weighted Aethae as a Commutative Ring

Such represents the far extent of the current discussion on weighted Aethae and their dynamics, so for the remainder of the paper we will return comfortably back to less speculative territory in our pursuit of the third postulate of the Aethus. Altogether, we might think to regard the set of weighted Aethae as a commutative ring, and leave the question of any additional field structure for the next round of insights on the topic. If there is ontology to be had here, we will know it when we see it, because it is going to have to be Earth-shattering. Anything less than remarkable is likely a mathematical construct, and not directly ontological in nature.

5 Manifestation of the Aethus in Practice

5.1 Three Definitions for the Aethus

Let us put all the aforementioned definitions of the Aethus together into one expansive definition.

Three Definitions of the Aethus		
Mathematical Definition	**Practical Definition**	**Epistemological Definition**
The Aethus can be defined as a collection of stated-Aethic attributes, where Aethic attributes are classes of descriptive elements of reality, and stated-Aethic attributes are the objects of those classes. It is like a "weighted set", but with certain restrictions on allowed contained information. A better precise definition: *where a "static Aethus" is defined as a set of stated-attributes, an Aethus is an equivalence class of static Aethae.*	Every person and animal has an Aethus. Every conscious being has an Aethus. Even every describable system, real or fictional, has/corresponds to an Aethus. *Generally, we might suppose that whenever a describable, (either epistemically or ontologically) phenomenon of sensory intake exists, it intrinsically implies a corresponding Aethus to that intake.* To each Aethus, then, there is a 1-to-1 correspondence to a particular designated reality/possible world.	Where the distinction between objectivism and relativism is usually considered to be a dichotomy, in Aethic reasoning it is actually a trichotomy. Here are the layers: 1. Sentient/Opinionated Knowledge: – The subjective interpretation of one's own information. 2. Received/Accessible Knowledge: – *The direct, unalterable, and technically imperceptible*[31] *intake itself of information.* – *(This is the Aethus).* 3. Objective Truths: – That information which cannot be accessed but exists anyway in some form.

Table 16: A representation of the three major applicative Aethus definitions.

[31] This imperceptibility of Aethic knowledge is somewhat analogous to Platonic ideals. For instance, we can use the number three, or draw a triangle, but in neither of these cases are the ideal of "three" or "triangle" actually directly presented physically. The same is true for human perceptions of our own Aethic information, where we are consistently making use of this information, but only in one direction, such that we can read it but never write to it, to use terms from computer science. Of course we can make decisions, (assuming free will), which influences future Aethic gains, but

We might suppose that there is a kind of *Aethic equivalence principle*, being simply that these three definitions ought to be referring to the same single concept: the Aethus itself.

5.2 Refining Aethic Reasoning From a Counter-Cartesian Frame

5.2.1 Ontological Aethae As White Noise

In case there is any confusion among our readers for why or how the Aethus, itself an inherently mathematical object, tends to situate itself with one's conscious reality, and whether such a thing is compatible with Occam's razor, consider the following proposition: because of our assertion that an ontological Aethus is merely a manifestation of an agent's sensory intake, by the rules of Aethic reasoning, the very state of some form of sensory intake existing implies the existence of a corresponding Aethus. It is not some additional, external, causal, or otherwise forced property — simply an ontological manifestation of the statement already posited.

So, naturally, it follows from this that rooting the ontology of the Aethus to any thing other than the direct sensory intake of oneself would be something of a fallacy, because it would include arbitrary intermediate layers between the actual ontological root of things and one's own interpretation of said ontology. Specifically, we originally brought about the concept of the Aethus by separating a human's subjective knowledge into opinionated and generally accessible forms, so through this, any state of defining the Aethus of a person as based on anything outside of the direct, root level sensory intake, would be contradicting this definition of it as being representative of the accessible knowledge. It would make room for error at best, and at worst it would be defining the entirely wrong thing. So, for example, supposing that the Aethus sprouts from the ontological process of the mind or any sort of thought-interpretation of reality is itself not synonymous with the generative concept of the Aethus. An interesting consequence of this definition of the physical rooting of the Aethus, by the way, is that it is very intertwined with the Aethic principle of accidentalism, and the first Aethic postulate itself, in which the basis of reality itself is strictly centered on whatever a person is conceptually receiving from it, with any ontology hiding behind or outside of that being respectively not meaningful. (For instance, that notion that whether we are in a simulation or not, in not being derivable from our own accessible information, is therefore not in possession of a single or definite state).

Lastly for this section, consider the notion of what it would be like to actually write down a static Aethus of one's own Aethus on paper. For an Aethus which we mathematically construct entirely from scratch, starting with a blank static Aethus and moving from there, we might suppose that, due to our own constructive limitations, such an Aethus will hold some semblance or another of readability of its properties, (for example, as might be seen through human-generated computer code, which is algorithmically followable). However, when we consider naturally generated Aethae, such as one's own Aethus, it follows that the process is rather more like the opposite, starting from some layer of utmost complexity rather than a blank static Aethus, which we can, in our mathematical manipulation, create slight tweaks to, while all the while staying consistent to this pre-build general ontological blueprint that is one's Aethus. That is, there is so much complexity in the mix, that the process of actually returning to a blank Aethus from this is essentially impossible in a step-by-step manner. This therefore implies that we will always stay at a low number of degrees of separation, (regarding algorithmically followable attributes), from the actual ontological Aethus when doing our manipulation, just due to the limitations of the human mind.

This being said, the proposition of actually writing down one's ontologically present static Aethus would work as follows: it would essentially look like white noise if we were to write down all attributes and their values on paper or in a database. The reasoning for this follows from the notion that human-defined attributes are always only approximates of ontology, and approximates which become less and less accurate to higher degrees of specificity, just like the length of a fractal coastline becomes less accurate to the truthful answer with higher specificity in the unit of measurement. For instance, take something seemingly simple, like the diameter of the sun. In our mathematical framework, this is a simple and important parameter, however in the real world, there sort of is no such ontological thing. Rather, the surface of the sun is fluid and ever-changing, causing a direct measurement of distance from one side to the other to be somewhat arbitrary and inconsistent among its possibilities. As such, we can note that if we start building a static Aethus from one's own Aethus, then even if we begin to choose algorithmically manageable attributes first to write down, (such as the diameter

we cannot actually manipulate this information directly or even directly comprehend of it. Only whatever mental falloff that goes from it into our minds is what we have to work with, making said mental states manipulable, but relatively dangerous for their according potential for misinterpretations (relative to the Aethic level).

of the sun), then each new attribute that we have to write to encompass all derivation in the Aethus becomes more and more difficult to write algorithmically while still capturing the needed ontology. As such, logically, we see that our probability of doing this correctly falls extremely quickly with each new attribute, such that the state of writing down the entire Aethus in an algorithmically-followable static Aethus becomes somewhat impossible. Consequently, now matter how one chooses to write down their Aethus in a static Aethus, it follows that they will essentially tend to be faced with a white-noise-like visual as the product.

As an example of this hypothetical transitionary process from an Aethus into one's own consciousness, refer to the following diagram.

Figure 3: A symbolic representation of the ontological chaotic randomness of a physical Aethus.

In effect, we hold as a fundamental principle of Aethic reasoning that any static Aethus of an ontological Aethus, upon being written down, is almost surely going to be manifested as white noise. For an epistemological Aethus, however, which is capable of also being generated for simpler cases, of course, this is not necessarily true. Just we have to remember that the very supposition of attempting to denote an ontological Aethus with a mathematical Aethus is not a process of fully depicting it, but rather depicting only the most surface-level details of it to whatever depth is achievable. Consider the following distinction, now.

Definition (Directional Dichotomy of Aethic Mathematical Expression)
Consider the two major procedures for defining a mathematical Aethus.

1. Empirical Declaration of an Aethus
    - This consists of asserting that a mathematical Aethus corresponds to a particular real-world Aethus, however without explicitly being able to know all the workings of the entire thing in the mathematics, naturally.
    - Such a process typically regards the selecting of a few attributes from the ontological Aethus to consider, and then performing Aethic analysis over those in a well-defined way.
    - Most of the philosophical applications of Aethic reasoning stem from this variety of declaration.
2. Epistemic Declaration of an Aethus
    - This consists of perfectly describing an Aethus down to its static Aethus through which we instantiate it mathematically, such that we have an awareness of all its properties on account of having defined them from scratch.

- This can be seen as a mathematical generalization of the practical tailoring which allowed us to define a mathematical Aethus in terms of an ontological Aethus in the first place. That is, once we have attained the base mathematical structure needed to depict the empirical Aethic properties, we might imaging generalizing them to a more basic mathematical space, being this basic declaration of an Aethus and such.

Through such a thing, we see clearly the dichotomy of how an Aethic may be declared, as well as some of the contextual and originating notions behind such things.

Importantly, we might think to refer to an empirically-declared Aethus as simply an **empirical Aethus**, whereas we might refer to an epistemically-declared Aethus as a **purely epistemic Aethus**. This is an intuitive yet crucially important distinction of Aethic metaphysics. Furthermore, we might think to further subcategorize empirical Aethae into first-person or third-person versions, on account of first-person versions needing to match only one's own known Aethic attributes in order to be an accurate fit, (even if such a fit is merely abstractly assumed in the mathematical formulation, which of course is necessary to depict such a thing mathematically in the first place).

- Epistemic Aethus
  - Purely Epistemic Aethus

    Def: An Aethus which is mathematically declared purely in the space of constructible static Aethae, without having an abstract assumed correlation to a particular empirical Aethus.
  - Empirical Aethus
    - First-Person Empirical Aethus

      Def: An Aethus which is abstractly assumed to exactly correspond to one's own metaphysically correspondent Aethus. Naturally this cannot be written down mathematically in full, but it can nonetheless be inferred to exist mathematically through abstract means.
    - Third-Person Empirical Aethus

      Def: An empirical Aethus which is not particularly a first-person empirical Aethus. On account of this, it will nonetheless share a substantial last common parent Aethus with one's own Aethus, all while either holding separate additional attributes, or perhaps being taken to hold blanks in place of certain instances of one's own attributes, (this notion is what we might perceive as said third-person occupying one's own "possible world", however we see with Aethic reasoning that the limits of distinction on such a boundary are fundamentally arbitrary anyway). This is the model of empirically declared Aethus that one might use to depict the Aethus of another person, or for that matter even an animal, process, or any instance of information.
- Ontological Aethus

  Def: An ontological Aethus does not exist in an epistemological context at all, and is merely the real-world physical thing which we are attempting to depict through Aethic reasoning.

We might now think to write down the theorem of inability to express empirical Aethae as a readable static Aethus.

Theorem 9 (Fundamental Theorem of Empirical Aethae)
It is almost surely impossible, as a physical agent, to express an empirical Aethus using a constructible or otherwise readable static Aethus, because the ability to design a framework which incorporates each new attribute drops exponentially quickly with each new added attribute to the framework. In the limit, we hold that Cartesian categorization-based epistemology breaks down entirely toward depicting the needed degrees of freedom of all involved causal logic, so we might consider replacing it with a form of Aethic logic where we assume that the mathematical Aethus which we manipulate has been fully constructed by whatever mechanism, all while explicitly acknowledging that we ourselves may never gaze upon the underlying dynamics directly. We may nonetheless perform Aethic reasoning over this empirical Aethus through its mathematical ideal, hence being the motivation of this paper.

A crucially important direct instance of the fundamental theorem of empirical Aethae coming into effect is within the philosophy of none other than machine learning.

5.3 Aethic Reasoning and the Philosophy of Machine Learning

5.3.1 Illustrating the Extra-Cartesian Model of Ontology

Note that this Aethic paradigm to ontology might become very helpful in disciplines like the philosophy of machine learning, because notions like word embedding themselves become quite natural under its scope. Consider, for instance, the issue of explaining double descent in machine learning. In double descent [21], we see that error heightens as we originally increase the number of parameters in our model, before sharply falling again once we reach a certain threshold. We might illustrate a possible explanation for why this happens through the use of an analogous thought experiment about the characterization of humans. Specifically, we might ask the simply question of *how does one, to philosophical accuracy, describe a person like Wolfgang Amadeus Mozart?*

Consider how I would describe Mozart to my friend who has never heard of him. "He is artistic." I might say. "He is profound but also somewhat childlike." I can continue. "He embodies leadership while also being an outcast." With the use of such words, I have taken the otherwise vast array of possible configurations of character that Mozart could have had, and I have compressed it into a much clearer picture. Looking more deeply at what information was passed during this linguistic exchange, we might also ponder over the deep myriad of implications that each word I said carried. Take the word 'artistic,' for instance. It evokes a certain feeling when pondered as a concept, does it not? How on Earth could one pass any semblance of such nuance to a computer in place of a human, such that it could do operations over Mozart's dataset just like a human might do upon thinking about Mozart?

If we begin at the most basic level of information – the bit – we swiftly begin to see a disruptive, if not mildly irritating pattern: every time we add a bit to identifying Mozart, we lose just a little bit of our pinpoint accuracy. Consider the following example: let us set up a series of dichotomies which we will sort Mozart into, as a kind of questionnaire. But we have to pick one, as selecting a middle ground would add more bits. One word we used was artistic, so perhaps we define the dichotomy of "artistic vs. calculating." Already one might notice some of the trouble ensuing: is calculating truly the logical complement of artistic? Sure, it might be an antonym under some regards, but by assuming that calculating is the antonym of artistic, we also now imply a stricter definition of artistic in the intuitive sense. 'If artistic and not calculating' is just a bit more specific a description than 'if artistic' alone. This was not intended – as all we did was declare a binary – and yet here we are. Nevertheless, however, we might suppose we can sort Mozart into artistic anyway, as that was the term we used after all. Next, we might consider another dichotomy. Perhaps we select the "profound-to-boring" dichotomy, and sort him into 'profound'. And then we might do a "leader-to-follower" dichotomy, and sort him into 'leader.'

But the word 'leader' carries a good deal of other implications, and those are implications that Mozart plainly does not follow. No, he does not govern a state or city, and no he does not give grandiose speeches to uneasy friends, Romans, and countrymen. The point of the matter is that the more dichotomies we instate in our attempt to describe Mozart's persona in data, and the more inaccuracies creep in. Eventually, then, we get to a state where we are hardly describing Mozart at all – in the very least regarding our ability to reconstruct him given the data. We might even attempt to add more resolution to each dichotomy itself, perhaps giving them four bits to a dichotomy, that way we have a scale of one to sixteen regarding Mozart's embodiment of a particular trait. But that creeping loss of accuracy, even if slightly slowed, is still very much present all the same.

Everything changes once we begin to add more data – or rather much more data. We see that going from five dichotomies to ten to twenty yields a dropping correlation between our set of dichotomies and the physical Mozart, (due to the issues just stated), but once we have amassed huge amounts of data, the pattern reverses entirely. Suppose we have now entered Mozart's value in eight thousand different dichotomies. As we have demonstrated, any group of a handful of these dichotomies will suffice a deeply poor match to Mozart's persona, (resultantly holding a low score of similarity if such a thing could be measured), so we have literally composed this large dataset of dichotomies from broken and mismatched units. And yet – strangely enough – a new phenomenon takes over at this scale: *the probability of ever coincidentally reentering our same parameters again becomes almost surely zero.* That is, in the set of all bits we could have entered into the dataset, the probability mass of the particular alignment we have proceeded with is next to nothing. This is a simple property of the exponentially decreasing probability of selecting a particular binary sequence as the number of digits increases. But the property of intrigue here is not this directly.

Consider the act of attempting to log data about a person, A, (in our case Mozart), by answering the questionnaire with the vector A_Q. Then consider the act of logging another person, B, in the

dataset by using our same dichotomy-based-questionnaire and entering B_Q as an attempted match for that person. The first property we know is that if $A = B$, (meaning that B is also describing Mozart), and yet still for two independently answered questionnaires, we have that the probability of their being equal in all responses is unlikely on the order of quantum fluctuations for a large enough questionnaire.

$$\mathrm{P}(B_Q = A_Q \mid B = A) \ll 1 \tag{103}$$

The interesting case, however, happens when B is not equal to A, (or in other words, that B is describing a separate physical person). Interestingly, we now have that even though the probability of ever attaining A_Q again is already extremely low, it is now even lower.

$$\mathrm{P}(B_Q = A_Q \mid B \neq A) \ll \mathrm{P}(B_Q = A_Q \mid B = A) \ll 1 \tag{104}$$

In fact, we can conjecture that for any set, S of physical people, real or fictional, of cardinality on the order of say 10^{18} or less, and we have that the probability of any of their B_Q vectors equaling A_Q is far, far lower than the probability of an equal B to A doing so. We might write this with the following equivalent statement, (through Bayes' theorem).

$$\mathrm{P}\big(B \neq A \mid B_Q = A_Q, (A, B) \in S^2\big) \ll 1 \tag{105}$$

What we then get to argue from this is that A_Q sufficiently "captures" the essence of A – so in this case captures the essence of Mozart to any degree requested of it. It is as if the degrees of freedom needed to describe Mozart himself have been written. Intriguingly, though, such a correspondence has not been written plainly itself, but rather is somehow abstractly contained in all the mess of data which instances of the questionnaire output for one person versus another. Through this mechanism, then – being that it is merely vastly more unlikely for A_Q to depict anyone other than Mozart than it already is for it to be exactly instantiated in the first place – we see something of a convenient parallel between the intuition of empirically-declared Aethae and the mysterious non-expressible degrees of freedom present in A_Q. We might refer to these as *ghost degrees of freedom* of sorts, and we might further suggest that an empirically-declared Aethus can be given to depict them. At least in the philosophical sense, rather than having to refer to the "set of ghost degrees of freedom," with the connotation of sets being rather questionable here, we might simply refer to the "empirical Aethus of ghost degrees of freedom", with the Aethus already being designed to dynamically handle such information.

So, truly what happens when we fit a huge amount of data is the following: *every individual response-parameter holds a substantial amount of error with regard to depicting its assigned person, to the level where it blatantly contradicts them – and yet still we have that when enough data is compiled about said person, it becomes so vastly unlikely that any other perceivable person would result in this exact response vector by comparison, that we are then forced to conclude that the response vector matches the person anyway.* This is in major disagreement with the held ideas of Cartesian categorization, because for this to be the case means we will have built a logical structure out of conflicting axioms, only to have it still remain meaningful. The issue, then, is not that the structure is a logical contradiction at all, but that it would be non-ideal to express it with any kind of Cartesian model of ontology. Instead, we might choose to depict it with an empirically declared Aethus. This leverages the fundamental mathematical structure of the Aethus for an application not entirely based on human ontology, but that makes that mathematical structure no less useful of course.

To quickly describe what replaces the Cartesian model of ontology for cases such as large language model embeddings, the basic idea is just what was described: *ontological depiction is as good as that which would be more improbable to reach from a distinct source than would be improbable to reach from the present source.* Even though this kind of mindset contrasts deeply with our major axiomatic frameworks of ontology, is it still not difficult to notice its agreement with biology and other notions of complexity in the universe. Perhaps then, from this perspective, we may think to reinterpret all the world's ontology – if only as an additive alternative rather than a substitutive one.

5.3.2 A Linguistic Ideal as an Ontological Aethus

Let us quickly form some terminology for use in this section. To begin with, there is a *semantic object*, which corresponds to a relevant linguistic token, and then there is a *semantic ideal*, which is merely the abstract Platonic ideal to that semantic object, such that it is given to hold all the abstract contextual properties of it. In effect, then, the limit of what a machine learning model produces for a

particular token embedding as the parameter complexity goes to infinity can be considered to at least epistemically "capture" the abstract degrees of freedom of the full semantic ideal in its procedural applications, while the semantic ideal itself can be considered to be endowed with all such perfectly accurate contextual meaning automatically. For the word "apple", then, its semantic ideal is merely exactly what abstract meaning the large language model seeks to capture about it, in effect rising to the ability of being able to perfectly apply its connotation in any setting.

Explicitly speaking, now, the main idea of using Aethic reasoning in the philosophy of machine learning is the following: *the embedding of a linguistic token, such as the word "tree" for example, is itself in direct association with the abstract Aethus which corresponds to that semantic ideal of that linguistic token, with the vector parameters of the embedding representing the states of a static Aethus with unknowable attributes.* Specifically, the very notion of such a linguistic token abiding by all the needed properties and transformations associating with the abstract semantic ideal which it denotes shows to derivable verification that it indeed represents a well-defined static Aethus to whatever ontological Aethus associates with it. The tricky part, however, is that we cannot know what the actual corresponding attributes denote. This is not even a question of finding what they are under the surface, as even that feigns the Cartesian fallacy of ontology. Our best supposition of viewing this, then, is by essentially viewing the fundamental theorem of empirical Aethae itself from the opposite standpoint. Just as we argued that it is almost surely impossible to physically express the static Aethus to an ontological Aethus without resulting in comprehensively untraceable white noise, we might then picture the embedding of a linguistic token as a direct example of just such an event. As such, we see that the abstract linkage between that static Aethus and the ontological Aethus which it depicts is still fully intact, so we need only to view the token embedding itself from the lens of the fundamental principle of empirical Aethae, and automatically we have an abstract implication of a corresponding ontological Aethus to that particular token embedding. Naturally enough, we can express the same semantic ideal with a myriad of token embeddings for a myriad of different models, but all the while we know that we are pointing to the same semantic ideal, at least on the limit of the model size.

As such, the philosophical claim is simple: *just as we might denote the embedding ideal as the token embedding vector itself, we might then express the abstract ideal of the semantic object in question with the third-person epistemic Aethus which associates with such a token and embedding.* The key takeaway here is that in all the immediate cascading effects of pure mathematics in its descriptive power of phenomena which are inaccessible from a physically computable standpoint, and still we cannot even express the abstract ideal which corresponds to the linguistic token without employing an Aethus for the task. Take a set, for instance, which by simply writing a recursive definition we know to be able to span literal infinities in the abstract universe. Even with all its powers of induction, however, let us argue now that *a set itself, as an object, cannot be physically made to express an abstract ideal in a well-defined manner.* The supposition behind this is that a set, in being at the end of the day merely a collection, lacks the abstract fluidity to accomplish such a designation. The Aethus, then, was specifically designed to fill in the abstract gaps which a set might be considered to run into upon attempting to encode the cascading effects which intuitively propagate at the scale of extra-Cartesian ontology. This extra "degree of freedom of fluidity" of sorts for the Aethus associates with its ability to utterly rearrange the physical states of a static Aethus which defines it at a moment's notice, while still pointing to the same abstract object. In effect, the hope is that this philosophical flux of sorts, being a property decidedly lacked by a set, thereby allows a mathematical Aethus to chameleon into the role of any ontological Aethus on a whim. We regard this property as almost like an extra condition beyond cardinality, where such a cascading fluidity, in the shoes of an Aethus, essentially ranks a natural number at degree zero, a set at degree one, and perhaps an Aethus at degree two, (with the corresponding principle then being that abstract ideals may only be described with such a degree two object). Whether there is a degree three, or if such an intuitively derived scale is even well-defined in the first place is quite speculative. However, it at least serves as something to ponder over for now.

The conclusion with all of this, then, is that the semantic ideal *is* an ontological Aethus, and therefore our most general mathematical conception of it *is* a third-person empirical Aethus. An Aethus itself, then, is merely that mathematical structure which makes such ideals denotable, with the ontological counterpart associating accordingly.

5.3.3 Embedding Aggregation as a Direct Instance of an Agreeing Superposition

An intriguing property of aggregating token embeddings is that we might consider such an output as precisely coinciding with the taking of an agreeing superposition over the abstract Aethae which correspond to said embeddings. Notice, then, the stark contrast between how an agreeing superposition is to be taken over the Aethae which correspond to highly complex embedding models as opposed to the Aethae which might correspond to a basic model of three or four parameters, (with the difference presumably deriving from double descent). If we wish to take the agreeing superposition of a model defined with vector $\langle 1.0, 2.0, 3.0 \rangle$ against a model defined with vector $\langle 2.0, 3.0, 1.0 \rangle$, then we will note that simply taking the average of the two vectors is insufficient for such an agreeing superposition, because it fails to derive the original two vectors again. As such, the intuition is that we would need six degrees of freedom to exhaustively encode such an agreeing superposition, or in general we would need $2n$ for a model of size n.

However, of course, we see that once we enter the regime of double descent, the vector average of some number of embeddings is indeed sufficient to capture their agreeing superposition exhaustively. This is an interesting phenomenon to take note of, and we might attempt to explain it by simply attributing the change to the extra-Cartesian role that the vector parameters themselves go on to play. As we saw with the earlier derivation, what was once more axiomatic becomes merely predictive at such scales of parameters, so in the least this is an interesting phenomenon to take note of.

5.4 Narrative Illustrations of the Ontology of Time

We can gain needed intuitions about the ontology of time in Aethic reasoning by using a few narrative-adjacent examples. Let us undergo this now.

5.4.1 Example in a Parking Lot

For an example of the Aethic phenomena operating in one's daily life, consider a parking lot in which your friend has parked their car. If you have your back turned to the parking lot, then relative to your Aethus, your friend's car is in Aethic superposition over being parked in every single spot in their entire lot, because you are unaware of which one they might have parked in. In addition to this, they are also in Aethic superposition of having not arrived at the lot at all due to whatever reasons may have held them up. (Notice that both superpositions are specifically disagreeing superpositions, as we will be able to derive with the coming third postulate).

As a rebuttal to this claim, you might argue that you can disprove this by simply turning around and seeing the parking lot with no superposition therein whatsoever. However, the fallacy here, at least according to the Aethic mindset, is that the very act of turning and looking at the parking lot performs centric unfolding, which in the process transits oneself to a new Aethus. As such, even if at this point you clearly see where your friend has parked, and nonetheless your friend's car is still in superposition at this very moment relative to your Aethus of before you looked at the parking lot, and relative to your Aethus of right now, your friend was always conveniently at the spot they are now parked in. This is so due to the underlying nature of disagreeing superposition, where such transformations toward child Aethae being always in place are fully plausible. However, with agreeing superpositions, note, given that their generating information will never be uncovered anyway, it follows that they will always stay in just such the state they were originally presented relative to all future Aethae of the observer.

Lastly, let us examine the concept of imagination and prediction. Eerily, this seems to be in part a human construct, at least when it regards the events unfolding behind closed doors, so to speak. In the prior thought experiment, when you were not watching the parking lot, your state of imagining what might be happening in the parking lot is actually not technically part of your own reality, because it contains extra hypothetical information that your Aethus does not have access to. Relative to your actual reality of that moment, the parking lot is in a strange, more raw state of existence that is a disagreeing superposition. Somewhat frustratingly perhaps, you can never see what such a thing looks like – not that it has a *look* in the first place – however the major point is that every time a person imagines what is happening elsewhere in the world, they are actually not picturing their own reality and or Aethus, and if anything they may be picturing an invalid Aethus due to a lack of rigorous examination with the postulates[32]. By the first postulate of the Aethus alone, due to your pictured

[32]This being said, we already know intuitively that the human brain is incapable of picturing a logical contradiction in its ontological lens, so a further question of intrigue might be to ponder over whether humans are capable of dreaming

reality about the specific location of your friend behind your back not corresponding to your Aethus, it is therefore *not real* in the most blatant sense of the word. This may very well be the single most jarring consequence of Aethic reasoning.

To be clear, this is not saying that your friend's reality is no longer real, but instead that the particular attribution which has them at an objective location is not real. There must be an actual real situation at play, of course, and this true situation is simply one in which they are in Aethic superposition relative to your Aethus at the moment.

5.4.2 An Example with a Medieval Battle

Consider the Battle of Brémule [22], fought in the high middle ages between the French and the English. As of the writing of this, not many people have actually heard of the Battle of Brémule, and as a consequence of that, are unsure of who actually won the battle, yourself potentially included. If you are knowledgeable of trivia to the extent of knowing this, then, well, first of all congratulations, but for this thought experiment you can simply substitute the Battle of Brémule in particular for some other hypothetical battle of several centuries ago which you are unaware of the outcome to. Now, considering how you are unaware of the Battle of Brémule at this moment, and considering how you have no means of accessing this information, (unless there is some kind of extra element to metaphysics which allows you to know this – which is definitely possible, just outside the more mathematical headspace of the Aethic mindset itself), it follows that the outcome of the Battle of Brémule is in fact not present in your Aethus. As such, when I tell you who won the fight in the next paragraph, centric unfolding demands that you will in fact see a random answer. Whether it is a 50-50 chance is a bit more complicated, but by Bayesian rules we have more or less selected a random battle from French-English medieval conflicts, so it will turn out more or less with whatever relative frequency each had of defeating the other. Considering how neither ever conquered the other, we may reasonably suppose that this is close to 50-50. The idea, then, is that since this Boolean attribute is registered as blank within your Aethus, it follows that upon selecting a random value for it on the next paragraph, your Aethus is about to physically move to a new reality where a conflict almost a thousand years ago falls into place. Until then, it will be blank, with all possibilities unfolding and both sides winning at once in Aethic superposition, (which will be further elaborated upon when we discuss how to determine Aethic superpositions).

And the winners of the Battle of Brémule, lo and behold, were the English! Just now, because you have gained this information in your Aethus, we see that only now do you join a reality in which the English won the Battle of Brémule. Classically, we might expect that the English have always won the Battle of Brémule as a kind of hidden-variable in the universe, and you have simply uncovered it by reading this. However, in the Aethic mindset, the result is far more peculiar, instead arguing that only now have you made this information real relative to yourself. That is not to say that epistemological solipsism is in place, but instead merely that your Aethus has moved to the location of seeing this, just as anyone else's Aethae might do. Crucially, if you somehow found a mechanism of time travel where you went back to your consciousness of a few moments ago when you were reading the last paragraph, and, sure enough, the dice would be rerolled, and the French would now have a chance of winning again relative to your Aethus of time travel – even though you know that not to be the case in your current reality. The battle was over with hundreds of years ago, and I wrote this very paragraph about it in your past, and yet still, relative to your Aethus of just before you read the current paragraph, the battle could have gone either way. Now, however, in your current Aethus, the English have always won the Battle of Brémule, and to this Aethus no superposition was ever present at all. It is the Aethus, remember, which tells us such things, and not the flow of time. The classical notion of time travel to one's own experience in the past, as seen in countless movies, books, and video games, becomes somewhat more complex and arbitrary with respect to this more basic system. In the classical version, one goes back to that past time, but meticulously crops out all attributes which occurred after the landing time, and also meticulously holds all attributes which occurred before the landing time in place. Like the absolute value function, which is not analytic and not inherently fundamental. Instead it is quite a construct to do it this way, and it highlights how even concepts like time travel are now apparently being oversimplified greatly in their narrative interpretation. Perhaps this is a cautionary tale of sorts toward other areas in physics where the same phenomenon is still ongoing.

about invalid Aethae. Is such a thing possible? An interesting hypothetical to ponder, in the least.

5.4.3 Example Using Narrative Time Travel

Consider the following narrative thought experiment. The idea, simply put, is that our protagonist, who we will call "Zoe", has broken into the office of the antagonist, and needs only to type the correct password into his computer so as to expose his evil deeds to the world. Specifically, she has narrowed the password down to four possible options due to her prior sleuthing, but she only has one attempt to punch in the correct password before the alarm system goes off. However, there is indeed a catch, which is that Zoe has the rare science fiction ability to jump back in time to her own body by exactly one minute, so as to alter the course of history by just that little amount. Zoe's plan, then, is to use process of elimination to achieve the correct password, such that if she makes a wrong choice and the alarms blare, she will swiftly make a past jump and try again.

This is quite a simple thought experiment, and hopefully an intuitive one for its association with science fiction, so for that reason it serves as a great place to isolate some of the key differences between Aethic and classical results. Let us compare and contrast these now.

- **Classical Structure**
  - *What Zoe does is simply implement a process of elimination. She guesses a password amongst the four options, and then procedurally travels back in time to just before she entered it if it is incorrect. She uses process of elimination to eventually arrive at the correct one of the four. In the first attempt, she has a* $1/4$ *chance of correctness, in the second, (should she fail the first), she has a* $1/3$ *chance of correctness, followed by a* $1/2$ *for the third and a guarantee by the fourth, (since all other options will have been eliminated as possibilities).*
- **Aethic Structure**
  - *In Aethic reasoning, we posit that there is one key fallacy in the perceived ontology within this classical approach. To fix this, we can break the temporal ontology of an event into two parts, being its dimensional location and its Aethic time of inclusion. By the principle of centric unfolding, upon adding a new attribute to one's Aethus, one finds it to be selected perfectly randomly from its standing superposition. In Zoe's case, we can split her query into four main hyperblock coordinates, (thus consisting both of Aethic information and spacetime-locational information).*
  - We have A, before Zoe did anything, B, when she narrowed down the password to the four options by whatever means, and C_{pb}, when she selects the password p and checks its correctness with Boolean b.
  - If we specifically consider A to represent some time in the past[33] when the password was actually definitively set by the antagonist, then classically we might expect that this is the timecode at which the information of the password was added to the universe, be it accessible or not to anyone in particular.
  - However, in Aethic reasoning we see that such a supposition is ontologically baseless, (because it is formulated independently from any particular Aethus), and as such we need a new interpretation to gather the correct ontology.
  - The new idea works as follows: Zoe actually adds the instance of the correct password to her Aethus at C_{pb}, long after it is originally set at A. As such, we have A as containing the dimensional location of the password setting (in its spacetime coordinates), whereas C_{pb} actually contains Zoe's Aethic time of inclusion, (in its Aethic coordinate).

    Note that C_{pb} is not actually one Aethus, but rather the collection of Aethae which corresponds to each submitted password on Zoe's list, and then whether it is correct. As such, we might refer to it in this context as a particular one of these scenarios.
  - Conceptually speaking, we therefore have the following: if Zoe checks a particular password, such as "ILuvDoomsday" for example, and sees that it is incorrect, then it is at this moment and this moment alone when she learns that this is an incorrect option.

    As such, if she was to time travel back to before she learned such a thing, to the prior Aethus of B, then it follows that the information she learned at her C_{pb} is now once again

[33] Specifically, we can consider it to represent an Aethus of Zoe which predated B, then coupled with the spacetime coordinates of the computer as the password was originally set.

lost to her Aethus. As such, we see that the information is *refreshed*, ontologically speaking. Even if we conventionally suppose that Zoe carries her memories from the prior C_{pb}, we nonetheless see, Aethically speaking, that B as an Aethus is not in possession of such gathered information. It then follows that if Zoe types "ILuvDoomsday" again, there must be an equal chance of it being the correct answer as there was before she typed it in the previous try, (being a 1/4 chance), with the information of having eliminated it as an option now being rendered entirely immaterial.

This is a precise difference with the classical version, because we of course know that the probability would have to be zero on Zoe's second time around on account of the original elimination. Aethically speaking, however, this contradicts how centric unfolding operates, so we therefore have to conclude that all information, including information about which password was physically set in the past at A, must be reset when Zoe returns via time travel to the Aethus B.

- Classically, she can leverage all prior attempts for future attempts, but Aethically we have that the information was, in a sense, *generated for her Aethus* upon her learning about it, so should she travel back to before she gained that knowledge, she will inevitably see that the superposition will reinvigorate and the option of which potential reality of a correct password that she will land at is once again fully random.

  Therefore, relative to Zoe's Aethus, the actions of even the antagonist who set the password however long ago, at A, are in superposition until she makes the discovery of a correct password, at which point only then do the actions of the past antagonist materialize to the exact state which she observes.
- Simply put, if you travel back in time to your own body before you learned something, then that something's state is refreshed to just an extent as anything else might be.
- In this particular case, every time Zoe rewinds her time, she will always have a 1/4 chance of getting the correct password, with prior tries yielding no information on account of her having traveled back to before she gained such information through centric unfolding.

5.4.4 An Example with Colorblindness

Speaking personally here, I have deuteranomaly color blindness, which I have had since birth. This means that I cannot distinguish blue from purple, among other issues that humans normally do not undergo. Classically, the ontological explanatory background for this is simple: I was immediately in a universe where I had deuteranomaly from the moment I was born, (or perhaps when I was a fetus), regardless of whether I was aware of that or not. When my genes first aligned, it was set in place. When I was diagnosed as colorblind at age 4, I did indeed learn about this though, which, classically, means that I now became aware of the universe that I was in all along.

To make the Aethic argument now, let us consider some base informational landmarks. (It should also be noted that the following analysis may indeed turn out to be somewhat crude once our society learns more about neuroscience, so in that case merely consider it to be an illustrative example of how Aethic information manifests chronologically, rather than being an assessment of neurological structure in particular).

Age 3: I am already in possession of my qualia for what it is like to see color, however I am unaware of the descriptions of other humans for how they compare my qualia with their own.

Age 4: I am diagnosed as colorblind, hence asserting the corresponding relations between me and my fellow humans.

Age 10: I first learn about how, scientifically speaking, humans have three cone receptors, being red, green, and blue.

Let us also consider a few possible scenarios for the makeup of any Aethae in this system. Note that we might also consider scenarios beyond simply cone-based vision, as after all I only learned about such a thing at the Age 10 node, but nonetheless we can simplify the explanation by supposing we restrict it to only cone-based vision – and in any case we have that the arguments that we are about to make serve as valid child Aethae to the full spectrum of possibilities.

A: Humans typically have two cones.

B: Humans typically have three cones.

C: Humans typically have four cones.

X: I have two cones.

Y: I have three cones.

Z: I have four cones.

Now, to assemble this all. When I was three years old, (with the approximation in place that the stated-attribute of *all humans undergoing cone-based color vision* being in effect), we have that all of the above Aethae are equally possible, and as such are in superposition relative to such an Aethus of mine. Resultantly, I would have found myself in a universe where humans are in superposition[34] of usually having two, three, and four cones in their eyes at once. Also, I myself have two, three, and four cones, with whichever universe I am in out of the three meaning that such a cone configurations maps to my qualia accordingly. That is, because I know what my qualia of color vision is like, we have that if I have two cones, then that it what it feels like to have two cones. Then, even if I have three or four cones, that nonetheless resultantly becomes what it feels like to have those three or four cones, (at least relative to *that* Aethus). The qualia is fixed in the Aethus, with the cone configuration, out of being unknown, occupying a superposition[35].

The next node, then, is the Age 4 node, holding its corresponding Aethic updates. Upon my learning that I am colorblind at age 4, I have not really added definitive information about my cone-count to my Aethus, (out of still never gaining the corresponding derivational information about the cones), but rather simply how it compares to that of other humans. That is, if I had three fully functioning cones in a word where humans have four cones, then I would still be classified as colorblind in that system, even though actual humans have three cones and as such would make me *not* colorblind in their system. As such, in this case I get the following breakup.

$$(X + B)(X + C)(Y + C) \tag{106}$$

This is so, remember, where addition is an Aethic intersection, and multiplication is an Aethic union/-superposition. Put in terms of words, *either I have two cones and humans have three, I have two and they have four, or I have three and they have four.* As such, my three year old Aethus must be a parent Aethus to the above Aethus.

The intriguing notion to draw from this, then, is that in our particular universe, which I arrived at in this context at my Age 10 node, we have that humans have three cones – meaning that I would be perfectly non-colorblind in the scenario $(Y + C)$ relative to us, even though I was also present in such a universe at age 3. Drawing away from only the mathematical notation here, the suggested intuition to build about this is that *if I time traveled back to the age of 3 and then centric unfolded again, I could very well end up in a universe where humans have four cones and I have three, all while maintaining my base qualia*[36] *which I hold in this universe.* As such, Aethically speaking, I[37] have the "power" to entirely rewrite the history and experiences of every human on the planet by doing something as simple as learning.

The issue with stating such a thing explicitly is that it runs the risk of being interpreted as a form of solipsism. It is crucial at this point, then, to explain why this is not so, and is a mischaracterization of the ontology. Plainly put, the act of oneself updating the entire human race's information relative to themselves is merely a notion of one's own location in the hyperblock universe, rather than being some kind of characterization of one's inherent influence over humans in general. As an analogy of another locational sort, consider a college student who lives in a dormitory where each room holds four roommates. If said student has the option of picking a room on the first floor versus the second floor, and then meets their year-long roommates accordingly, then we do not say that our student *materializes their roommates around them*, but rather that they merely moved to a location where one set of roommates are present, hence leaving the other set of roommates in the other possible

[34] A disagreeing superposition, to be exact, as can be seen with the third postulate of the Aethus.

[35] Due to the second postulate, specifically.

[36] Note that in making this claim, we are indeed making the assumption that John Locke is correct in his interpretation of Molyneux's problem [23]. That is, if one sense is entirely insufficient information to imply another, then we have that the qualia of color vision alone is able to operate with many respective ontologies of color without contradiction. Hence we are allowed to make the particular Aethic argument that has been presented.

[37] And all of us individually by our own Aethae.

room accordingly. It is just the same with the particular version of the human race that one finds themselves surrounded with, Aethically speaking. Upon undergoing centric unfolding, oneself merely sorts into one particular universe where humans hold some properties, all while leaving the other humans perfectly intact in the other universe. And, of course, before taking this Aethic distinction in the first place, oneself finds that they are in both universes at once, (speaking in terms of those human-properties themselves, at least).

5.4.5 Time Travel Action Scene Example

For one other quick example of how time travel would naturally function Aethically, let us substitute Aethic time travel for a narrative example. If you will excuse the violence of the following thought experiment, imagine we create something of an Aethic time travel instance which occurs during a bank robbery. Suppose you walk into a bank, and while you are waiting in line, a bank robbery occurs. The robbers bust into the room, call out for the bank manager, a middle aged man, and then shoot him when he doesn't cooperate fast enough.

At this point, you use your abilities to rewind time and go back in time five minutes, to before the robbery occurs, and just before you walked into the bank. Now, as before, you walk into the bank. Let us now analyze the difference between classical time travel and Aethic time travel. Firstly, the classical approach. Here, the postulate of complete reality is assumed, with the past being solidified in all attributes, be them known or not, and the future being open to change[38]. Therefore, once you land five minutes in the past, it still follows that the robbers are on their way here, and it still follows that everybody in that bank will be the same people. Of course, you would say – they all were born prior to when you landed in the past, and so here they will stay.

Now, Aethically, we have to throw this postulate out the window for a substitute – being that your experienced events only unfold relative to your Aethus, and that alternate realities branch when you learn about them and then only. With this Aethic-rewind, now, you are going to revert back to your prior Aethus with no discrimination between past or future attributes to that Aethus being maintained. All we will suppose you take with you are your memories, as otherwise it would not be much of a time travel story at all. So, when you revert back to your prior Aethus of five minutes ago, the first thing you will notice is that when you walk into the bank, every person in line is an entirely different person than previously. And, on top of this, the bank robbers never show up in the first place. It's just a calm day at the bank. You even catch a glimpse of the manager, who is a thirty year old female. Flabbergasted, you leave the bank and go along with the rest of your day as usual.

So, what happened here? Let's start with the bank manager. In the old version, he was a middle aged man who was shot during a bank robbery. So why has he now been swapped out for a thirty year old female? Simply put, the explanation is this — by performing Aethic time travel, you reverted to your old Aethus, and underwent centric unfolding anew. This means you, in effect, rerolled those last five minutes. And because you only met that bank manager within those last five minutes, this time you happened to fall into a universe where he never existed in the first place. Now, when you randomly centrically unfolded the bank manager again with your prior Aethus, the new roll of the universe was a thirty year old female. I took the liberty, as the writer of this thought experiment, of picking her as a result, but generally it would be utterly random, and drawn from Bayesian statistics in the process. Furthermore, importantly, the bank robbery has not happened in the new reality. This is because bank robberies are quite uncommon, and you were not aware of any bank robberies one way or the other in your Aethus of five minutes ago, so therefore that was rerolled as well. No robbery this time.

Some of the attributes which you picked up during the original five minutes were, "*there are bank robbers here*," "*they were coming a little ways behind you when you first walked into the bank*," and "*these are the people in the bank*," etcetera. Upon the reroll, though, all of these attributes are ditched and rerolled, just as they were in the prior Aethus. Even though the "*the robbers were coming a little ways behind you when you first walked into the bank*" attribute applies to a circumstance of before the five minute window, nonetheless it was *gathered* by your Aethus during the window, and so therefore is one which must have been rerolled. The same is true of the people in the bank, such as the manager. They have full lives beforehand, but you simply travel to an alternate reality where they didn't exist in particular, and instead this new set of people did in their place. Why? Because you had no means of distinguishing between the two groups anyways just before you physically walked in the bank, and

[38] Or perhaps not in a strict determinism, but with the alternate realities idea of even the many-worlds interpretation, this is assumed to be so as a classic time travel postulate.

as such your Aethus gave you a randomly generated set of them once you could discriminate, (via simply looking at them).

6 Constructing the Third Postulate of the Aethus

6.1 Structuring the Outcome Cases of the Double-Slit Experiment Using an Aethus

Let us begin by familiarizing ourselves with the double-slit experiment. To summarize, we are to fire electrons, one by one, toward a plate with two slits, such that each electron which makes it through the slits is allowed to fall upon a back screen behind the experiment itself, leaving a mark to signify where it landed. We will then observe, given this setup, that the pattern of electrons will form a banded interference pattern, which is somewhat puzzling from a macroscopic perspective, where a single item is not allowed to interfere with itself in such a wavelike way. An especially unanticipated property of the experiment is that closing one of the slits while leaving the other open tends to, at least roughly, revert to a single concentrated bright spot behind the open slit, which then demonstrates that the feat of having both slits open at once implies some form of ability for the electron to pass through or at least attain information from both slits at once. This, of course, we know to be a very different outcome than anything in our macroscopic sphere of reality.

However, the most confusing aspect of the experiment is what happens if we place a detector over one of the slits, perhaps for the goal of identifying which slit the electrons went through for sure. The moment the detector is placed and the experiment commences, we see that the pattern on the back screen changes. Now it is no longer an interference pattern, but instead is a pattern of two bright spots, one behind each slit, as is more analogous to the particle manifestation of electrons. The paradox itself, then, is to ask *by what process or mechanism does this change come about?* Solving this will be a primary goal of Aethic reasoning in the coming section, as doing so in a well-defined manner will allow Aethic reasoning to have the empirical support to its claim of having solved the measurement problem.

The most important initial step toward achieving such a thing will be to explicitly depict these two experimental outcomes with the mathematical structure of the Aethus. To begin with, consider the four possible cases for what slit will be traversed by the photon, as well as their corresponding Aethae. Interestingly, we can indeed conclude that the Aethic structure is capable of handling all four cases, simply because all four cases can indeed be described with a given Aethus, as shown. Notice, crucially, that *Case 4* is to be depicted using a blank attribute, rather than physically adding both states to the Aethus, as is consistent with the superposition-contradiction contrast principle.

The key, now, is to structure both empirical outcomes, (being an interference pattern versus a two-clusters pattern), using these four Aethae which we have just devised. We might then argue that the way to do this is the following. Notice how we may take the Aethic superposition of entire Aethae, just as we may take it over Aethic attributes. By the Aethic union principle, we have than an Aethic superposition is one in the same with an Aethic union, so we denote such superpositions with unions accordingly. The procedural key to this, now, is that we may think to express new Aethae as the unions of our four fundamental cases, rather than referring to them alone.

What we have specifically done with the diagram is represent the particle-like result of the experiment using the Aethic union of the individual traversal cases, all while reserving the interference pattern for only the double-traversal case, being *Case 4*. As might hopefully be intuitive, each of *Case 2* and *Case 3* is equivalent with one slit being open, and the other closed, so for us to take their Aethic union merely overlays the corresponding intensity patterns, or rather probability density functions of the particles upon the back screen. The part that is a little more unexpected, perhaps, is the assertion that *the union of Case 2 and Case 3 is decidedly* ***not*** *Aethically equivalent to Case 4*. We might intuitively grasp such a principle by referring to centric unfolding. As an agent traverses a sequence of Aethae under centric unfolding, we might consider the degree of their knowledge about which slit a particular electron went through at different Aethic times during the experiment. As is hopefully straightforward, we might suppose that upon their being in the upper case shown in the diagram, our agent will now have the ability to centric unfold into any of the three Aethic cases shown in superposition. For example, perhaps they observe that the electron went through *Slit 1*, which would accordingly sort the agent into *Case 2*, or perhaps they find that it does not reach a slit at all, which would therefore sort them into *Case 1*. The intuitive supposition, then, is that the possible cases being unioned to attain one's own Aethus must match the set of scenarios which oneself

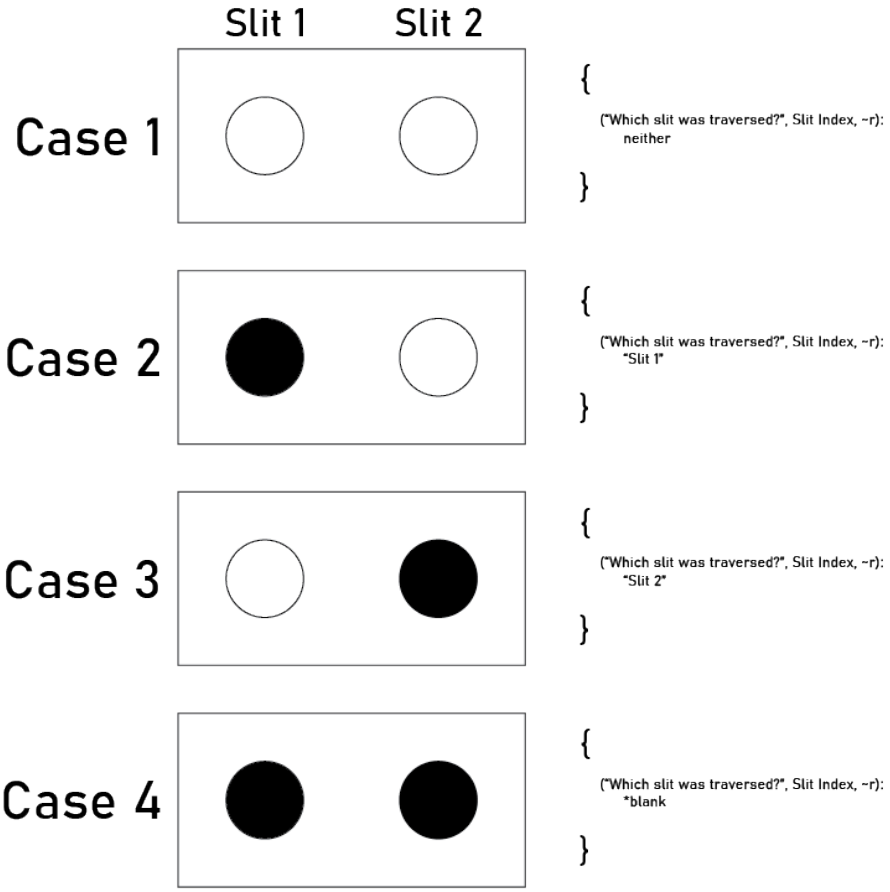


Figure 4: Here is a graphical representation of these four Aethic cases of slit traversal. Note that each case has a pictorial representation and an *equivalent 2-Aethus* representation. (Note that in *Case 4*, it would technically be more accurate for the *2-Aethus* to also include an attribute disallowing the "Which slit was traversed" attribute from holding *neither*, but this was excluded visually for the purposes of simplicity).

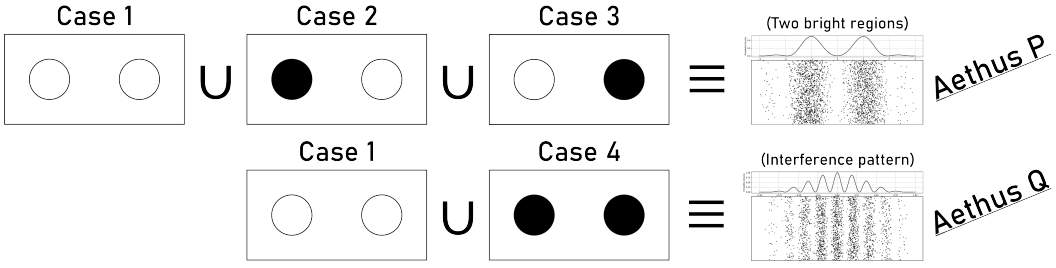


Figure 5: A representation of the mapping between the union of Aethic cases onto the corresponding realized system.
Let us refer to the top Aethus as *Aethus P*, and the bottom as *Aethus Q*. Note, crucially, that *Aethus P* is the case which empirically corresponds to the presence of detectors, whereas *Aethus Q* corresponds to the lack of detectors.

can reasonably centric unfold into. In the case of the interference pattern, however, we see that one loses the option of centric unfolding into *Case 2* or *Case 3*, because after all, such an outcome would contradict the sight of the interference pattern in the first place, because it assumes that a single-slit pattern would then be achieved.

Arguably the most intuitive explanation for why the union of *Case 2* and *Case 3* must be decidedly different than *Case 4* is the probabilistic explanation, which roots directly to the definition of probability in Aethic reasoning. We can start by quickly demonstrating how *Case 2* and *Case 3* are decidedly disjoint Aethae, because for the second slit to be disallowed traversal in *Case 2* is an Aethic contradiction with the second slit being traversed in *Case 3*, and for that matter the state of the first slit being disallowed traversal in *Case 3* directly contradicts the traversal of that first slit as seen in *Case 2*. As such, we see intuitively that the Aethic union of *Case 2* and *Case 3* is probabalistically equivalent to their being treated as disjoint events, with probability density functions being taken accordingly. Specifically, we know that for the union of two disjoint events, we add the probability density functions of a certain outcome happening in either of them, so what this tells us is that the probability density of the particle reaching a given point on the back screen should be given as the sum of the probability density functions which correspond to each slit fully by itself, with the other being given as effectively closed. The key here, then, is that the Aethic union of *Case 2* and *Case 3* ought to yield the same empirical result as the action of merely adding their classical probability density functions, because otherwise we would conflict with the definition of probability in Aethic reasoning on account of its clear implication into the functioning of disjoint unions. As such, we know automatically that whatever this union of *Case 2* and *Case 3* is to mean ontologically, empirically it is precisely equivalent to the outcome of the double-slit experiment with the detector running, because we know of course that such an empirical outcome is already equivalent to the action of summing the two probability density functions directly. From such a probabilistic perspective, then, the mere supposition that *Case 2* and *Case 3* union to *Case 4* is a direct Aethic contradiction against the empirical facts of the situation at hand, because it would imply that the interference pattern must be equivalent to the two clusters pattern. We know, of course, that such a thing would be an absurdity, so we immediately show through proof by contradiction that *Case 2* and *Case 3* must not union to *Case 4*, and instead union to the direct broad outcome of the detector being on. This is an important result in general, because it immediately demonstrates for us that the Aethic union of *Case 2* and *Case 3* is indeed an empirical match to the outcome of the detector-on scenario.

A more technical reason for why *Case 4* is not the Aethic union of *Case 2* and *Case 3*, however, lies in how *Case 2* and *Case 3* are implying certain attributes, via their attribute cascades, which are not consistent with *Case 4*. Consider how the Aethus of *Case 2* is also in possession of the attribute that *Slit 2* was not traversed, and also notice how *Case 3* is in possession of the attribute that *Slit 1* was not traversed. So, if unioning *Case 2* and *Case 3* was to result in *Case 4*, then by that same logic we might suppose that it should also be *Case 1*, because that would be implied through the lens of which slits are not traversed rather than which ones are. This highlights the major difference, then, between each of *Case 2* and *Case 3* as opposed to *Case 4*, which is that *they tell you just as much about which slit is not traversed as they do about which one is.* In effect, we might think to refer to our union case of *Case 2* and *Case 3* as the particle *going through one slit but not the other in both ways*, which in the least hopefully highlights the strict additional conditions apart from *Case 4*.

Please also note that one might think to push back against the supposition that the *2-Aethus* which we used to define *Case 4* is unique to it in the first place, because, after all, it showed the traversal attribute as physically blank, and we hold that union of *Case 2* and *Case 3* necessarily and satisfactorily holds such an attribute as physically blank as well. This may be so, but our supposition is the following: *we may conventionally suppose that the act of leaving said additional attributes like those which distinguish Aethus P and Aethus Q out from the original static Aethus of Case 4 is sufficient to declare that they must be blank, or otherwise not present by extension in that Aethus.* This is a simple enough claim, and the consequence to it is that our notion of having defined the union of *Case 2* and *Case 3* as already acquiring any lingering degrees of freedom of theirs beyond *Case 4* is itself sufficient to demonstrate that said additional degrees of freedom will only ever be blank in *Case 4*. Whether we are to declare our static-Aethus in question to generate an Aethus more like *Aethus P* or *Aethus Q* can be left up to any supplemental contextual information that the writer provides about the Aethus which they wish to describe. Hence the designation of the terms "agreeing superposition" versus "disagreeing superposition" for important nuances like this.

It is also important at this point to gather a foundational intuition behind what we see in *Case 4*, which is that empirically speaking, once *Case 4* occurs it should be physically impossible to assess

any information about the slit of traversal from then on. This is consistent with the base quantum interpretation of how the "which-path" information must now be permanently limited so as to enable the existence of *Case 4* in the first place. Such a thing holds empirically derived logical equivalence with the information of the path having not "leaked" into the environment. Such things are all well and good, but as we know they are merely qualitative assessments, and happen to lack a rigorous philosophically grounding. We will attempt to provide just such a grounding with the third postulate of the Aethus, but for now it is important to note that the information-leaking intuition can be encoded in Aethic language in the form of the following statement: *we cannot actually add the which-slit information to Case 4 in the practical sense, so what we end up seeing is that every child Aethus of it has to hold the slit of traversal attribute as blank in order to stay valid.* This is a very helpful initial intuition to take into our more complicated analyses, and we might even think to attach a custom terminology to it accordingly. In the case of *Case 4*, at least, the slit of traversal attribute turns out to be *permanently blank*, which simply means that we cannot state it in any child Aethus of *Case 4* which we wish to remain valid. The art of identifying the third postulate, then, will be the art of encoding such a consequence into the underlying empirical phenomena to the most precisely exhaustive applicability possible. Note that it is not itself a sufficient statement for the third postulate, however, because its implication points in the wrong direction: that is, our current empirical statement effectively says that *for Case 4 to be in effect means that the which-slit attribute is permanently blank*, but a more developed third postulate would have to instead say something of the form that *for the which-slit to be permanently blank means that Case 4 is to be in effect for some specified reason.*

The next very important thing to discuss, now, is the nature of which particular interference effects are allowed to occur given the different cases. The key to understand is that in the union of *Case 2* and *Case 3*, we have that no electrons are ever allowed to interact with themselves from the other slit, *because for them to traverse any one of the two slits already implies that they cannot traverse the other slit.* This is a tricky but fundamentally important aspect of disagreeing superpositions like this one, (where specifically the slit of traversal in disagreeing superposition in the union of *Case 2* and *Case 3*). Let us write this as a principle to further solidify its procedural importance.

Principle 25 (Principle of Disagreeing Superpositions)
For two systems to be in disagreeing superposition means that they cannot interact with one another, because for one to be "on" implies the other is "off." However, crucially, the two systems are still very much allowed to be in Aethic superposition in such a case, because we hold that Aethic superpositions present in the Aethic union direction, whereas for two systems to be Aethically disjoint is merely a supposition of the Aethic intersection direction. Due to this differing in degrees of freedom, we therefore have that superpositions are not epistemologically contingent on whether or not their constituent states are disjoint.

Such a principle demonstrates that disagreeing superpositions are very much allowed within the Aethic framework, so let us consider an important additional insight to such a thing, which regards the process of how an agent's Aethus picks up attributes in relation to the superposition. Specifically, notice how in the union of *Case 2* and *Case 3*, being the disagreeing superposition of the slit of traversal attribute, we have that such an attribute has to be physically blank, because such an Aethus truly has no mechanism of determining if one slit was traversed versus the other. As such, we still see something of a parallel between attribute blankness and Aethic superposition, because the stance of the attribute being physically blank is what disallows the reconciliation of which slit was traversed of the two states in disagreeing superposition. Upon our agent in question later learning of this, though, we might simply think to add the state of which slit was traversed to their Aethus, and in doing so will finally choose a single option out of either *Case 2* versus *Case 3*. The key to such a circumstance, then, is that *it would be inaccurate to truly say that the superposition collapsed upon measurement, being the state which empirically transferred the system from Case 4 to the union of Case 2 and Case 3. Rather than this, it only truly collapses when the agent physically attains the state to the attribute, thereby making the slit of traversal attribute state-decomposable. We see from this an important principle of Aethic reasoning, being where we can localize measurement versus collapse.*

Principle 26 (Aethic Sifting Principle)
We might suppose that quantum decoherence, in the absence of a direct state having yet been added to an agent's Aethic attribute in question, is still as genuine a form of Aethic superposition as agreeing superpositions, just we have that the interference effects have been limited due to the disjoint nature of states in disagreeing superposition.

In more quantum-oriented terms, we might argue that for two eigenstates to be in agreeing superposition with respect to one another implies that they are in quantum superposition within the same wavefunction, however when decoherence occurs, it is not that they are falling out of superposition at all, but are merely transitioning into a disagreeing superposition, which implies that the Born rule is called prior to the assembly of the superposition rather than after it. It is the act of measurement, then, which triggers the disagreeing superposition, and only ever the direct act of observation which gathers a single state out of this disagreeing superposition. Notice that agreeing superpositions cannot be reduced to child Aethae of single states, so therefore are distinct in at least this way.

In effect, this sifts all of the properties which the Copenhagen interpretation attributes to measurement to their correct positions in the measurement process versus the observation process. We argue that measurement is not sufficient to actually collapse a superposition, as that would violate the second postulate of the Aethus, so instead the supposition is that measurement merely transfers the states from what would otherwise be an agreeing superposition, (i.e. like quantum wavefunction), to a state of disagreeing superposition, (i.e. several wavefunctions are applied with the Born rule and then additively combined as probabilities into the Aethic superposition). Observation, then, is what physically collapses the superposition and draws a single eigenstate from the measurement basis of whatever weighted random wavefunction is selected from the disagreeing superposition. Ontologically, however, the supposition of the Copenhagen interpretation that the eigenstates had already fallen out of superposition prior to physical observation is effectively an objectivist fallacy.

Given these suppositions, then, we see that *for Case 4, where the slit of traversal is in agreeing superposition rather than disagreeing superposition, it follows that the electrons are allowed to interfere with themselves from the other slit, thus forming the interference pattern accordingly.* This is an important notion, which is that in the face of an agreeing superposition, we are to feed said allowed states into a quantum superposition, such that they interfere together as according to the mathematical rules of quantum mechanics such as the Schrödinger equation and the Born rule. As such, let us take a moment to partition the epistemological process between the base Aethus math and the empirical effects as follows.

- *Step Z*
  - This is the step by which the Aethus in question reads blank for the slit of traversal, and thus generates a corresponding Aethic superposition for it upon retrieval.

    This is merely an instance of the second postulate of the Aethus, such that it is tailored to this particular experimental circumstance. Note that we ought not to undersell the importance of this *Step Z* in establishing the full trio of the steps here listed, because, after all, *the originality and importance of the second postulate of the Aethus might be expressed through its supposition that any Aethic object will be in superposition upon being blank, thus taking the eigenstate-specific intuition of quantum superpositions, and generalizing it to an entire well-defined system of reasoning. That is, instead of only allowing physical observables to be placed in Aethic superposition upon their being blank, we can now place entire Aethae in superposition by the same fundamental rule. This allows us to explore all kinds of abstract iterative processes in this regard without ever implying more than one axiom.*
- *Step Y*
  - This is the step which allows the needed specification to imply that the resultant Aethic superposition is an agreeing superposition.
  - In the case of the double-slit experiment, for example, this step encodes which Aethic cases are to manifest as a function of the context, (i.e. detector running versus not).

    More generally, we might think this step to answer the question of why and how quantum decoherence occurs, given that we have already established Aethic reasoning to the current point via *Step X*.
  - Whichever axiom needs to be added to Aethic reasoning so as to accurately depict the phenomenon of *Step Y* will be, by definition, the statement of the third postulate of the Aethus itself.
- *Step X*

– This is the step which implies the corresponding quantum quantitative mathematics, for instance regarding the wavefunction, Born rule, and Schrödinger equation given the state of the agreeing superposition from *Step Y*.

  We might phrase this step simply as *that which implies a quantum superposition given an agreeing Aethic superposition of the relevant quantities*. Once a quantum superposition is attained in its full mathematical breadth, then of course the standard quantum mathematics can take it from there.

Notice that we have already derivationally formulated *Step Z* at this point, through our analysis of the second postulate of the Aethus. However, we still need to ontologically derive *Step Y* and *Step X* as well, as right now they are still merely empirical-epistemic statements. We are to suppose that the completed third postulate of the Aethus will be aimed at explaining *Step Y*, but note that *Step X* is not to be directly addressed in this paper, as instead we are reserving its solution for our followup paper on Active reasoning. In the meantime, then, it becomes our priority to derive *Step Y*, which remember is what tells us whether our particular setup of the double-slit experiment is to follow what we called *Aethus P*, (being the particle-like pattern), or instead *Aethus Q*, (being the interference pattern).

It is also important to note that in the event of our arriving at a successful rendition of the third postulate of the Aethus later in this paper, *it should follow that the state of an Aethic superposition as being agreeing or disagreeing should be entirely dependent upon the intrinsic structure of the Aethus in question given the third postulate*. That is, even though one can choose to epistemically declare an Aethus through attributes encoding the superposition type, a successful third postulate will be signified by its ability to accurately derive whether any given valid Aethic superposition is agreeing or disagreeing given only its Aethic context of attributes, and thus all without having to physically state which one it is. The dangerous flip-side to this, however, is that the act of arbitrarily declaring an Aethic superposition as agreeing versus disagreeing runs the risk of directly violating the third postulate of the Aethus, because after all it is to draw a connection between any Aethic setup and its corresponding output of superpositions. In general, as is a foundational approach all throughout mathematics, we may couple the third postulate of the Aethus with the superposition type of a system, and through that directly derive much about its context, and likewise we may couple the third postulate of the Aethus with the context, and through that achieve a decided result about the types of superpositions at play. The third postulate, in effect, then, is merely a glorified shortening mechanism of our possible degrees of freedom regarding which Aethae are or are not allowed to be valid.

To begin this ontological analysis, we need one more epistemic principle: when considering whether our Aethus is to map to *Aethus P* or *Aethus Q* as depending on the presence of detectors versus not, respectively, we might consider depicting the distinguishment using invalid Aethae rather than any other means. That is, consider the following statement.

$$\text{“When the detector is running, } \textit{Aethus P} \text{ will occur.”} \tag{107}$$

This is an empirically true statement, of course, but we might consider phrasing it in a more advantageous form.

$$\text{“It is an invalid Aethus for } \textit{Aethus Q} \text{ to occur when the detector is running.”} \tag{108}$$

What we have done here is simply rewrite the original statement in disjunctive normal form, so as to isolate where the invalid Aethus is given to occur, at least to the degree of logical equivalence with the empiricism. This takes advantage of the following logical identity.

$$a \rightarrow b \Leftrightarrow \neg\left(a \wedge \neg b\right) \tag{109}$$

In this case, a would be the state of the detector running, b would be the case of *Aethus P* occurring, and $\neg b$ would be the case of *Aethus Q* occurring instead.

This statement, then, is an empirical postulate, so our goal will be to translate it into a generally applicable postulate within the mathematical structure of the Aethus. Such will be our third postulate, and such will be our proposed solution to *Step Y*.

6.2 The Aethic Soccer Field Thought Experiment

Let us analyze what we may call the *Aethic soccer field thought experiment*. I originally thought of such a thing in late August of 2022 during a very transformative week for Aethic reasoning, (as

only a few days earlier, I had the epiphany which gave me the extrusion principle, being perhaps the greatest single flash of insight in my life so far), so I will describe it here for the same reason why I gathered it for myself: it brings a certain level of personal relevance to the quantum phenomenon, which is a core value behind Aethic reasoning. To contrast this, consider the supposition of first-order epistemic antirealism, where quantum effects operate only in fundamentally impersonal respects, with any tangible linkage being irrelevant. *As part of our counterargument to such a stance, what we need is a theory of quantum decoherence which is in direct compatibility with the space of tangible effects, such that any step of the process which is expressible without tangibility is taken as a violation of Occam's razor.* Such an insight as this is directly what led me to fall upon the thought experiment in the form in which it is presented. As such, let us proceed with said thought experiment now.

Consider the prospect of attempting to apply the double-slit experiment to the macroscopic world, so as to highlight any resulting properties of interest from a purely tangible perspective. That is, whatever phenomenon brings about decoherence on the quantum level should, by the same underlying principles, bring it about on the macroscopic scale if Occam's razor is to hold. So, instead of performing the double-slit experiment with electrons and two slits, let us perform the experiment with humans and two doors. If we can isolate exactly where the decoherence Aethically occurs, especially within the context of applicability to just such a thought experiment as this, and we will have found the root of the third postulate.

As such, let us imagine a soccer field which has been set up with a two-doored walled across its midline, and then a numbered wall on the far side of the field, as corresponds to the slits and back screen, respectively. Naturally, we know ahead of time what is to result from this experiment – most assuredly not an interference pattern, as that would violate the macroscopic axiom of the Heisenberg cut [1] – but this serves as only more reason to attempt to isolate the root of such a phenomenon. As such, we commence the experiment. For some quick context, we might suppose that the organizer of the experiment is a college freshman who wants to see the outcome, (as I myself was a college freshman in my first week when this thought experiment originally crossed my mind), and the involved participants are their friends from around campus. Suppose we refer to the organizing freshman in question as *Oliver*.

Given this, then, Oliver is to be sitting, blindfolded, on the bleachers, so that he is guaranteed to not be aware of the outcome of the experiment as it unfolds. At the end he will remove his blindfold, but for now he can only wait in his excitement to see the results. As for the friends themselves, they are to each be texted two numbers, the first being either *Door 1* or *Door 2* to traverse, and the second being a random angle to leave that door at, so as to walk to the back wall accordingly, (however we might think to do some backend trigonometry, and simply supply them with a numbered position along the back wall to stand at instead of an angle). With this setup being complete, Oliver gives the signal, and the experiment commences.

As each participant walks through a door, Oliver, of course, has no awareness of which one they will have picked. His Aethus will therefore register the door of traversal attribute for each participant as *blank*, however we know from the empiricism that this is to project to a disagreeing type superposition instead of an agreeing one, specifically due to the added influence of the third postulate, wherever it might say in particular. As discussed earlier, our goal at present can be isolated to the following: *we ought to find a theoretical derivation for the empirical axiom of that for Oliver to see an interference pattern of his friends amounts to an invalid Aethus.* To put it another way, the major benefit of using this thought experiment as our source for such a task is that we have one less degree of freedom to juggle, because the macroscopic axiom of being above the Heisenberg cut stands in for the detector-based dichotomy of decoherence versus coherence. Now all we have to do is explicitly derive the invalidity of Oliver's Aethus using the tools intuitively expressible to his setting, and that should be sufficient to gather the entire postulate due to generality. To be clear on these matters, we are imagining the Aethus in which Oliver removes the blindfold and sees the interference pattern of his friends, and will suppose that this is called an *Oliver's Aethus* by convention. The procedure, then, is to gather a well-defined mechanism within the Aethus structure which will best produce such a property of invalidity to Oliver's Aethus.

Our first attempt at the underlying mechanism might be a basic proof by contradiction of why such an initial scenario should be impossible. This is quite simple actually – all he needs to do is walk over to one of his friends, and ask five simple words.

$$\text{“Which door did you get?”} \tag{110}$$

The friend, naturally, will reply with one of the two doors, being either *Door 1* or *Door 2*, and

in that simple sentiment, Oliver will have added to his Aethus that said friend must have gone through a single door, and accordingly must be of the single-slit or particle manifestation, not the wavelike manifestation as the interference pattern demonstrates. As such, because the interference pattern implies that both doors were traversed in superposition, and because the friend's response[39] implies that they went through only one door, an Aethic contradiction is clearly reached, and the corresponding Aethus must be invalid.

The more nuanced element to this, however, is that truly the contradiction only directly occurs in the later Aethus. This means that while such a proof by contradiction is valid there, the principle of extrusion demands that the contradiction itself cannot directly backtrack to the older Aethus, as we might do in classical proofs by contradiction with only one universal Aethus. What we need, then, is an expression for why the past Aethus somehow "knows" what will happen in the future Aethus, all while staying true to the well-defined principles we have accumulated thus far in Aethic reasoning. This means that any kind of timelike expression for the cause of this should be out of the question, because that would combat the extrusion principle. Somehow we need to manifest this odd occurrence using only the Aethic structure as our tool.

So far we have gathered a very important insight from the future Aethus in which Oliver speaks to the friend: it only takes one question to trigger a direct Aethic contradiction. We know, then, that Oliver decidedly has the ability to generate an Aethic contradiction given the scenario where the interference pattern has occurred with his friends, but this leaves for us a pressing question. Does it make a difference that only some possible futures involve an Aethic contradiction in this scenario, or is that already enough to imply that the whole scenario is an invalid Aethus? To answer this, let us begin our formal derivation.

6.3 Derivation of the Third Postulate of the Aethus

6.3.1 Statement of Notation

Consider some definitions of terms.

- $\mathbf{V}[A]$ is the validity operation, which returns true if and only if an Aethus A is a valid Aethus.
- $\mathbf{C}[A]$ is an operation which assesses an immediate Aethic contradiction in an Aethus A. We will suppose that if a physical Aethic contradiction is present in an Aethus, (specifically in the system of Aethic reasoning where we do not yet assume the third postulate of the Aethus), then we will regard $\mathbf{C}[A]$ as triggering in the state of true accordingly. Crucially, note that $\mathbf{C}[A] \Rightarrow \neg\mathbf{V}[A]$.
- $\mathbf{O}[A]$ can be an operation which specifically designates the invalidity of Oliver's Aethus. As we have touched on already, we are declaring that Oliver's Aethus is deemed invalid through empiricism, so we will hold that $\mathbf{O}[A]$ triggers as true if we can in any way imply the particular empirical state of invalidity with associates with Oliver's Aethus from a particular Aethus A. Like the general Aethic contradiction, $\mathbf{C}[A]$, we hold with this that $\mathbf{O}[A] \Rightarrow \neg\mathbf{V}[A]$.
- Also note that the symbol $\subseteq$ is to denote a "child Aethus", whereas $\subset$ is to denote a "proper child Aethus." These terms borrow from their inspirations in set theory.

6.3.2 The Derivation

We ought to start the procedure of derivation with an important corollary of the definition of invalid Aethus. Let us phrase this as follows.

Corollary (Corollary of Aethic Invalid Inheritance)
Every child of an invalid Aethus must also be invalid.

The derivation of this is somewhat straightforward in both the structural and centric unfolding respects. Structurally speaking, whatever Aethus of stated-attributes are present in the parent invalid Aethus must also be passed to the child invalid Aethus, so for said stated-attributes to trigger an invalid Aethus in one case should also apply to any other case. Also, regarding centric unfolding, we have that valid Aethae have to be reachable from their parent Aethae, but invalid Aethae must not. So in the case of three generations of Aethae, for the second generational Aethus to be invalid now

[39] That is, assuming they are truthful, and even if they are not, there are millions of other decisive clues, for example a camera or two, an onlooker, etcetera.

"blocks" off the ability of reaching the third generation, and thereby implies that it must be invalid as well. Given this corollary, then, we can immediately identify a conflict with the principle of "*there exists*" invalid child Aethae.

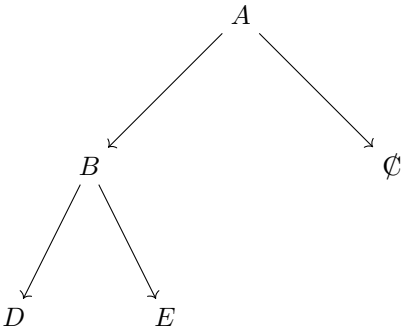
Consider a proposed statement of the third postulate which regards a *there exists* representation.

Third Postulate Attempt 1
"An Aethus will be invalid if it has any invalid proper child Aethae."

$$\exists B \subset A, \neg \mathbf{V}[B] \Rightarrow \neg \mathbf{V}[A] \tag{111}$$

Notice that we used the term "proper child Aethae" here, because trivially speaking, any Aethus will have an invalid child Aethus, if only we generate one by intersecting it with a disjoint Aethus. As such, this statement is only compelling at all if we consider proper child Aethae, which are now compatible with a more centric unfolding style of Aethic inheritance. Even so, however, we may still write up a proof by contradiction of a different sense for why this fails as a possible third postulate statement.

Example Aethic Inheritance Diagram



Consider the above diagram, where the arrows represent proper child Aethae, and C is taken as an invalid Aethus. Referring to the attempted statement of the third postulate, we take A as invalid because C is a proper child to it, but we take B as valid because both of its proper child Aethae are valid. This then contradicts the corollary of Aethic invalid inheritance, because a valid B cannot be a child Aethus to an invalid A.

Given this failure, let us also consider the opposite form of the statement, being a *for all* statement rather than a *there exists* statement.

Third Postulate Attempt 2
"An Aethus will be invalid if all of its proper child Aethae are invalid."

$$\forall B \subset A, \neg \mathbf{V}[B] \Rightarrow \neg \mathbf{V}[A] \tag{112}$$

This statement, now, is a poor attempt at the third postulate for an entirely different reason: *it is technically always true, but is overly specific, to the point of not describing most empirical cases of invalidity.* If we consider Oliver's Aethus again, say as some Aethus A, then notice how this statement is insufficient to derive it as an empirically invalid Aethus. To see this, consider how all of the proper child Aethae to Oliver's Aethus can be sorted into two categories.

- Category 1 (Aethic contradiction)
  - The proper child Aethus is a direct Aethic contradiction, on account of Oliver having attained the Aethic information of which door was traversed by one or more participants.
- Category 2 (Other)
  - The proper child Aethus is not yet an Aethic contradiction, however a future Aethic contradiction is still very much on the table, due to Oliver still having the chance to gain the door of traversal information.

– Crucially, *notice how every one of these Aethae is itself an Oliver's Aethus*, because it satisfies all the same original criteria which we used to define an Oliver's Aethus, being the sight of an interference pattern coupled with the ability to attain each door of traversal information.

  We can write such a statement in the form of a mathematical statement, being that *every proper child Aethus of an Oliver's Aethus is an Aethic contradiction or another Oliver's Aethus.*

$$\mathbf{O}[A] \Rightarrow \forall B \subset A, \mathbf{C}[B] \vee \mathbf{O}[B] \tag{113}$$

  We can make such an or statement either a disjunction or exclusive disjunction depending on if we want to include the Aethic contradiction cases as Oliver's Aethae themselves, but the distinction is only important to the point of convention.

– Notice, however, that even though these extra cases are highly relevant from the empirical lens, they end up becoming circular logic if we suppose the correctness of our second attempt at the statement of the third postulate.

  To see this in effect, consider our attempt to prove the Oliver's Aethus of A as invalid through the use of this second attempt at the statement of the third postulate. To do this, we would both need to rely on the contradiction proper child Aethae *and* the other cases in order to satisfy the condition all all proper child Aethae being invalid. The issue with this, however, is that we would then need to demonstrate these other cases as invalid themselves, but given that they themselves are Oliver's Aethae, we would then be stuck in the same recursive pattern of relying on their own non-contradictory cases for invalidity. The problem, then, is that this recursive pattern would never have a base case, so all invalidity for an Oliver's Aethus would be indeterminate. As such, we might think to refine this second attempt at third postulate of the Aethus to rely on Aethic contradictions directly rather than further invalid Aethae.

Third Postulate Attempt 3
"An Aethus will be invalid if all of its proper child Aethae are Aethic contradictions."

$$\forall B \subset A, \mathbf{C}[B] \Rightarrow \neg \mathbf{V}[A] \tag{114}$$

This statement is less misleading than the previous attempt, perhaps, but it is still far from being quite sufficient. The reason is simply that, well, we still have leftover non-directly-contradictory proper child Aethae to an Oliver's Aethus. The tricky thing about such Aethae is that they are indeed not directly Aethic contradictions by themselves, even though they have an empirically discernible semblance of invalidity about them. As stated before, then, we see that this attempt at the third postulate is indeed a true statement to the cases in which it applies, but its scope of application is far too specific to account for all instances of an Oliver's Aethus. In effect, where the *there exists* argument of attempt one is perhaps too mathematically "weak" a statement, the *for all* arguments of attempt two and three are too "strong" to be applicable. We might specifically think to use terms such as weak versus strong because it simply follows that whatever the true reason is for why Oliver's Aethus is invalid, (being the third postulate itself), it follows that its occurrence in Oliver's Aethus will indeed imply that Oliver's Aethus has some invalid proper child Aethae, (thus making the *there exists* argument comparatively weaker), and at the same time we have that all special cases of it in which the *for all* case holds will imply it as still being in effect. What this tells us, then, is that *for all proper child Aethae to be contradictions implies an application of the third postulate toward invalidity*, and also that *for the third postulate to be in effect toward implying invalidity also implies that there exists an Aethic contradiction amongst the improper child Aethae.* So while this case is intermediate regarding implications, it does not correctly align with either extreme.

This issue is, naturally, something of a paradox, however the solution to it is already hiding in plain sight, if only we think to look for it. Let us first explain what this solution is in intuitive language, and then move to express it with but a single algebraic substitution of the equations we have already written.

Let us take a moment to consider the workings of Oliver's Aethus from a merely procedural stance. If we refer to the diagram once more where the Aethus A has two proper child Aethae, B and C, such that B is valid but C is invalid, then we see accordingly that the centric unfolding of an agent at Aethus A may only ever develop them to Aethus B, but never Aethus C. As such, in an intuitive way,

we have that *it might as well be part of their Aethus already that C will never be a future possibility for them, because it is indeed an invalid Aethus.* Considering how Aethic information is fundamentally derivational in scope, we can assess that this is as legitimate a form of derivation as any. That is, we might naturally consider it to be an attribute of any Aethus anyway that *all invalid child Aethae are not to be centric unfolded to.* The key, then, is that for the Aethus A to already contain the attributes which forbid the eventuality of C, it follows that, bluntly, A must be capable of attaining such attributes. A keen analogy at this stage is the concept of *check* in the game chess.

Specifically, we might suppose that for some Aethus, each proper child Aethus to it represents a kind of 'chess move'. When even a single proper child Aethus to some Aethus is invalid, then, this means that said Aethus would be in what is analogous to 'check' on account of a possible next move being fatal. In the case at hand, we have that the Aethus A has a proper child Aethus of C, so therefore A would then be in 'check' as per the analogy. This is a risk, yes, however it does not represent a true loss of the game. As a player at chess might simply move their king out of check in the next move, an agent's Aethus might centric unfold them to B so as to remove the possibility of C. Now the check is gone, and the game may continue. This being said then, we have to ask ourselves the essential question, being *what happens when we can no longer move out of check with any possible move?* In chess, of course, such a thing is called 'checkmate', and it signifies the loss of the game. In Aethic reasoning, we can declare that such a thing implies an invalid Aethus, with such a declaration being none other than the third postulate itself.

So, if check in Aethic reasoning is *the possibility of contradiction*, on account of Oliver's Aethus centric unfolding to an Aethus in which the door of traversal is attained, then checkmate would be *the impossibility of avoiding the possibility of contradiction.* Given that this, in being checkmate, must be absolutely implied invalid, we then get the following full sentiment. ***It shouldn't be impossible to make a contradiction impossible***. This is the very assertion of the third postulate of the Aethus, but of course it would be beneficial to write it in terms of a mathematical formalism.

Consider two statements which we have thus far shown to be true, being the statement of inheritance for an Oliver's Aethus and the *there exists* expression for Aethic invalidity inheritance, which remember we have shown to be implied by an Oliver's Aethus on account of it being weaker.

$$\mathbf{O}[A] \Rightarrow \forall B \subset A, \mathbf{C}[B] \vee \mathbf{O}[B] \tag{115}$$

$$\mathbf{O}[A] \Rightarrow \exists B \subset A, \mathbf{C}[B] \tag{116}$$

Given these two statements, we can imply that the third postulate is, as stated earlier, expressible only with algebraic substitution of these two statements. That is, given how these are both true statements, we might think to substitute the latter into the former to get a statement which must also be true.

$$\mathbf{O}[A] \Rightarrow \forall B \subset A, \mathbf{C}[B] \vee \exists C \subset B, \mathbf{C}[C] \tag{117}$$

We can easily simplify this further by simply noting how for an Aethus, B, to be an Aethic contradiction of course implies that it possesses a proper child Aethus, (being itself, perhaps), which is an Aethic contradiction. Because the logical disjunction between a statement and something it implies equals the thing it implies, we have that $\mathbf{C}[B] \vee \exists C \subset B, \mathbf{C}[C] = \exists C \subset B, \mathbf{C}[C]$. We may then simplify accordingly.

$$\mathbf{O}[A] \Rightarrow \forall B \subset A, \exists C \subset B, \mathbf{C}[C] \tag{118}$$

As such, all we need to do is generalize this to all Aethae, so as to conclude that this property is the direct cause of Oliver's Aethus being invalid in the first place.

$$\forall B \subset A, \exists C \subset B, \mathbf{C}[C] \Rightarrow \neg \mathbf{V}[A] \tag{119}$$

Notice that this is precisely equivalent of our earlier linguistic statement that *it shouldn't be impossible to make a contradiction impossible.*

With the intuition of Aethic contradictions having served us well in formulating this statement, let us now finally generalize it back to all forms of Aethic invalidity through the node of the Aethic contradictions.

$$\forall B \subset A, \exists C \subset B, \neg \mathbf{V}[C] \Rightarrow \neg \mathbf{V}[A] \tag{120}$$

The fascinating thing about this, now, is that we can consider it be something of a cascading effect. So long as we can prove that the Aethus under the for all and there exists arguments is invalid, through perhaps Aethic contradictions, the second postulate contrapositive, or any other means, and we may

immediately imply properties about their parent Aethae through the mechanism of this formulation. Such is the power of the third postulate of the Aethus.

To complete our final representation of the third postulate of the Aethus, we might consider writing it in the positive rather than the negative, through the use of the logical contrapositive of the present statement.

6.4 Statement of the Third Aethic Postulate

Here is the completed statement of the third postulate of the Aethus.

Third Postulate of the Aethus

If some Aethus is valid, then there exists a proper child Aethus to it for which every one of its own proper child Aethae are valid.

$$\mathbf{V}[A] \Rightarrow \exists B \subset A, \forall C \subset B, \mathbf{V}[C] \tag{121}$$

Note how this is a strictly two-generational argument for the ontology of wavefunction collapse. This resultantly deviates it from perhaps the majority of modern hypotheses for how this might happen, which instead rely on a more one-generational "leaking of information," as is the supposition of quantum decoherence.

We can now see that this insight directly explains the empirical phenomenon that Oliver observed – where even though he was not aware of which door each of his friends went through, and yet he still observed the two-concentrations pattern instead of the interference pattern. This is simply because his Aethus for which he sees an interference pattern is immediately invalid, because by the third postulate of the Aethus, for any child Aethus of his own, (being himself in the future), he can decidedly still access all that information by asking his friends or otherwise attaining entropic clues. As such, given two Aethae for which pattern he sees at the instant he takes off the blindfold – being the interference versus the two-concentrations – and he must see the two concentrations, as the interference one is invalid, and he, in existing, must have some valid child Aethus, being the other option itself. Such a thing now conceptually derives quantum decoherence, and so is a satisfactory solution to *Requirement 4* in the context of the measurement problem solution.

6.5 Immediate Abstract Applications of the Third Postulate

6.5.1 Testing the Third Postulate on Known Valid Aethae

Given how the third postulate is defined based on proper child Aethae, which themselves are defined based on blank attributes, we might find it to be an important exercise to show that several already-asserted cases of Aethic validity are still counted as valid under the third postulate. Let us prove this for a few examples now.

To begin with, consider the Aethus, A, which we will define through the following static Aethus.

```
{
  ("What kind of pet does Tim have?", Type of Animal, r1):
        "Dog",

  ("What breed is Tim's pet?", Breed of [Pet], r2):
        *blank,

  ("Does Tim own a Dalmatian?", Boolean, r3):
        false
}
```

Table 17: An example Aethus, defined through the static Aethus which corresponds to the graph of the above *2-Aethus*.

Given this Aethus, simply enough, we hold that the retrieval for "*what breed is Tim's pet?*" returns the set of all breeds of dog besides the Dalmatian. Such a thing is due to the Aethic dichotomy theorem, where we first assert that Tim's breed of pet must represent a breed of dog due to the first attribute, and second that said breed of dog is not to be a Dalmatian. Resultantly, due to the specific breed otherwise being blank, we hold such a blank as the blank component of our attribute, and return the set of remaining possibilities.

We know, as per the intuition of invalid Aethae, that such an Aethus should surely represent a valid Aethus, so the question at this point should be whether the third postulate of the Aethus confirms it, specifically when it is taken in definition through proper child Aethae. Let us then proceed by deriving that this Aethus is indeed satisfactorily valid.

Proof That Said Aethus Cannot Be Taken Invalid Under the Third Postulate
Let us show that there exists a proper child of the aforementioned Aethus A for which every further proper child is valid. To begin with, we have one blank attribute which we might think to fill, being the following.

$$\varphi = (\text{“What breed is Tim's pet?”}, \cdots) \tag{122}$$

Due to this being a physically blank attribute, we therefore hold that the act of filling it with any corresponding dog breed state will account for a proper child Aethus – even if the state is to contradict other attributes of the Aethus. In this regard, the definition of a proper child Aethus is less strict than requiring the fill of a conceptually blank attribute with a state, and instead merely requires that a physically blank be filled.
Through this, we may create exactly one proper child Aethus for each breed of dog, with the total set of all such proper child Aethae serving as an Aethic partition of A itself. For the sake of exactness in description, let us suppose that we create a reference function, f, which maps each breed of dog onto its corresponding element from the partition. Given this setup, it is sufficient to satisfy third postulate-validity that we might merely demonstrate one of said proper child Aethae to hold all valid proper children, because such a thing would serve as a counterexample to the stance of A being deemed invalid under the third postulate.
If we consider the graph of the function f, (being the set of ordered pairs of its input and output results), then we need only to find one Aethus in its image for which there exists a proper child Aethus with all valid further proper child Aethae. We can note, immediately, that we are allowed to do this for all such Aethae except for only one, being $f(\textit{Dalmatian})$. In the case of $f(\textit{Dalmatian})$, we see automatically that it is an invalid Aethus on account of being an Aethic contradiction between the attribute which forbids Tim to own a Dalmatian. With this Aethus being excluded, then, we have that *any other Aethus we select from the partition will indeed have a proper child Aethus will all valid further child Aethae.* The one thing to note is that for such Aethae, we also need to add an attribute which offsets the capacity of any further predicaments such as this, (for example maybe we add an attribute which says that Tim cannot own a parrot, and then sets his pet bird to blank, in effect doing the same thing). It is an algorithmically definable process to disallow all such further iterations of this sort, and after we do such a thing we will then find that, naturally, at least one Aethus in that original partition will have such a proper child Aethus which has all valid proper children. In effect, we see that the maneuver of simply excluding the Dalmatian item from our set of possibilities was sufficient to demonstrate the validity of all further options, in effect satisfying the third postulate for the validity of A.

6.5.2 On General Permanencible Attributes

With the third postulate now having been stated in full, let us think for a moment about how we might creatively generalize the concept of "permanently blank attributes" into whatever class is generally tailored to the third postulate as a permanently blank attribute is to the particular empirical case which we first examined with the double-slit experiment. Such an object is what we might refer to as a *permanencible attribute*, being named as a portmanteau of *permanently accessible.*

Let us think to define a permanencible attribute as follows.

Definition 23 (Permanencible Aethic Attribute)
A permanencible attribute is one which, when added to a particular Aethus, triggers invalidity by so much as even stating another attribute in question within that same Aethus.

There is an immediate list of some common kinds of permanencible-leaning attributes.

- Of course, the instance of permanently blank attributes in an Aethus is the important case seen already. Specifically, the permanencible attribute in question would be whichever conditional attribute in the Aethus states that the permanently blank attribute in question is blank. Here is a basic setup of such a thing.

$$\varphi_a = (\cdots,\ \cdots,\ \varphi_{ar}) \tag{123}$$

$$\varphi_b = (\text{“Attribute } \varphi_a \text{ is stated as blank”},\ \textit{Class Boolean},\ \varphi_{br}) \tag{124}$$

  If we now create an Aethus, A, in which φ_b is set to *true*, then automatically we now have that φ_a must be a permanently blank attribute within A, because the very instance of stating it causes nothing less than an Aethic contradiction over φ_b.

  It is also important to mention that there are many cases in which we simply do not want an attribute to be permanently blank, so the proper way of encoding these more typical cases is to simply set its corresponding conditional, like φ_b, to physically blank. Notice that it ought not to be conceptually blank, as that would imply the interference of the second postulate of the Aethus. Physically blank will therefore do, which is effectively the same as leaving it out from any and all static Aethae altogether, thereby giving us the base Aethic picture instead of this more complicated one.

- Let us note that there are other intriguing instances of permanencible attributes as well as just this simple case. For instance, consider the example with Tim's dog breed again. Let us suppose we set the actual breed attribute of Tim's dog, φ_a, to physically blank, but then use five additional Boolean attributes such that each one disallows a particular breed of dog. For example, perhaps we set the breed of Tim's dog as a Dalmatian, Shiba Inu, Boxer, Newfoundland, and Australian Shepherd all to false. Now let us consider adding one more attribute to the defining static Aethus of our Aethus, being “Set of possible breeds for Tim's dog” as some attribute φ_s. Perhaps we set it to all dog breeds beside the five in question.

  Notice, now, what our requirements for valid Aethae are. To begin with, we could not have added any of the five disallowed breeds to the set of φ_s's state, because that would be an Aethic contradiction. However, there is perhaps an even more intriguing consequence as well, being that the very state of φ_s in failing to be physically blank in the Aethus in question means that φ_s itself cannot be changed in any child Aethus without leading to an Aethic contradiction. In effect, this means that even the attribute φ_a must now be permanently physically blank, because the act of stating it would lead to φ_s needing to be a set of only one element, which we know to be an Aethic contradiction given that it has already been stated. What this tells us, then, upon running the second and third postulates, is that *Tim's dog would have to be in agreeing superposition over occupying every breed in φ_s at once*. Such a thing would be a valid Aethic uncertainty principle, which we will expand on after we derive the double-slit experiment.

- One final intriguing example of a permanencible attribute is one which fixes the probability of another attribute. For example, perhaps we have one Boolean attribute which encodes whether it will rain tomorrow or not, φ_a, and then also a real number attribute, φ_b which states what the probability of it raining tomorrow is. Of course, by the definition of probability in Aethic reasoning, we therefore have to assess that such a probability gives the weight of φ_a occupying true as opposed to false, which itself is an Aethic union and therefore an Aethic superposition of both possibilities. Yet again, now, the very notion of stating φ_a would result in an Aethic contradiction on account of the other state dissolving and then φ_b no longer accurately describing the Aethus. As such, we again have through the full application of Aethic reasoning that φ_a would be shown to go into agreeing superposition, in effect making it both rain and not rain tomorrow in agreeing superposition.

It is worth mentioning that these examples, of course, are merely purely epistemic Aethae, and as such are not direct empirical assertions. Obviously for a dog to be in agreeing superposition over many breeds, or for a day to be in agreeing superposition over having rain or not would be empirically absurd outcomes, because in the empirical world such attributes may have their states easily gathered rather than truly being permanently uncertain to this degree. In effect, then, these examples were here only for purely epistemic explanatory gymnastics of sorts.

Another important notion we should quickly touch upon is that a static Aethus which leaves permanencible attributes out will decidedly *not* include them in the attribute cascade by default. The

reason for this simply has to do with, as we have seen, the state of permanencible attributes being blank versus stated having categorical consequences onto the Aethus. Simply put, we therefore claim that permanencible attributes are not automatically derived along with other derivable attributes in the attribute cascade, simply because their stance of being stated or not fails Aethic equivalence between the two options, even though the *3-Aethae* of both are extensions of that same static Aethus. With the permanencible attribute being physically blank upon having been left out of the static Aethus, we therefore default to that option in such a case.

Lastly, please note that just because you often cannot write permanencible attributes in an Aethus directly does not mean that you cannot retrieve them from an Aethus. With retrieval fundamentally being a passive operation, in that it cannot affect the intrinsic Aethic structure, it therefore follows that we can essentially retrieve any attribute we can imagine, with the exception of outright paradoxes, (for example, "does this retrieval return false?" is a paradoxical retrieval statement, so perhaps we disallow retrievals to reference themselves so as to weed out these kinds of issues). It is through this flexibility of retrievals that we allow ourselves to gather information like the probability of it raining tomorrow from an Aethus. That is, similarly to what we saw with the second postulate, we might simply set up the Aethus in a proper manner, and then call anything we want off of that structure using the retrieval of choice.

7 Solution to the Double-Slit Paradox

Given that the experimenter in place during the performance of the double-slit experimenter has the Aethus for which we will analyze, it follows that there are four main outcomes for what could potentially happen to a particle which is sent toward the slits during the experiment.

Slit Permutation Cases	
Case 1.	Neither slit is gone through.
Case 2.	Slit A but not Slit B is gone through.
Case 3.	Slit B but not Slit A is gone through.
Case 4.	Both slits are gone through at once.

	Case 1	**Case 2**	**Case 3**	**Case 4**
Detector Running	**Valid**	**Valid**	**Valid**	*Invalid*
Detector Absent	**Valid**	*Invalid*	*Invalid*	**Valid**

Table 18: This is a representation of what Aethic reasoning will output for each Aethic intersection given by this intersection table.

Remember that each of these outlined cases are themselves Aethae, specifically being child Aethae[40] of the Aethus of the experimenter. However, this being said, it will be included in the experimenter's Aethus which of these are valid and which are not according to the rules set in place by the three Aethic postulates[41]. The game, then, will be one of finding which are invalid, and stating in the experimenter's Aethus that these ones are forbidden accordingly.

[40] Note that the four cases themselves are allowed to be in agreeing superposition within their total Aethus due to the principle of Aethic extrusion. That is, while the state of the detector measuring the particles and *Case 4* occurring causes a direct contradiction within the same Aethus, the state of deciphering whether or not *Case 2* or *Case 3* happens with the detector running, for example, is found out only in a child Aethus to the Aethus in which is was blank, again due to the principle of Aethic extrusion. Therefore, we have different properties being held in two decidedly different Aethae, in effect not triggering any kind of contradiction in keeping all four cases in agreeing superposition in whichever Aethus to which that is applicable, (or, more specifically, it is not required to assert a disagreeing superposition, as we might have to do in other cases).

[41] Note that there is a clear reason why *Case 4* does not trigger an Aethic contradiction in and of itself. That is, we can consider this to be the natural state of an Aethus, in which the attribute of "which slit is gone through" is simply blank. As such, when retrieved, it returns the characteristic agreeing superposition. The other cases, then, are the "weird" ones, for lack of a better word, in that they hold an extra condition – being that one slit or another is definitively not gone through in their respective Aethae. Upon taking the Aethic superposition between these cases themselves, then, the procedure is that these independent attributes of one allowed slit versus another cannot flow out

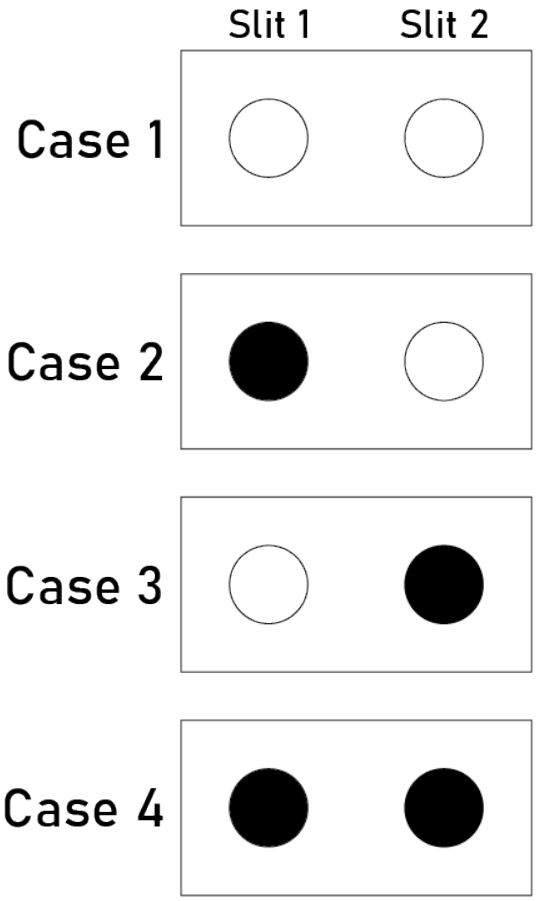


Figure 6: Here is a graphical representation of these four Aethic cases.

The experimenter, of course, themselves has two possible overarching Aethae they have to work between. In one case, they have placed one or more detectors over the two slits of the experiment, and so the goal of this section is to, using nothing but the presence of the detectors and the Aethic postulates, demonstrate which of the four possible cases are automatically to be deemed invalid in the Aethus of the experimenter, in the process solving the measurement problem by very specifically stating what ontological process brings about the collapse of the wavefunction at large.

7.1 Derivation for the Detector-Off Case

Let us begin with the case where the detector is absent. As such, the key property we need to make use of is the Heisenberg uncertainty principle, which provides us with a lemma that quantum information, once not measured, may never again be attained. This is a crucial input to the Aethic postulates, because it immediately fails to invalidate *Case 4* of the possible cases, being the one in which the interference pattern is raised. That is, there is indeed a proper child Aethus to the experimenter's Aethus – in fact all of them – for which their own proper child Aethae all prevent the slit of traversal's information from being reattained, which would have triggered a contradiction to the state of *Case 4*. As such, the third postulate returns indeterminate, but does not necessarily argue in the true or false direction due to the nature of its converse being unknown, (so as to allow for the second and first postulates to also contribute to any potential invalidity). In addition to this, however, the contrapositive of the second postulate also fails to invalidate such an Aethus, because the slit of the

and into the other Aethae, because this associativity from one Aethus to the next is simply not allowed over Aethic superpositions. In effect, then, the procedure is to instead find which Aethae do trigger contradictions based on the *external circumstances* put in place by the experimenter's actions themselves, and this is what ontologically invalidates some Aethae before others.

traversal of the particle is in fact unknown and it is in fact in superposition. As such, because none of the three postulates are able to invalidate this Aethus, we may claim that it is valid. However, even though this is now known, we must still be careful in supposing that this Aethus equates to that of the experimenter automatically – for there are still three other possibilities in the permutation of which slit is gone through beyond *Case 4* alone.

Thus, the only way to mathematically demonstrate that the experimenter's Aethus is necessarily equal to an Aethus in which the particle goes through both slits at once is to invalidate the other Aethae. Let us do this now. To begin with, we must note how Heisenberg's uncertainty principle implies that the slit of traversal attribute is strictly unattainable given that the double-slit experiment has been run without the use of a detector, so such a thing is a property not only of the experimenter's Aethus, but any valid child Aethus of it as well, because for a child Aethus of it to not agree with this property would be a direct contradiction of the empiricism under Heisenberg's uncertainty principle. In total, there is a full contradiction in the works here, because we simply have that *Case 2* and *Case 3* themselves contradict such an assertion of the which-slit attribute needing to remain blank. As such, they must amount to invalid Aethae when intersected with the experimenter's Aethus, therefore invalidating both of them for the detector-off case.

Note that equivalent approach for demonstrating this leverages the second postulate of the Aethus, where we may specifically show that Heisenberg's uncertainty principle being in effect means that any valid child Aethus of the experimenter's Aethus must hold the slit of traversal as conceptually blank, and therefore must hold it in superposition as per the second postulate of the Aethus. However, we clearly see that *Case 2* and *Case 3* do not hold the slit of traversal attribute in superposition, so through such a thing they also contradict Heisenberg's uncertainty principle, and must accordingly be taken as invalid Aethae in the case of the detector being off. This also serves as something of an intuitive argument for why *Case 4* must be allowed to remain in their place, being because it contains the property which they lack of never being able to centric unfold to an Aethus in which the slit of traversal drops out of superposition. Such a property is uniquely compatible with Heisenberg's uncertainty principle, therefore favoring *Case 4* in the process.

Finally, regarding *Case 1* within the detector-off case, this time such an Aethus is actually not invalidated in the first place. This can clearly be seen empirically, for those cases in which the particle does not wind up behind the slits, but instead gets caught elsewhere on the plate adjoining the slits without managing to traverse them.

As such, for the case where any detectors are utterly absent, we can see that the double-slit experiment results in the particle being in a weighted superposition between the Aethae of entering both slits at once, or neither at all.

7.2 Derivation for the Detector-On Case

All that is left now is to derive the solution to the case where the detector is present. We can immediately start by deciding that *Case 4* is invalid, because the experimenter always has the option of checking the data in the detectors later on, hence invaliding that case for at least some child Aethae for every one of the experimenter's own child Aethus where they observe an interference pattern[42], (in the absence of some near-improbable fluke of generation[43]). Specifically, the attribute of *Case 4*

[42]One possible objection to this goes as follows: "*What if we simply consider a child Aethus to that of the experimenter's for which they cannot access the information recorded by the detector?*" There are three major interpretations to this. Firstly, perhaps the detector information is permanently destroyed or definitively inaccessible – in which case the answer is simply that such a thing counts as the "detector absent" scenario and ought to be categorized there instead, (just by the nature of the third Aethic postulate – so not subjectivity or anything like that). But, for the more common interpretations of this, either we suppose that an attribute is abstractly added to the Aethus which disallows the experimenter from checking the detector but not through necessity, as such technically arguing that *there exists* such an Aethus anyways, or perhaps we argue that there is a child Aethus for which they are infinitely unlikely to actually check, itself representing a possible child Aethus. In both cases, assuming the baseline that the detector's information is outwardly present in the universe, hence asserting this is a "detector present" scenario, it follows that for the first case, such a thing is simply an Aethic contradiction, because the whole point of the detector's information being always available is that there are no loopholes to make this not so, and for the second case, such a probability never will truly be infinitely small, because even infinitesimal probabilities are probabilities nonetheless. Only something on the order of uncountably infinite precision might potentially do the trick, but as we can see here such a thing is countably infinite precision at best, (because the experimenter has only finite time to check the detector – hence arguing that there is still pointwise variation in their scenarios of checking). As such, even the chances of preventing Aethic invalidation yield Aethic invalidation here, so the third postulate firmly asserts this Aethus is invalid.

[43]This is to say, technically an interference pattern could be generated by the two-spotlights setup, however of course this is so unlikely, that in every case besides it this rule will hold. If, however, this incredibly unlikely scenario is to occur, it does not invalidate Aethic reasoning, but instead simply argues that the pattern is unknown to match, thus

that neither slit is not gone through can possibly be contradicted by any double-generational child Aethus, immediately violating the third postulate[44].

Put rigorously, suppose that the experimenter's Aethus then and there, being detector on intersected with *Case 4*, is to be some Aethus X, with there existing a proper child Aethus of Y to that. All we need to demonstrate is that we can find such a Y for which every proper child Aethus to it, Z, is valid – or alternatively we can prove X invalid by finding that any given Y must possess a proper child Aethus of Z which is invalid. To do this, simply consider how Y can either consist of an Aethus in which the experimenter looks at the detector output, or they do not. If Y holds that they looked, then that is an invalid Aethus on account of contradicting the interference pattern, so by another application of the third postulate of the Aethus we have that all of its further child Aethae are already invalid. That leaves the case where they are yet to look for Y, however we can then show that we might consider some further child Aethus to this, Z, in which they do look. Specifically, let us consider Z to simply consist of them adding the information from the detector to their Aethus. It immediately follows from this that Z is indeed a proper child Aethus of Y, because in either case of if the particle goes through *Slit A* or *Slit B*, and such an added stated-attribute is clearly physically blank in Y, on account of Y having already been defined in holding no information whatsoever about the slit of traversal, via the interference pattern as well as its prior condition of having the experimenter to not look, (and, generally, with there being no derivational process within the scope of Y which can discriminate between the particle having gone between *Slit A* versus *Slit B*). All in all, we then know that this Z must be an invalid Aethus, because it does indeed contradict the state of there having been an interference pattern in the first place, on account of that pattern's implication that the particle decidedly *did* go through whichever slit was not registered by the detector also. Hence, for every Y it turns out that Z becomes invalid, so therefore, by the contrapositive of the third postulate of the Aethus, this X has to be invalid. As such, *Case 4* with the detector on is an invalid Aethus.

This, note, causes an intriguing ripple effect onto the remainder of the experimenter's Aethus. It is no longer truly the case that the slit of traversal is to be conceptually blank to their Aethus, even if they have yet to check the detectors, because the mere fact that the act of going through both slits at once triggers an invalid Aethus is an indicator that certain configurations of the slit of traversal attribute can be used to attain information about the Aethus at large. In effect, this tells us that the slit of traversal attribute is merely semiblank in such a case. With this being so, what is still decidedly unknown to the experimenter's Aethus of before they observe where the particle landed on the back screen, is which of the other three cases is actually in effect. What we see from this is two intriguing consequences. The first is that we can no longer leverage the second postulate of the Aethus so as to show *Case 2* and *Case 3* as invalid, because the lack of needed conceptual blankness of the slit of traversal attribute no longer forces a superposition to have to be in effect at all. The second, most importantly, is that an attribute which points to whether *Case 1*, *Case 2*, or *Case 3* is in effect is indeed fully conceptually blank. This is a huge result, because it allows us to use the second postulate of the Aethus to imply that all three of the cases themselves ought to go into Aethic superposition in the given Aethus. As such, this might be specifically contrasted with the detector-off case by our two-step process of first discounting the need for the slit of traversal attribute itself to be the one in agreeing superposition, and second abiding by the new iterative layer of the full Aethic cases themselves as our new unit of agreeing superposition. In effect, the implied disagreeing superposition itself of the slit

installing a tiny margin of error in the form of an Aethic weighted union. Nothing disheartening, however, due to the sheer unlikelihood of it.

[44]To be abundantly clear about the specifics here, note the difference from cases of the principle of Aethic extrusion. In this case, where the detector is running and *Case 4* occurs, look to the retrieval of "Which slit has not been gone through?" from a child Aethus in which it is checked. Notice that we can create mutually exclusive outputs to this just depending on which attributes from this Aethus are factored into the formulation. If we consider the parent Aethus which only holds the state of *Case 4*, then the return of that retrieval is "None." Note that this is a perfectly viable option, because it is technically an answer to that question when considering the generalization of choosing to permutations. (As such, invalidating "None" would be an arbitrary and subjective decision). On the other hand, though, consider the parent Aethus of the current one which only holds the return of the detector. In such an Aethus, the return for our retrieval is "slit A" or "slit B" but not both. Notice how this return is mutually exclusive to the "None" return, because under no conditions does there exist an Aethus which is an intersection of both. As such, this Aethus must be invalid. (As this is an Aethic contradiction). And of course, so too must then be the experimenter's total Aethus in this case, because all such invalid Aethae can be reached via any child Aethus of the experimenter, hence violating the third postulate. Notice the difference, then, between the case where Alice checks an entangled particle and sees spin-up. We cannot use the same logic to argue that Alice's current proposition of spin-up contradicts her previous proposition of spin-up and spin-down in disagreeing superposition, because, first of all, both do have a valid intersection, (being spin-up), and second of all, we cannot actually create two separate avenues of attributes within the Aethus which are mutually exclusive, because of that fact that the superposition is disagreeing — so the attribute update Aethus is a perfect child Aethus of the original.

of traversal attribute can be alternatively expressed as the agreeing superposition of the cases *Case 2* and *Case 3* as taken as Aethae over the base attribute. This is so where we specifically take the attribute which points to either *Case 2* or *Case 3* as being conceptually blank to imply an agreeing superposition as per the second postulate of the Aethus, but such an agreeing superposition which may be stated in a valid child Aethus. Agreeing superpositions over physical observables like the slit of traversal typically do not follow this same quality of being still valid if their child Aethae can be stated as per the specific nature of the third postulate of the Aethus, so such a thing can be taken as a special property of more abstract Aethic superpositions like those over an Aethus in place of physical observables. Note that it is a general rule that an attribute in disagreeing superposition ought not to be conceptually blank in the Aethus in question, due simply to whatever informational spillover is accounted for by the disagreeing superposition itself.

If the experimenter has not observed anything about the landing location of the particle besides what could be attained from setting up the detectors beforehand and running the experiment blindly, then relative to their Aethus of that nature, *Case 1*, *Case 2*, and *Case 3* are all in agreeing Aethic superposition. However, if the experimenter adds the location of the particle to their Aethus by looking at or otherwise assessing the information on the back screen, then the weights on the three cases in superpositions shifts accordingly – as in perhaps if it is closer to slit A, hence implying more of a chance to *Case 2* than *Case 3*, however not entirely guaranteed and therefore not entirely added to their Aethus. Only if they can truly add this information to their Aethus, such as checking the detector, may the experimenter actually collapse their Aethus as far down as an individual case amongst *Case 1*, *Case 2*, or *Case 3* here, but note that this is not given merely by the feat of the particle having been measured by the back screen beforehand, as this would, Aethically speaking, be no less arbitrary than simply asserting that quantum superpositions are known beforehand.

7.3 Assessing the Results

All this being said, with the detector absent, the tendency is an Aethic superposition between *Case 1* and *Case 4*, whereas with the detector present, the tendency is an Aethic superposition between *Cases 1, 2, and 3*. The crucial takeaway here, all things considered, is that the detector-off case implied an agreeing superposition of the slit of traversal, whereas the detector-on case implied a disagreeing superposition of the slit of traversal. This fundamental flip can be seen as a major component of the ontological essence of the wave-particle duality notion, with the complete picture needing to be filled in with *Step X*.

Generally, then, we see that there are two major varieties of ontological content to what we call "quantum wavefunction collapses." The first is like what we see in the double-slit experiment, where a measurement triggers the change from agreeing to disagreeing Aethic superposition. The second is when a direct observation is taken from a list of many options, such as randomly shooting a particle at some array of detectors and personally determining which one has been struck. This is simply an instance of a child Aethus being taken from a disagreeing superposition of the possible ending locations, no differently than all the other disagreeing superpositions we collapse relative to our Aethae in day-to-day macroscopic life. Note, however, that even after a particle is detected at a destination, the path it took to get there remains very much in agreeing superposition if not recorded in some way, just due to the second postulate itself. The point there is that even the supposed claim of having gathered an attribute in one's Aethus is only ever a small part of a largely superposition-infused picture. This lingering set of agreeing superpositions to any system is part of what makes quantum mechanics so eye-catching.

Regarding the notion of expanding this to the general solution, there are four crucial steps to undergo to validate all three postulates to a given Aethus, in effect describing the precise ontological makeup[45] of a system so as to satisfy a solution to the measurement problem.

[45] To quickly describe the effects of the third postulate in another way, we say that wavefunction collapse is never only about a single measurement — rather it is what happens when it's possible to write up two different measurements (of one phenomenon) which give two different answers. So we could very well observe the consequences of some agreeing superposition, so long as we cannot look under the hood, so to speak, by probing it with an alternative measurement which gives a different answer. In a sense then, such observation scenarios are indeed a form of measurement — however they're just not complete enough to collapse the superposition.

Algorithm 1: How To Perform Aethic Reasoning Over a System

Basic Description: The following algorithm is a rendition of the specifically epistemological procedure which one might undergo in order to assess the Aethic retrieval and thereby state of presence in reality which a particular attribute holds with respect to a particular Aethus, (being most commonly a first or third-person empirical Aethus).

Input: Our inputs are the empirical Aethus corresponding to the reality of the system, A, and an Aethic Template which we wish to retrieve the state of, β.

Output: The result will be an exact mapping between the parameters of the system and the set of allowed Aethic outcomes. Aethic reasoning now renders the wavefunction collapse as algorithmic through the very state of the present algorithm producing the correct empiricism independently of external epistemic intervention.

function DecipherRetrieval(A, β)
    if β is present in A **then**
        We know that β is present in the Aethic reality of the system
        $B \leftarrow$ The queried state of β in A
        return B
    else if β is impartially blank in A **then**
        We understand that β must be in a general superposition of some sort with respect to A, but we still need to determine if it is agreeing or disagreeing
        Proceed to the next layer of the algorithm
    else if β is otherwise semiblank blank in A **then**
        $\beta_1, \beta_0 \leftarrow$ The decomposition of β into its present and impartially blank components in A, respectively, which we know to be possible by the generalized Aethic dichotomy theorem for impartial blankness
        return The retrieval conjunction of DecipherRetrieval(A, β_0) and DecipherRetrieval(A, β_1)
    end if

    Let us now analyze the specifics of the case where β is impartially blank in A
    if β is uncertain in all proper child Aethae of A **then**
        β is representative of an Aethic uncertainty principle of some kind with respect to A
        We now know that β is both conceptually blank with respect to A, and therefore in agreeing superposition with respect to it by the second postulate of the Aethus
        return The retrieval which consists of the set of all possible states of β as according to however they are weighted in A, if applicable
    else if β holds the possibility of being attained in some proper child Aethus to A **then**
        In this case, the third postulate declares that for β to be conceptually blank with respect to A would amount to an invalid Aethus
        With such a case of β being conceptually blank being an invalid Aethus, we now look to all the remaining cases, being the remaining combinations of the individual states of β being present in the retrieval or not, with their corresponding descriptive Aethae
        Go through and invalidate each of these other cases, one by one. *This represents a major shift from classical epistemology, in which we assume that all cases which realize multiple disjoint states are automatically invalid.* Here we have to do a case-by-case analysis of all possible combinations of the realized states of β, and invalidate them with the third postulate of the Aethus directly
        Some number of Aethic cases will now be left over, out of not being able to be invalidated by the third postulate
        Since the property of which is these cases is realized in the the retrieval is itself conceptually blank in A on account of their all not being invalidated by the third postulate, we use the second postulate of the Aethus to put the cases themselves in agreeing Aethic superposition within the retrieval
        With the iteration-layer of the cases being in agreeing superposition, this then implies a disagreeing superposition of the lower iteration layer that is the states of β itself
        return A disagreeing superposition of the states of β, or alternatively an agreeing superposition of whichever cases remained after the validity cropping done by the third postulate
    end if
end function

Through this, the measurement problem has its first official solution. Whether there will be others, it is hard to tell. But it is very unlikely that they should be as simple as this one, due to the nature of the particular inductive steps that were chosen to create this. At least as far as Einstein's razor [5] is concerned, that would make this the final solution itself. Naturally, then, we have the complete solution to the measurement problem, hence satisfying *Requirement 2* to the measurement problem solution. Also notice that we have matched the empiricism in doing so, which also allots to us *Requirement 1* in this context. From here, now, let us look to what might perhaps be the most general expression of Aethic reasoning.

8 Generalized Aethic Coherence Principles

The natural question at this point is what comes next given our scientific understanding of Aethic reasoning. The natural answer, then, is that we ought to peer deeply into further uncertainty principles, perhaps even giving them a type. So far, one of these uncertainty principles is known to us – Heisenberg's uncertainty principle itself – which we may consider our node of entry into the larger Aethic reasoning. But, consider an *uncertainty principle* itself to signify the larger class of these types of forever-unknowable Aethae.

Principle 27 (Aethic Uncertainty Principle)
An empirical principle which corresponds to an instance of a particular class of Aethic attributes being permanently blank by the effects of some related permanencible attribute.

Principle 28 (Aethic Uncertainty Attribute Class)
The class of Aethic attributes which correspond to their Aethic uncertainty principle.

Principle 29 (Aethic Coherence Principle)
An Aethic coherence principle is an empirical principle which regards a certain class of Aethic attributes as following a predictable agreeing superposition under the relevant context.

This is why Heisenberg's uncertainty principle is itself a type of Aethic uncertainty principle – because it corresponds to a class of attributes, which we might call "Heisenberg attributes," or perhaps "quantum attributes," themselves pertaining to the Aethus of a particle's position and momentum at once. By the classic statement of the quantum uncertainty principle itself, we know that for any quantum attribute such as this, there exists a child Aethus to it which will be permanently statistically independent to any single valid Aethus in which it is placed. This is simply due to the Aethic dichotomy theorem and the classic statement of the quantum uncertainty principle. By the quantum uncertainty principle, we cannot know position and momentum at once, so therefore the knowledge of position implies an Aethus holding momentum which is blank to one's Aethus, and alternatively knowing momentum implies an Aethus holding position which is blank to one's Aethus. As such, quantum attributes will always return a nonempty retrieval due to their ensured possession of superpositions in at least position or momentum. As such, given that a quantum attribute is present in a valid Aethus, it follows that the third postulate may very potentially not return an invalidation, because we might simply choose an Aethus to house them in in which position, momentum, or both are unknown, (implied by its validity), hence arguing that any proper child Aethus of the standing one will possess proper child Aethae due to its inherent validity already discussed. Furthermore, we know that such a valid Aethus must exist due to the principle of centric unfolding, (assuming that we exist and valid Aethae with us), and so, therefore, we see that quantum attributes are indeed coupled with an uncertainty principle, and that uncertainty principle is Heisenberg's uncertainty principle itself.

This now being said, it is inductively implied by Aethic reasoning that any single uncertainty principle will result in agreeing superpositions of a corresponding type. This is simply due to the correlation between agreeing superpositions and the application of the third Aethic postulate, as well as the assertion by an uncertainty principle that the third Aethic postulate be applicable after all. As such, a major goal of any future studies on Aethic reasoning is to name as many classes of uncertainty principles as possible; primarily those which have practical use and or prevalence. Given that quantum uncertainty is already in existence, it is quite reasonable to imagine that there are a full myriad of alternative classes of uncertainty attributes, with their corresponding uncertainty principles. And if this is true, then the best among them will provide agreeing superpositions which can possibly rival those in quantum mechanics for their mysterious intrigue and classical-defying scope. Just as an Aethic uncertainty principle generalized the quantum uncertainty principle, let us also suppose that

"Aethic coherence" to a given Aethic uncertainty principle generalizes quantum coherence – so, that is, the agreeing superpositions of some Aethic uncertainty principle can be designated as holding that uncertainty principle's Aethic coherence – with any conversion of this to disagreeing superpositions being referred to as "Aethic decoherence." The same as in quantum mechanics, but for the general Aethic system. This can be phrased in the form of a theorem.

Fundamental Theorem of Aethic Reasoning

To every valid Aethic uncertainty principle there corresponds an Aethic coherence principle.

Put into more simple language, this theorem states that according to Aethic reasoning, *that which is permanently uncertain performs every possible action at once.* Such is to be interpreted as a fundamental rule of the universe in any and all relevant contexts. The argument is that given the existence of quantum coherence, we assert that this is the only reasonable inductive conclusion, with the entire layered argument of Aethic reasoning being the support to this claim.

This theorem, now, marks the completion of Aethic reasoning's foundation.

9 Additional Aethic Insights

The following section will cover some specific loose ends that the Aethic mindset helps to understand.

9.1 Some Helpful Aethic Corollaries

Corollary
Any child of an invalid Aethus is also invalid.

Corollary
For two attributes within an Aethus to contradict invalidates that Aethus. For two statistically independent attributes to an Aethus to contradict, this is not necessarily so.

Corollary
For any valid Aethus, the union of some number of its proper child Aethae will also be to it a proper child Aethus.

Corollary
For any valid Aethus, the superposition of itself and its complement under some Nexus is simply that Nexus itself, (i.e. the Null Aethus of that Nexus's Aethic tree).

Corollary
Any superposition can be expressed as a combination of agreeing and disagreeing superpositions only onto certain attributes of the retrieval in question[46].

Corollary
The Aethic union of all the valid child Aethae of some Aethus, (with the proper weights), is always Aethically equivalent to that Aethus itself.

Corollary
If A is an agreeing superposition of stated-attributes, and B is the disagreeing superposition of those same stated-attributes, then the Aethic union of A and B is Aethically equivalent to the disagreeing superposition of A and B.

Corollary
Two Aethae, A and B, are Aethically equivalent if and only if every valid parent Aethus of one is implied to be a parent Aethus of the other, and with the same weight[47].

[46] This is a corollary of the Aethic dichotomy theorem. As an example of using it in action, consider three attribute states, which we will call A, B, and C, and consider how we would express the retrieval given by $\left[[A, B, C], [A, B, \not{C}], [A, \not{B}, C]\right]$, (supposing uniformity across both levels). One way of writing this using agreeing superpositions, say $\mathbb{A}$, together with disagreeing superpositions, say $\mathbb{D}$, would be the following: $\mathbb{A}\Big[A, \mathbb{A}\Big[\mathbb{A}[B, C], \mathbb{D}[B, C]^2\Big]\Big]$.

[47] A major extension of this corollary is for cases when A and or B are invalid Aethae, for which the corollary still holds. Specifically, we might use this to demonstrate that all hyperinvalid Aethae are Aethically equivalent, or that two seemingly unequal generic invalid static Aethae may indeed be equal anyway, (that is, marking this as an extra avenue for telling Aethic equivalence in the case of invalid Aethae only).

9.2 Specific Cases of Wavefunction Collapse

In the double-slit experiment, the switching from the interference pattern to the two-spotlight pattern is a direct example of the switching from agreeing to disagreeing Aethic superposition on the particle's slit of traversal attribute.

Regarding a wavefunction for which a single state is selected, this is and always was an act of simply removing possibilities from a disagreeing superposition, or in other words taking a child Aethus at random from that disagreeing superposition. For instance, if a particle is fired to a random ending location, at which place it is measured, then the particle exists in disagreeing superposition between hitting all possible measuring endpoints until a weighted random Aethus among them is selected upon adding such a result to the Aethus. The Aethus of the experimenter that corresponds to the landing point of the particle is necessarily a disagreeing superposition rather than an agreeing one of all the endpoints, because otherwise a contradiction would be set in motion by the third postulate. Specifically, implying the validity of an agreeing superposition child Aethus to the experimenter's Aethus would also imply, in that Aethus, that none of the targets were not reached. As such, we could generate a child Aethus to that for which one of the targets measures a result at itself, in the process adding the attribute that all others are not gone through to a further potential child Aethus. The second to last of these Aethae is a child Aethus to the experimenter, and the last is a child to that, so therefore the third postulate is broken on the experimenter's Aethus if there is even a hair of allowance for an agreeing superposition between measurable outcomes. As such, any measurable occurrence exists in strictly disagreeing superposition over its possible outcomes, including position if any kind of traceable interaction occurs there.

It goes without saying that humans also are always in a strictly disagreeing superposition, if at all, because they have the capacity to relay information.

9.3 Schrödinger's Cat

Schrödinger's cat can be seen to be in disagreeing superposition in the Aethic sense. However, this is not due to causality with the particle here, but instead is just a consequence of the experimenter being unaware of the cat's state. It is a simple if not surprisingly straightforward solution. This does in fact also imply that every person and animal in the world is in disagreeing superposition over being alive and dead relative to your Aethus at this moment as well – which, although shocking, is a perfectly compatible result with the core Aethic postulates. Of course, note that the weights in this superposition vary, however, and are probably oft to be quite minute. In this way the standing life-death superposition of your friends is about as negligible as how far you view them in the past while in conversation with them due to special relativity, so aside from more extreme cases this is somewhat unremarkable, (even if it is classically-unanticipated as an edge case of sorts).

As for why the cat must be in disagreeing superposition, this is again because even supposing that the superposition can be agreeing with some semblance of potential validity triggers a violation of the third postulate of the Aethus. One can consider the inherent quantum decoherence present within the box to be the analogue of the "detector" in the double-slit experiment.

Lastly, remember that the cat is only in superposition relative to the experimenter's Aethus of before they have checked the box. At this point, the cat will permanently be in superposition relative to that Aethus. For example, even six years later, at least relative to the experimenter's Aethus of that very moment, and the cat will still have been in superposition all that time. However, at the instant that the experimenter checks the box, they now have transited to a new Aethus in which the cat was never in superposition in the first place. If they see an alive cat, then the cat was never partially dead relative to this Aethus. However, if they see a dead cat, then the cat was never in a partial-superposition of being alive the moment the poison went off. Such is the nature of the Aethic universe.

9.4 Aethic Logical Determinism and the Completeness of Quantum Mechanics

It was noted earlier in the paper that Aethic reasoning is logically deterministic, and this is so. However, note that it is nonetheless still indeterministic in the philosophical sense, specifically meaning that it contradicts the specific doctrine that is titled "determinism." The reasoning for this follows from the demotion of classic causality in the Aethic system.

By logically deterministic, we merely mean that Aethic reasoning's postulates themselves are invariant and always generate the same reality given the same states of information – even if said reality is a superposition. Even centric unfolding is generally logically deterministic, because for every child Aethus which goes one way, all other child Aethae are also generated relative to their parent Aethus via centric unfolding. This entire net system, then, is still invariant.

So, specifically, any lingering assertions of logical indeterminism can be waived away as collecting themselves in the unit ontological objects of superpositions, which themselves operate in strict invariance given their corresponding Aethic postulates and data. In a funny twist of fate, then, god indeed does not play dice with the universe.

To be abundantly clear about what is being stated here, this works because the classical assumption that logical implications and physical causality are synonymous is, Aethcially, more or less fiction. Instead of this, we see that physical causality is merely an approximation of logical implications, and if anything a *bad* approximation. This will be elaborated upon more in the causality section. But if the supposed connection were true, then the myriad of consequences would be as well, such as the deterministic causal chain existing, with it implying no free will, etcetera. But, Aethically, we see that this base postulate was never a thing in the first place, and as such derivations like this fall apart. In total, Aethic reasoning maintains logical implications, but in doing so severs its connection with physical causality. This is why it can hold Aethic reasoning implies logical determinism yet does not imply physical determinism – it is merely because the two are taken as inherently separate.

This assertion in Aethic reasoning that quantum mechanics is logically deterministic, and through this rationally comprehensible, is one of its major successes. There is something of a pessimistic universal ideal about quantum mechanics in the world as of the writing of this – which is that it sits firmly beyond the realm of human understanding – specifically on account of our brains not being "wired" to understand it. Instead, we evolved as hunter-gatherers, and as such the quantum phenomenon cannot be grasped or traversed by the human mind in any way, shape, or form due to this immortal deviation of our environments. Now, I think we will come to find that this mindset was a major intellectual fallacy of our time. First of all, that is not how a mind works. It can rationalize anything that exists, just some things may be more difficult to grasp than others. It is understandable why we would think quantum mechanics is this intangible and incomprehensible madness in the metaphorical shredder of reality, (especially due to our oft held assertion that the macroscopic and microscopic are different), however our takeaway, now that we know this is not the case, should be to realize that such a concept isn't exactly ontologically possible anyway, and if anything is a logical contradiction of sorts. If something did not operate by rules, then it would not exist. So if we do not know the rules, that means we do not know them *yet* – not that they are nonexistent – rather such a notion doesn't even mean anything in an ontological sense. And given that we have the ability to mentally traverse rules, it follows that any rules are rules that we can, well, mentally traverse. If this seems trivial to the point of being a leap of faith of sorts, then consider it a postulate.

I would like to end this section with a long overdue tribute to Einstein's view on the quantum phenomenon. He has been slandered by many for about a century now for his views on quantum indeterminism, and the "spooky action at a distance"[48] that is the quantum wavefunction collapse. The truth is, summarizing Einstein's entire viewpoint with the EPR paper [14] or any other individual argument is a mischaracterization at best, and audaciously insulting to his legacy at worst. Think about where you would be without this man before you open your mouth. Now, this all being said, Einstein is, as is common knowledge, remarkably brilliant, and held remarkably sharp intuitions. So it is rather disappointing that the community not only failed to listen to his final intuition – being that quantum mechanics is fundamentally incomplete – but that we then attributed this to his age or lack of sharpness rather than showing him the decency of hearing him out in full. All the hype with Bell's theorem, in my mind, is completely overrated accordingly. See how quickly I found a workaround for all of that at the start of this paper? And how beneficial it was to incorporate the Einsteinian insights into this broader message? I would not have done such a thing if I didn't genuinely take him seriously. I should mention while I'm here that many people do show him that respect, which is great. *You know who you are.* Philosophically, though, there is still something of an understanding that either Bohr or Einstein needs to be right. But is this not binary thinking? Can they not both be right together?

So, to be explicit about this, we have taken the Einsteinian eternalist mindset, and have made it ontologically keystone to the Aethic mindset, by virtue of representing each cross section to the Aethic

[48]Notice, also, that Einstein was a hundred percent right that the Copenhagen interpretation's implication of such a spooky action at a distance is unacceptable in an ontological theory. As such, what truly is wrong with his standpoint?

dimension as one such block universe. Then, we incorporated the Bohrian notion of superpositions, in effect allowing us to gather a full, and more accurate, ontology of the universe. In the end, Einstein was not wrong – quantum mechanics was indeed incomplete. So I think a few people owe Einstein an apology, at least in spirit.

9.5 Ontology of Detectors

Short answer – there is none.

The claim of Aethic reasoning is that detectors are just a human construct that we mistook for having ontological significance. The whole issue of detectors being made of quantum particles and as such drawing circular logic to quantum properties is resolved by stating two concepts.

1. The significance of detectors is simply a misnomer which supposes that an ontological entity must *cause* the collapse of a wavefunction. Instead of relying on this fallacy of causality assumption, the Aethic argument instead states that what we believe is an ontological cause here is simply the act of an Aethic superposition switching from agreeing to disagreeing, and nothing more, (i.e. process before structure). As for the other variety of quantum superposition collapses, where the set of all outcomes is reduced to one single outcome, this is instead an example of a child Aethus being taken from a disagreeing Aethic superposition. In no case is some fundamental separate class of ontological entities engaging with the system.

2. It is a fallacy of the postulate of complete reality to assume that any object is the net probabilistic representation of all its quantum particles which make it up. This assumes that the nature of superposition is observer to particle and then particle to macroscopic and macroscopic to observer. This, however, is wrong because it asserts that it cannot simply be Aethus to observer in one step. For instance, if you have forgotten where you left your car keys, then instead of imagining its probability over different outcomes as arbitrarily consisting of all quantum particles which make up the universe evaluating to a result, instead one should simply look at the car-key attribute in their own Aethus. As complex of a concept as car keys may be in an Aethic sense, it is still better to treat it as having a direct ontological correlation to one's Aethus instead of adding more players to the mix – being quantum particles – which not only assume more information than is accessible to the Aethus, (thereby violating the Aethic reversal principle), but are arbitrary in general for their lack of a well-defined boundary of significance. In total, that kind of probability-from-particle attribution is quite misleading and Aethically indefensible. The Aethic substitute is that *you get to choose what the elemental probabilistic property is depending on what you select as your Aethic attribute, and the Aethus retrieves it accordingly.* You cannot feasibly decompose an Aethus into realizable material due to the fundamental theorem of empirical Aethae, but you may still analyze it piece by uncorrelated piece.

Notice that the presence of such an insight about detectors allows us to meet *Requirement 3* in full.

Regarding the actual Aethic update to the concept of detectors, perhaps any phenomenon which we accept as relaying information to our Aethus as the expense of continued agreeing superpositions might be regarded as some kind of "detector."

9.6 Quantum Effects and Scale

In the Aethic mindset, quantum effects are independent of scale in their inherent capacity to exist. That is, by the fundamental theorem of Aethic reasoning we have that an agreeing superposition is just as intrinsically capable of existing on the scale of the solar system as on the scale of an atom. The key thing that stops this from happening in practice is the exponentially increasing modes of information being gathered and relayed to one's Aethus at these larger scales. For instance, every air molecule now serves as a threat to continued quantum coherence, etcetera.

So, in conclusion for this, an entire boulder could be put through a larger equivalent of the double-slit experiment, and it should result in an interference pattern so long as any and all means of finding its path are to be hidden. It goes without saying that this would be extremely difficult to achieve, but it isn't impossible. Note that in order to truly replicate the interference pattern with the boulder, however, we would also have to slow down its momentum enough to put it on the order of Planck's

constant, which is a condition that subatomic particles obey more easily. The tricky nuance here is that according to the fundamental theorem of Aethic reasoning, there is decidedly no intrinsic barrier to agreeing superpositions due to scale, so the issue becomes a practical one, both in terms of hiding information and drawing a correct parallel to the subatomic interference pattern of choice via the boulder's velocity. If the boulder were going too fast, then that would be analogous to an electron which was whizzing by with extremely high energy, and would therefore not make an easily visible interference pattern anyway upon going through the double-slit experiment.

Such a difficulty of hiding information with scale applies to the interplay of Heisenberg's uncertainty principle with the third postulate of the Aethus, but it does not rule out the functionality of more exotic potential uncertainty principles that are yet to be discovered. We could easily conceptualize an uncertainty principle or two for which no traces would be left on any scale, and such possibilities may very well be in effect as far as we know at this very moment. (For example, suppose we double the gravitational constant and the spacetime-breadth of all objects in the universe – we would never even notice the difference).

9.7 Framework Behind Agreeing and Disagreeing Superpositions

Given how we have asserted the Aethic union principle, where the action of unioning two Aethae is asserted to be equivalent to building the Aethus of all attributes present in both, we can create the following claim about how agreeing versus disagreeing superpositions collaborate:

Consider two Aethic stated-attributes of the same state, being X and Y, such that they are distinct. Also consider two Aethae, being A and B, such that A puts X and Y in an agreeing superposition, whereas B puts them in a disagreeing superposition. Can we demonstrate, then, why taking the agreeing superposition of A and B ought to intuitively follow from taking their Aethic union? To do this, let us set up A and B as follows: consider some external attribute, being M, with M saying that X implies the falsehood of Y, and that Y implies the falsehood of X. It goes without saying, then, that any Aethus which contains M cannot hold X or Y in an agreeing superposition, because such a thing would trigger an Aethic contradiction. Accordingly, we might suppose that B contains M. However, to be more specific, let us create another Aethic attribute, being L, such that L holds whether M will be retrieved as true or false within a given Aethus. So, accordingly, any Aethus which holds M will return *true* for L, but any Aethus with M' will return *false* for L. Moreover, consider that a *false* value for L specifically means what it is expected to logically, being that either X and Y are allowed to both be in the same Aethus at once. In effect, we might imagine that A and B are the same in all ways, such that they hold blank for X and Y's attribute, perhaps, except for one node of difference, being that A holds *false* for L, and B holds *true*. In effect, we can now gather the ontology of taking the Aethic union of A and B, being that the resulting Aethus, say C, will have L in a disagreeing superposition between *true* and *false*. The reason, to be clear, that this is not agreeing, is because we have not unioned into this any Aethus in which they are the same at once, so asserting the possibility of this would be adding more information to the Aethus than we can accept. Or, more specifically, both A and B disallow an agreeing superposition across themselves individually, (as a result of their clearly disagreeing with the other one by virtue of not implying it already), so such an attribute must be passed to C anyway.

In effect, we derive have now derived the corollary that *if A is an agreeing superposition of stated-attributes, and B is the disagreeing superposition of those same stated-attributes, then the Aethic union of A and B is Aethically equivalent to the disagreeing superposition of A and B.*

9.8 Explicitly Generalizing Fixed Versus Variable States

Rather quickly, please consider the following principle of how fixed states ought to be properly generalized to Aethic reasoning, as will have applications in active reasoning and beyond.

Principle 30 (Generalized Fixed Principle of Aethic Reasoning)
Notice how in classical logic and metaphysics, we often refer to a given state as being 'fixed' versus 'variable' while stating logical relationships. To give an intuitive example, perhaps we perform a study where we find that of the people in a room, only those with shirt color c_0 all have a single favorite food, f_0, whereas the people of any other given shirt color have at least one disagreement in favorite food between them. If we then suppose that the function $g(p)$ of a person gives their favorite food, then we naturally have that the image of f over the set of people with shirt color c holds cardinality one if and only if $c = c_0$. Let us refer to this logical statement as the 'base statement' for further reference. The

key, now, is that in the classical mindset, we automatically assume that c_0 is going to only ever hold a single state, (i.e. not be in Aethic superposition), however by introducing Aethic superpositions we are met with the issue that our condition of c_0 being a single state in the first place is no longer well-defined up to the criteria granted by the classical logical system alone. For example, if we decide to place c_0 in a disagreeing superposition between being a blue shirt and a red shirt, then our initial supposition of which image is a single favorite food becomes somewhat ambiguous up to classical standards of specificity. To Aethic standards, however, the fix is indeed rather straightforward, being that we simply out to also place the image which has a single food into disagreeing superposition over the two options, (where we first place the shirt color and corresponding food states in Aethic conjunction before running the disagreeing superposition, of course).

With this all being said, then, we get to the heart of the supposition of this principle, being that we intuitively still view this example thought experiment itself as having a 'fixed' shirt color whose image is a single food, because the lack of a realized overlap between the alternate scenarios in disagreeing superposition means that we will only ever empirically observe direct compliance with the phrasing of the base statement anyway. As such, especially with regard to situations such as this, let us refer to such a fixed state up to a disagreeing superposition, (such as the c_0 in this example), as being what we will call 'Aethically fixed' rather than classically fixed. The key premise is that all the same deductive intuition ought to be inherited from the classical treatment of such states, however to abide by accurate Aethic reasoning, where unknowing implies a disagreeing superposition in the absence of an Aethic uncertainty principle, we might simply then assert the extra degree of freedom by which the treatment of a fixed state becomes the treatment of an Aethically fixed state. That is, we ought to picture such states the same way procedurally, (unless otherwise specified by characteristically Aethic modes of deduction), all while making the slight update of allowing disagreeing superposition-based variation 'behind the scenes' in other to remain consistent with Aethic reasoning. Such is a technicality more than anything, (unless making characteristically Aethic claims), but ought to be considered nonetheless. And, lastly, we use the word 'fixed' in 'Aethically fixed' so as to apply a needed intuitive element to exactly how they generalize the notion of fixed states in a classical context. Such is as much a necessity as anything else, as the ability to efficiently comprehend mathematical steps is of course keystone to their being successfully undergone.

9.9 The Aethic Mach–Zehnder Interferometer

I spent a great deal of time staring at an animation of the Mach–Zehnder interferometer throughout 2022. As a matter of fact, this allowed some of the major insights of Aethic reasoning to come to me, so I look forward to presenting such insights to you now, in the medium of that very experiment.

The base Aethic explanation for this experiment works as follows: simply put, upon detecting the particle in question before it can reach its destination at the end of the interferometer, information has now been made permanently available to one's own Aethus and its children about which of the two paths it took out of the first beam-splitter. As such, we see that a disagreeing superposition arises out of these two possibilities. However, if the detector is not present, then we permanently have no way of accessing which path was taken, so by the third postulate of the Aethus, it is best to suppose that both paths were taken at once in an agreeing superposition. This is what we then see when the paths converge again at the end of the interferometer, and then undergo wave interference accordingly. Note that the explanation for the ontological nature of such a wave interference component is under the umbrella of *Step X*, and so will be addressed in the active reasoning paper accordingly.

A further iteration of insight we can gain about the Mach–Zehnder interferometer under Aethic reasoning is how we are now perfectly allowed to update information about reality, (via our Aethus), in either the past, present, or future. By the Aethic extrusion model of Aethic reasoning, we see that spacetime can very well be rigid and causally deterministic, (as is the case in relativity), to a cross section of the Aethic dimension, but in doing so we have to include superpositions and the broad extra dimension of Aethae. As such, we see that we can actually gain insight into reality even when the attribute in question physically occurred in the past, as was seen with the Battle of Brémule example. In the same process, we also ontologically allow for the notion of whether the particle went through the first splitter in an agreeing or a disagreeing superposition to the moment of whenever one's Aethus either gathers the information that a detector was present along the path, or not. Information from the past is "determined" in the present[49], but this is typical in Aethic ontology anyway.

[49]... Relative to an Aethus, of course!

9.10 Biological Implication of Aethic Reasoning

One major implication of Aethic reasoning is to provide ontological insight into the miraculous functionality of biology. For instance, take the sheer complexity of proteins. Of course, their complexity has a multitude of functions, but one of them may regard quantum coherence itself. Consider the nature of photosynthesis in plants, which allows an extraordinary efficiency of transporting energy without loss. It seems very likely that this is due to the phenomenon of quantum coherence [24]. As such, with the Aethic mindset, we might consider that one of the primary functions of the proteins which transfer photonic energy throughout the plant is to in a sense "hide" the information of where the photons are located in the vast expanses of complexity within the proteins. If this is done sufficiently enough, then the third postulate of the Aethus itself can be exploited to yield astounding levels of efficiency in energy transfer, which is just what it seems that plants are doing in possessing the gift of photosynthesis. As such, the endurance of our biosphere itself holds an intimate dependence on the third postulate of the Aethus, even though the scale between us and where it operates on Heisenberg's uncertainty principle are by many orders of magnitude removed.

In particular, though, we can suppose that a major general role of biological proteins is to procedurally manipulate and transfer Aethic coherent states. Due to the unfathomable complexity within proteins alone, we might suppose that Aethic effects are not only present, but well within the scope of natural selection. For a protein to harness Aethic effects would be no more or no less unusual than for it to harness the better-studied chemical effects and the like. Aethic coherence would, simply put, be a major mode of contribution toward proteins and their procedural abilities. This is so assuming the validity of the postulates of the Aethus.

Let us use these insights to construct an Aethic version to the orchestrated objective reduction (Orch OR) hypothesis of Roger Penrose and Stuart Hameroff. Specifically, their idea posits that human consciousness may come about from effects of quantum coherence within the neurological brain, particularly within its microtubules [25]. This hypothesis is quite controversial for its conflicting nature with key postulates of modern neuroscience. However, we will take this section to argue that with only a few Aethic updates, Orch OR can be seen for a high quality hypothesis indeed.

Now, Aethically speaking, we know that the ability for a conscious mind to collapse a wave function has not directly to do with any quantum essence within the mind itself, simply because the postulates of the Aethus explain the collapse themselves. That is, Aethic reasoning conflicts with objective-collapse theories by nature[50]. Through such a thing we get that that portion of Orch OR is not to be salvaged, but with that out of the way, we can begin to analyze its more intriguing aspects.

We will specifically argue, via the Aethic standpoint, that it is quite plausible that consciousness implies an influence of quantum coherence in its functionality. However, we will strictly also hold that the converse of such a statement is not generally true, (at least under the same mode of reasoning), as would be a more panpsychist supposition, perhaps. Regardless of whether there is any merit to the panpsychist argument in general, we are to make a very specific argument here regarding why the brain's remarkable abilities over energy and time efficiency would imply a dependence of the brain on quantum coherence for its functionality, *but merely where this is a boost to its general functionality rather than the medium of it.* In essence, we still fully agree with the standard paradigm of neural connections being the physical root to consciousness, but then regard quantum coherence as being a necessary extra ingredient to the picture for the consciousness to actually be allowed existence.

The premise behind this is that if we attempted to perform, say, even a single second of the brain's computation without the effects of quantum coherence, then the time complexity would skyrocket while the efficiency fell, in effect rendering animal life impossible over the second-to-second timescales of functionality demanded by natural selection. If it took ten thousand years and quadrillions of joules to power the human brain for a single waking second, then of course consciousness would be impossible, so our argument here is specifically that *given the accuracy of our supposition about the involved time complexity, it follows that consciousness is technically existentially dependent on quantum coherence by only one degree of causal separation, and therefore Orch OR's identification of such a phenomenon*

[50]Note that even the question of whether Aethic reasoning conflicts with objective-collapse theories is somewhat nuanced, so we must be careful about how we state this. Specifically, the issue with objective-collapse models is that they always attribute the wavefunction collapse to a single causal phenomenon, which is strictly contrasted by the more dynamic, albeit deterministic phrasing of Aethic reasoning on wavefunction collapses. With the point aside of how no existing instance of an objective-collapse model thereby agrees with Aethic reasoning, we also have that objective-collapse models do not directly further the road to Aethic reasoning any more than other quantum interpretations, and as such should not gain a higher status among them. In effect, the attributions of how wavefunctions collapse according to objective-collapse models ought to be treated less as underlying ontological phenomena, and more as input parameters into the general machinery of Aethic reasoning.

is well placed.

Regarding the second part of our argument, being why it is justifiable to hypothesize such a massive falloff in the time complexity at all given the lack of some supposed neurological quantum coherence, derives simply from the truly vast complexity held within biological proteins. From a purely existentialist point of view, I am taken aback by only one physical concept to the same intensity as when I try to ponder the scale of Graham's number, and that concept is the macromolecule. The sheer immensity of these objects is almost not to be believed, it is so vast. As such, given what I know about the fundamental theorem of Aethic reasoning, it seems that hiding molecular information would be essentially child's play for the right class of macromolecule. In effect, we might even regard the inner workings of cellular biology as having a vast infrastructure of quantum coherent effects, with the perfect efficiency of photon transportation being only the tip of the iceberg. At the very least we have to acknowledge that under the fundamental theorem of Aethic reasoning, together with the almost intelligent procedural capabilities of macromolecules, it follows that the influence of quantum coherent effects at the biochemical scale are a very real possibility for explaining, at least in part, essentially any biological phenomenon. The sheer thought of what powers a particular biological protein might have over the effects of both Aethic and active reasoning are, in a word, rather striking to ponder over. As such, it follows that if proteins have indeed built a vast biological infrastructure of quantum coherence, then it follows through basic anthropic argument that the state of such an infrastructure existing at all implies it had better be deeply advantageous.

In total, we see that since proteins ought to be highly capable of hiding molecular information, then the fundamental theorem of Aethic reasoning implies that they participate in lots of quantum coherence. Then, because such neurobiological quantum coherence exists, we have that there had better be a great reason for why evolutionary nature would bother making it a possibility. Such a reason would have to imply significant disadvantages in the scenario where there are no neurobiological quantum coherent effects, so therefore the ability for consciousness to procedurally exists is dependent upon neurobiological quantum coherence. It may validate the premise of Orch OR on a technicality, yes, but that is as sufficient a confirmation as anything else.

Lastly for this section, let us simply reject the "warm, wet, and noisy" [26] objection to neurological quantum coherence on account of the aforementioned incredible yet uncharted abilities of biological proteins. There is nothing more to address on the topic, as saying "*the brain cannot be quantum coherent because it is warm, wet, and noisy*" is about as powerful an objection as claiming that Jupiter is receiving no sunlight because it is currently nighttime in Dallas.

9.11 Aethic Bayesianism

Aethically speaking, Bayesian givens and their updates to probability distributions can be fundamentally regarded to simply be an ontological consequence of invalid Aethae in the system. This is not to specifically update Bayesian updates per se, (which follow simply from adding an attribute and as such dealing with a new Aethus), but rather the very specific case of when a probability distribution that normally operates one way is somehow altered by the addition of another attribute. Take, for example, the classic Monty Hall problem [27], which, interestingly enough, becomes rather more intuitive under Aethic reasoning.

In the Monty Hall problem, you're on a game show, and you're given three doors, where two of them have a goat behind them, and the other has a new car. Supposing you're not a goat herder, and you would prefer the car, it follows that you're going to try to do what you can to pick its door. Once you pick one of the three doors, the host of the game show opens one of the other two doors, and behind it is a goat. So the only closed doors are the one you picked, and the remaining closed one. Now the host asks you if you want to switch to that door, or stick with your door. What do you say?

Aethically, this is how we might approach the problem: find which Aethae are invalid, and lone their weights to adjacent Aethae. Let's suppose you've picked Door One to start, and Door Three was afterwards shown to be a goat. Change the labeling on this choice if you wish, and you get every possible scenario so far, (i.e. isomorphism). Let's look at your Aethus at this very moment, which we will call A, and let's further suppose that it can be subdivided into three additional child Aethae, being B_1, B_2, and B_3, with the car behind that corresponding door, (being 1, 2, and 3 respectively). Let's also merge B_2 and B_3 with an Aethic union, that way we can focus on the dichotomy of B_1 or

not.

$$\begin{array}{cccccc} & & & A & & \\ & B_1 & & & B_2 \cup B_3 & \\ C_1 & C_2 & C_3 & D_1 & D_2 & D_3 \end{array} \tag{125}$$

What we have effectively done with this analysis is partitioned the possibilities into either the case where we select the correct door to begin with, being the case of B_1, or where we do not, being the case of $B_2 \cup B_3$. We then make an important Aethic move beyond this, which is to re-express all three possibilities again for the door of the car as child Aethae to these two scenarios, but then merely cross off the contradictions. This looks like the following.

$$\begin{array}{cccccc} & & & A & & \\ & B_1 & & & B_2 \cup B_3 & \\ C_1 & \not{C}_2 & \not{C}_3 & \not{D}_1 & D_2 & D_3 \end{array} \tag{126}$$

Generally speaking, we have that C_2 and C_3 are Aethic contradictions on account of their contradicting the need for the car to be behind Door 1 in scenario B_1, and D_1 is an Aethic contradiction with $B_2 \cup B_3$ on account of it being immediately expressible that for the car to not be behind Door 1, as seen by $B_2 \cup B_3$, means of course that for it to be behind Door One also, as seen by D_1, is an Aethic contradiction.

For our particular scenario, however, we have also conventionally defined that whatever the second door which is to be opened by the host is what we refer to as Door Three, so therefore D_3 must also be an Aethic contradiction on account of Door Three needing to be a goat.

$$\begin{array}{cccccc} & & & A & & \\ & B_1 & & & B_2 \cup B_3 & \\ C_1 & \not{C}_2 & \not{C}_3 & \not{D}_1 & D_2 & \not{D}_3 \end{array} \tag{127}$$

We have now expressed the full array of possibilities for where the car might be given the initial setup, being C_1, which is the case where we pick the correct initial door, or instead D_2, being the case of our having guessed wrong initially.

Given that the car was going to be behind a random door in the beginning, we can therefore argue that the weights of B_1, B_2, and B_3 are to be uniform in our original Aethus, so since we know they represent an Aethic partition of A, it therefore follows from additive probability rules that $B_2 \cup B_3$ is twice the weight of B_1, in a sense holding two thirds of the probability upon a randomization from A. This should hopefully be somewhat trivial, and consistent with the normal stance of probability, no Bayesianism required. Now, however, to instill Bayesianism, all we need to do is analyze the total effects of all invalid child Aethae.

Generally, the concept is simple – given some Aethus, it ought to only select probability from among the weights of all its valid child Aethae only, in effect disregarding the weights of invalid child Aethae. As seen before, this is what we refer to as *realizable Aethic probability*. Such can be considered to be the interpretation of probability which we are all used to – given an array of Aethae, select outcomes only out of those which are valid. Under this method, we simply split a third of all probability toward B_1, and then siphon that all to C_1, hence concluding that there is a $\frac{1}{3}$ chance of the car being behind the first door, and we can siphon the remaining two-thirds of all probability from $B_2 \cup B_3$ into D_2, hence concluding that there is a $\frac{2}{3}$ chance of the car being behind the second door. Through this, we have fully generated the solution to the Monty Hall problem just using the nature of invalid Aethae. The claim here is that such a thing is ontologically responsible for all of Bayesianism in some form or another.

As we know, of course, beyond the realizable interpretation of probability is the *hyperrealizable probability* interpretation of Aethic reasoning. That is, this interpretation of probability seeks to, under a given convention, mathematically consider invalid Aethae as possessing nonzero probabilities, but then simply reject any invalid sampling outputs upon converting to a realizable solution at the end of the derivation. That is, we repeatedly rerun the randomization process until a valid Aethus is sampled, and only then return that output. Consider the setup for the Monty Hall problem again, but under such a hyperrealizable model.

$$\begin{array}{cccccc} & & & A & & \\ & B_1 & & & B_2 \cup B_3 & \\ C_1 & A & A & A & D_2 & A \end{array} \tag{128}$$

This is not meant to specifically imply that A ought to be a child Aethus of B_1 or $B_2 \cup B_3$, but rather that we are meant to recursively run centric unfolding on A again if an invalid Aethus is attained, in a sense ontologically supposing that the landing on the invalid Aethus "never happened." (So, in making it never happen, we revert back in Aethic time and try again). The above diagram can be considered to map to centric unfolding this time rather than parent-child Aethae specifically.

The procedure now to find the probability of C_1, (car behind door 1), or D_2, (car behind door 2), is to simply write up an infinite geometric series of all probabilities, where each instance of A substitutes the series therein. This would, however, require several nodes per each iteration to write correctly, so let us write up a possible result using a simpler example instead.

Suppose in the simpler example that some valid Aethus, A, has three child Aethae over a uniform distribution, being X, Y, and Z, such that Z is invalid. The procedure of expanding this into a total expansion for X, for instance, works as follows.

$$A \to \{X, Y, \not{Z}\} \tag{129}$$

$$A \to \{X, Y, A\} \tag{130}$$

$$A \to \{X, Y, \{X, Y, \{X, Y, \{X, Y, \cdots\}\}\}\} \tag{131}$$

$$P(X \mid A) = \frac{1}{3^1} + \frac{1}{3^2} + \frac{1}{3^3} + \frac{1}{3^4} + \cdots \tag{132}$$

$$P(X \mid A) = \frac{1}{2} \tag{133}$$

This is the functionality of the hyperrealizable interpretation of probability under Aethic Bayesianism. Also note that this is inherently not a Frequentist perspective. Sure, as a property of probabilities, if we could run a centric unfolding episode innumerably many times from the same Aethus, it follows that this would indeed, in weight, equate to the realizable probability. But this cannot be extended to the physical world just as logical causality can – the reason being that the physical world is too messy – or, more specifically, Aethae are constantly changing, so we cannot say that one single Aethus is repeatedly mapping to different children, because instead, in the real world, it is rather always a string of different Aethae that are only equated through speculative or subjective assumptions, themselves mapping to, again, distinctly different child Aethae. For example, even the supposition that some number of coin flips represent the same repeated event is as arbitrary as how one defines the equivalence of those events. A wise person once said that *you can never step in the same river twice* [28].

All in all, to conclude this brief talk on Aethic Bayesianism, we see that the essence of Bayesian reasoning lies merely in the directed incorporation of invalid Aethae into an Aethic argument.

9.11.1 The Aethic Assessment of Frequentism

Simply put, Aethic reasoning rejects the philosophy of frequentism for its violation of the first postulate of the Aethus. Specifically, frequentism defines probability of an outcome as the proportion of times at which that outcome occurs as the limit of the number of independent trials goes to infinity. The Aethic issue with this supposition is quite simple, then: the mere supposition of what constitutes the intrinsic equivalence between any two trials is fundamentally a subjective choice, and therefore a choice which is not compatible with the first postulate of the Aethus. As such, with the claim that any two trials are instances of the same general thing being Aethically arbitrary, we therefore have that frequentism itself fails to be well-defined under the first postulate of the Aethus. Such is a somewhat ironic fatal flaw of frequentism, given its premise of operating outside subjective interference and all.

Let us now define something of a formal sort of "frequentist bias" as according to Aethic reasoning.

Definition 24 (Frequentist Bias)
The bias of arbitrarily assuming that two Aethae are equal when considering a like quantity between them. Often characterized by personifying words explaining how the quantity in one is caused to be different from its form in the other. In Aethic reasoning, we hold this entire sort of sentiment as being as arbitrary as whatever one subjectively supposes constituents equivalence between the two Aethae in question. In other words, it violates the first postulate of the Aethus accordingly.

9.11.2 Aethic Sweeps Over the Hyperealized Layers of an Aethus

Consider a derivational exercise which we might call an 'Aethic sweep'. The premise of Aethic sweeps is essentially a more organized method of doing Aethic reasoning than other approaches, at least in many settings.

The idea is that we create different 'sweep layers', (each corresponding to a specific hyperealized layer of an Aethus), such that each sweep layer comes with a predefined set of conditions for invalid Aethae. This allows us to disperse such conditions for invalidity across the layers rather than running it all on a single layer. With the 'topmost' layer being the realized layer of Aethic reasoning, which is given to have to abide by the rules of validity within one's Aethic reality in question, we then are allowed to do manipulations on the different layers from the bottom-to-top direction, all while 'running' an Aethic sweep every time we jump up a layer. So long as one finishes their derivation by having run all required Aethic sweeps for their system in question, and so long as all individual layers follow the three Aethic postulates, then whatever insights one will have gained over the derivation can be counted as Aethically valid. The art of using Aethic sweeps, then, is to isolate phenomena on lower sweep layers without the meddling of validity conditions which apply only to the higher layers. When done well, then, this serves as a method of highlighting ontological truths that would otherwise be extremely difficult to derive.

9.12 The Aethic Second Law of Thermodynamics

Interestingly, we can reason that the Boltzmann interpretation of the second law of thermodynamics is merely an emergent property from the principle of centric unfolding. Simply put, to one's Aethus we have that a given system of particles is to be in disagreeing superposition over every possible configuration that it might exhibit as weighted by the number of microstates to each such configuration. Such a thing is trivial when we consider the microstates themselves to be uniformly random in disagreeing superposition, and then each macrostate to merely correspond to a set of unique microstates. By the principle of centric unfolding, then, each Aethus itself effectively "freezes" its chosen configuration state upon stating it as is weighted by said initial disagreeing superposition itself. The idea, then, is that such an ontology immediately derives Boltzmann's statistical interpretation to the second law of thermodynamics, in effect then bringing about the empirical law itself. Crucially, then, we have that Aethic reasoning agrees with Boltzmann that the second law of thermodynamics is fundamentally statistical in nature rather than absolute.

Note that to the extent in which the arrow of time itself is derived from the second law of thermodynamics, we may make a complementary generalized statement across all Aethae via the indiscriminate time principle.

Principle 31 (Indiscriminate Arrow of Time Principle of Aethic Reasoning)
In Aethic reasoning, we hold that centric unfolding indiscriminately produces the entropic arrow of time relative to an Aethus at any point in history instead of only at the present moment. This is because when we truly analyze the underlying Aethic effects, we see that one's attainment of knowledge about any point in history still follows the same rules of attribute-gain as the present moment, with there being no intrinsic difference between the two under the indiscriminate time principle of Aethic reasoning. As such, we hold that centric unfolding triggers the realization of the Boltzmann interpretation of the second law of thermodynamics indiscriminately across all points in the past and future history of the universe, all relative to a given centrically unfolding Aethus.

9.12.1 Aethic Reasoning and Time-Reversals

A highly intriguing consequence of Aethic reasoning can be summarized in what we might refer to as the *entropic principle of Aethic reasoning.*

Principle 32 (Entropic Principle of Aethic Reasoning)
There is something of a remarkable corollary to the Aethic premise of how the second law of thermodynamics ought to be rooted to the progression of Aethic time rather than Einsteinian time, which we might refer to as the 'entropic principle of Aethic reasoning'.

Simply put, the premise is that if we somehow were able to perform a time-reversal operation onto the entire universe, something like flipping a switch, then entropy would still have to increase after the fact due to the Aethic second law of thermodynamics. In effect, we have that triggering a genuine reversal of time could not possibly cause the universe to backtrack along its own ordering of

events accordingly, but instead would merely cause an instantaneous reversal of all odd-dimensions with respect to time reversal, (such as velocity for example), after which point entropy would still have to increase as usual. For instance, had two friends been throwing a football at the moment when the reversal occurred, then the football would not magically follow its initial trajectory back to the hands of the thrower, but instead would get something of a kick of momentum back in the direction from which it came, all while still feeling air resistance and other entropic effects as if time were flowing forward still.

This bizarre premise can be considered a consequence of the extrusion principle as well, where the progression of Aethic time and Einsteinian time are no longer obliged to occur in parallel.

9.13 On Being Wrong

There is something of a potential criticism to the Aethic logic, which is to regard the possibility of one's entire epistemological outlook being wrong. There are extreme examples of this, such as that seen in the film *The Matrix* [29], but there are also more mild versions, such as thinking you left your car keys in your pocket but instead having left them on the table. Etcetera. What happens, Aethically speaking, when one's perception does not match the truth contents of their Aethus? May the Aethus even be sure to have contents at all anymore beyond that point?

The most straightforward solution to this paradox of sorts is to add a special additional principle to the Aethic mindset. Here it is.

Principle 33 (Principle of Aethic Accidentalism)
No Aethic attribute, either spoken of or ontological implied, may certainly exist in one's Aethus. At most it is in a superposition with some of its alternatives such that the weight is very much in its favor against theirs. This is the Aethic analogue for epistemological skepticism, along with an additional layer regarding the ripple effects of such a thing through reality.

That is, Aethic superpositions never "collapse" at all – instead they merely "compress."

This particular interpretation of Aethic reasoning serves as something of a failsafe towards implying that all information which is spoken of as true necessarily is true within one's Aethus itself. To be clear, the idea is that superpositions may only ever approach a single attribute, but have something of an asymptote toward reaching it in terms of certainty. Never does it actually reach the fixed point that is the attribute itself's definite state in the Aethus.

Some examples of this principle might be thinking you see your friend's car, and then being wrong. Human error, see, creates an immediate buffer toward being wrong about something. At the instant of seeing the car, it would be a fallacy to argue that the state of seeing your friend's car is now within your Aethus. Perhaps you are wrong. In the prior example, we see that you were. Even if you are looking directly at your friend, it is still a fallacy to suppose that that is your friend. Perhaps they have a secret identical twin who is posing as them. Perhaps you have a brain disorder which prevents you from distinguishing between different people. Perhaps you are a brain in a simulation. And so on and so forth. The main supposition of this postulate, then, is that it is a fallacy at all times to argue that something you believe empirically is within your Aethus – no matter how sure you are about it. This is nothing new to the possibility of being wrong as seen through the classical lens, it is just nonetheless unsettling that it also extends to the Aethic mindset.

This is not to say that your Aethic does not contain information – rather it is an argument that one cannot assert they know what is in their Aethus beyond hypothetical mathematical meddling. As such, we are required to have a "standard system" of sorts of interpreting reality, which might fall under the umbrella of the centric unfolding interpretation of the Aethus. Such a system would imply that some of the core postulates about reality which seem to be true as a matter of fact are – that is unless they are eventually proven to be not so.

As an example of an argument we might use in favor of such an assertion, one might ask why the Aethic postulates operate so neatly over one's Aethus in the first place. If we were separated from the truth of reality by many more iterations than we believe, (for example via a simulation), then we could justifiably ask why reality keeps track of applying the second postulate to our empirical world so well. If all of the events of our lives were trivial and unconnected to the core of reality, then perhaps those laws would only apply to the deeper things, in the process feeding our perceptions with ever changing and unstable Aethic updates rather than ones which can be shown to follow a general pattern. However – there is a dark side to this assertion even by itself, because if we extended such a chaotic possibility far enough, such that everything and every law of physics was utterly chaotic and

non deterministic, then some kind of creature might as well develop in this chaotic soup which views it in a somewhat orderly lens with respect to itself – and that could just by you and your Aethus[51]. This is not to say that this is the case for sure, but it can be extrapolated that an Aethus is a natural possible consequence to either the most orderly or chaotic system imaginable – whether, that is, there is a difference in the first place.

Anyway, this argument was simply given as a backup to any criticisms against the Aethic mindset which regard it. We ought to be outward in our claiming of inability to see into the inner workings of the Aethus, and that is that. That does not, however, mean that we cannot set up a system which matches to all things we have empirically described, such that even if we are in some false reality or another, we will describe that falsehood to a high degree of accuracy.

As a direct example of how the Aethus interprets scenarios like these, consider what would happen if you were to live in a dream world where every time you walk on pavement, you are actually walking on grass, and every time you walk on grass, you are actually walking on pavement. If you currently believe you are walking on pavement, (meaning you are actually walking on grass), it simply follows Aethically that your Aethus ought to hold the same state now regarding such a thing that it holds before. That is, the Aethus only ever asserts that this qualia at the moment lines up with whatever qualia you involuntarily aligned it with before. So if it's pavement but really grass, and it was pavement yesterday but really grass, then either way what it really is now is what it really was then, because since your Aethus is simply an ontological manifestation of your sensory intake to an exact correspondence, it then follows the two line up. And even if they do not, such as it being pavement but really grass today but pavement but really water yesterday, then the mediocrity principle itself can be of use here, arguing that it was probably still pavement but really grass yesterday as well. If, however, it is not, then such an assertion is simply an instance of the problem of induction but in Aethic form. However, considering how all throughout human society do we constantly assume no problem of induction, it follows that that same assumption maps here in the assertion that one's Aethus truly contains what they believe that it contains. The key though is to remember that what the Aethus contains is deeper and more fundamental than what believes it contains, so the Aethus might very well contain something and have you not know it rather than definitely containing something only because you thought that it must. The problem of induction, then, would be a problem of opinionated knowledge, not of the Aethus, and hence we get the principle of Aethic accidentalism once more. But yes, if an isomorphism between what you feel and what there is is to be implied, then this is sufficient before a direct assumption of equality. The relationalism between the two is enough to write up this ontology.

9.14 The Aethic Tree

The Aethic tree is an abstract representation of all possible Aethae into a directed acyclic graph, (referred to as a "tree" because a directed acyclic graph is a special kind of tree graph). That is, in such a graph, every Aethus possesses a directed edge toward each one of its child Aethae. As such, the Null Aethus points to every Aethus in the tree, and is pointed to only by itself, (thus making it the root), and beyond that, all other Aethae are reached via edges from their parents.

An intriguing property of the Aethic tree, then, is the notion that every possible conscious being, in being rooted to an Aethus, sits somewhere on this same tree as every other possible consciousness. So, every human on the planet exists on this same Aethic tree, such that they simply hold different manifestations of the same ancestral Aethus through their Aethic attributes. Furthermore, given the fundamental tenet of centric unfolding, which states that we are constantly transiting to our own child Aethae, it follows from an inductive extrapolation that, at some point in our Aethic past, all of us would have had our consciousness present on the Null Aethus. This is an extraordinary prospect to ponder, and it is also quite difficult to truly grasp, but perhaps this is representative of the fundamental connection of all life in some way or another.

Lastly for the Aethic tree, consider two concepts.

Concept 2 (Dimensional Time)
Time as it is described in the theory of relativity. Time is a dimension which is a component of spacetime.

[51] To be clear, the argument here is more or less that given the mediocrity principle and the postulates of the Aethus, it is not too radical to suppose that a simulation-on-simulation-on-simulation or something world of utmost chaos could not itself develop Aethic and physical properties with respect to whatever bath of chaos generates it. In such a lens, the Aethus is less a standalone ontological entity, and is more tailored to whatever stacking of reality it operates in relation to. I.e. the Aethic postulates and the accordance theorem still apply regardless of system due to their relational nature.

Concept 3 (Aethic Time)
While not technically time in the standard, dimensionally oriented sense, Aethic time is simply a quantitative measure of how far along one's string of child Aethae stretching back to the Null Aethus they are. While it is difficult to find the exact numerical values to Aethic time, it holds a property that given two Aethae, A and B, where B is a child Aethus of A, the Aethic time of A is less than or equal to the Aethic time of B. Beyond this, the details of what it entails are merely further specificities in the general Aethic time class.

As such, *Aethic past* would regard Aethae of oneself with lesser Aethic time, and *Aethic future* would regard Aethae of oneself with greater Aethic time. Remember, these concepts are merely representative of one's position on the Aethic tree, and have no direct relation to spacetime.

To form an example of where Aethic time is relevant to one's day-to-day life, consider how it allows for a more intuitive explanation of what is called the *Lindy effect*. The Lindy effect is a mathematical notion that the expected future lifespan of an object or concept should be proportional to its past lifespan [30]. Specifically, however, this depends on the object being "nonperishable," instead of being "perishable" like a human, whose likelihood of continued survival to a unit time tends to decrease. The issue that we would like to point out with this notion, however, is that although the distinction between perishable and nonperishable is empirically present, we do actually possess an ontological mathematical definition of *nonperishable*. As such, the use of this term runs the risk of circular logic, where it is both defined through the outcome and the cause to those systems which make use of it. However, this issue can be fixed if only one makes use of Aethic time. Simply put, here is the definition of nonperishable items with an Aethic approach.

One final note for this Aethic tree section regards the Null Aethus itself. Based on the Aethic union principle, we can see a fascinating trait of the Null Aethus – it serves as the superposition of the entire Aethic tree into one single Aethus. (Note[52]).

Concept 4 (Nonperishable Items)
An item for which the hazard rate of its perishing is constant over dimensional time relative to a fixed Aethus.

As an example of this in practice, suppose we are to analyze a book's longevity with the Aethic Lindy effect. To begin with, we must assess if the book is nonperishable. Given an Aethus to describe the book which has no attributes other than that the book exists and has a current age of t, it follows from the Poisson limit theorem that it should have a constant hazard rate with dimensional time, as such making it nonperishable given the definition stated here. Note, however, where the distinction with perishable items comes, which is simply a function of there being more attributes at play in the Aethus of description than this. By default, the hazard rate should be constant due to workings of mathematics and the Poisson limit theorem, however with continually added attributes to such an Aethus, the possibility of the item being perishable now also comes into play. For instance, take a human. It is decidedly included in a human Aethus that we are to age in a humanlike way, and as such the hazard rate of our own deaths tends to increase exponentially with time accordingly. This highlights that the difference between nonperishable and perishable items lies directly in the specificity of Aethic attributes describing it. Does it tend to be overarching, and as such operate something like white noise, with many possibilities of disagreeing superposition generally evening out in probability and creating a nonperishable item, or are there instead sufficient Aethic attributes to create a definite change in the hazard rate with dimensional time, thus making a perishable item?

This now being said, given that an item is nonperishable, the Lindy effect itself can be derived using a simple application of the mediocrity principle. The Aethus with which we use to describe an item, as before said, has only the attributes marking the existence of the book, and how long for which it has existed, being some t. As such, we may further deduce from this information that the book is nonperishable given the prior explanation, however it is still unknown what the particular constant hazard rate actually is over dimensional time. Through the mediocrity principle, then, it should be expected based upon the expected value of an exponential distribution, (being the reciprocal of the hazard rate), that the expected hazard rate is in fact $\frac{1}{t}$. As such, if we were to only take child Aethae for which the book is to survive, (hence applying the condition of the Lindy effect that success

[52]However, note that the Nexus information of this is still vague. In order to compile the entire Aethic tree into one Aethus, we must know by which Nexus the Aethic tree naturally operates. As a matter of fact, we could create an entirely distinct Aethic tree for each and every valid Nexus. As such, what truly is the Null Aethus in this light? The superposition of the superpositions of all Aethic trees? Who knows! To find this out, we first need to understand Nexae better, and specifically how they operate quantitatively.

of longevity is to be taken), then it will follow that the dimensional time hazard rate of the book's demise should continue to be constant and the reciprocal of the book's current lifespan to an Aethus. As such, even though in every particular Aethus, a derivation might retrieve a constant expected hazard rate, it follows over the passage of many Aethae over time that the hazard rate will tend to decrease with respect to the changing Aethae. It is something of an unintuitive dilemma in the classical sense, albeit in the Aethic sense it is quite natural.

It should also be noted, to finish out this section, what "up" and "down" mean in the Aethic tree. By convention, the Null Aethus should sit at the very "top" of the Aethic tree, with Aethic time pointing down with its progression. It is done this way, such that parent Aethae point "up" on the Aethic tree, (to match how ancestors are "up" in one's family tree), and that child Aethae point "down" in the Aethic tree. This also implies that "descending" the Aethic tree means to follow the natural flow of centric unfolding in the downward direction, whereas "ascending" would mean to conceptually consider the space of parent Aethae rather than child Aethae. Note that this holds the reverse intuition in terms of branching than physical trees, at which the root is at the bottom, and the branching heads upwards. With the Aethic tree, instead we have the root, (being the Null Aethus), at the very top of the tree, with any and all branching from there facing downward.

9.15 On Aethic Stackable Attributes

There is a seemingly paradoxical effect at play for certain classes of physical properties, so we need to address how they are to be properly converted into an expression through Aethic terms. Consider, for example, the way in which we humans measure time, by incrementing very small intervals additively like a linearly growing float value. In our classical world, this is a tangible enough epistemic property, however once we start to translate it to Aethic terms, we find that it is a surprisingly nontrivial question. Unlike depicting categorical attributes like, say, the properties of minerals to an Aethus, we find with time that designating a single attribute to it is insufficient, because if you set the state of attribute "time" when the clock strikes two o'clock, then you effectively freeze that time wherever the setting was done, because to change it at any future point would amount to an Aethic contradiction. As such, we have that simply setting the attribute as is amounts to an invalid way of encoding time.

The basic idea is that in the face of issues such as this, all we have to do is come up with creative alternatives of expressing the same desired empirical notion without relying on the same styles of Aethic encoding which triggered the problem in the first place. Whether it can be done is implied as true in Aethic reasoning, but how easily it can be done is a whole other question.

Considering time again, if we want to simply brute force the solution by brainstorming other ideas of how to encode it, then we find that they too tend to fall short of succeeding. Maybe we suppose that time itself is state-decomposable into many different binary attributes, such that its value simply reads their sum. When each reads blank, we might suppose that it adds zero to the sum, however once it becomes stated, it then adds one. In total, we would create something of a clock, such that the total registered time increments as each new attribute in the sequence is stated. Now, this being said, we can somewhat easily discount it as anything which is ontologically relevant. For one, time is obviously not discrete like such a framework would imply, and it also goes without saying that such a framework is far too Cartesian to attach to any real ontology.

A better idea, perhaps, may be to use attribute weighting for this endeavor, such that incrementing time amounts to slightly filling in the blank of a single attribute. The benefits of this framework are that it is now continuous rather than discrete, and that it does not rely on numerous arbitrarily defined attributes. Epistemically speaking, then, such a notion is at least arguably well-defined, however it nonetheless hardly addresses the larger issue at hand, being the corresponding ontology. That is, we might list all the nuanced ways of *possibly* expressing time in an Aethus, but none of them help sway the debate in favor of the best ontological system. As such, with the epistemic question of Aethically encoding time already being nontrivial, the ontological question is yet even more difficult. We will leave this question here for the current paper, and will attempt to address it further in the followup paper on active reasoning.

Given this example of time, let us create a name for the general class of physical properties which tend to update with time, as such triggering conflict with their direct representation in the Aethus. Perhaps we refer to such properties as *stackable attributes*, due to their nature of having a timelike "refresh mechanism" of sorts. The simplest example of such a thing is dimensional time itself, for which the question of its Aethic expression has already been depicted as nontrivial. Some other key examples of stackable attributes are quantum spin and gauge boson polarization, which we know

empirically to be able to pick up brand new states with time as well. For example, we know that every time a photon passes through a polarizer, we have that its polarization state is to change accordingly.

Given that all of these examples of stackable attributes have empirical components to them, the scientific method demands that they get the benefit of the doubt in the event of us questioning their intrinsic compatibility with Aethic reasoning. This then supplies us with something of a dichotomy of options, of which only one option is true.

1. One option is that all possible empirically-correspondent stackable attributes can be reformulated into empirically equivalent epistemologies which are Aethically compatible in both the epistemic and ontological lenses. We will refer to the reformulations which do this as the *stackal transform* of the corresponding stackable attribute.

2. The only other option is that there exists an empirically-correspondent stackable attribute which cannot in any way be reformulated to Aethically compatible terms, in effect making it *stackally untransformable*. In such a case, the paradigm of Aethic reasoning itself would have to be false, on account of it no longer fitting all constituent empiricism. We therefore have a fundamental principle, being that *the correctness of Aethic reasoning demands that there are no stackally untransformable attributes which correspond to a valid empiricism.*

Through this insight, then, we automatically have to declare the following premise as a conjecture in Aethic reasoning.

Conjecture (Stackal Transform Conjecture)
Any physical phenomenon which is present in the reality of a valid Aethus will possess a well-defined stackal transform for each valid epistemic formulation of it.
Note that such a principle tells us that there is indeed a stackal transform to be found, however it does not cover the procedure of actually deciphering it. As such, different stackal transforms will require different derivational methods, perhaps of varying levels of difficulty. (In this way, a good analogy is the solutions of integrals).

Here is a rough listing of different classes of attributes, so as to consider the ease or difficulty of finding their stackal transforms.

- If the attribute is trivial, then it will not be a stackable attribute, and as such is its own stackal transform.

- If the attribute is a stackable attribute of an easier variety, then perhaps it can be written with a relatively straightforward stackal transform.

- If the ability of finding an attribute's stackal transform is provably impossible, then the attribute in question must be a construct, (at least according to Aethic reasoning).

- If an attribute's stackal transform is possible but excruciatingly difficult to decipher, then said attribute might be interpreted as hinting at the need for new physics altogether. This is the ontologically difficult category of stackal transforms.

Of course, in order for the stackal transform conjecture to rise to the level of a theory, it is going to need a wide array of confirmational cases for which a stackal transform is indeed achievable. Given that it is early in the game as of the writing of this paper, this achievement is going to require some time to finish in full, but in the active reasoning paper we will describe some of the basics for how to do this with quantum spin, and perhaps even dimensional time itself.

9.16 The Fallacy of Initial Conditions

By this point, it should hopefully be clear that Aethic reasoning argues that the importance of "initial conditions" to our classical intuition for system ontology is now deemed arbitrary. It is a remnant of the postulate of complete reality that has to be avoided through the Aethic lens. Instead, now we would assert that the state of a system is a function not of its initial conditions, but of whichever Aethus is that of the observer.

To clearly highlight what this is specifically arguing against, take a swinging double pendulum for an example. The classic analysis of such a pendulum is that it has a definite, deterministic path to it, being a function of its precise initial conditions. However, this makes one clear fallacy in the Aethic

lens, which is only truly correct in some but not all cases: it assumes that all present superpositions are disagreeing ones.

Disagreeing superpositions are certainly very fundamental to those places in which they apply. Our modern and popular idea of "timeline splits" are, in a sense, merely referring to disagreeing superpositions. The only difference is that a timeline is supposed to imply all its constituent information and the like, which has already been discussed. But, aside from this, it can be seen that timelines and disagreeing superpositions are essentially one in the same – where their composing contents are fundamentally discrete and separated from one another.

This, also, is where both differ from agreeing superpositions, who also imply the potential for attributes to occupy "contradictory" states at once, (but only in the exterior sense of contradictory, in effect not truly triggering an (interior) Aethic contradiction, which itself is still forbidden).

This all being said, for disagreeing superpositions where no more or less information is to be attained during its running, (i.e. a fixed Aethus), it follows that knowing the state of the system at any one time implies a knowledge of it at any other time, (with such a known time being standardized to the beginning of the experiment). However, of course, this is a far too specific situation to actually deal properly with the more chaotic functionality of the world.

Instead, in the real world, there are two main differences from these disagreeing superpositions, which make the deterministic model generally unfavorable regarding accuracy and ontological truthfulness. That is, agreeing superpositions are also very much a possibility, and information is almost never static. As was seen with the derivation of the Lindy effect in an Aethic light, it is actually more than reasonable to dynamically alter the Aethic information of a system, which manifests itself empirically as Bayesian updates, etcetera.

For these reasons, the more accurate ontological model of a double pendulum is more to depict a device for which there is always a hair of error in the ontological measurement of its state at any given moment. That is, it is in a slight superposition of existing in multiple states at once near to the pinpoint precision of an exact angular orientation at present. And, as we know from the functionality of chaos, such a thing will unfold to a vast amplification with the passage of time. So, in a sense, your Aethus begins with all possibilities of where the double pendulum might go, and then progressively crops out more and more of these possibilities as you continue to update your Aethae with the passage of time when watching the pendulum. This, instead, should be the Aethic general substitute for the concept of initial conditions.

9.17 The Constituent Matter Fallacy

A pressing fallacy that I see many people default to is the notion that every "object" in the universe, (whatever such a thing even means), is entirely derived in ontology from those matter parts which compose it. That is, the idea is that the root of all causality sits in the realm of the smallest particles, with everything else being derived from this. In my mind, however, this is an odd if not indefensible standing. Under what evidence is it sure to be true?

In order to found Aethic reasoning, I had to look at this from entirely different direction. My claim now is that the Aethus is the fundamental arbiter of ontology, with the random scatterings of particles being just a consequence of this. By the first postulate of the Aethus, furthermore, we can go as far as to argue that assuming all superpositions derive from the net combinations of quantum particles is a fallacy outright. Rather than causality only pointing from the small to the large, instead we have that it points outward from the Aethus, be it regarding the motions of subatomic particles or the galaxies around us. The particle-first view, then, seems rather archaic when one really analyzes it. (Why not big-to-small? Why not space-to-matter instead of matter-to-matter? And so on from here).

9.18 Aethic Causality Notions

Consider something of a pitch for Aethic reasoning, which highlights a potential parallel between it and the the Newtonian revolution.

The great revolutions in science come from replacing causal arguments with relational arguments of an original motivation.
For example, the major part of what makes Newton's laws so remarkable is that they operate completely independently from causality, in effect replacing would-be causal arguments with something as contextually shocking as a second-order differential equation. This represented the very first time when humanity divorced a major component of its explanative natural philosophy from Aristotelian[a] causality. Notice how we're still reaping the benefits.
We might argue that the best news for Aethic reasoning is that it applies this same process of what Newton's laws did to his day, but instead to the modern world, in that the causal backbone of the Copenhagen interpretation is replaced with the three Aethic postulates.

[a]This is also why I would argue that the Newtonian revolution is every bit as impressive as the Einsteinian revolution, as we have to remember that Newton did the same thing to Aristotle which Einstein did to Newton.

9.19 Intuitive Updates for the Multiverse

One point of interest with the Aethic mindset might be to compare and contrast it with standard multiverse theories like the many-worlds interpretation of quantum mechanics. The main point of difference, to begin with, is how the Aethic multiverse is rooted to an Aethus, (informational and sentient-adjacent entity), rather than a physical spacetime continuum through timeline branching or whatnot. This would cause a number of paradoxes that have already been more or less gone over implicitly, such as the inability to create the third postulate, or the supposition that human quantum observers are arbitrarily unchanging with time.

Beyond these key differences, however, there are also many similarities between the classical multiverse and the more ontologically minded Aethic multiverse, (being the Aethic tree itself). However, there is one further point of difference that really helped our team on our way toward deriving the Aethic concepts in the first place, and we would like to share this point with you.

Specifically, we recommend thinking of the multiverse as two different concepts, instead of one. There is the *lost multiverse*, made up of all the Aethae you have passed by and away from in your centric unfolding over the years[53], and there is the *dark multiverse*, made up of all the attributes which are blank to your current Aethus, (and as such entirely unknown to you). The very epiphany that originally led me to the extrusion principle was the realization that the dark multiverse is ontologically separate from the classical multiverse, which itself operates more like the lost multiverse. In effect, the multiverse does not contain different instances of the same room, but rather the same room contains a corresponding leg of the multiverse within its physical contents. So when you stare at a room in which there is an Aethic superposition, you would note how you are in a single universe with the entire contents of the superposition, rather than the superposition perhaps being distributed across intangible alternate realities in the very moment. Apologies for the potentially Lovecraftian sounding names, (of course they are free to be changed), simply these names were spontaneously chosen at the moment to roughly portray their relation to oneself.

This all being said, it is helpful to picture the dark multiverse as not existing over different entire universes, but instead being a whole multiverse squished down right into our universe with us. It simply operates directly outside your view, because, after all, it is *your* dark multiverse, but nonetheless it holds entire universes worth of information crammed into minute spaces. The nuance of agreeing versus disagreeing superpositions are a bit of a ways beyond the affordable scope of this, with the general idea being that right under your nose, vast arrays of possibility are unfolding right here and now, instead of being in some far off and intangible alternate plane. It's personal, you see. Not distant. This is the epiphany that I had in 2022 while I walked down a sidewalk at my school and pictured a coin being flipped. I imagined a web of all the coins and all the realities that could result being merged into that one coin, with the Aethus following neatly along and then – boom, the coin lands heads, and the Aethus loses the superposition like it never happened in the first place, (i.e. the extrusion principle). That is the nature of the dark multiverse.

As for the lost multiverse, it operates a bit more classically. It is a list of all the ways one's own reality could have unfolded, and what they could have seen but never did. It is wider and more

[53]Rigorously speaking, this is the set of Aethae for which the union of it with your current Aethus is *not* a child Aethus to you.

expansive than the dark multiverse, but also more perilous for its array of worlds which hold an absence of life on Earth due to the terrors coupled with the Rare Earth hypothesis [31]. But even in our own sliver of ideal luck, we see innumerable different Aethae all strung together by the immortal threads of centric unfolding. That is the nature of the lost multiverse.

9.20 Are We in a Dream World or Simulation?

Consider the prospect that we are in a simulation like the Matrix [29], or perhaps oneself is dreaming and only thinks themselves awake. In an objectivist or otherwise deterministic mindset, these problems hold a real status in the picture of reality. As a matter of fact, many people instinctively turn toward the simulation hypothesis upon seeing the outcome of the double-slit experiment for the first time. This all being said, a natural question is to ponder over what status the simulation hypothesis holds in the grand scheme of the Aethic mindset, and whether it is relevant at all therein.

To begin with, the simulation hypothesis is, well, not very consequential at all in the Aethic mindset, the reason being that many of the philosophical notions used to emphasize it are nullified with regard to the Aethus.

Consider some number of iterative simulations, such that there is some "real world" on top, in which there is a computer running a simulated world, itself then holding a computer running a simulated world, and so on. A natural question that a philosopher might ask in the face of this is "which level am I on?" But, the notion that they must occupy even one level at all, instead of multiple, is an artifact of objectivism. In the Aethic mindset, given by the condition of being in a simulation that one is unaware of whether they are in a simulation, it follows simply from the second postulate that said person must necessarily occupy all levels of the simulation at once in a superposition. Perhaps even an agreeing superposition if some kind of uncertainty principle is here applicable. This might seem a very odd solution to the simulation query in the classical setting, but Aethically it is the only natural solution in the face of the vast unknowing coupled with the state of the simulation in the first place. Through this, we see that the ontological relevance of the simulation is perhaps even some form of underwhelming, with any semblance of a "real world" being present among these being Aethically arbitrary.

As a matter of fact, the Aethic mindset itself provides an alternative way of interpreting this dilemma in the existential sense. Suppose one found hard evidence that they were in a simulation, at least one level down from the "real world," (hence collapsing the Aethic superposition in the process). Given this, does it really *matter* at all in the existential sense? Most people would say that of course it does, because it now demonstrates that you are not living in the real world, and are as such that much more insignificant in the existential sense. However, in the Aethic mindset, the reaction to this would be quite different. Instead, we might suppose that we are inherently just as *real* as the level above us, because, frankly, we are real relative to our world and our Aethus, just as the other levels are relative to themselves. If we did indeed find ourselves in a simulation, we might simply readjust our perception and leave it at that. Or if anything we would not need to do any readjusting anyway, since, by virtue of being computer characters, we would already be tailored to our environment no more or no less than we would have been before. Ontologically, the link between person and Aethus is unchanged. That is, let us ease maximally into the relativism of things. Just because your Aethus is simulated, doesn't mean it is any less of an Aethus than any other Aethus. As such, reality roots to an Aethus, so by rooting to your simulated Aethus, you are still as *real* as anything else out there. This is simply an application of the first postulate – which supposes that reality holds all value in relation to an Aethus, and that includes values of implied significance with respect to one simulation level or another. Existentially, then, no Aethus is superior to any other – that is simply not how the Aethic tree works.

9.21 Aethic Approach to The Hard Problem of Consciousness

We might note an interesting rendering of the first postulate of the Aethus, which is that *since reality is a statement of relation to a particular Aethus, we might then argue that any valid Aethus has to it possible statements of relation, and therefore must have possible corresponding realities.* This can be seen as a kind of reality-Aethus dualism principle.

Principle 34 (Principle of Aethus-Reality Dualism)
Just as for any reality, there must be a corresponding Aethus, we also see that for any Aethus, there is automatically a corresponding reality.

This might be seen as synonymous with the first postulate of the Aethus itself, but particularly in a way which highlights the ability of both statement and converse to hold.

A key idea we might take away from this, then, *is that biological life, by climbing the evolutionary ladder toward more sophisticated evolutionary mechanisms of gathering information, accordingly implies a corresponding Aethus which must arise in parallel to such an advancement.* To illustrate this point, consider a thought experiment in which we can follow along with our distant ancestors as they undergo evolution, similarly to watching a movie. At some point in the runtime, such an ancestor would have been not so different than a flatworm, bobbing around in some ancient ocean. Such a flatworm, we might argue, will have a rudimentary two or three thousand neurons in its body, which through their incredible biological function will enable it to make calculated assessments about its oceanic environment. For example, perhaps it can gauge the basic salinity of the water around it, so as to involuntarily swim left or swim right accordingly. Mathematically, just this simple mechanism is grounds for defining an Aethus. The question of which specific attributes we would choose to depict it is somewhat daunting already, especially as per the fundamental theorem of empirical Aethae, but the notion is that an Aethus which does this could indeed be declared. In effect, the ghost degrees of freedom of the salinity gauge can be considered analogous, in their combination, with the corresponding Aethus to the system.

So, given that such a flatworm-like creature can be attached with an abstract empirical Aethus, such that the Aethus specifically encodes its deeply complicated neurological assessment of the salinity in the water around it, we might then use this to ask a fundamental philosophical question.

Question (Question of Evolutionary Aethic Extrapolation)
Is the Aethus we described for a flatworm's salinity gauge its Aethus in the same way as your Aethus is your Aethus?

This is something of a deep philosophical question – naturally deserving of many debates beyond what can be offered here. But it was worth mentioning it as a new open question of sorts.

Regardless of whatever the specific extrapolations of a human's Aethus to earlier layers on the evolutionary ladder are, the trajectory of things on account of evolution is somewhat more clear on account of it pertaining to our first-person experience as conscious beings. As such, as evolution continued on, and as our thought experiment-movie runs, we see more and more sophisticated measures of attaining information in our ancestors, in a way almost as a driving force to their evolutionary development. From worms come fish, and from fish come tetrapods, who themselves give rise to amniotes. What we see is that with each new biological revolution comes new environments which demand of new perceptual capabilities, which themselves are brought about in the nervous system. What ends up happening is that the nervous system, like an astoundingly powerful machine, learns to convert its very instance of sensory intake, (which remember we inferred can be encoded with an Aethus as per the example of the flatworm), into an immediate chain reaction of consequences. The neural system itself might even be regarded as being trained to perform the same intrinsic output to like stimuli, such as the flatworm swimming left versus right as depending on the salinity content input. Now, with more neurons, we stack more and more procedures just like this, with simple inputs producing trained outputs, and we then see that the combinations of the inputs themselves yield a vast number of additional and unpredictable outputs, all while still maintaining chief optimization against the stimuli of the environment. In effect, the brain evolves to the earliest hints of its modern capabilities. And as this occurs, a corresponding Aethus – which remember we take to correspond merely to the ghost degrees of freedom of the sensory intake system – takes shape accordingly for each new style of brain in the evolutionary development. What we get, then, is a corresponding hierarchy of three effects.

1. Through evolutionary pressure, the neural complexity of the evolving brain comes about to combat the immense variation in pressures which an organism might face over the course of its life. The neural network itself can be considered as the continual adaptation of the past design of the neural network so as to optimize its fit to each new environment. Naturally, this requires immense complexity, and its power comes in how it extrapolates known stimuli-to-response conversions into the wide variety of alternatives through essentially techniques of combination.

2. *The neural network of the brain brings about a corresponding empirical Aethus which corresponds to the ghost degrees of freedom of the sensory intake system, for no reason other than the presence of such ghost degrees of freedom implies that they can be expressed in an Aethus, so therefore a corresponding Aethus is present to that extent.* This is what we might generally refer to as a

"Aethus expressional declaration," which may be regarded in a similar vein to the mathematical universe hypothesis [32], however only to the extent of analogy. Specifically, the analogy is that where the mathematical universe hypothesis takes every stated mathematical concept to have an ontological counterpart – such that even allowing a mathematical structure to appear epistemologically implies that it must also possess a generated ontological component – we might then argue a similar thing of Aethae, being that for a system to exist which even *can* be depicted in terms of an Aethus implies that there must exist a corresponding empirical Aethus which associates with that.

Principle 35 (Principle of Aethic Ontological Implication)
Noting that this proposed principle is external to the foundations of Aethic reasoning, and as such is speculative to that extent, we might state it as follows.

Any system which can be depicted with an empirical Aethus implies an ontological Aethus which corresponds to it. (Note that this is not dependent on an agent actually doing the depiction manually, as that would be arbitrary – merely the suppositions is that if there exists a mathematical Aethus which can depict said system, then there must exist to that a corresponding ontological Aethus).

The comparison with the mathematical universe hypothesis falls off sharply after that, once that hypothesis strays from the pure philosophy. Even then, we are not here arguing that mathematics itself has an ontological counterpart, because such an assertion is variant as depending on the lens through one views that mathematics anyway. Instead, we argue that it would only be appropriate to make this kind of claim with regard to an entire Aethus, due to it being the only structure which is directly extendable to a well-defined reality, as per the first postulate of the Aethus.

3. *By the Aethus-reality dualism principle, we then have that a corresponding reality must come about to match the aforementioned ontological Aethus. Perhaps it is this reality itself which brings about the conscious experience of the agent, or we might at least suppose that in the significant breadth of metaphysics which spans this step, there is more than enough of a spacing to house a consciousness. Perhaps this unique metaphysical element of Aethic reasoning is where the inabilities of the classical paradigm to solve the hard problem of consciousness are relieved.*

9.22 The Aethic Mindset and Autistic Savants

This is slightly beyond the scope of the mathematical-centricity of this paper, but it is nonetheless philosophically relevant enough to attain just a brief mentioning. Consider the dichotomy of the classical objectivist and deterministic mindset of reality, (as is based upon the postulates of complete reality and static observation), and consider the query of whether or not humans are born with an innate tendency to favor the classical mindset, or if, rather, we are taught to do so in infancy by our society.

An excellent way to test various solutions to this using the merit of the scientific method would be to identify a possible control group of people who are not influenced by society in this way. Specifically, let us suppose that people with a highly developed theory of mind [33] are proportionally[54] likely to hold societal bias due to the relationship between such a theory of mind and their intake of knowledge from a societal standpoint. As such, those people who have a less-developed theory of mind are consequently open to two further general possibilities. Either, A) they are an unbiased control group that may be used to examine a human's innate perceptions of the Aethic mindset, or B) they themselves tend to favor or disfavor the Aethic mindset more-so than a general human at birth does innately, (or would do in the absence of the same societal influence). In a sense, this gives us two "variables" of sorts to determine – that which is representative of the Aethic mindset of a sample, and that which is representative of the innate Aethic mindset of a human. Such nuance may be sorted out with the use of a few, cleverly selected sample groups.

Here are four such possible groups we could compare and contrast to yield maximal differentiation.

1. Allistic adults in a Western society.

[54] Of course probably not numerically proportionally – in this context the word is meant to be more qualitative.

2. Autistic[55] adults in a Western society of various subcategories[56].

3. Infant children younger than two years of age.

4. People of an indigenous or otherwise non-Western society.

This all being said, there is a case to be made that many subcategories of autistic savants have a natural inclination to thinking Aethically. As such, this begs the question – is this due to them remaining at a younger-type brain state that is universal to all human infants [33] – or is it so that they instead branch off into an alternative method of thought that is itself distinct from the mindset of infancy? Only time will tell these answers. But, if autistic people do share any mental proclivities with infants[57], there is quite an argument to be made that perhaps humans do thinking Aethically in the natural sense, and that millennia of civilization have simply distanced us from this innate thought process so as to keep society functioning thus far. Perhaps the Aethic mindset would have been selectively non-beneficial to the optimal functionality of society in the past – however there is quite an argument to be made that this same tendency need not stand for the future, and if anything is perhaps due to invert.

9.23 Standard Linguistic Form of the Aethus

One might have noticed how we have repeatedly capitalized the word "Aethus" throughout this paper. The thinking for this goes that if a human name counts as a proper noun, then so too should an Aethus by the same line of reasoning. This does mean the *class* of Aethus as well as simply the *object* of Aethus. Such a thing does admittedly stray from what can be said of other attributes of a human, however we nonetheless are supposing that due to the unique properties of reality which correspond to an Aethus, it then follows that it ought to at least partially inherit some of these typically object-exclusive characteristics regarding proper nouns and their direct applicability.

9.24 Aethic Reasoning and Eastern Philosophy

Hopefully, if we have done our job, there are many mathematical, logical, and philosophical tools of sorts to play around with from this paper. Many of them may be entirely new and innovative. Having gotten to the truths associated with Aethic reason firsthand, however, I am amazed to see that many of these newfound inner truths of reality were known to the east for thousands of years. The eastern mindset seems almost more tailored to thinking Aethically than the west.

[55] Regarding another point of interest for future studies – I am actually somewhat hesitant to claim that I was the very first human to solve the measurement problem on one specific ground – the population of autistic savants on Earth. We know that Aethic reasoning is deeply fundamental to reality, and we know that autistic savants are both deep thinkers and comparatively immune to societal biases with respect with an average allistic person. As such, the parallel seems too apparent to miss – with the question being whether any autistic savants have already solved the measurement problem ages ago – and yet never conveyed this knowledge to neurotypicals for one reason or another, (perhaps due to a corresponding lack of a standard theory of mind). It seems very plausible, even, to imagine a scenario where a Level 3 autistic person naturally thinks in Aethic reasoning, and yet is merely diagnosed as lacking a theory of mind by a psychologist. Given that allistic people have yet to traverse a measurement problem solution, it is very plausible that there is a psychological phenomenon where a theory of mind and a generative intuition for Aethic reasoning conflict, so this all being said, it is an intriguing if not ironic situation that those who have been diagnosed with a "disorder" may have been more insightful on the topic than the psychologists diagnosing them.

[56] We say subcategories here, because it seems quite likely that two random autistic people tend to be as different from one another as they are from allistic people. As such, we picture something of a tree of many different brain types, with allistic people occupying one branch, and autistic people being "every other branch." It is analogous to humans being one single twig on the tree of life, but having nonetheless diagnosed some perceived mutually exclusivity to the human-animal-dichotomy. The allistic mind would be the highly specialized one in this case, with the supposed autistic mind simply being its set complement of sorts. Somewhat ironically, when allistic psychologists try to chart everything that autistic people *are not*, what they really tend to be doing is inadvertently charting everything allistic people *are*. The majority of the diagnosis stands in the backtracking from the allistic branch on the tree, considering how autism itself spans every other branch anyway. (This becomes somewhat evident when we consider just how highly specific allistic intuitions are in the neural network sense – such that if an intelligent alien came to Earth, the likelihood that we would diagnose them as allistic is minute).

[57] Note that we are not asserting that autistic people are immature – that would be highly offensive to say. Instead, we are simply regarding the aspect of the theory of mind, and wondering whether the theory of mind model is an ancestor-descendent model between autism and allism, or instead a divergence model with age.

9.24.1 Aethic Reasoning in Indian Philosophy

An intriguing comparison to be made is perhaps with the Hindu concept of Sākṣī, which by my reading is described in a very similar same way to how I describe the Aethus, with it *being to the mind as the eye is to the world and the mind is to the eye* [34]. Beautifully put. This, I would argue, is very potentially the analogue in Hinduism to the Aethus itself[58]. Note how it is described as being beyond space and time, which at one point may have been perceived as flat mysticism by the most skeptical among you, but now can be seen as ancestral to the precise scientific claim that I have made in this paper. It is literally so that the Aethus is beyond space and time, because it is a kind of extra-dimension beyond that which they can describe alone, as per the extrusion principle. It is the same as what Einstein did to space when he added time to the picture – now we also add an Aethus, because without such a thing our models lack the degrees of freedom to describe reality, and we arrive at problems like the measurement problem. Once again, Hinduism was ahead of the curve by several thousand years by acknowledging such a phenomenon.

Another major parallel from Hinduism is Brahman, which resonates with me as being analogous to the Aethic tree itself, and through that the Null Aethus, which, remember, is the superposition of the entire Aethic tree into one Aethus. This raises a fundamental question – if we all came from the Null Aethus, (by virtue of reverse-extrapolating our centric unfolding) – then does that imply that there is no distinct *self* in the first place, as the Advaita Vedanta philosophy infers? That is, the argument here might be that in order for the Ātman, or Aethic consciousness, to exist independently from Brahman, we would have to derive a well-defined system for which we can always state whether a given Aethus is "you" or not. If we cannot derive such a system across all mathematical tools, then it follows that Advaita Vedanta is probably more accurate before Dvaita Vedanta, which instead argues for the difference between ultimate reality and Aethic self.

As for actually trying to categorize Aethae as *myself* versus *not myself* to test this, it is admittedly very difficult. The first sign that it might be impossible is the postulate that both *all my past Aethae are myself* and *all child Aethae to myselfs are also myselfs* are intuitively true, which by the principle of centric unfolding implies that A) the Null Aethus is myself, and thus B) all Aethae are myself. Therefore, if we were going to do this, we would have to make one of these postulates false. Intuitively, it should probably be the second one, which feels like an awfully distant choice to make to my fellow humans, (because among those Aethae would be me if I hadn't sneezed three seconds ago), but nonetheless seems the likelier option given the two. As such, maybe a substitute could be to use Nexae? As in, every Aethus which operates on a Nexus which is not a child Nexus to XYZ is perhaps not *myself*. It feels vaguely more categorical, which is perhaps helpful in a way? Something along those lines perhaps?

And to be clear, it's an Aethically invalid workaround to simply suppose that there are different instances of the same Aethus to each person, because that would assume that each instance attaches to an Aethus without being known to that Aethus which Aethus it attaches to, (by virtue of them being the same Aethus, and as such holding no properties of distinction between them). As such, we leave out a superposition where there should be one, which would violate the second postulate and trigger an invalid Aethus. This all being said, it seems as though the Advaita Vedanta mindset has the upper hand, truth be told.

9.24.2 Aethic Reasoning in Taoism

Another incredible wave of Aethic insights can be found in Taoism. For instance, consider the following quote from Lao Tzu.

> "The Tao that can be told is not the eternal Tao; the name that can be named is not the eternal name. The nameless is the origin of Heaven and Earth; the named is the mother of all things." [35]

[58] However, I also want to note that my take on the Aethus is that it is even a layer deeper into metaphysics than one's own *consciousness*. Consciousness itself, then, would be like a coupled sentience that floats on top of the near-infinite stream of information contained within one's Aethus at any given time. The Aethus, as I've mentioned, operates directly in parallel with that precise unalterable being of perception, in that it crunches any analysis directly over that intake from the perception. Just because this procedure is happening doesn't mean that procedure itself is conscious – rather it is deeper and more fundamental into reality, and your own consciousness would merely be a kind of fluctuation of sorts onto that deeper phenomenon. I do think this mirrors the concept of Sākṣī quite nicely, but I also want to be careful about directly translating it to the word "consciousness" and then assuming it mirrors the Aethus still.

In this quote, Lao Tzu talks about how the core premise of the ontological Tao is that it cannot even be described or captured with organized thought without falling short of its fundamental essence[59]. Such a thing has some immediate parallels in Aethic reasoning, being both the premise of the second postulate of the Aethus in which so much as viewing an attribute through states versus not causes a change to the underlying superposition, and further being the fundamental theorem of empirical Aethae in general, for which the premise of capturing an entire ontological Aethus is fleetingly impossible the harder one tries. This shows us that yet again, Taoism has been well aware of Aethic concepts for thousands of years. Or, perhaps the Aethic rendition of these concepts is merely an attempt to replicate this Taoist statement in a mathematical language, rather than the other way around.

It should also be noted that this quote clearly makes a statement of the Tao in some way being ancestral to everything in the modern world, which can be seen as a parallel of the Aethic concept of all Aethae descending from the Null Aethus. In that sense, then, the Tao and the Null Aethus may be viewed as fundamentally synonymous. On that note, here is another quote from Lao Tzu which this time deals with the concept of the paradoxical vitality to be found in emptiness.

> "Thirty spokes share the wheel's hub; it is the center hole that makes it useful... Therefore, benefit comes from what is there; usefulness comes from what is not there." [35]

This is a metaphor for how emptiness, or *wú*, actually turns out to represent a source for the vitality in one's being. Such is paradoxical in Western philosophy, but in Aethic reasoning it is perhaps the root of the entire premise: for something to be truly blank in an Aethus implies not that it is void of essence, but rather that it is enriched with essence. That comes from the second postulate of the Aethus already, but beyond even this we get the clear assessment from Aethic reasoning that emptiness is the fundamental source to reality on account of all Aethae having come from emptier Aethae throughout the running of centric unfolding.

Another excellent Taoist representation of emptiness comes from a quote by Wang Bi.

> "The subtlety of the Tao is that it allows itself to be all things while being nothing. It has no form, no image, and no quality that one can grasp." [36]

As is quite consistent with the second postulate of the Aethus, we get from this the clear message that it is the very formlessness of the Tao which implies it is to represent all things. Such a depiction again characterizes the Tao as being akin to the Null Aethus, and also perhaps Aethic superpositions at large. It is perhaps obvious at this point that there is a firm agreement between how Taoism sees the world and how Aethic reasoning aspires to see the world.

Lastly, let us look to a quote from Cheng Xuanying which combines both concepts of Taoism and the Madhyamaka tradition of Buddhism.

> "Emptiness (kōng) does not mean nothingness but rather the interdependence of all things. It is through understanding both being and non-being that one realizes the Way." [37]

Such is perhaps a direct acknowledgment of the premise of the second postulate of the Aethus under some interpretations. Even if it does not have the Aethic structure to back up such a statement, it is still rather remarkable how this quote directly states that emptiness is not nothingness at all, but rather the combination of anything and everything. What we see is that while it took the West all the way until the discovery of quantum empiricism to induce such concepts via this paper, we have that the East had already accessed them thousands of years prior through meditation, observation, and genuine awareness of how the world actually operates. If that is not an inspirational story, then I am not quite sure what is.

9.25 Order of Events Toward Deriving Aethic Reasoning

I want to very quickly throw in something of a bonus section of sorts to this paper, where I can briefly chronicle the order of events with which I derived Aethic reasoning in full, as well as when such things happened.

1. First, interestingly enough, was none other than the accordance principle from Nexic reasoning. Both my memories and even my records of this at the time are admittedly a bit blurry, but

[59] I would argue that, in this way, the Taoist perspective on ontology is essentially antithetical to the Cartesian perspective, in which ontology is not only describe, but describable in partitions. Even when I gaze over the modern paradigm of physics do I see the Cartesian perspective winning out over the Taoist perspective on almost every front, so perhaps a summary for my goal is to bring some kind of counterbalance to that perspective in the form of my ideas.

my first direct written acknowledgment of the accordance principle, that I know of, comes from a Google Doc written on June 9, 2020, (in which I outline an unmade YouTube video script for how to visually interpret the weighted timelines toward human existence probability). It goes without saying that this was the bridge, or perhaps first-order spark if, you will toward my full system of ideas, such that maybe the second-order spark, which officially branched Aethic reasoning off of of Nexic reasoning, came later with the extrusion principle. But yes, apparently the chicken does come before the egg, because Nexic reasoning fully predates Aethic reasoning in having been established. I indeed think this is no accident, because it seems that having worked my mind to think in Nexic reasoning was just that perfect storm which allowed me to catch the basic seed of Aethic reasoning, in the defining instant when the extrusion principle hit me.

2. It is worth mentioning, however, that it is more accurately the duo of the accordance principle and the Aethic reversal principle which allowed Nexic reasoning to occur in my mind in the first place. Indeed, during the stretch of a couple of years in which I engaged primarily with Nexic reasoning, what I know call the 'Aethic reversal principle' was the driving engine to the metaphysics in a similar way to how the extrusion principle became the driving metaphysical engine of the mature Aethic reasoning. Accordingly, we might even go so far as to call the Aethic reversal principle the signifier of 'Old Aethic Reasoning', whereas the extrusion principle might signify 'New Aethic Reasoning', (so as to play off of the Old and New Kingdoms of Egypt, anyway). The Old Aethic Reasoning then would have been entirely sufficient to drive the metaphysical analysis of Nexic reasoning, however it lacked the extrusion principle, and therefore could not have said anything about superpositions. So, most accurately speaking, the first shift in my outlook happened over the two years in which I targeted Nexic ideas using the Aethic reversal principle, whereas the second shift occurred when I managed to express the superpositions in terms of the existing Aethic framework by means of the extrusion principle.

   Regarding the actual chronology of things with the Aethic reversal principle, then, interestingly enough I actually forgot about its existence entirely for a little while after I wrote the original accordance principle documentation on June 9 of 2020. Specifically, I was reading back to that Google Doc, but I had this inexplicable confusion about me while I was reading the pitch. '*What is the pitch anyway?*' I remember thinking – that is, I not only failed to interpret the meaning of the explanation, but also whether it was saying anything at all. What I know now, is that in that moment I had subconsciously reverted back to the pre-reversal principle mindset, even though I had clearly been at a reversal principle-oriented mindset while writing the document in the first place. That is, the accordance principle only works, as a concept, (and in relation to the classic dinosaurian example), if one concludes that a human can still be a human at all if dinosaurs had not existed. The pre-reversal principle alternative would to suppose that humans, as a class, require a perfectly matching set of all surrounding properties in order to remain at the same class. As such, under such a mindset we have that so much as tweaking which species did or did not exist in history would cause us to lack Leibnitz equality with ourselves accordingly. In effect, the distinction between the pre and post reversal principle mindset comes down merely to ontologically suggesting that all information versus a subset of information is required to properly define an ontology. Somewhat miraculously, then, a few months after even that, I read back to the document again having once more subconsciously reverted back to the reversal principle mindset, (and of course I never went back from there). Such was sufficient both for me to identify the correct interpretation, as well as where I had gone wrong in my prior reinterpretation – so the added benefit was that I then had a conscious understanding of the reversal principle. Had this second reversion not occurred, and it does not take much analysis to realize that my life would have likely played out very differently from there. Or is such sufficient to characterize the trajectory of my life at all – that is in lieu of further cumulative information? Maybe life is ironic after all.

3. After the accordance principle and reversal principle, the next important step I made was to define the Aethic mathematical structure that we know and love today. Intriguingly, I have the date and time of the moment at which I conceived the mathematical structure of the Aethus, because I logged the idea down in my personal math journal just after devising it, (at least to the conscious layer of understanding). Such a moment was on December 7, 2021, at 6:36 PM. To begin with, yes this is indeed quite a while after devising the accordance principle, and this is only so because I was busy at work formulating Nexic reasoning throughout the intermediate time. In fact, the only reason I devised the Aethic structure in the first place,

(which I originally termed an 'Attribute Set'), was to create a mathematical structure that was capable of describing the nuances between alternate histories. This is where the epistemic component to the reversal principle came in in full force as well, because I noted at some point around then that leaving irrelevant attributes out of the Attribute Set actually turned out to be beneficial to the mathematical analysis of the accordance principle rather than destructive to it.

To be clear, moreover, even though the mathematical intuition for the Aethic structure has not changed between now and then, the way in which I represented it very much has. Such may even be the single most frustrating aspect of my journey in Aethic reasoning, at least regarding the communicatory facet, because from that very first moment I had this abundantly rich structure for declaring and relating attributes, and yet I could not come up with the notation to portray it with. Importantly, this was never really a mathematical shortcoming in the first place – rather it was purely a psychological one. I understood fully well how to manipulate and imply Aethic statements from one another, but I was lost about the nuances of how somebody who had never seen this structure before would react to it. Worse yet, as I was only a junior in high school, I did not know anybody who was knowledgeable enough about discrete mathematics to understand my thoughts – and even if I did it would be a longshot to find the right notation and explanation with which to convey it. It would indeed be another three years, until September of 2024, until I conveyed the Aethic structure to a single other person, (being my professor Dr. Fokoué at college), and of course by that point it had been over a year since I had fully derived Aethic reasoning. Regarding the specifics of how I would convey the intuition in the intermediate time, I would often refer to the recursive property of Aethae, (then Attribute Sets), with which adding attributes to one as a full Aethus is equivalent to adding them all individually – thereby inferring equivalence between the structure of the full Aethus and the compilation of the attributes themselves. That way, we are able to 'compact' the nuances distinguishing them into a single mathematical object. Of course, to the onlooker this sounds something like gibberish, and that was perhaps the curse of knowing how intriguing this mathematical object was all while being unable to convey it properly. Maybe I am less Ajax and more Cassandra, all things considered!

I should also mention that I was fairly convinced during this time, (that is, in 2021 and 2022), that the Aethic structure had already been discovered before me, and I was simply reusing it for my purposes. Indeed, I had been independently discovering foundational mathematical theorems and lemmas by the dozen since before kindergarten[60], (I did a tentative count of them when I graduated high school, and it was somewhere around ≈ 189 at the time), so I could only assume that the Aethus was the next example of one of these. The alternative will have been that I was the first, but such seemed unlikely due to the sheer simplicity of its presentation. Given what I know now, though, I seem to have already been on the frontier.

4. On January 2, 2022, I wrote down what could be the first instance of the first postulate of the Aethus, being the idea that metaphysical ontology ought to only be properly described with respect to the experience of the individual, specifically because having to deduce which external variables to that are respectively arbitrary or not combats the reversal principle accordingly. In

[60] Of course, the ones at that young an age were not going to be quite as complex – but still I was already instinctively forming mathematical structures. The classic example, perhaps, is that where in kindergarten I imagined addition as preparing and projecting a number forward by some number of spaces on the number line, (with $2 + 3 = 5$, for example, preparing to move forward from 2 by 3, and then running the command with the equal sign – as mirrors the functionality of a calculator device), I then dreamt up an alternative where we change not the operation, (as in establishing subtraction), but instead the running command. That is, I wondered if we could take the same preparation command, such as $2+3$, but then at the last minute devise a different mathematical object to run it, (thereby keeping its 'degrees of freedom' intact but localizing the change to the qualitative unfolding of the run command, whatever such may be). If I was lucky enough, even, I could find a way to use such a command to project the result to outside the number line altogether, therefore perhaps enabling the travel to other structures like the alphabet, or even something metaphysical in character given enough iterations, like the human afterlife, (which, note, is altogether an explicit prelude to both the function and set extension intuitions). This, mind you, was a snapshot of the mathematical intuition swimming in my head while I was in kindergarten, so mathematical structures truly are and always have been instinctive for me. Also, note that I stated that I was coming up with known and foundational premises, and of course I had plenty of these as well. At the young age, they were various identities of number theory, like how $a^2 - (a-1)^2 = a + (a-1)$ while I was in fourth grade, (during an abnormally striking shower thought), or, as a high school sophomore, how developing a Riemann sum-like pattern over population density over an area, on the limit to infinity, gives a formulation for the net population therein, (albeit to be clear, I never got the fundamental theorem of calculus – that will always have been over my head, derivationally speaking). All I had done was obsessively play around with identities and structures, but the intriguing result is that I found somewhere between a few hundred and maybe even a thousand little identities and their immediate consequences, some of them fundamental and some less so.

fact, if some number of external attributes were deemed non-arbitrary, then what is to say they are external in the first place? So, in other words, my reasoning led me to that point to the conclusion that an ontological system which embraces the reversal principle must then also be fundamentally relativist.

This idea may be rendered as the origination of the ontological reversal principle, in addition to just the epistemic one. This entry, then, was highly important for a second reason as well, because I also used it to argue that in a ontological model such as this, an agent need not be restricted to a single timeline in the first place. Rather, for any events of which they are unaware, it would be perfectly acceptable, (according to the framework), for them to sit on both realized timelines at the same time, only to sift into a more specific outcome among them upon learning about it. Such is what I explicitly termed 'centric unfolding' during a later entry on the 16th of January. Note that I was still firmly locked into the timeline-branching ontological model, so it would not be until my reaching of the extrusion principle in August of that year when I realized the alternative way of looking at such.

Now, centric unfolding is, of course, a rather absurd premise to even entertain, and naturally I was aware of this. However, the rebellious teenager that I was, the reason I continued to engage with it was rather simple one: it was thrilling. That is, even though I was at an unspoken understanding that my being on multiple timelines at once could not possibly be right, still the mere notion that such a metaphysics could be set up without triggering an empirical distinction was rather intriguing to ponder over. It is the same reason why the 'tree falls in the forest' thought experiment is thrilling – the alternative conclusion is absurd, and yet it cannot be empirically falsified. In the end, it would be this exact subtlety of metaphysical open-mindedness which enabled my later derivation of Aethic reasoning in full.

5. On August 10, 2022, I came across an intriguing online lecture by physicist Jim Al-Khalili concerning the mystery of the double-slit experiment, (specifically on why the wavefunction collapse occurs when introducing a detector to the system). This was the moment that first formally introduced me to this premise, and in doing so sparked the escalating wave of curiosity which led my discovery of the Aethic extrusion principle within the week. That is, upon finishing the video, I felt a strong intuition that I was somehow at the very doorstep of a solution, and only then was realizing it. The work which I had done on centric unfolding, which at the time had only seemed peripheral to my major formulation of Nexic reasoning, had suddenly been granted a direct procedural relevance, albeit in a distinctly niche regard. As much of a stretch as this paradox was to grapple with, I was presented with a fleeting opportunity to grasp it if only I could take the leap to initial comprehension. Such a leap needed to be made, I could sense, because as I stared at the nuances of that interference pattern in my mind's eye, I could tell that I was dealing with a metaphysics of a subtle but eternal character. Something which could be grasped in an instant, and yet could be lost forever with so much as a blink. I had started on third base because of centric unfolding – a mere accident – and now I had the opportunity to grasp the storm which was passing over my mind. This, of course, is what I did during that foundational epiphany when the extrusion principle came to me. Sometime between the end of the video on August 10, and the end of my college orientation week on August 19. It was a genuinely poetic moment in my life, which is why I like to write it as such. This is the idea that marked the birth of Aethic reasoning.

6. On August 22, 2022, I wrote down my thoughts about the Aethic soccer field thought experiment in real time as they came to me. Indeed, there was a soccer field outside my second-story dorm room window, albeit with a good deal of obstructions in front of it. Nonetheless, my proximity to it led me to ask this inductive question, with the idea being that if I could pinpoint the cause of the collapse in this thought experiment, then I could pinpoint it anywhere, (with that instinct simply being a mode of inductive reasoning given my knowledge of the Aethic functionality). Upon reading my notes, I clearly see that I already had a procedural understanding for the first postulate of the Aethus, the second postulate of the Aethus, and the extrusion principle of course, albeit not in their modern forms yet. For instance, the way I approached the second postulate was to picture not one Aethus, but instead an 'Ethus' and an 'Anti-Ethus', in which the Ethus is the Aethus itself, (under the original spelling, of course, to be changed later so that 'Aethic' is not 'Ethic'), and its corresponding 'Anti-Eethus' consists of all properties which are unknowable to that current Ethus. Since I had the extrusion principle, I then had a fundamental understanding that an agent may progressively change their Ethus over time, so the premise was

that the Anti-Ethus is the designated controller of what the agent currently reads as being in superposition within their reality. This treatment is a rather complicated phrasing of it, but it is nonetheless unmistakeably a statement of the second postulate of the Aethus. Also, of course, the use of an Ethus and Anti-Ethus pair in defining the structure of reality also clearly acknowledges the first postulate of the Aethus as well.

Using this framework, then, I made my very first acknowledgment of the need for a third postulate. Specifically, under the soccer field thought experiment I noticed how the knowledge of the observing agent's future Aethae were used to characterize the collapse of the superposition, in addition to that which was present in their current Aethus. I wrote down that it was apparently some kind of "backwards-time manipulation", although I already instinctively knew better than to attribute this to time itself, as such a thing would clash with the intuition of the extrusion principle. Importantly, I was also yet to develop the premises of parent and child Aethae, nor had I created a concept of agreeing versus disagreeing superpositions. I had many of the base intuitions, but now I had to take the final leap from my already high vantage point to the full solution. This, of course, was going to require some derivation.

7. There is a rather insightful entry in my math journal from October 23, 2022, which I think helps paint the picture of where my thinking was at the time on Aethic reasoning. That is, I had created a list of five major properties which I saw to be contributing to the realization of an Aethus.

   Rule #1: No contradictions allowed!
   Rule #2: Something can only be real relative to an Ethus.
   Rule #3: Any Attribute of an Anti-Ethus will be in superposition relative to its Ethus.
   Rule #4: An Attribute may have an Anti-Ethus component and an Ethus component.
   Rule #5: If any part of a superposition breaks a rule, then the defining Attribute of that superposition joins its respective Ethus.

   In sequential order, this is an acknowledgment of the Aethic principle of non-contradiction, (being a generalization of the principle of non-contradiction which is specific to the interior of an Aethus), the first postulate of the Aethus, the second postulate of the Aethus, and the Aethic dichotomy theorem. As for the fifth item, while this is not yet the third postulate of the Aethus, it had covered an important intermediate step in having acknowledged that the seeming 'backwards-time manipulation' ought to be represented by a further condition to the interior structure of the Aethus rather than representing a peripheral exterior condition. This is important, because, to give an analogy, it is inductively equivalent to trying to model an ontology with an analytic versus a piecewise function. I chose the former, and that seems to have been the right choice. The one issue with that particular treatment, in retrospect, is that it seems to suggest a relationship between the collapse and the parent Aethus-direction, (as shown by the proposed superposition dependence), however this would directly lead me to formulate parent and child Aethae in order to express it better, so such was a happy choice anyway.

8. On January 10, 2023, I wrote about a third addition to my coupled pair proposal of an Ethus and Anti-Ethus. I referred to this third object as a 'Severed-Ethus', which is effectively the collection of the very strongest Aethic attributes of the Anti-Ethus, in that they are by definition physically forbidden from ever being added to the corresponding Ethus. I used this mindset, then, to explicitly state the cross-paired cases from the extrusion principle, being that the past Aethus still reads a superposition in the future time, and that the future Aethus still reads a superposition in the past time. That is, even though I had the metaphysical structure of the extrusion principle, (as opposed to timeline branching), since August, here I was explicitly tailoring this view to the sectional partitioning of the different viewpoints on reality. Such was the first instance of the instinct which allowed me to develop disagreeing superpositions, in which we have a nested superposition structure and can explanatorily isolate the effects of individual child Aethae in doing so.

   Referring back to the Aethic soccer field thought experiment, I used this premise to suggest that we ought to aim toward maintaining the superposition of the entered door relative to the prior Aethus of the observing agent. Perhaps we could find a way to hide the degrees of freedom for this in the prior Aethus and its cross cases, that way the second postulate of the Aethus could remain in its inductive simplicity. The use of the Severed-Ethus itself, then, was as something

of an acknowledgment of how its being nonempty in a system or not has something to do with this discerning nuance between the prior Aethus and subsequent Aethus of the observing agent.

9. On February 8, 2023, I suggested the first axiomatic designation to Aethic reasoning. That is, I wrote down my three postulates, all while expressing that the original 'Rule #5' ought to be updated with the following replacement.

    1. Anything may only be real relative to an Ethus.
    2. If an Ethus is valid, then any given property will be in superposition relative to it if and only if it is statistically independent to it.
    3. Any child of an invalid Ethus will also be invalid.

    Perhaps the major two insights of this designation, in order, is that now I decided not to use an 'Anti-Ethus' object at all for its unwieldy nature, and instead simply express the second postulate of the Aethus in terms of the base Aethus itself. The second insight was to reformulate the more ambiguous assessment of contradictions within a superposition with the inheritance structure present within Aethae. Of course, such also marks this as the fundamental moment in which I first used the parent and child Aethic terms, therefore establishing a focus on Aethic inheritance.

    As we know, at this point I was only a hair away from the completed derivation, as the true third postulate implies, but is slightly stronger than the tentative supposition shown above.

10. On February 19, 2023, I devised the thought experiment in which, according to Aethic reasoning, performing a time inversion on the universe would not actually backtrack along its past events, as entropy would still have to increase before and after the shift.

11. On May 8, 2023, I had about a week of waiting until my last final exam on the 9th, so while I sat in my freshman dorm room under the overheated conditions, fan blaring and all, I decided to give one last push toward the completion of Aethic reasoning. Having perhaps just willed myself to do it, this is the moment in which I came up with the idea of using two generations of Aethae instead of only one. I knew the existing inheritance statement had to be true, but I also noted that it was going to have to be true for not only the observer's Aethus in the Aethic soccer field, but for every possible one of their child Aethae. That is when I hit upon it: what I had just stated was none other than the solution itself. Such marked the instant of completion for Aethic reasoning, even though it would be a great while until anybody else knew about it. I should note that I started work on this very paper on January 14 of 2024, and continued writing all the way through November, so as to capture all the ideas. The official publication time to PhilArchive was November 14, 2024.

12. I started officially working on active reasoning over the fall semester of 2023, but the specifics of that are a story for another day.

9.26 Conversational Exchanges

For your reference as the reader, here are some direct conversational excerpts of mine considering relevant explanations of topics in Aethic reasoning.

9.26.1 Email Conversation

April 9, 2025

Hello —!

First of all, thank you so much for the thoughtful email! It's super exciting to hear your reactions to some of the stuff I've set up in Aethic reasoning! I have actually heard the name Markus Müller, however I haven't actually gone through his or Paul Tappenden's work, so I'm glad to hear of this connection – something to read about! Yeah actually I have so many thoughts about how to answer the questions you brought up, so I'm going to go in order and see if I can give a shot at my interpretation/reasoning!

First of all, great point about bringing up the kinds of themes of Müller and Tappenden's interpretations – being maximization of computational complexity and weighted mixing across multiple branches – because that gives me a clear launching point to state my own idea's theme:

basically in one sentence, I would say that my approach is to model superpositions themselves with the simplest possible bout of inductive reasoning, all while relocating them to something almost circumstantially universal, (with the quantum superposition treatment itself then being a special case of this broader effect, instead of representing the defining whole story of where they show up). That's where the second postulate comes from, which is basically the inductive counterpart to what the Markov chain stuff is telling us about the ontology. So, where that quantum immortality argument, (for example), is on the iterative layer of Boltzmann statistical mechanics, then Aethic reasoning is a pitch for what the analogous "Newton's law of motion" should look like. As in, the deepest most general – while still inductively precise – possible ontological ground layer atop which all quantum/classical logical effects operate, (like how Boltzmann statistical mechanics still roots to Newtonian-derived concepts like kinetic energy, etc – so built in that language but writing way more complex content – at least to draw a rough analogy). So in short, where your Aethus tells you which block universe you're in along the Markov chain, the second postulate tells you that the mere state of what you don't know is entirely enough to predict/derive the superposition content that's in there with you. Unknowing = superposition, but the further Aethic union principle then uses a little more induction to paint more degrees of freedom than just *superposition on* vs *superposition off* and whatnot!

Now, then, we get to the point about how much flexibility Aethic reasoning allows in the universe / future Aethae. I mean, this is a huge talking point already, because in my book a model that allows everything is no model at all – because once you lose all the causal correlations of the universe, you're not writing up anything. Even the lack of causal connection between anything, (i.e. a random universe), is still a causal connection between the iterated state of causal connections and the perception of the universe, it'd just be second-order then, (and so on). But I digress! So right after the Markov chain and the second postulate, this is the next most important concept in Aethic reasoning: *there's a deterministic algorithm with which you can deem any Aethus invalid or not.* This is very very important to the predictive power at play, not only because the lack of its truth would open up a hailstorm of well-defined avenues with which to disprove the relativism of Aethae and block universes, (think Plato vs. Protagoras), but also because that earlier point – the art of how to restrict possibilities – is written in the language of invalid Aethae in Aethic reasoning. Part of the beauty of this, if I may say so myself, is that it's both conceptually straightforward and explanatorily powerful. Want to write $A \to B$ with Aethae? Just call $A \wedge \neg B$ an invalid Aethus! (i.e. Aethic material implication identity). *Crucially speaking*, want to model the quantum observer effect in Aethic reasoning? Just create a general identity which forces an invalid Aethus every time there *isn't* an observer effect, (slight oversimplification, but close enough), and that identity is the third postulate of the Aethus itself, (which I want to just state explicitly here, is taken as literally the simplest possible statement of a material implication identity over Aethic inheritance which is consistent with the double-slit experiment outcome, so whether it's correct comes down to Occam's razor – but I'm not worried because it's just too darn convenient to be wrong).

So that brings me to quantum spin itself. The idea I'm trying to set up here with that is that Aethic reasoning is a language rather than an independent assertion in and of itself, (so, oh I don't know, like category theory instead of abstract algebra, or like a class instead of an object, to give a few analogies), and that's part of why it only really works if it's hitting that sweet spot of "Newton's laws"-esque simplicity of inductive reasoning. So the goal is that there should exist a way to stitch invalid Aethae together through logical reasoning – no matter how much geometry, philosophical context, probabilistic heterogeneity, etc – sits in between, such that the precise statement of Malus's law comes out the other end when you're done, (with the example being Malus's law since, well, my argument is that if you can explain Malus's law with an Aethus, and you have a basic understanding of what a lepton "is" ontologically, then you should be able to make short work of general Bell's inequality violations). So this is a bit of a Herculean task in and of itself – I know because I've been playing around with it for like two years – but the simple place to start with describing quantum spin measurement is that you have to know what *not* to do. What not to do is layer a new attribute into your Aethus every time a measurement occurs. It's tempting, no doubt, but it's not really how an Aethic argument "behaves", you could say, based on what I've seen from what works and what doesn't work, (i.e. causality is utterly nonlinear in Aethic reasoning, basically as a ground rule – so while there are answers, they're all creative answers of the Aethic "brand"). The simple reason why you can't

do this is that you get an Aethic contradiction. If I layer "P(+)" into my Aethus after the first measurement and then a couple of measurements down the line put in "P(-)" for the particle's spin state, then that's a plain Aethic contradiction, because in proper practice I ought to only ever be filling in blank attributes of the Aethus with updated states, rather than ones which are already filled-in by a spin-state. So, at this point we might be wondering if there's a way to do this at all – and my pitch is that yes, there is – it's just subtle, (which is characteristic for Aethic logic anyways). I mean, in the time I've been thinking about it I've been having to develop this really geometric extension of Aethic logic, and my pitch is that this treatment – together with creative "bypassing" maneuvers of classically-minded linear progression of causality. The only reason this isn't already in the Aethus paper is that I want this new stuff to all be in one place, so these last two months I've been trying to put the finishing touches on Part 2, which is what I call "active reasoning". That's the proposed pitch for how to handle Malus's law, and then some of the further direction-dependent measurements for fermions. But speaking in the most general terms, what we want is that this one-after-the-other sequence of updates – like particle spin measurements – has to always be convertible into an Aethic treatment which only ever fills in blanks at a time. I termed this a "stackal transform" in the Aethus paper, which is simply the transformation of a model from something which is sequential, (with the most basic general example of this being the way we societally count time, as an incrementing float), into something which is Aethically compatible, (kind of more like spacetime, in that not much is getting incremented, and instead we can harness a felt passage by strategically firing off many Aethic updates at once, thereby making the block universe progression and giving you stuff like the second law of thermodynamics in the process). The danger, of course, is in the possibility that maybe there's a phenomenon which can't actually be stackally transformed at all. Now, if you can prove that there's even a single example of one of these, then that's literally a direct counterexample against Aethic reasoning being correct. So the "gamble", you could say, is that I'm predicting that you should never find a process which can't be stackal transformed. I will say that so far it's looking really positive, (based on the contents of active reasoning), and that's namely because Aethic reasoning turns out to have just the right amount of generality, (second postulate), and just the right amount of restriction, (invalid Aethae), such that you can hypothetically paint just about whatever the heck you want with an Aethus, and that includes adding in another axiom or two to model quantum mechanics in full. So while I should mention that, like I said, Aethic reasoning is fundamentally a language, the pitch is still that it's focused enough as a treatment of reality to "evolve" into a more mature physical theory once you layer on the axiomatic pillar that is, (at least in empirical effect), the quantum wavefunction and Born rule. Such is the work of active reasoning!

But yeah, on that point I'll definitely make sure to email you the link to the preprint as soon as I get it up online, but the basic answer is that it is a little bit nontrivial, while also being expressible with an extra few postulates in place. That's the pitch, anyway. Sorry I can't give a more conclusive answer on that right now by the way – partially still a work in progress, partially because I want to be careful what I say prior to the paper's launch and whatnot – but the child Aethus concept is way more axiomatically basic, so I can definitely explain that right now. The idea with a child Aethus, simply put, is that many of the attributes of an Aethus are oftentimes blank, and you might want to fill them in with stated attributes – thereby generating a child Aethus. The most basic example of using this properly is, say, distinguishing an Aethus with a superposition of states versus the various Aethae where you assert each individual state itself. So it's "filling in a superposition", specifically by filling in the attributes. In the most direct possible sense, it's literally the operation which kicks you into a new block universe, so if some other block can be written as "ancestral" to yours in the chain, then you know automatically that you're its child Aethus. So in short, they fill in more attributes, so as to specify a system further, (so to give the Schrödinger's cat example, the Aethae of all outcomes are child Aethae and child blocks to the superposition Aethus – but in the abstract and regardless of whether you actually get there or not). That's also part of why the compatibility with the spin states is a little murkier, (at least in the direct sense), since there are more degrees of freedom at play there than simple "know more" versus "know less" and the implied restrictions on the superposition. The child Aethus concept is supposed to be what's rooted to the Markov chain itself, so the whole spin correspondence is a question about how spin works rather than a question about what makes a child Aethus. Again, axiomatically basic versus axiomatically heterogeneous, etc. So what I would definitely assert is

that child Aethae are much less about the progression of time, and much more about the abstract distinctions between Aethae, (specifically along the Aethic dimension-direction rather than the spacetime-time direction). The block universe Markov chain concept itself effectively isolates Aethae a little bit – since you can't rely on a shared objective reality for deduction – so the child Aethus concept is meant to be a rigorous means of precisely stating what we mean by one block being an extension of another. So you could call a child Aethus "inter-block future" and a parent Aethus "inter-block past" in the most basic, direct sense, (but structurally speaking, rather than personally speaking). But yeah, the "family tree structure" of parent and child Aethae is literally just the structure of the Markov chain itself, so the idea is that the mathematical structure of Aethae themselves is your middle man toward deriving this. I should also quickly mention an actual major application of this premise: a key idea behind the double-slit experiment treatment is that in the abstract, we're defining the cases of the interference pattern and the two-spotlight pattern as both the child Aethae of the total Aethus of possibilities. What's really cool about this treatment is that it winds up giving a second-order second postulate application, because the idea is that these Aethae themselves can be put in Aethic superposition, (specifically in this case by condensing the further child Aethae into those two mentioned outcomes). When you actually run the experiment in practice, though, only one of these abstract child Aethae gets selected, (because of the influence of the third postulate to this specific case), which is why we can only ever see one outcome, and by that really special setup-dependent designation at that!

Ok, so now onto the last question, which is how Aethic reasoning ties into a person's literal felt experience of the universe, as in *how does existing in part among many possible universes affect your own experience*? First things first, my major interpretative pitch here is again a subtle but important one, being that you yourself don't actually experience being along multiple universes at all – rather you get a funny relativist outcome where you think you're in a single block, and the matter/people/world around you is the one in flux between different superposition-like possibilities. It's wild, I know, but part of the pitch behind that is that you have to sacrifice the common sense surrounding that in order to access the inductive reasoning backbone of Aethic reasoning, (similarly to how special relativity throws out objective simultaneity in order to explain Maxwell's equations). More rigorously speaking on this topic, the idea is that since any block universe has a bijectively corresponding Aethus, you can actually apply Aethic unions to block universes just as you would Aethae. The result? You get a superposition of both block universes at once. But, crucially, it's not that you then go to both blocks – rather you have to always have a single Aethus and a single block, (relative to you), so what happens is that we overlay/merge both respective blocks into a single block universe. In short "they come to you, you don't go to them", you could say. That's the heart of the mathematical dynamism of the blocks, which is that the mindset isn't to actually split your own block into other blocks, (because there's a thousand ways to do it, and it's arbitrary), but instead to just assume that you always occupy a single fixed block state, but that the blocks themselves are structurally capable of "morphing" together, essentially, and then still form a single block. The way this works is that even though the blocks are all distinct in their degrees of freedom, (as in one is quite literally informationally a *different* block universe than the next), they still share the same physical space, so it's not that motion between the blocks moves you physically at all – instead it just layers extra-spatial degrees of freedom onto your position, so you can be sitting in the same physical chair, but get a distinction in the "available" superpositions in the block around you, (hence the implied dualist-adjacent degrees of freedom). You don't have to see or even be aware of the surrounding superpositions – it's just that assuming they're there and that they follow this merging-style arithmetic is, again, the pitch for the only way to reach the Aethic inductive backbone, etcetera.

And, the second thing for that – which also a weird one – is that in Aethic reasoning, there's a funny consequence of the block universe Markov chain concept, which is that it suddenly becomes rather ambiguous about what we mean by a person's "self" in the first place. That is, at least in the Aethic structure itself, there actually isn't any kind of ontological criterion which stands out to categorize different Aethae in time of a single person as being any more related than the Aethae of two totally different people. On the surface this is rather striking, of course, but then again that might be informative in its own way. The analogy that comes to mind is that it's seeming to do to the concept of "self" the same thing which we've all been doing to Aristotle's ideas for the last 500 years, which is that we're finding out that our original definitions themselves were kind of founded on an ambiguity that's harder to reconcile now that we know more about

the machinery of the universe, (especially without straying into the dangerous territory of trying to conventionalize your ontology). So, paradoxically, Aethic reasoning offers a more precise mode of explaining everything inductively, but in doing so it removes us from a handful of clear metaphysical premises which we're used to being definitionally straightforward. For all I know, it could be a new hard problem of consciousness or something. What I do know, though, is that there are loads of philosophical degrees of freedom floating around in there – so in the moment all I can ascertain is that Aethic reasoning is a bit too axiomatically simple to even have a take on quantum immortality, again quite like how Newtonian mechanics is to Boltzmann mechanics.

Anyways, that's all the stuff I can think of at the moment to address some of these questions! By the way, thanks again for engaging with me on this! I always love to get a thoughtful email – it's a major part of the fun of doing this stuff! Also, the insights to see how people are reacting is super helpful to me concerning how best to explain this stuff, so I really appreciate the help on that! I probably should even attach this response email of mine to the end of the paper, (if that's alright with you!), that way it's all in there if needed for anybody!

Thanks again, and I'm glad to have had this great discussion!

–Ajax

Extra Segment

Ah hello again! I see I forgot to mention the direct answer to the multiverse part of the question! But yeah, a big idea of Aethic reasoning is that we're relativity-izing the multiverse, so A) yes there are indeed implied other universes, except B) instead of them being all cut off from one another, you're actually viewing them all through the lens that is your own block universe. So the block universe is to the Markov chain as a reference frame is to spacetime, with the pitch being that in order to make an idea like that work you need a Markov chain structure in particular. But yeah, the Markov chain would be the multiverse, but the really weird idea behind Aethic reasoning is that there's no real designation which separates one block universe from the next – it's all about what you happened to take with you in your own Aethus viewpoint. That's the premise behind the 1st postulate of the Aethus, which says that there's no objective structure to the Markov chain besides what can be referenced through an individual block universe.

Anyways, that's the extra point I wanted to add real quick! Thanks again for the interest! (And oh also the goal is that the Tsirelson bound should result deductively once I can fully produce the quantum wavefunction, Born rule, and particle dynamics having to do with vector wavefunctions and stuff. But yeah I'm once again trying to overshoot it with inductive reasoning, and then set the axioms in place to reproduce anything – that's my strategy at least!).

–Ajax

10 Conclusion

This paper has presented the openings of Aethic reasoning as regards philosophical, mathematical, physical and metaphysical contexts. In the process, we have seen the solutions to *Requirement 1*, *Requirement 2* and *Requirement 4* through the process of providing the first rationalist algorithmic derivation to the collapse of the wavefunction in the double-slit experiment. Furthermore, we have solved *Requirement 5* through the well-defined explanation of how locality works in Aethic reasoning, as specifically regards the underlying interplay between the extrusion principle and the first and second postulates of the Aethus. And lastly, we have solved *Requirement 3* by isolating the specific way in which quantum decoherence occurs not through some independent detector-based axiom, but instead due to the natural consequences of the third postulate of the Aethus. All that is left now to demonstrate, via the followup paper on active reasoning, is the specific ontological reason for why agreeing superpositions then imply a wavelike interference when taken over the properties of physical matter quanta. Such is the final question of *Step X*, which deserves a paper of its own in order to be gathered.

With these things representing the specific impacts of Aethic reasoning to the measurement problem, it of course follows that the inductive steps of this paper can only have a broader impact. We have already seen with some of the great works in physics of the twentieth century that simultaneity and energy are fundamentally relative concepts, but now we extended the front of relativism all the way to

core metaphysical notions like knowledge and truth. Beyond even this, if Aethic reasoning has even a shadow of correctness to its suppositions about superpositions, and of course that would imply a vast string of consequences across the remainder of human history. Among these consequences, at the very least, are the emergence of a metamodern paradigm of physics, a new layer of philosophical depth to be explored by humanity, a first tangible tie between scientific rationalism and Eastern metaphysics, and perhaps a myriad of deeper implications into the scope and meaning of life itself. After all, in the Aethic world, many a preconceived anthropic notions have to be shaken, to say the least, and it seems more than evident that the dominoes are falling in the meaningful direction, (as highlights the metamodern alignment[61] of Aethic reasoning once more).

At this point, now, we are entering something of a very creative time in human history, so the world truly is whatever we make of it.

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[61] Metamodernism is the art of structuring the indeterminate, and Aethic reasoning takes this art to the core of metaphysical reality. This is why Aethic reasoning may perhaps be viewed as an early example of a quintessential metamodernist stance on metaphysics.

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