"Possible Worlds, Contingency and Necessity of the Universe"

As a student of contemporary metaphysical thought, the word “modal” followed by “logic” conjures up images of aging American professors, smoking pipes, talking about the sublime uniformity by which the Universe can be explained using □ and ◇. We simply prefix □ to any necessary statement, and ◇ to any contingent one. Thus, we eliminate much of the Logical Positivist sludge that had plagued philosophical thought for fifty years (and in turn made metaphysics a dirty word) by marking the difference between what there is and what there could be. Thankfully men such as Quine and Kripke were able to formalize the intuitive notion we all hold when using ordinary language, in that we are fully capable of speaking of those things that don’t exist. If I tell my friends an anecdote about purchasing a unicorn from the local PetsMart, my story adheres to the rules of grammar, and my now non-friends can identify the temporary insanity that has caused me to mistake a dog with an antler attached to its head for a fabled creature of myth. If I say “I saw a unicorn”, no unicorn suddenly appears giving my statement a referent, nor does my statement fall under the auspices of non-sensical gibberish.

But, suppose we consider for a moment the whole idea of just what □ and ◇ mean. We are now speaking of things that are possible (unicorns) and actual (dogs with antlers on their heads), yet it seems that the possibility exists **somewhere**. By this I mean the existence of a unicorn seems to be only in the mind of individuals and not physically present anywhere in this universe. Yet, how can we posit such a creature if, in fact, it doesn’t have some capacity to exist outside of our own thoughts? If we appeal to

Platonic Forms, it might be helpful; yet it seems Forms don't quite do justice to our ability to create new ideas (although I am still open to their possibility). Perhaps G-d thinks of unicorns for us all day, and plants the image in our mind whenever we wish to imagine one. Again, seems to limit our thought process. Indeed, I can easily create new creatures from existing ones and give them reasonable sounding names. How about an ursine quadracorn, a strange bear-like creature with four horns jutting out of its head? Where does this creature actually exist? Simple intuition says nowhere, obviously. Are my thoughts simply transient, bearing no relationship to the Universe? Appealing to Modal Logic, I can simply say "It's possible that a Universe, quite like our own, could have existed in which ursine quadracorns drove taxis in New York City". Logical, but does it really solve the problem? I contend that having a possible world, i.e. a world merely located in the semantics of language, isn't enough to actually give my sentence any weight of meaning. Possibility itself is necessary to formulate new, exotic creatures for my taxi service. I must have access to an infinity of possible worlds, necessarily, to even begin creating new ideas. Thus, a possible world isn't merely contingent, it is necessary. For clarity:

> For idea Φ to be conceived, worlds P_1 to P_∞, at least one of which is required for the possibility of Φ to exist, exist necessarily.

Further:

If idea Φ is conceived, then world P, in which Φ exists possibly, exists necessarily.

By existence for world P I mean to imply that P exists in **some** form, not specifically physically, perhaps outside human understanding.

Now comes the task of fully explaining my justification for such a claim. First, it seems I've fallen into the same trap I attributed to Modal Logic, i.e. relying on semantics to speak of non-existent things. A Logician would never make the distinction between "unicorn" spoken semantically and the idea of a unicorn, in at least so far as I can tell. They appear identical for all intents and purposes. By my claim, the idea of a unicorn suddenly appears in universe P whenever I speak of it, and P necessarily exists somewhere in the vast cosmos. This seems like adding extra baggage to a system that relies on simplicity for maximum currency. The problem is with understanding exactly what an idea is, the true metaphysical question at hand.

If we assume that P exists necessarily, and contains unicorn-like objects floating around for us to comprehend, isn't that just Formal Metaphysics all over? It also seems like a statement a Logical Positivist might claim (i.e. my idea of a unicorn requires a referent), although it is purely non-physical in nature. Let me clarify. When I stated that a unicorn appears in P, the true relationship between P and reality (meaning our world or true existence) is necessity, therefore the unicorn has existed in P since the beginning of time as we understand. It seems P has transcendental existence, and is a fundamental fact

of the Universe, not merely a convenience created semantically to allow us to discuss non-real things. We seem to be left with rectifying three things: Modal Logic, Forms, and Positivism, as all have some impact on our ability to create new ideas. I've shown that Modal Logic easily allows us to demonstrate an infinite number of necessary worlds for our possibilities to exist from, and since those worlds actually do exist, the Logical Positivist is left no recourse other than to accept them as referents. Platonists would simply call my non-contingent possible worlds "Forms", which is a valid claim since both share a number of attributes that are very similar; the primary difference being that I have appealed to Modal Logic to show that possible worlds are necessary, whereas Plato appeals to intuition.

Coming full circle, what started as a plan to show how Modal Logic does indeed provide us with the ability to create new ideas and not rely solely on semantics has ended up as an exercise in producing a view that satisfies the original metaphysics, current metaphysics, and even non-metaphysics, or views that dispute Metaphysics as a whole. Still, there seem to be some issues with Modal Logic as I am using them that need to be clarified for my suppositions to have any real value.

In its simplest distillation, it seems Modal Logic attempts to formalize the world of our understanding into a system of propositions that can then be used to either prove or disprove facts about the world. Thus, if I have the following:

$\Diamond$Raining $\rightarrow \Box$ Ground-wet

which is translated as “It is possible that it is raining, and if so, the ground must be wet”. Taking this statement, what have I actually shown? It appears to be an intuitive relationship between rainfall and the wetness of the ground. The idea of rain is well known to us (unless perhaps you live in the Sahara Desert), so we have no problem comprehending the statement as logically true. But, what about this:

$$\Diamond \text{Bullywug} \rightarrow \Box \text{ Has-green-skin}$$

translated as “It is possible a bullywug exists, and if so, it has green skin”. First of all, what’s a bullywug? We’ll say it’s a bizarre bipedal frog-like creature that has green skin and a bad temper. Thus, the statement is, in fact true. If I had instead said that bullywugs have purple skin, the statement would have been false, but would still be a well formed formula, implying it makes sense when we read it. What’s the difference between bullywugs and rain? In the statement I made about rainfall, this appears to be a necessary truth as we have never encountered rain that didn’t make the ground wet (at least nominally). But, since I’ve never actually seen a bullywug (and doubt their existence entirely), it’s difficult for me to say whether the statement as a whole is contingent or necessary. Simply because I describe a bullywug as having green skin in no way entails that my friend believe the same; he thinks that some have purple skin and others green. For me, the statement is necessary, as my understanding of the creature leaves no alternative other than the conclusion. For my friend, the statement is false. It is not even contingent due to its strict requirements. However, if I write the following:

◇Bullywug→ ◇ Has-green-skin

my friend accepts this without incident. He might say this is a necessary truth simply because he thinks some bullywugs have green skin, thus the statement is always true and cannot be otherwise. For me, however, this statement appears true, but I would still reject it as actually true, and instead say it was false. My understanding of bullywugs leaves no alternative other than green skin, and the proposition implies that it could be otherwise. It does not directly claim that some bullywugs have purple skin, but the mere fact that it does not stipulate that all bullywugs have green skin makes the statement invalid for my system of belief.

In response to the preceding, a Modal Logician might contend that my friend and I are talking about two different creatures that share the same name. That is possible, and indeed the most probable explanation, but ignores something vital: what if we weren't speaking of different creatures? Since bullywugs do not actually exist in this world, neither of us knows what characteristics they truly have. To use a more realistic example, suppose I met Richard last week. Richard has brown hair (in so far as I can tell). I was speaking to my friend about Richard yesterday, and in conversation mentioned that he had brown hair. My friend, who has known Richard since grade school, contends that his hair is actually blond and always has been so. Since my friend has known Richard for many, many years, I would seriously want to re-evaluate my assumptions about his hair color, even though I remember it vividly. Neither view of Richard's hair color can be

proven, however, beyond that of an appeal to experience. My experience leads me to believe Richard's hair is brown, whereas my friend's experience leads him to believe Richard's hair is blond. Taking that into account, what is the truth value of the following statement:

> If Richard exists, then it is necessary for Richard to have blond hair.

First of all, I know Richard exists, so this statement seems a bit ludicrous. If Richard exists? Of course he exists, so the sentence is suspect. If I were to accept the statement as making sense, I'd say the truth value was false, since I'm sure his hair is brown. My friend says the statement is true, even though we both agree to the absurdity of "If Richard exists". Modal Logic requires us to concern ourselves with the prospect of beings having transitory existence, or even non-existence; a situation most unsatisfactory when talking about things in the Real World.

David Lewis had tackled a similar sort of problem by asserting that all statements concerning modality have some implied W, where W is a possible world. W_1, for instance, refers to **this** world, the world of reality, and whenever I make a statement about Richard's hair color, W_1 is automatically attached. Does that really help us in this case? Supposing I rewrite the proposition thusly:

> If Richard exists, in the real world, then it is necessary for Richard to have blond hair.

This seems to have done nothing other than clutter up my sentence with more language that I really don't feel I need to add. The real problem, i.e. "If Richard exists", is not helped by simply adding W. Further, "in the real world" does nothing other than imply that other worlds exist outside of this one (a proposition that doesn't sit too nicely). Rewriting the statement again to eliminate these issues, I get something like:

Richard exists and it is necessary that he has blond hair.

Two problems with this as I see. First, "Richard exists" seems to imply "It is necessary Richard exists". I have some problems with Modal Logic, but even I'm not going to make the claim that Richard is a necessary being (at least night right now). Secondly, why do I need to keep the "it is necessary" in the second part? I can easily eliminate that language and still maintain the same meaning. Obviously, if Richard exists, then his hair color is a relatively concrete part of his makeup. Still, he might get some Maxim Hair-color for men sometime soon. Again, rewriting the statement:

Richard exists and has blond hair right now.

Richard's hair color is now contingent on a temporal factor, but all we've really done is explicate the implied temporal component that all of us use in every day language. Modal Logic supposedly adds $\Box$ and $\Diamond$ to propositions formed from language we use regularly, but it doesn't really seem that we actually say these things. As shown above, when we talk about Richard existing, we're not saying he's a necessary being (which

appears to be what Necessity requires), nor that Richard is a possible being. Richard exists here and now, regardless of how many possible worlds are out there with similar beings, with the same names. None of those beings is truly Richard. If we maintain that beings are not necessary (except G-d), yet not possible (in that they do or don't exist, so speaking of them as merely possible seems absurd), how does anything actually exist in the system of modality? Using the preceding examples, it appears we have to know the truth-value of a statement prior to understanding how to interpret it. For instance, when we say "It is possible Richard exists" (where Richard actually exists) in modal logic, what we're saying in normal language is "Richard exists, but I can conceive of the world where he doesn't". If Richard **doesn't** exist, the same statement instead means "I can think of the world as having a guy named Richard in it, even though such a being doesn't exist".

The assertions above show many of the problems possible worlds create when we try to explain common statements of fact using modality. We are only given two operators, neither which fully captures our notions of reality. However, if we fully believe that an infinity of possible worlds to be necessary in some capacity (as stated earlier in this paper), how do we solve this dilemma? Perhaps thusly: possible worlds have nothing to do with the real world beyond transitory ideas. If we assume that possible worlds exist merely to allow us to think of things that do not truly exist, the problem becomes moot. Modal logic is regulated to a position of semantic construction that bears no real relationship to the universe. This seems to dismiss modality as nothing more than a word game, which is unwarranted. I think the only way to attempt to rectify modality with reality is with a system of temporal transience. If we think of the occurrence of

reality as an infinite number of slices, all linked by time, modality becomes a much more plausible construction. By this I mean that each proposition P assumes some time t to have meaning. “It is possible that Richard exists”, as stated above, has several meanings depending on the true state of Richard’s existence, but the statement “It is possible that Richard exists at 12:37pm” has only one meaning. To illustrate why I believe the second statement to be different than the first in the general sense, suppose that I am of the green-skinned bullywug camp (to bring up a prior example). Let us assume bullywugs actually **do** exist in the real world, and I observed one at 1 o’clock earlier today. The proposition “It is necessary that bullywugs have green skin at 1pm” implies that bullywugs do indeed exist and they have green skin at 1pm. It says nothing about their skin color at 1:01pm, or any other time. If my friend retorts “Yeah, but bullywugs are actually purple”, I can simply ask him to define the time frame in which he saw purple bullywugs. If he says he saw some at 2:37pm, then his statement is clearly different than mine. The statement “It is necessary that bullywugs have purple skin at 2:37pm” has a positive truth value. Thus, the same thing can have properties that are contradictory as well as necessary if we use the form P(t). What if about the contingency of such a proposition, i.e. “It’s possible that bullywugs have purple skin at 1pm”. This statement is false because we know they’re green at that time. However, the statement “It’s possible that bullywugs have purple skin at 3pm” seems to be a meaningful proposition, with a positive truth value. No one has observed a bullywug at 3pm, so it seems plausible that their skin color could indeed be purple at 3pm instead of green. But are they really purple?

The plausibility of contingency is again raised, even using t as a modifier. Using an example to illustrate this point, consider Schroedinger's Cat (while devised to explain quantum mechanics, the example is perfect for this case). The cat is placed in a box with some poison in a vial and a portion of radioactive mineral. If the mineral decays (a 50% chance), the poison will be released and kill the cat. Until we open the box and look, is the cat dead or alive? Schroedinger posits that the cat exists in a state of both being alive and dead at the same time, simply because observation determines the true state of wellness the cat experiences. To apply the example to modality, the bullywug I saw had green skin because I observed it as having green skin. Until the time that it was observed, its skin color might have been otherwise, or perhaps it did not even have a skin color. Thus, contingency appears to be predicated upon observation if we account for this view. This doesn't seem very convincing for numerous reasons, the primary being our own intuitive notions of the world. Is the cat dead or alive in the box? The answer "It is possible the cat is dead or alive", the intuitive response we would give, does not say something resembling what Schroedinger proposes. We are not saying that the cat's aliveness is in a state of transitory being, awaiting our observation; instead we mean "I don't know if the cat is dead or alive, and I'd have to look inside the box to find out". Implied is the sense that the cat is either dead OR alive, and we will use empirical techniques to discover the true state of being. In the same way, the bullywug does have a skin color, we just don't know what it is at this time, but will when we observe it. Could be green, might be purple, but it does actually have skin tone as a property, even if we never actually ascertain what it is. In short, yes, the falling tree does make a noise when no one is around.

Granting that contingency is not predicated upon observation, in that there need be no direct experience with something to make claims of possibility, it seems that how we use contingency still does not resemble the ◇ of modality. If I say "It is possible that Al Gore was elected president", I'm not saying Al Gore is president, nor am I saying he's not president; the statement is merely an explication of my imagination. This is indeed a different use of contingency than Schroedinger used for his cat, yet it is still a question of possibility. There lies the primary problem with the ◇operator in modality, as I see it. Possibility and contingency have many different meanings in everyday language, yet we are only given one operand to work with. There is one true reality, about which we can make a multitude of statements, some of which are false, others true, and some whose truth value we do not know. The third type of statement does have a discoverable truth value, and that is precisely where modality seems to fail us. Just because we do not know the true state of things has no impact on the universe. Black holes might or might not exist, and we could say "It is possible that black holes exist". Essentially, that statement means "Black holes exist or black holes don't exist, but I don't know which is true". ◇ fails to capture the "I don't know" part of contingency that we use quite frequently when speaking.

Going back a bit, a possible world isn't contingent, simply because contingency bears no real resemblance to reality. Possible worlds are necessary constructs for me to imagine things that did not happen, or things that might happen in the future, but have no impact on the way things actually are. Things exist or they don't; contingency is merely a

construct we use to explain our lack of understanding, or posit things we can imagine happening. “It is possible that Al Gore was elected president” bears no resemblance to the real world in the sense that George Bush was really elected president. Modality implies that the statement is describing a sequence of events that could have taken place in the past rather than the events that actually took place. The sentence makes sense simply because I can access a multitude of possible worlds within my mind, at least one of which has Al Gore being elected president. I am not required to explain myself further when making this statement, as it is understood that possibility does not entail reality.

Above, I’ve tried to demonstrate the problems with formalizing language into the modal operators by giving numerous examples of how ◇ doesn’t seem to capture the true meanings of the things we say; yet I have discussed little about necessity. This is mostly because □ seems to capture our use of “necessary”, which brings up an issue I’ve skirted throughout this paper: the problem of modality implying that the world is not this way necessarily. When we discuss things, such as the color of the sky, there appears to be an implication of necessity. “The sky is blue” is making a statement of fact about the world. Indeed, the sky **is** blue. Surely I can think of the sky being red or orange or yellow, but none of those thoughts have to do with reality. The sky is blue and appears to necessarily be blue. There is no possibility that the sky be a color other than blue in reality. Thus, □ is implied whenever statements are made concerning what truly exists. It might be argued that the sky is blue due to the circumstances of gasses released into the atmosphere in the not-so-distant past. If one variable was slightly different, then the sky might instead be yellow. But those variables weren’t different; they happened in the

manner that caused the sky to be blue instead of yellow. The Modal Logician would simply say "Yes, but events **could** have been different"; yet, they weren't. Is there really a difference between what the Logician and I say? On the surface, there doesn't appear to be one. We both maintain that it is possible that the sky be yellow instead of blue. Referring back to contingency, my meaning of possibility is quite different in this case than the Logician's. I am simply stating that I can imagine our world as having a yellow sky, nothing more, while the Logician implies that the world could actually be different. So how does necessity fit into this equation?

Things are how they are because they are that way. Events might have been different, but they weren't. I maintain that our ability to imagine and propose differences in the nature of reality in no way entails things actually could have differed. Surely humans could have had six fingers instead of five, yet they don't. Instead of the world being a mere collection of probabilities, there seems to be some sort of cohesiveness throughout that strives towards a goal, and thus the whole of history is dedicated to carrying out that goal. Abraham Lincoln might have decided to read a book instead of going to a play; but he didn't. I can posit all sorts of possibilities about Lincoln living another year or two, but they have no bearing on reality. Is it necessary that Lincoln was shot at the theater? If we were alive at the time he was shot, say one minute prior, and asked this question, our response might be "No"; Lincoln being shot does not affect us since it is a future event. Now, though, the answer seems to be "Yes", simply because every event that followed the shooting seems inexplicably linked to it. The series of events that followed Lincoln's assassination require that Lincoln be shot. Thus, it is

necessary that Lincoln die for the world to be the way it is now. In the same vein, is it possible that Al Gore be president? Sure, but it is necessary that George Bush be president simply due to the fact that he **is** president at this time. I cannot go about changing reality by merely positing possibilities, nor can I see the world as being anything other than what it is, predicated upon past events. Those past events, while not necessary prior to their happening, are indeed necessary now.

Time is linked to every event that occurs, which was the supposition when I advocated a time t being linked to every contingency. The true problem is simply our inability to escape the temporal straightjacket that encloses our minds. Suppose we think of the universe as a garden hose, partitioned into infinitely many sections, each section a snapshot of the current state the world is in, and think of time as the water that flows through the hose, moving through each section, but never lingering in place. Since we're inside the universe, being carried along by time, we can only see the current section of the hose, our memories recollecting prior moments; the occurrence of time is like a movie, each section being shown but for an instance before moving to the next. Possibility arises because we cannot see the future, necessity of the past now becomes reasonable since the hose does not change simply because we moved through it. To complete the analogy, G-d is using the hose to water his garden. He can see the beginning of the hose to the end in its entirety. He sees the water flow through the hose not as we do, instances that occur, but as one collective entity. G-d is not bound by time when he experiences the universe, nor does his omniscience affect the outcome of our water ride, but it is still necessary that the universe be created in such a way that allows his garden to

be watered properly. The earlier claim of the universe having a goal seems logical, then, if we accept that possibility that G-d created it for a specific reason.

Perhaps possible worlds are indeed necessary, as I have argued. It seems reasonable that we need possible worlds to speak of anything other than what truly exists in the universe; yet, do those worlds exist outside of our own minds? It doesn't seem that they do. When we use the term "possible worlds", perchance what we mean instead is "our imagination"; contingency is nothing more than our own ability to envision things that are non-existent. Further, necessity is linked to time; everything that has happened has happened because an event prior to it necessarily happened. This necessity of events prior to the events they entailed is missing from modal logic, I think. $\Box$ implies that the thing is necessary by virtue of what it is, not by what it caused. The only thing that has the attribute of necessity fundamentally is G-d; everything else is necessary by virtue of an instance in time. Thus, $\Box$ and $\Diamond$ fail to capture the true nature of reality in the sense that neither operator expresses the implications of "necessity" and "contingency". I see no clear way of rectifying this problem other than an introduction of numerous other operands; yet the minimalist nature of modality is appealing, and I do not reject it entirely. Perhaps modal logic might be better used as a way to assist in the interpretation of reality, instead of a quantification of reality as a whole. Or, better yet, we might simply just accept our role as helping G-d's flowers grow.