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Imagination as a Guide to Knowledge of Possibilities

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Imagination as a Guide
To
Knowledge of Possibilities

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ABSTRACT

In this thesis, I argue that Dominic Gregory (2004) and Stephen Yablo's (1993) error theoretic accounts provide the most compelling reason to think that the imagination will guide us towards knowledge of possibilities. In the first chapter, I take up both Dominic Gregory (2004) and Stephen Yablo's (1993) error theoretic accounts. The error theoretic view picks out a specific sense of imagining as that which will justify our modal beliefs. First, I argue that both Gregory and Yablo's accounts are epistemically circular and in need of revision. I proceed to argue that after revision, both accounts provide tenable error theoretic reason to think that the imagination will guide us towards knowledge of possibilities.

In the second chapter, I present Peter Kung (2010) and Dominic Gregory's (2019) imagistic accounts. Contra the error theoretic view, the imagistic position holds that there is something about the imagistic medium of certain imaginings that makes them suitable guides to knowledge of possibilities. In the third chapter, I investigate two cases which probe the adequacy of the various accounts I have examined. While each of the accounts provides a successful evaluation of these cases, it turns out that they all rely on the same error theoretic move in order to do so. The error theoretic accounts predictably offer the strongest defense of that move. Since these cases probe how the imagination fares as a modal epistemological tool, we have reason to think that error theoretic accounts of the imagination are best equipped to guide us towards knowledge of possibilities.

ACKNOWLEDGEMENTS

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INTRODUCTION

Upon initial consideration, using the imagination as a guide to knowledge of possibility is a familiar act. For example, suppose that I am in a situation in which I must move a sofa out of my house. In doing so, I might wonder if it is possible to fit the sofa through my front door. I may try to answer this question by imagining the sofa next to the door or imagining rotating the sofa to mentally analyze its size relative to the door from various angles. These imaginings will then determine whether I attempt to push the sofa through the door or deem doing so impossible and opt for a different solution. In this way, our everyday considerations reveal that most of us *do* seem to rely upon our imaginations as guides to what is possible.

However, if we believe that the imagination can provide us knowledge of possibilities,[1] we are obliged to account for the fact that we also seem to be able to imagine impossible things. For example, it seems as though we can imagine that the claim 'water is H20' is false. Since water is one and the same as H20, imagining the falsity of 'water is H20' is to imagine the falsity of something that is necessarily the case, which is to imagine an impossibility. We might then wonder how we can be sure which of the things that we imagine are in fact possible. If our imaginings are going to serve as any sort of justification for our thoughts about possibility, we must explain which imaginings are reliable guides and which are not.

While imagination can lead us astray, this alone does not suffice to discard it as a guide to knowledge of possibilities. Our perceptual faculties likewise lead us astray at times. It is certainly not the case that I only enjoy visual experiences that accurately represent the world. However, I am justified in taking my visual experiences to be guides to knowledge of the world around me because

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[1] What we really do amounts to something more like relying on our imaginings to provide justification for our thoughts on possibilities. If I think that X possible, I imagine X and I take my imagining of X to justify my thought that X is possible. In this way, we take our imaginings to boost the epistemic status of our modal intuitions. In this thesis, I will speak of the imagination 'guiding us towards knowledge of possibilities' as a shorthand for this longer explanation of the kind of work that we seem to take our imaginings to do.

I have a grasp on how my perceptual errors arise. For example, suppose that I mistakenly take myself to see a dog in the distance when in fact I am only looking at an oddly shaped log. Once I find out that I have made this error, I will likely have easy epistemic access to its source (e.g. I might notice that my glasses are smudged, notice that I have an eye infection, etc.) Knowing how our perceptual errors arise justifies us in thinking that what our visual experiences display is accurate so long as we have reason to think that those visual experiences lack known error-causing features.

In contrast, we are comparatively uninformed about the etiology of our modal errors. We are thus less capable of recognizing when our imaginings either have or lack certain error-causing features, precisely because we are not clear as to what those error-causing features are. Once we recognize the factors that lead to modal error, we can be more certain in ascribing possibility to the contents of our imaginings when we have reason to think that those features are absent.

In this thesis, I argue that error theoretic accounts of the imagination offer the most compelling explanation of our modal errors. They thus provide the strongest reason to think that our imaginings can serve as trustworthy, albeit fallible, guides to knowledge of possibilities. Error theoretic accounts pick out a specific sense of imagining as that which will justify our modal beliefs, and they take modal errors to occur when we are mistaken about what we imagine. This is to say that I can mistakenly take myself to imagine either an impossible X or a modally indeterminate X in a way that I take to justify my modal beliefs when I in fact only imagine X1 in that way. We can thus explain my modal error in ascribing possibility to X by pointing out that I was in fact imagining X1.

In the first chapter, I canvass Dominic Gregory's (2004) and Stephen Yablo's (1993) error theoretic accounts. I argue that both accounts require revision in order to be epistemically non-circular. Next, I argue that each account regains epistemic legitimacy once supplemented with Ichikawa and Jarvis' (2012) conceptual entailments framework. I proceed to argue that even though Gregory and Yablo's views require revision, their views are preferable to Ichikawa and Jarvis'

positive view. I conclude that after revision, both Gregory and Yablo's accounts provide tenable error theoretic reason to think that the imagination will guide us towards knowledge of possibilities.

Error theoretic accounts contrast with what I call 'imagistic accounts.' On an imagistic account, there is something special about the imagistic content of certain imaginings that justifies our modal beliefs. Further, the imagistic view holds that it's not the case that I can be mistaken about what I imagine (contrary to the error theoretic positions). When I imagine X, I in fact imagine *X*, and I have reason to think that my imagining justifies my modal beliefs in case the imagistic content of my imagining has the requisite good-making features. I thus make modal errors when I fail to recognize that my imaginings lack those features. I present Peter Kung's (2010) and Dominic Gregory's (2019) imagistic accounts in the second chapter.

In the third chapter, I investigate two cases which probe the adequacy of the various accounts I have examined. A successful account of the imagination needs to produce correct judgements about these cases. The first case is a proposition about whose modal status we are unsure and the other is an image that depicts an impossibility. I evaluate how all four accounts handle each case and argue that the error theoretic accounts handle both cases better than the imagistic accounts. Since these cases probe how the imagination fares as a modal epistemological tool, we have reason to think that error theoretic accounts of the imagination are best equipped to guide us towards knowledge of possibilities.

I conclude by questioning several of the assumptions on which Gregory and Yablo's error theoretic accounts rest. While we can push back on those assumptions, I argue that none of the objections at hand undermine the accounts in question. Instead, I take each error theoretic line of reasoning to remain a tenable means of explaining modal error that is well-suited to help us to feel more certain about which of our imaginings *will* guide us towards knowledge of possibilities.

CHAPTER I: ERROR THEORETIC ACCOUNTS

We have already seen that the imagination is so liberal as to facilitate our imagining impossible things. A modal epistemological account of the imagination thus needs to make a cut between imaginings whose contents are possible and imaginings whose contents are not. Error theoretic accounts make this cut by picking out a specific sense of imagining as that which will justify our modal beliefs.[2] We have reason to think that a sense of imagining will do so if impossibilities turn out to be unimaginable in that sense. If impossibilities are unimaginable in a certain sense, then we will be justified in ascribing possibility to what we *can* imagine in that sense. The project thus becomes to pick out which constraints we need to place on our imaginative abilities in order to characterize a sense of imagining on which impossibilities will be unimaginable.

The error theoretic accounts that I defend in this chapter adopt this strategy albeit in different ways. Dominic Gregory (2004) introduces a line of reasoning that constrains our imaginative abilities by requiring us to imagine propositions under suppositions. According to Gregory, impossible propositions will be unimaginable under certain suppositions and it is establishing this constraint that gives us reason to think that propositions that *are* imaginable under the suppositions in question will be possible. In contrast, Stephen Yablo (1993) argues that we are justified in ascribing possibility to a given proposition only if we can imagine a possible world of which that proposition is true. He thus makes the cut by constraining the set of imagined possible worlds that justify our beliefs in possibility.

In this chapter, I argue that both Gregory and Yablo's error theories preserve the imagination as a fallible guide to knowledge of possibility even when confronted with well-founded critique. In Section I, I argue that Peter Kung's (2016) first objection to Gregory's error theoretic characterization of unshakeable imaginability as a guide to knowledge of possibility fails because

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[2] In this thesis, I will refer to this sense of imagining as the modally salient sense.

Kung misinterprets Gregory's line of reasoning when forming his objection. First, I reconstruct Gregory's conception of unshakeable imaginability. In doing so, I underline that in order to get unshakeable imaginability off the ground, Gregory must provide reason to think that impossibilities will not be unshakeably imaginable. I then present Kung's objection, in which he argues that there are certain *a posteriori* impossibilities that remain unshakeably imaginable and thus defeat our reason for thinking that unshakeable imaginability will be a guide to knowledge of possibility.

I proceed to argue that Kung's objection succeeds on a misinterpretation of Gregory's method. I then explain how Gregory's method in fact functions and reevaluate Kung's objection. Next, I argue that Kung would object to the correct interpretation of Gregory's method on the basis of what he calls 'modal conclusions first' reasoning. According to this objection, Gregory can only say that certain propositions are unshakeably imaginable by rigging the imagination to conform to his antecedent modal conclusions. I endorse the objection and conclude that Gregory's view is guilty of epistemic circularity.

In Section II, I introduce Ichikawa and Jarvis' (2012) characterization of conceptual entailment as a guide to modal knowledge and argue that supplementing Gregory's view with it can save the unshakeable imaginability line of reasoning from being epistemically circular. First, I introduce Ichikawa and Jarvis' notion of having a rational commitment to infer in imagination. In doing so, I underline the close parallel that they take the imagination to have with belief. Then, I show how Ichikawa and Jarvis argue that certain rational commitments to infer correspond to what they characterize as conceptual entailment relations. I proceed to explicate how they take our judgements of necessity to result from our recognition of certain conceptual entailment relations.

In Section III, I apply Ichikawa and Jarvis' method to one of Gregory's cases in order to show that recognizing necessity relations by way of recognizing conceptual entailments allows the unshakeable imaginability line of reasoning to avoid epistemic circularity. I argue that Gregory holds

a tenable error theoretic view so long as we amend it with Ichikawa and Jarvis' conceptual

entailment framework. I conclude by explicating how once we have reason to think that

impossibilities are not unshakeably imaginable, we have reason to think that propositions that *are*

unshakeably imaginable will be possible.

In Section IV, I argue that Stephen Yablo's (1993) error theoretic account is likewise subject

to Kung's 'modal conclusions first' objection. I first summarize Yablo's view and outline the sense

of imagining that he takes to be modally salient. I then explicate the line of reasoning on which

Yablo explains modal error. I proceed to raise Kung's 'modal conclusions first' objection to that line

of reasoning and argue that the objection succeeds. I then argue that Yablo's view can likewise be

supplemented by Ichikawa and Jarvis' conceptual entailments framework in order to avoid being

epistemically circular.

In Section V, I head off the objection that if both Gregory and Yablo avoid epistemic

circularity only by appealing to Ichikawa and Jarvis' conceptual entailment framework, we might be

better off adopting Ichikawa and Jarvis' positive view over either of theirs. I argue, contra this line of

reasoning, that Ichikawa and Jarvis' positive view, even if successful, is not a view on which the

imagination is a guide to modal knowledge. In doing so, I argue that we need not employ our

imagination in order to determine whether a proposition is possible on Ichikawa and Jarvis' positive

view. Given that the project at hand is to determine whether the *imagination* can be a guide to

knowledge of possibilities, I conclude that we are better off adopting either Gregory or Yablo's

revised error theoretic views.

In Section VI, I head off the subsequent objection that if Ichikawa and Jarvis' positive view

relies upon conceptual entailments and does not employ the imagination, then we might think that

Gregory and Yablo's lines of reasoning will likewise no longer employ the imagination once revised.

I argue that this objection fails to distinguish between the types of conceptual entailments to which

the respective accounts appeal. I take the conceptual entailments to which both Gregory and Yablo appeal to be of a different type than those to which Ichikawa and Jarvis appeal in their positive view. This allows the former two accounts to preserve the imagination as a modal epistemological tool while the latter positive view cannot. I conclude that since our project is to determine whether the *imagination* will be a guide to knowledge of possibilities, we ought to endorse either Gregory or Yablo's error theoretic account of it.

Before proceeding, it is necessary to note that both Gregory and Yablo pick out a sense of 'imagine' that is modally salient and contrasts with imagining full stop. From here on, I will refer to the modally salient sense of 'imagine' as m-imagining and the full stop, non-modally salient sense(s) of 'imagine' as fs-imagining. Since Gregory and Yablo pick out different senses of imagining as the modally salient one, I will indicate which sense of imagining is m-imagining on each account.

Section I: Gregory (2004):

I.A: Gregory's View:

Gregory (2004) defends the imagination as a guide to knowledge of possibilities by arguing that we are justified in taking a proposition to be possible when it is unshakeably imaginable (330). Thus a proposition is m-imaginable in case it is unshakeably imaginable. A proposition is unshakeably imaginable when it is fs-imaginable under "every correct, accessible and non-modal supposition about what is actually the case (331)." According to Gregory, an accessible proposition is a proposition whose truth value we would know in case we were situated in the right way (331). For example '4+5=9,' and 'George Washington was the first President of the United States' are both accessible. Gregory takes an accessible proposition to be a correct one in case it is actually true (331). Thus, the two examples above are both accessible and correct.

In order to give us reason to think that unshakeable imaginability will be a trustworthy guide to possibility, Gregory offers examples of accessible, correct, non-modal suppositions under which

he takes certain impossibilities to be fs-unimaginable. Making these suppositions will shake our ability to subsequently fs-imagine those impossibilities, thus making it such that the impossibilities are not unshakeably imaginable. As such, making certain suppositions will constrain our ability to imagine impossibilities and give us reason to think that what we *can* imagine under those suppositions will be possible.

Prior to presenting these cases, Gregory draws distinctions between various types of impossibilities. First, he distinguishes between *a posteriori* and *a priori* impossibilities. With respect to *a posteriori* impossibilities, Gregory further distinguishes between *a posteriori* impossibilities that depend on the non-contingency of rigid designators and *a posteriori* impossibilities that result from essentialism. I will argue later on that Kung's counterexample constitutes an *a posteriori* impossibility that results from essentialism and so I will focus on Gregory's line of reasoning with respect to that type of *a posteriori* impossibility.

Before proceeding further, it is necessary to note that Gregory and Kung endorse Kripkean essentialist claims about the necessity of origins.[3] Kripke (1973) claims that if an object X originates from Y, then X originates from Y necessarily (152). This is an essentialist claim because it asserts that originating from Y is essential for being X.[4] Thus, an object that shares many properties with X but does not originate from Y will not be X (152). For example, suppose that a table X is constructed out of a particular piece of wood. Kripke argues that in order to be table X it is necessary to be constructed out of that exact piece of wood (152). While a table could have exactly the same measurements as X and be placed in exactly the same location as X, that it would not be constructed out of the particular piece of wood from which X is constructed would make it not X.

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[3] All of the accounts that I canvass in this thesis endorse Kripkean claims with respect to the necessary *a posteriori*.
[4] Note that this is not to claim that having origins Y is sufficient for being X. There are plausibly other factors that are necessary for being any given X. The claim is just that if X has origins Y, then having origins Y is one necessary condition for being X.

In order to see how an impossible proposition might be fs-unimaginable under a supposition it is best to consider an example. If we are Kripkeans, we are committed to the claim that the sun is necessarily composed of a particular ball of gas. While a ball of gas could have the same properties as the sun and be placed in exactly the same location as the sun, that it would not be composed of the particular ball of gas of which the sun is composed would make it not the *sun*. As such, a proposition like 'the *sun* is made out of toenails' is impossible.

According to Gregory, we will find that proposition fs-unimaginable under the supposition that 'the sun is not actually made of toenails.' In other words, when we make that supposition, we will be unable to fs-imagine that the *sun* is made of toenails. Our inability to fs-imagine the impossible proposition in question under that supposition is then supposed to give us reason to think that we are justified in ascribing possibility to propositions about the sun that we *do* find fs-imaginable under that supposition.

I.B: Kung's objection:

Peter Kung (2016) offers several counterexamples that he takes to render Gregory's notion of unshakeable imaginability untenable. The success of unshakeable imaginability as a guide to possibility hinges on both what fs-imagining under a supposition amounts to and whether doing so in fact places constraints on what we can or cannot fs-imagine. Kung raises skepticism about the constraining force of fs-imagining under a supposition by offering what he takes to be counterexamples of *a posteriori* impossibilities that remain fs-imaginable even under suppositions that ought to shake their imaginability.

Kung takes Gregory to endorse a concept of fs-imagining under a supposition in which imagining X under the supposition that Y does not amount to imagining the conjunction of X and Y (330). There is evidence for this interpretation of Gregory's view in a case that Gregory himself explicitly presents. Gregory asks us to suppose that pigs do not actually fly (330). He then argues

that if we try to fs-imagine that pigs fly under this supposition, "the question about our imaginative abilities should be construed as asking whether [we] can imagine a situation - whether actual or non-actual - in which pigs fly (330)." The task is thus not to try to fs-imagine that pigs fly in the actual world, but rather to fs-imagine whether the actual world could be such that pigs fly or whether a possible world could be such that they do.

According to Kung, this means that Gregory is not asking us to import our suppositions into our imagined scenarios. Kung takes this to be the case because importing a supposition X into an imagined scenario Y would amount to fs-imagining the conjunction of X and Y, but there will be cases where the conjunction of X and Y is an explicit contradiction (102). Kung then points out that explicit contradictions are not clearly fs-imaginable (102).

 Kung demonstrates that imagining an explicit contradiction cannot be the task at hand by asking us to suppose that 'dinosaurs are extinct' (X) (102). He claims that even when we make the supposition above, we seem to have no problem fs-imagining 'dinosaurs roaming the earth' (Y) (102). Kung argues that this indicates that "there are clear cases where [we] can suppose that P and still fs-imagine that not-P (102)." Given that we cannot fs-imagine explicit contradictions, our ability to suppose P and still fs-imagine not-P in the dinosaur case offers further reason to think that we do not import our suppositions about what is the case in the actual world into our imaginings.

Kung argues that on Gregory's conception of imagining under a supposition, there is not sufficient reason to think that our suppositions will in fact constrain our imaginative abilities. He asserts that "once it is clear that we are not being asked to import the supposition into the imagined situation, it becomes harder to see what work the supposition does (103)." According to Kung, without our suppositions constraining our imaginings in any obvious way, it is unclear why impossibilities will not be just as fs-imaginable under suppositions as they are outside of them. This is troublesome if suppositions are to constrain our ability to fs-imagine impossibilities.

I.B.1: Kung's Counterexample

Kung then presents a counterexample that he takes to demonstrate that Gregory has not given us sufficient reason to think that fs-imagining under a supposition will constrain our imaginative abilities. If suppositions are supposed to shake our ability to fs-imagine impossibilities by constraining our imaginative abilities, a demonstration of their lack of constraint would undermine Gregory's view. First, Kung claims that even when we make the correct, accessible, non-modal supposition that "Madame Chiang Kai-Shek is not [Kung's] great-grandmother," we will still be able to fs-imagine the impossibility that she married Kung's great-grandfather and "the fact that [we] accept the necessity of origins does not prevent [us] from imagining this (103)."

The proposition that 'Madame Chiang Kai-Shek married Kung's great-grandfather' is an *a posteriori* impossibility that we understand in virtue of accepting Kripkean essentialist claims with respect to the necessity of origins. If we are Kripkeans, then Madame Chiang Kai-Shek has the origins that she has (i.e. having parents X and Y) necessarily. However, we know that the person who married Kung's great-grandfather did not have those same parents X and Y. If in order to be Madame Chiang Kai-Shek it is necessary to have had parents X and Y and the person who married Kung's great-grandfather did not, then it is impossible for the person who married Kung's great-grandfather to have been *Madame Chiang Kai-Shek*. In raising this counterexample, Kung assumes that if we are Kripkeans about the necessity of origins, then being able to fs-imagine that 'Madame Chiang Kai-Shek married his great-grandfather' under a supposition whose content explicitly specifies her origins elsewhere should suffice for us to conclude that the proposition is unshakeably imaginable. Thus if unshakeable imaginability is supposed to give us evidence of possibility (i.e. count as m-imaginability) our ability to unshakeably imagine the impossibility that Madame Chiang Kai-Shek married his great-grandfather undermines it.

I.C: Gregory's Method Unmasked

I argue that Kung's objection gets off the ground only because he is mistaken about the way in which our knowledge of Kripkean essentialism works in Gregory's line of reasoning. Gregory relies heavily upon Kripkean essentialism in order to claim that we are unable to fs-imagine *a posteriori* impossibilities under certain non-modal, accessible and correct suppositions. This is evident when we take a closer look at his 'imagine the sun being made of toenails' case. First, we are asked to suppose that the sun is actually not made of toenails, which is our non-modal, accessible, and correct supposition. Then, we are asked to appeal to our knowledge of Kripkean essentialism (334-335). The Kripkean view tells us that if the sun is a particular mass of hot gas, then it is so necessarily. Thus even if some toenail constituted object was positioned in exactly the same location as the sun, that it would not be that particular mass of hot gas would make it not *the sun*. It is with this knowledge in mind that we are then asked to fs-imagine that the sun is made of toenails. However given the Kripkean claims to which we just appealed, any toenail constituted object we fs-imagine (regardless of how many other sun-like properties it has) will not be *the sun*. We are thus unable to fs-imagine the sun being made of toenails under our supposition that it is actually not made of toenails.

This case reveals that it is by recognizing the Kripkean claims that follow from our supposition that we are rendered unable to fs-imagine the sun being made of toenails. Our supposition is non-modal, since we are supposing that the sun is *actually* not made of toenails. However, if we are Kripkeans, our non-modal claim ensures that a subsequent modal claim is true: If there is some X that is the sun and X is actually not made of toenails then X is necessarily not made of toenails. If this modal claim to necessity is true, then it is true across all possible worlds. Thus when we try to fs-imagine that the sun is made of toenails, we do so already knowing that there is no world in which that can be the case. Under our supposition, any imagining in which it

appears that the sun is made of toenails cannot be an imagining in which it is *the sun* that is such (i.e. it would be an imagining in which another sun-like object is made of toenails).

Gregory gets close to revealing that this is what his line of reasoning is in fact doing when he says: "For some arguments take the following form: We could never imagine that Q; but if we were to make the supposition that R actually holds, then if we were to imagine that P under that supposition, we would thereby imagine that Q; so we cannot imagine that P, under the supposition that R actually holds (330)." However, Gregory neglects to make explicit that it is our knowledge of some Kripkean claim Z that restricts us from ever fs-imagining Q. When we suppose that R actually holds, R is such that if R is true then some Kripkean necessity claim Z is true. If we were to fs-imagine P under the supposition R, we would fs-imagine Q but we could never fs-imagine Q because Z restricts us from being able to do so. In other words, that the sun is necessarily constituted by a particular mass of hot gas (Z) restricts us from being able to fs-imagine that *the sun* is made of toenails (Q).

We are now in a position to re-evaluate Kung's counterexample with a clearer picture of how Gregory's method actually works. As before, we first make the correct, accessible and non-modal supposition that Madame Chiang Kai-Shek is not Kung's great-grandmother. Gregory would presumably think that we should now appeal to the Kripkean claim that Madame Chiang Kai-Shek and Kung's great-grandmother each have the distinct origins that they have necessarily. Thus in order to be Madame Chiang Kai-Shek it is necessary to have origins X and to be Kung's great-grandmother it is necessary to have origins Y. That our supposition is true thus ensures that the following modal claim is true: if Madame Chiang Kai-Shek is not Kung's great-grandmother, then she is *necessarily* not Kung's great-grandmother. Therefore, while we can fs-imagine that some person married Kung's great-grandfather and we can fs-imagine that the person resembles Madame Chiang Kai-Shek, Madame Chiang-Kai Shek's origins ensure that she is necessarily not Kung's great-

grandmother and thus we cannot fs-imagine that it is in fact *Madame Chiang Kai-Shek* who married

Kung's great-grandfather.[5]

Section I.D: The Modal Conclusions First Charge

While Gregory's line of reasoning in fact shows how suppositions (together with knowledge

of certain Kripkean essentialist claims about the necessity of origins) might constrain our imaginative

abilities, Kung would reject the correct interpretation of Gregory's method on the basis of what he

calls 'modal conclusions first reasoning (102).' Kung claims that if certain imaginings are supposed

to act as independent evidence for our modal beliefs, then we should not use what modal intuitions

we already have to arrive at those imaginings. To do so would be to conclude that our imagined

scenarios only justify our thoughts on possibilities in case they accord with our antecedent modal

intuitions. In no way would our imaginings be generating independent reason to boost the epistemic

status of those modal intuitions.

When Kung raises the 'modal conclusions first' objection, he argues that once we abandon

'modal conclusions first reasoning,' *a posteriori* impossibilities like 'Madame Chiang Kai-Shek married

Kung's great-grandfather' become fs-imaginable even under suppositions that are supposed to

render them fs-unimaginable. We previously found that proposition fs-unimaginable because a

necessity of origins claim made it such that any individual we imagined (no matter closely she

resembled Madame Chiang Kai-Shek) could not *be* Madame Chiang Kai-Shek. According to Kung,

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[5] When I say that we cannot fs-imagine that "it is in fact Madame Chiang-Kai Shek who married Kung's great-grandfather" under the supposition that she is not his great-grandmother, I mean that we cannot fs-imagine that Madame Chiang-Kai Shek married the man who *in fact* became Peter Kung's great-grandfather, and gave birth to the child who *in fact* became Peter Kung's grandmother. Since Peter Kung has his origins necessarily and Madame Chiang-Kai Shek is not Kung's actual great-grandmother, if Madame Chiang-Kai Shek instead of Kung's actual great-grandmother had married the man who became Kung's great-grandfather, then *Kung* would not have existed. So, it is impossible that Madame Chiang-Kai Shek married Peter Kung's great-grandfather because any man who Madame Chiang-Kai Shek married would not have been Peter Kung's great-grandfather because in that scenario, there is no Peter Kung! So, it is the impossible situation in which Madame Chiang-Kai Shek marries the person who *in fact* becomes Peter Kung's great-grandfather that I take us to be unable to fs-imagine under the supposition that she is not his great-grandmother. In the remainder of this thesis, I will refer to this impossible situation via the shorthand "Madame Chiang-Kai Shek married Kung's great-grandfather."

our imagining is doing no work if that scenario is only fs-unimaginable because our antecedent modal conclusions about the necessity of origins make it such that it is not. Kung concludes that 'modal conclusions first' reasoning operates along these lines: "We should reject the imaginability of [certain cases] because they are impossible. We should deploy our prior modal convictions to infer, *post hoc*, whether we were or were not imagining what we thought we had imagined (103)."

Kung's characterization of modal conclusions first reasoning corresponds to what Paul Tidman (1994) calls "epistemic circularity (298)." Tidman argues that a line of reasoning exhibits epistemic circularity when "its premises can be defended only by tacitly assuming the truth of the conclusion (298)." Kung's charge against Gregory accuses him of exactly this: that 'Madame Chiang Kai-Shek married Kung's great-grandfather' is fs-unimaginable can only be defended by tacitly assuming that certain *a posteriori* impossibilities just *will* be fs-unimaginable under certain suppositions if we are Kripkeans about the necessity of origins. Therefore, to claim that Gregory uses 'modal conclusions first' reasoning is to claim that his line of reasoning is epistemically circular.

I endorse Kung's 'modal conclusions first' objection against Gregory and thus conclude that the unshakeable imaginability line of reasoning is epistemically circular. However, I argue that the scope of Kung's 'modal conclusions first' objection must extend only over appeals to antecedent *a posteriori* modal knowledge. In contrast, I take us to be justified in appealing to antecedent modal knowledge of propositions known *a priori*. This is because we gain knowledge of both the truth value and the modal status of *a priori* propositions simply in virtue of grasping their constituent concepts. We thus can gain knowledge of the modal status of *a priori* propositions independently of the imagination.

Further, we have reason to think that any proposition whose truth value we know solely in virtue of grasping its constituent concepts will be true in any possible world. For example, 'bachelors are unmarried males' is true in every possible world in virtue of the fact that to be a bachelor just is

to be an unmarried male. Should we imagine a world in which married men are referred to as 'bachelors' we ought not to conclude that we have found a world in which there is a bachelor who is in fact a married male. Rather, we ought to conclude that in the world in question, the word 'bachelor' corresponds to a different concept than does our word 'bachelor.' Given that *a priori* truths are necessary, they ought to come out m-imaginable. If *a priori* truths are necessary, then *a priori* falsehoods are impossible and thus ought to come out m-unimaginable.

Unlike *a priori* propositions, we do not recognize the modal status of *a posteriori* propositions solely in virtue of grasping the concepts that make up those propositions. Our knowledge of their modal status is instead contingent on knowledge of external facts about the worlds of which their contents are predicated. Further, the imagination is the only tool with which we are currently attempting to acquire this modal knowledge. Thus, while we can gain knowledge of the modal status of *a priori* propositions independently of the imagination (i.e. by recognizing their constitutive conceptual relations), we have no such established independent means of gaining knowledge of the modal status of *a posteriori* propositions. Contra appeals to *a priori* modal knowledge then, to appeal to *a posteriori* modal knowledge is to appeal to modal knowledge gained from the imagination in order to see whether the imagination is a trustworthy provider of modal knowledge. Given that this move is epistemically circular, a successful account of the imagination as a modal epistemological tool cannot appeal to *a posteriori* modal knowledge.

Section II: Ichikawa and Jarvis

I granted that Gregory's appeal to Kripkean essentialist claims in order to shake our ability to imagine impossibilities under certain suppositions is epistemically illegitimate. It is circular to claim that our new modal claims that rely upon *a posteriori* propositions are justified in case they cohere with our antecedent modal beliefs about those propositions. However, by making this concession I do not cast aside Gregory's view as a guide to modal knowledge with respect to *a posteriori*

propositions full stop. Instead, I argue in this section that Ichikawa and Jarvis (2012) introduce a

framework that allows Gregory to make modal judgements about *a posteriori* propositions without

having to resort to epistemic circularity.

In order to do so, I reconstruct Ichikawa and Jarvis' position with respect to how we come

to have knowledge of necessity. On their view, judgements of necessity arise from recognition of

what they call conceptual entailments. Conceptual entailments will correspond to certain rational

commitments to infer that we have in imagination.

Ichikawa and Jarvis first pick out a set of imaginings that they characterize as coherent.

Coherent imaginings are imaginings whose contents are not absurdities.[6] While Ichikawa and Jarvis

do not specify the scope of absurdities, I take their examples to indicate that absurdities are *a priori*

falsehoods (135).[7] On this definition, "the cat is on the mat" is coherent while "the married

bachelor" is not. Ichikawa and Jarvis define the former, coherent cases as 'conceptual possibilities,'

such that the contents of an fs-imagining will be conceptually possible in case that imagining is

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[6] It is necessary to note that Ichikawa and Jarvis take supposing and imagining to mean the same thing. To this end, they use the words 'suppose' and 'imagine' interchangeably. Given that we often suppose absurdities (e.g. P&~P) for the sake of argument, this interchangeability allows that we can imagine absurdities.

At first glance, that Ichikawa and Jarvis use 'suppose' and 'imagine' interchangeably seems to set them apart from Gregory, who distinguishes the two terms when establishing unshakeable imaginability. In that line of reasoning, suppositions are non-modal and true of the actual world while imaginings depict how the actual world could be or how a possible world could be. However, this alone does not suffice to say that Gregory takes the two terms to mean different things, because it says nothing of what Gregory thinks we can suppose when not trying to establish unshakeable imaginability. In fact, he *does* allow that we can suppose facts about how the actual world could be and facts about how possible worlds could be, provided that we are not using those suppositions in the unshakeable imaginability line of reasoning. This said, though Gregory also claims that we can suppose absurdities in more general circumstances, he maintains that we cannot fs-imagine them.

While Ichikawa and Jarvis' interchangeable use of 'suppose' and 'imagine' does distinguish them from Gregory with respect to absurdities, they preserve the Gregory/Yablo view that absurdities are in some sense fs-unimaginable when they distinguish imaginings that are coherent from those that are not.

[7] There will be cases where an absurdity will not be immediately recognizable as such (e.g. some people will not immediately realize that 'there is some barber who shaves all and only those barbers who are not self-shavers' is an absurdity). In these cases, Ichikawa and Jarvis would plausibly say that we will mistakenly take such absurdities to be coherently imaginable (and thus conceptually possible) until we recognize them as absurdities.

coherent (135). Thus incoherent fs-imaginings (i.e. fs-imaginings whose contents are absurdities) will be conceptually impossible.

The fact that coherent imaginability offers us knowledge of conceptual possibility will be important because a proposition must be conceptually possible in order to be metaphysically possible. However, recognizing conceptual possibility via coherent imaginability does not suffice for knowledge of metaphysical possibility because *a posteriori* impossibilities remain conceptually possible. For example, the proposition "Hesperus is not Phosphorus" is coherently fs-imaginable (and thus conceptually possible) because we come to know that "Hesperus is not Phosphorus" is false *a posteriori* and thus the proposition is not an absurdity. The proposition is thus conceptually possible even if metaphysically impossible. In contrast, recognizing conceptual impossibilities will guide us towards knowledge of metaphysical impossibilities because conceptual impossibilities are *a priori* falsehoods and *a priori* falsehoods are metaphysically impossible (e.g. a married bachelor is metaphysically impossible). So, while we are justified in inferring from conceptual to metaphysical impossibility, the *a posteriori* impossibilities ensure that no similar direct inference is available from conceptual to metaphysical possibility.

II.A: Rational Commitments to Infer

With conceptual possibility ruled out as sufficient for knowledge of metaphysical possibility, Ichikawa and Jarvis characterize a method of determining metaphysical possibility that proceeds by way of recognizing rational commitments to infer that we have in imagination. Our rational commitments to infer in imagination parallel the rational commitments to infer that we have in belief (137). For example, if I believe that I have deposited a check at the bank, I will be rationally committed to infer that the amount of money I deposited will appear in my bank account. I will infer this particular proposition because of some empirical knowledge that I have with respect to how bank deposits function. By saying that I am 'rationally committed' to inferring that there is an

additional sum of money in my bank account, Ichikawa and Jarvis mean that I will believe that the money is in my account should the question arise.

Analogously, if I imagine Sherlock Holmes depositing a check, I will imagine that there will be a new sum of money in his bank account should the question arise (i.e. and I thus can be said to have a rational commitment to infer that there will be a new sum of money in his bank account). Since our rational commitments in imagination parallel our rational commitments in belief, anything that explains our rational commitments to infer in belief will also explain our rational commitments to infer in imagination (137).

Rational commitments to infer appear as though they could either be defeasible or indefeasible. A rational commitment to infer Q from P would be defeasible if there are cases in which we will fail to have a rational commitment to infer Q even though P obtains and there is an evidentiary relation between P and Q (138-139). For example, I might not be rationally committed to infer that my bank account will have more money in it when I deposit a check if I do not know how banks function. In contrast, a rational commitment to infer Q from P would be indefeasible if we have a rational commitment to infer to Q in any possible case in which P obtains and there is an evidentiary relation between P and Q (138). For example, we might think that we will always have a rational commitment to infer that X is something if we know that X is a cat.

However, Ichikawa and Jarvis argue that in fact no rational commitment to infer in belief is truly indefeasible because all such rational commitments can be defeated by our rational limitations (139). Rational limitations are limitations with respect to our ability to process evidence, such as limitations in computational capacity, tendencies to make errors when computing, or lack of knowledge of concepts (139). Instances where our rational commitment to infer Q from P is defeated by our rational limitations contrast with instances where gaining additional evidence defeats that commitment.

For example, suppose that John is spending his first winter in Boston and he learns that it is going to snow (P). Suppose that John does not realize that the streets in Boston are plowed after a snowfall, and so he forms a rational commitment to infer that the streets will soon be covered in snow (Q). However, upon learning that the streets in Boston are plowed after a snowfall, his rational commitment to infer is defeated. In this case, gaining additional evidence defeats John's rational commitment to infer from P to Q even though Q obtains and there is an evidentiary relation between P and Q.[8]

Contrast this with a case in which both John and Jill are given a logic problem. Jill gets the correct answer, but John does not. In this case, John's failure to have a rational commitment to infer the correct answer is more aptly explained by something like errors in computation or lack of conceptual knowledge, because John and Jill have the same amount of evidence available to them and Jill infers the correct answer (i.e. she believes the correct answer when the question arises). Ichikawa and Jarvis claim that our rational commitments to infer in belief will always be vulnerable to being defeated in the latter of the two ways.

Given that rational commitments to infer in imagination parallel rational commitments to infer in belief, rational commitments to infer in imagination will likewise always be vulnerable to defeat by our rational limitations. However, whereas in the belief case, being defeated by rational limitations contrasts with being defeated by paucity of evidence, in the imagination case, being defeated by rational limitations contrasts with being defeated by further imaginings. Since rational commitments to infer in imagination parallel rational commitments to infer in belief, we can say that imagining further scenarios is analogous to gaining further evidence.

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[8] It is admittedly strange to think of John's rational commitment being defeated because he has no rational commitment in the first place. This oddness is a product of I&J's use of the term 'defeator.' In the subsequent logic problem case, John also has no rational commitment to infer in virtue of lacking the relevant conceptual knowledge (i.e. it's not that he first has a rational commitment and then it is later defeated).

For example, suppose that someone tells you that it is raining in Las Vegas. You now have a rational commitment to infer that the streets in Las Vegas are wet, but that rational commitment to infer in belief could be defeated by your gaining the additional evidence that the streets in Las Vegas have in fact all been covered. Analogously, imagine that it is raining in Las Vegas. Doing so rationally commits you to infer in imagination that the streets in Las Vegas are wet, but your rational commitment to infer in imagination could be defeated by your further imagining that the streets in Las Vegas have all been covered. Thus while rational commitments to infer in belief and imagination can both be defeated by something other than our rational limitations, that 'something other' is further evidence in the belief case and further imaginings in the imagination case.

II.B: Conceptual Entailment

Ichikawa and Jarvis utilize both rational commitments to infer in imagination and rational limitations in order to offer a characterization of conceptual entailment. A proposition P conceptually entails Q in case any failure on our part to infer Q when we imagine P results at least partly from either our rational limitations or evidence that we have concerning our rational limitations (140). We have evidence concerning our rational limitations when we know that our ability to process evidence is compromised in some way (e.g. knowing that we have taken a drug that causes extreme drowsiness). This characterization of conceptual entailment (CE) is equivalent to the claim that P conceptually entails Q in case any failure on our part to infer to Q given P does not result wholly from further beliefs in the belief case or wholly from further imaginings in the imagination case (140).

Ichikawa and Jarvis clarify what conceptual entailment in imagination is supposed to be by introducing a series of cases. For example, imagine that 'Stephen knows that P.' We have a rational commitment to infer that 'P' from this imagining (141). If Stephen in fact knows that P, then P must

be true. In order to see whether this rational commitment corresponds to a conceptual entailment in imagination, we must ask how our inference might be defeated.

We might think that our inference could be defeated by the further imagining that "Stephen knows that P even though in fact, ~P (141)." However, if 'Stephen knows that P' in fact rationally commits us to infer 'P,' then "Stephen knows that P even though ~P" is an explicit contradiction, and explicit contradictions will entail any proposition, including P (141). Since our further imagining is an explicit contradiction that itself entails P, it fails to defeat our rational commitment to infer. Given that our rational commitment cannot be defeated by further imaginings, we can conclude that any failure to infer from 'Stephen knows that P' to 'P' will result from our own rational limitations. Thus 'Stephen knows that P' conceptually entails 'P.'

II.C: Conceptual Entailment as a Means of Recognizing Conceptual Necessity

Ichikawa and Jarvis argue that we gain knowledge of what they define as conceptual necessity by recognizing conceptual entailments that obtain in our imagined scenarios. It is appreciating these conceptual necessities that will ultimately guide us towards knowledge of metaphysical necessity and possibility. How recognizing conceptual entailments guides us towards knowledge of conceptual necessity becomes clear via the following example. Suppose that we find out empirically that water is H2O. Our empirical knowledge thus rationally commits us to infer that "X is not water" should someone tell us that "X is not H2O." However, it is not solely in virtue of recognizing *this* rational commitment to infer that we come know that necessarily, water is H2O (145). Rather, it is engaging in Putnam style thought experiments that reveals that if we know empirical facts about water and H2O, we will hold them as "tacit background imaginings" in our imagined scenarios (146). Recognizing the propositions that we tacitly imagine in the background will guide us towards knowledge of conceptual necessity.

How tacit background imaginings work becomes clear when we take up a Putnam style thought experiment in which we imagine that in some possible world, there is a non-H2O substance L that shares surface level properties with water but is actually composed of something called XYZ (145). We are then asked to imagine that in the actual world, scientists proclaim that they have been wrong all along about the liquid that we call 'water' on earth and assert that it is actually composed of XYZ instead of H2O (145). We are then asked whether the substance we imagined in the possible world is water. The obvious answer is supposed to be 'yes' and it is our rational commitments to infer about what substances count as water in our imagined scenario that are supposed to explain this response (145).

The rational commitments to infer that lead to our 'yes' response arise from our tacit background imaginings. Here it is necessary to first specify the content of the tacit background imagining that is doing the work. It is not that we tacitly imagine that 'water is composed of H2O' when engaging in the thought experiment above and *that* proposition rationally commits us to infer facts about what substances count as water in our imagined scenario. Rather, it is that we tacitly imagine that 'whichever substance composes water does so *uniformly*' and that gives rise to those rational commitments. This is a non-modal, *a posteriori* proposition, since we come to know about the uniform composition of water empirically. In order to see that *this* is the proposition operating in the background of the Putnam style thought experiment, we need only recognize that our answer to whether the possible world substance is water would be 'no' if we were told that the substance was only partially composed of XYZ.

Thus, when we agree that our possible world substance L is water, we see that we are rationally committed to infer from our empirical knowledge about the uniform composition of water in the actual world to a judgement about what sorts of substances count as water in our possible world(s) (146). More precisely, the Putnam style case shows that we have a rational commitment to

infer in imagination that "L is water" from both the proposition that "in the actual world, the samples of water we interact with are uniformly composed of Y" and the proposition that "L is uniformly composed of Y (146).[9]"

Ichikawa and Jarvis argue that our rational commitment to infer in this Putnam style case corresponds to a conceptual entailment (146). In order to defeat our rational commitment to infer with a further imagining, we would have to imagine either that L is not composed of XYZ or that water is not composed of XYZ. However, if 'L is composed of XYZ' and 'water is composed of XYZ' in fact rationally commit us to infer that 'L is water,' then this would amount to us either imagining that 'L is composed of XYZ even though L is not composed of XYZ' or 'water is composed of XYZ even though water is not composed of XYZ.' Since either of our further imaginings create an explicit contradiction that itself entails any proposition including the proposition in question, both further imaginings fail to defeat our rational commitment to infer. Thus when we imagine 'L is composed of XYZ' and 'water is composed of XYZ,' any failure to infer in imagination from those propositions to "L is water" will result at least in part from our rational limitations, and this is what is required for conceptual entailment.

Recognizing conceptual entailment relations such as these guide us towards knowledge of conceptual necessity. A proposition Q is conceptually necessary if and only if it is conceptually entailed by any proposition (142-143). Further, Ichikawa and Jarvis claim that the following equivalence with conceptual entailment obtains: if P conceptually entails Q, then the conditional (P⊃Q) is conceptually necessary (142-143). Thus when we recognize that P conceptually entails Q, where P is the conjunction ("water is composed of XYZ" and "L is composed of XYZ") and Q is "L is water," the equivalence with conceptual necessity entails that we also recognize that the

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[9] From hereon I will use 'composed' to refer to 'uniformly composed.'

conditional "If water is composed of XYZ and L is composed of XYZ, then L is water" is conceptually necessary.

II.D: Conceptual Necessity Entails Metaphysical Necessity

Ichikawa and Jarvis then argue that conceptual necessity entails metaphysical necessity (147). Previously, we saw that recognizing conceptual impossibilities guides us towards knowledge of metaphysical impossibilities. Here, recognizing conceptual necessities guides us towards knowledge of metaphysical necessities.

A proposition Q is conceptually necessary if and only if it is conceptually entailed by every proposition. This is to say that for every proposition P, we will be rationally committed to imagine Q when we imagine P and that rational commitment will correspond to a conceptual entailment. We know that at least one proposition P is true of every possible world. Thus if Q follows from any proposition then for every possible world, Q will follow from whichever proposition P is true of it. As such, if we are rationally committed to imagine Q when we imagine any proposition P, we will be rationally committed to imagine Q in every possible world and to be metaphysically necessary just *is* to obtain in every possible world. Ichikawa and Jarvis' method thus reveals how we come to have knowledge of metaphysical necessity via our recognition of conceptual necessity relations that obtain in our imagined scenarios.

Section III: Gregory's Account Revisited

III.A: Gregory's Case

We are now in a position to see whether appealing to Ichikawa and Jarvis' framework might help the unshakeable imaginability line of reasoning avoid epistemic circularity. In order to do so, we can apply their methodology to Gregory's case: that it is impossible to fs-imagine Madame Chiang Kai-Shek marrying Kung's great-grandfather under the supposition that she was not his great-grandmother. Previously, Gregory appealed to a Kripkean essentialist claim about the necessity of

origins in order to assert that the supposition above shook the imaginability of the impossibility and

Kung raised concerns about epistemic legitimacy. The test then is to see whether Gregory can

instead appeal to Ichikawa and Jarvis' framework in order to do the same work that his appeal to

that Kripkean essentialist claim once did.

First, we must turn Gregory's case into a Putnam style thought experiment. We know that

Madame Chiang Kai-Shek is not Kung's great-grandmother.[10] Now we fs-imagine a possible world

in which there is a person X who is not Madame Chiang Kai-Shek. Then we imagine that in the

actual world, Kung was mistaken about his ancestry and Madame Chiang Kai-Shek is in fact his

great-grandmother. If asked whether X is Kung's great-grandmother, our answer will be 'no.'

We must again specify the content of the tacit background imagining that causes our 'no'

response. In the water/h2O case, we tacitly imagined that 'whatever substance composes water does

so uniformly,' and that imagining determined which substances counted as water in our imagined

scenario. In this case, our response reveals that we tacitly imagine that 'whomever is Kung's great-

grandmother has origins Y,' and this background imagining determines which person counts as

Kung's great-grandmother in our imagined scenario. More precisely, that tacit background imagining

rationally commits us to infer that X is not Kung's great-grandmother when we imagine that 1) in

the actual world, Madame Chiang Kai-Shek is Kung's great-grandmother and 2) X does not share

origins Y with (i.e. and thus has distinct origins from) Madame Chiang Kai-Shek.

Further, this rational commitment will correspond to a conceptual entailment. If we imagine

that 'in the actual world it turns out that Madame Chiang Kai-Shek is Kung's great-grandmother'

and that 'X does not share origins Y with Madame Chiang Kai-Shek' we are rationally committed to

infer that 'X is not Kung's great-grandmother.' In order to defeat our rational commitment with

further imaginings, we would have to imagine that it turns out that X does in fact share origins Y

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[10] I am again using 'Kung's great-grandmother' to refer to the person who gave birth to Kung's grandmother.

with Madame Chiang Kai-Shek. However, if 'X does not share origins Y with Madame Chiang Kai-Shek' in fact rationally commits us to infer 'X is not Kung's great-grandmother' then "X shares origins with Madame Chiang Kai-Shek even though X does not share origins with Madame Chiang Kai-Shek" is an explicit contradiction, and we have already seen that explicit contradictions will entail any proposition, including 'X is not Kung's great-grandmother' (141). Since our further imagining creates an explicit contradiction that itself entails the proposition in question, it fails to defeat our rational commitment to infer. As such, any failure to infer will result from our own rational limitations. We thus have a case of conceptual entailment.

It is now time to see how appealing to the conceptual entailment above can shake the fs-imaginability of 'Madame Chiang Kai-Shek married Kung's great-grandfather' under the supposition that she was not his great-grandmother. First, we make that supposition. Then, we run the Putnam style thought experiment illustrated above. Doing so allows us to recognize that the proposition 'whomever is Kung's great-grandmother has origins Y,' is acting as a tacit background imagining and conceptually entailing facts about which people count as Kung's great-grandmother in our imagined scenarios. Since our supposition tells us that Madame Chiang Kai-Shek is not Kung's great-grandmother (and thus has distinct origins from her), we recognize that the conceptual entailments that obtain in our imagined scenario make it such that whomever we fs-imagine marrying Kung's great-grandfather under our supposition will not be the person who gave birth to Kung's grandmother.

Appealing to conceptual entailments thus offers Gregory a means of establishing fs-imagining under a supposition as a trustworthy method for shaking the imaginability of impossibilities in a way that is epistemically non-circular. I conclude that supplementing Gregory's account with Ichikawa and Jarvis' conceptual entailment framework in this way leaves him with a tenable error theoretic line of reasoning. Since known impossible propositions come out not-

unshakeably imaginable on that line of reasoning, we now have reason to think that propositions that *do* come out unshakeably imaginable will be possible. In the next section, I explicate how Gregory's unshakeable imaginability line of reasoning justifies our ascriptions of possibility.

III.B: Knowledge of Metaphysical Possibility

Gregory argues that we will be justified in concluding that a proposition is possible when we take ourselves to be able to inductively infer to its unshakeable imaginability (343). For example, suppose that we want to find out whether it is possible that there are striped elephants in Barmby Moor (343). First, we identify accessible, non-modal suppositions under which we have reason to think 'there are striped elephants in Barmby Moor' might be fs-unimaginable. One such candidate supposition might be the explicit denial of the proposition whose modal status we are attempting to determine (i.e. 'there are no striped elephants in Barmby Moor'). According to Gregory, we will be able to fs-imagine that Barmby Moor contains striped elephants under the supposition that there are no striped elephants at Barmby Moor (343). We are then supposed to repeat this process with additional suppositions "until we feel safe to infer inductively -- as we surely eventually will -- that striped elephants at Barmby Moor are unshakeably imaginable (343)."

In previous sections, we established unshakeable imaginability as a trustworthy means of determining possibility so long as we supplement it with Ichikawa and Jarvis' conceptual entailment framework. We are thus justified in taking it to be possible that there are striped elephants at Barmby Moor so long as we find 'there are striped elephants at Barmby Moor' unshakeably imaginable. So while Kung's critique caused us to revise the unshakeable imaginability line of reasoning in order to avoid being epistemically circular, making such a revision leaves Gregory with a tenable error theoretic account.

Section IV: Yablo

Section IV.A: Yablo's View:

In this section, I introduce Stephen Yablo's (1993) error theoretic account of the imagination as a guide to knowledge of possibilities. In the proceeding section, I argue that it is subject to the same 'modal conclusions first' worry as is Gregory's account but can likewise reconcile the worry if we supplement it with Ichikawa and Jarvis' conceptual entailment framework. Like Gregory, Yablo identifies a specific type of imagining as modally salient (i.e. m-imagining). On Yablo's view, we m-imagine P if we imagine a world of which it is veridical that P (29). The claim that P is true of a possible world W amounts to the claim that if W had existed, then P would have been the case (29). As such, when we imagine a world of which P is veridical (i.e. m-imagine P), it appears to us that P is possible (29). We are *prima facie* justified in taking P to be possible in case we can imagine P in this way.

However, our *prima facie* justification can be defeated because we are able to m-imagine impossible propositions if we lack knowledge that the propositions in question are in fact impossible. Because we are *prima facie* justified in taking what we m-imagine to be possible, we will also be *prima facie* justified in taking what are in fact impossible propositions to be possible until we gain knowledge of their impossibility. Finding out that the propositions in question are impossible will then defeat our *prima facie* justification for taking them to be possible.

For example, philosophers prior to Kripke plausibly were able to m-imagine a world of which it is veridical that water is composed of a non-H2O chemical composite XYZ (34). They were thus *prima facie* justified in taking that claim to be possible. However, if we are Kripkeans, we have reason to think that water is necessarily composed of H2O. This is because 'water' and 'H2O' are what Kripke (1973) calls rigid designators. If X is a rigid designator, then if X designates Y then X designates Y in every possible world (144). So, if 'water' designates a certain liquid, then 'water'

designates that liquid in every possible world and the same is true for 'H2O'. Given that 'water' and

'H2O' designate one and the same liquid, they designate one and the same liquid in every possible

world. In other words, water is necessarily one and the same liquid as H2O (i.e. we can say that

water is necessarily composed of H2O). Once we accept Kripkean claims, our *prima facie* justification

for taking it to be possible that *water* is composed of XYZ is defeated.

Further, accepting these Kripkean claims will make it m-unimaginable that there is a world

of which it is true that 'Water is composed of XYZ.' Given that water is necessarily composed of

H2O, any world in which a substance appears to be composed of XYZ is not a world in which *water*

is composed of XYZ. In this way, modal errors arise due to ignorance. We can m-imagine what are

in fact impossible propositions because we fail to recognize that those propositions are in fact

impossible. Once we recognize that the propositions in question are impossible, we will no longer be

able to m-imagine them.

More formally, Yablo argues that for every impossible proposition P there exists a modal

conditional of the form (if Q then ☑ ~P) (29).[11] When we find impossible propositions m-

imaginable, either we lack knowledge of Q or we lack knowledge of the modal conditional (29). We

can now formulate the case above on this model. Let P be the impossible proposition 'Water is

composed of XYZ.' Let's make Q 'In the actual world, water is uniformly composed of H2O.'

We now need reason to accept the modal conditional as true because once we do so, we can

conclude that if Q is true then ☑ ~P must be the case. Yablo establishes the modal conditional as

true via a method akin to the Ramsey test (29). In order to establish a given indicative conditional as

true on the Ramsey test, we are to suppose that we are reliably informed of the antecedent and then

consider, under that supposition, how plausible we find the consequent (29, n.66). If we find the

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[11] ☑P means necessarily, P

consequent plausible then we ought to accept the indicative conditional as true. Given that (if Q then ☒ ~P) has a modal consequent, we need to amend the Ramsey test slightly (29, n.66). We again suppose that we are reliably informed of the antecedent, but instead of considering whether we find the consequent plausible we consider whether we find the consequent fs-imaginable. This is to say that we consider whether we find P fs-imaginable under the supposition that we are reliably informed that Q. If we find P fs-unimaginable under the supposition that we are reliably informed that Q, then we can accept the conditional (if Q then ☒ ~P) as true.

It is necessary to recognize both Q and the modal conditional as true in order to no longer be able to m-imagine P. If we have reason to think that Q is true but lack knowledge that Q guarantees ☒ ~P, then we will still be able to m-imagine that P. In contrast if we know that Q guarantees ☒ ~P but we are unaware that Q is in fact true, we will still be able to m-imagine P. Thus we can m-imagine P and in doing so form false beliefs about the modal status of P in case we lack knowledge of either of Q, or of the modal conditional, or of both. So while there is a modally relevant way of imagining on Yablo's view, we are *prima facie* justified in taking what we imagine in that way to be possible in case we have reason to think that there will be both no Q and no modal conditional around to defeat that *prima facie* justification.

Section IV.B: Kung's Modal Conclusions First Critique of Yablo:

Kung argues that knowledge of both Q and the modal conditional (if Q then ☒ ~P) will fail to prevent us from being able to m-imagine P. This is because given that Q will be a non-modal *a posteriori* proposition about the actual world and such propositions can fail to obtain, Yablo must accept that we can fs-imagine that Q fails to obtain (101). For example, we might fs-imagine that in the actual world, it's not the case that the liquid that we designate as water is uniformly composed of

H2O. Thus even if we establish the modal conditional (if Q then ☒ ~P), if Q does not obtain then we cannot conclude that ☒ ~P.

Recognizing that ☒ ~P obtains is supposed to render us unable to m-imagine P. Thus, if we can no longer conclude that ☒ ~P, we will find P m-imaginable. So, we do not have reason to think that gaining knowledge of both Q and of (if Q then ☒ ~P) will render P m-unimaginable if we can fs-imagine that Q fails to obtain even when we know Q and fs-imagining that Q fails to obtain allows us to m-imagine P.

Kung argues that Yablo might be able to block this worry by conceding that while we can fs-imagine that non-modal facts can fail to obtain, impossible propositions will still be m-unimaginable if we hold certain non-modal facts fixed. Kung takes holding a proposition fixed to amount to supposing that proposition and so to hold a proposition like 'in the actual world, water is uniformly composed of H2O' fixed is to suppose that 'in the actual world, water is uniformly composed of H2O' is true. We have already seen that if 'in the actual world, water is uniformly composed of H2O' (Q) is true and we accept the modal conditional, then we are justified in concluding that ☒ ~P. As such, it seems as though our knowledge of both Q and of the modal conditional *does* in fact render us unable to m-imagine P so long as we hold Q fixed.

Even so, we can continue to push back on Yablo's line of reasoning by objecting to the means by which he establishes the modal conditional (if Q then ☒ ~P). If it turns out that we do not have reason to accept the modal conditional, then even holding Q fixed will not render us unable to m-imagine P because that Q is true will not guarantee ☒ ~P. Recall that we established the modal conditional (if Q then ☒ ~P) by attempting to fs-imagine P under the supposition that Q. If

we found P fs-unimaginable when supposing Q, we had reason to accept the modal conditional (if Q then ☒ ~P).

While Yablo claims to find P fs-unimaginable under the supposition that Q, how this is so is not obvious. The proposition 'in the actual world, water is uniformly composed of H2O' (Q) is a non-modal *a posteriori* fact about the actual world. Recall that when evaluating Gregory's unshakeable imaginability line of reasoning, we established that we are not to import our actual world suppositions into our imagined scenarios. Thus just as we saw earlier, it is not clear why supposing that 'in the actual world, water is uniformly composed of H2O' will prevent us from being able to fs-imagine either that the actual world could be such that water is not uniformly composed of H2O or that a possible world could be such that that is the case. Given that we do not import our actual world suppositions into our imagined scenarios, there is not sufficient reason to think that our supposition will in fact constrain our imaginative abilities.

I argue that supposing 'in the actual world, water is uniformly composed of H2O' (Q) will only prevent us from being able to fs-imagine 'water is composed of XYZ' (P) if we take 'in the actual world, water is uniformly composed of H2O' to ensure that the following modal claim is true: if in the actual world, water is uniformly composed of H2O, then *necessarily* water is uniformly composed of H2O. Let's call this modal claim Z. We can thus say that it is only by assuming that Q ensures Z that we will find P fs-unimaginable when we suppose Q.

In order to see how appealing to the modal claim above helps render our impossible proposition P fs-unimaginable, first make the supposition that 'in the actual world, water is uniformly composed of H2O.' If we are Kripkeans, then we will recognize that 'water' and 'H2O' are rigid designators. Our supposition thus ensures that the following modal claim is true: if in the actual world, water is uniformly composed of H2O, then necessarily water is uniformly composed of H2O. Therefore, while we can fs-imagine that there is some liquid that is composed of XYZ and we

can fs-imagine that the liquid is water-like, that water is necessarily composed of H2O ensures that the liquid in question is not water. We thus cannot fs-imagine that *water* is not composed of H2O under the supposition that in the actual world, it is uniformly composed of H2O.

Yablo thus establishes his modal conditional via the same imagining-under-a-supposition line of reasoning that Gregory uses in order to establish unshakeable imaginability as a guide to knowledge of possibilities. Both Gregory and Yablo need to isolate a set of suppositions under which impossible propositions will be fs-unimaginable. Recall that for Gregory, showing that a certain set of suppositions render impossible propositions fs-unimaginable gives us reason to think that propositions that *are* fs-imaginable under those suppositions will be possible. In contrast, Yablo needs impossible propositions to be fs-unimaginable under certain suppositions in order to establish the modal conditionals that are doing work in his explanation of modal error. It is gaining knowledge of those modal conditionals (in addition to gaining knowledge of the truth of their antecedents) that is supposed to render impossible propositions m-unimaginable.

Since Yablo uses the same line of reasoning as Gregory in order to establish his modal conditional, he too is subject to Kung's 'modal conclusions first' objection. Gaining knowledge of the modal conditional (if Q then ☒ ~P) is supposed make P m-unimaginable to us. However, we only have reason to accept the conditional if we find P fs-unimaginable when we suppose Q, and this will only obtain if we assume that Q ensures the *a posteriori* modal claim Z. This is to say that P is only m-unimaginable to us when we suppose Q because our antecedent *a posteriori* modal conclusion Z makes it such that P is fs-unimaginable to us. To adopt this line of reasoning is thus again what Kung would classify as "deploy[ing] our modal convictions to infer, *post hoc*, whether we were or were not imagining what we thought we had imagined (103)." While we are justified in appealing to antecedent *a priori* modal knowledge, Kung is right in pointing out that deploying our *a posteriori* modal convictions in this way is epistemically illegitimate. Just as in Gregory's case, if we are

classifying our imaginings as guides to possibility in case those imaginings adhere to our antecedent *a posteriori* modal beliefs, then in no way do our imaginings generate independent reason to boost the epistemic status of our novel *a posteriori* modal intuitions.

<u>Section IV.C: Yablo as Helped by Ichikawa and Jarvis:</u>

Though Yablo commits the same 'modal conclusions first' error as Gregory, that they use the same line of reasoning means that Yablo too can avoid epistemic circularity if we supplement his view with Ichikawa and Jarvis' conceptual entailment framework. Just as in the Gregory case, we need appealing to conceptual entailments to do the same work that appealing to an antecedent *a posteriori* modal belief is currently doing. The antecedent Kripkean modal belief Z currently makes P fs-unimaginable when we suppose Q. As such, we need recognizing the conceptual entailments that follow from Q to likewise make P fs-unimaginable when we suppose Q.

To see how this would work on Yablo's account, we must first turn the water/H2O case into a Putnam-style thought experiment. Recall that we have already seen this very thought experiment when I explicated Ichikawa and Jarvis' conceptual entailments framework in Section II. We know that in the actual world, water is composed of H2O. Now we fs-imagine a far-off world W where there is a non-H2O substance S that shares surface level properties with water but is actually composed of something called XYZ. Now we fs-imagine that in the actual world, it turns out that scientists were wrong about the liquid that we call 'water' on earth and assert that it is actually composed of XYZ. When asked whether S is water, our answer will be 'yes.'

As in the Putnam style thought experiments we examined before, we must specify the content of the tacit background imagining that is eliciting our 'yes' response. Recall that previously, we established that it's not the case that we tacitly fs-imagine 'water is composed of H2O' and *that* proposition rationally commits us to infer facts about what substances count as water in our imagined scenarios. Rather, we tacitly fs-imagine that 'whatever substance composes water does so

uniformly,' and this imagining gives rise to our rational commitments. More specifically, it is this tacit imagining that gives rise to our rational commitment to infer that 'S is water' from the proposition that 'the actual world, water is uniformly composed of Y' and 'S is uniformly composed of Y.[12]

Further, it's not the case that our rational commitment to infer can be defeated. Just as before, in order to defeat our rational commitment to infer with a further imagining we would have to imagine either that S is not composed of XYZ or that water is not composed of XYZ. However, if 'S is composed of XYZ' and 'water is composed of XYZ' in fact rationally commit us to infer that 'S is water,' then this would amount to us either imagining that 'S is composed of XYZ even though S is not composed of XYZ' or 'water is composed of XYZ even though water is not composed of XYZ.' Since either of our further imaginings creates an explicit contradiction that itself entails any proposition including the proposition in question ('S is water') both further imaginings fail to defeat our rational commitment to infer. As such, any failure to infer in this case will result at least in part from our own rational limitations. We thus have a case of conceptual entailment.

It is now time to see how recognizing the conceptual entailments above can explain why 'water is composed of XYZ' will be fs-unimaginable under the supposition that in the actual world, water is composed of H2O. First, we suppose that in the actual world, water is composed of H2O (Q). Then, we run the Putnam style thought experiment illustrated above. Doing so allows us to recognize that the proposition that 'whichever substance composes water does so uniformly' is acting as a tacit background imagining and conceptually entailing facts about which liquids count as water in our imagined scenarios. Since our supposition tells us that in the actual world the samples of water we interact with are composed of H2O, we recognize that the conceptual entailments that

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[12] Recall that we recognize that proposition that constitutes our tacit background imaginings must include the 'uniformly' modifier when we realize that our answer to whether the possible world substance is water would be 'no' if we were told that the substance was only partially composed of XYZ.

obtain in our imagined scenario make it such that whatever liquid we imagine being composed of XYZ under our supposition will not be *water.*

Appealing to Ichikawa and Jarvis' conceptual entailments framework thus can do the same work that appealing to antecedent *a posteriori* modal knowledge once did in allowing Yablo to establish his modal conditional. Since we have reason to accept the modal conditional, we have a tenable means by which to account for modal error. Gaining knowledge of the etiology of modal errors puts the modal beliefs that we do form on more solid footing. So long as we have reason to think that neither Q nor the modal conditional (if Q then ☒ ~P) obtains, we can take ourselves to be *prima facie* justified in believing that P is possible when we m-imagine P. As such, supplementing Yablo's line of reasoning with Ichikawa and Jarvis' conceptual entailments framework allows us to end up with an additional defensible error theoretic view.

Section V: Against Ichikawa and Jarvis' Positive View

I have argued that both Gregory and Yablo need to rely on Ichikawa and Jarvis' conceptual entailments framework in order to be epistemically non-circular. Given this dependence, we might wonder whether we ought to abandon both Gregory and Yablo's views in favor of Ichikawa and Jarvis' own positive view. If the latter constitutes an epistemically non-circular view on its own, we might think that it is preferable to a view that requires supplementation. In this section, I reject this move on the grounds that Ichikawa and Jarvis' line of reasoning, while successful, is not a line of reasoning on which the *imagination* is justifying our modal beliefs. I argue instead that we are better off endorsing either Gregory or Yablo's positive view even if both views require supplementation in order to avoid epistemic circularity.

Ichikawa and Jarvis provide a means of recognizing possibility that they call "moderate modal rationalism (MRR) (147)." MRR is as follows:

MRR: A proposition P is metaphysically possible if and only if both P is conceptually possible and there is *no* Q such that both Q does not obtain in the actual world and P conceptually entails that it obtains in the actual world (147).

In order to conclude that P is metaphysically possible then, we must determine whether the right side of the biconditional obtains. We can do this by evaluating each of its constitutive conjuncts in turn. First, we determine whether P is conceptually possible. A proposition is conceptually possible in case it is coherently imaginable and Ichikawa and Jarvis' characterization of coherent imaginability indicates that something is coherently imaginable in case it is not *a priori* false. So we can plausibly evaluate whether the first conjunct is true just by determining whether P is *a priori* false, and we do not need to employ the imagination in order to do that.

Given that the second conjunct consists in two sub-conjuncts, we need to evaluate the status of each of those sub-conjuncts in turn. In other words, we need to determine both whether Q does not obtain in the actual world and determine whether P conceptually entails Q in the actual world. So long as at least one of those two sub-conjuncts is false, there will be no Q such that *both* Q does not obtain in the actual world *and* P conceptually entails Q in the actual world, and thus the second main conjunct will obtain.

To begin, we should determine the set of propositions Q that are conceptually entailed by P. After we do this, we can determine whether any of those propositions Q obtain in the actual world. If there is a proposition Q that both is conceptually entailed by P and obtains in the actual world, the second main conjunct of the right side of MRR will fail to obtain and P cannot be possible. If there is no such proposition Q, then (provided that P is conceptually possible) we will be justified in concluding that P is possible.

It's not the case that we need to employ the imagination in order to determine whether P conceptually entails that Q obtains in the actual world. If P conceptually entails Q, then we have a rational commitment to infer Q given P. So, in order to determine whether P conceptually entails that Q obtains in the actual world we need to first see whether we have a rational commitment to infer Q in the actual world given P.

However, if we have a rational commitment to infer Q from P in the actual world, our rational commitment to infer will be a rational commitment to infer in belief not a rational commitment to infer in imagination. This is because our rational commitments to infer to states of affairs that obtain in the *actual world* are determined by our current beliefs. For example, suppose that I learn that my friend has put my clothes into the washer. Given my current beliefs about how washers work, I will have a rational commitment to infer in belief that in the actual world my clothes are wet. In this way, my current beliefs about *a posteriori* evidentiary relations that obtain in the actual world (i.e. that putting clothes in the washer will make them wet) determine what I will be rationally committed to infer with respect to states of affairs that will obtain in the actual world.

In contrast, rational commitments in imagination only commit us to make inferences about states of affairs that obtain in imagined scenarios. For example, suppose that I imagine that my friend has put my clothes in the washer. Given what obtains in my imagined scenario, I will have a rational commitment to infer in imagination that my clothes are wet. In this case, my importing some of my actual world beliefs about the evidentiary relation between putting clothes in the washer and having clothes that are wet causes me to have this rational commitment in imagination.

However, my importing some of my actual world beliefs about evidentiary relations into my imagined scenario does not mean that my rational commitment to infer in imagination commits me to infer that my clothes are wet in the actual world. I have a rational commitment to infer that my clothes are wet in my imagined scenario, given that what obtains in my imagined scenario is that my

clothes are in the washer. As such, I am only rationally committed to infer that my clothes are wet in the imagined scenario in which my friend puts my clothes in the washer. Thus, my rational commitments in imagination will not tell me about what I am rationally committed to infer about the actual world. So, if we have a rational commitment to infer that Q obtains in the *actual world* given P, that rational commitment will be a rational commitment to infer in belief.

In order to see whether my rational commitment to infer in belief corresponds to a conceptual entailment, I must determine whether my rational commitment can be defeated by gaining further evidence. With respect to the washer/clothes case above, I do so by consulting my current beliefs about the evidentiary relations between putting clothes in the washer and having clothes that are wet. My past *a posteriori* experience tells me that this evidentiary relation is defeasible. For example, if the washer has a leak then presumably putting my clothes in the washer will not make them wet. I can thus conclude that my rational commitment to infer in belief does not correspond to a conceptual entailment, but I have not employed my imagination in order to reach this conclusion.

In order to determine the status of the first sub-conjunct of the second main conjunct, we needed to determine both whether we have a rational commitment to infer that Q obtains in the actual world given P and whether that rational commitment corresponds to a conceptual entailment. However, given that rational commitments to infer to states of affairs that obtain in the actual world are rational commitments in belief, we accomplished both of these tasks without employing the imagination. As such, we need not use the imagination in order to evaluate the status of the first sub-conjunct.

It is likewise not the case that we need to employ the imagination in order to determine the status of the second sub-conjunct. In order to determine whether the second sub-conjunct is true, we need to determine whether Q in fact obtains in the actual world. However, this is done either via

a posteriori investigation or via appeal to *a priori* knowledge, neither of which require us to use our imagination.

We can thus conclude that we do not need to employ our imagination in order to determine the truth value of the second main conjunct of the right side of MRR. Given that we also do not need to use the imagination in order to determine the truth value of the first main conjunct of the right side and determining the truth value of both conjuncts suffices to determine whether P is possible, we need not employ the imagination to determine whether P is possible on MRR. To this end, though Ichikawa and Jarvis may have offered us a tenable means of determining whether P is possible, it is not a means on which the *imagination* is acting as a guide to knowledge of possibilities. However, the project at hand is to determine whether the *imagination* can help us justify our modal beliefs. Thus, even if MRR succeeds in giving us knowledge of possibilities, it will not be of much help for our purposes because it does not employ the imagination in order to do so.

Section VI: In Favor of Gregory (2004) and Yablo (1993)

I have argued that we ought to reject Ichikawa and Jarvis' positive view. However, I have also argued that both Gregory and Yablo must appeal to Ichikawa and Jarvis' conceptual entailments framework in a substantive way. Since Ichikawa and Jarvis' positive view relies upon conceptual entailments and does not employ the imagination, we might wonder if Gregory and Yablo's lines of reasoning, once revised, will likewise no longer employ the imagination. In this section, I argue that this objection fails to distinguish between the types of conceptual entailments to which the respective accounts appeal. I take the conceptual entailments to which both Gregory and Yablo appeal to be of a different type than those to which Ichikawa and Jarvis appeal in their positive view. This allows the former two accounts to preserve the imagination as a modal epistemological tool while the latter positive view cannot.

In order to determine the status of the second main conjunct of MRR, we determined whether there is some Q such that Q does not obtain in the actual world even though P conceptually entails that it does. The conceptual entailment relation that we need to determine thus only concerns what is entailed with respect to the *actual world*. I argued in Section V that determining what P conceptually entails in the actual world does not require us to employ our imagination.

In contrast, both Gregory and Yablo are concerned with what a proposition P conceptually entails in *possible worlds*. Both Gregory and Yablo need certain suppositions P to render certain impossible propositions Q fs-unimaginable. First, we suppose a proposition P. Then we see what P conceptually entails in possible worlds. If we have reason to think that a proposition Q is impossible, we need P to conceptually entail ~Q (i.e. because then the conditional if P then ~Q will be conceptually necessary). If P conceptually entails ~Q in every possible world, then we will be unable to fs-imagine Q when supposing P. This conceptual entailment line of reasoning gives Gregory and Yablo an epistemically non-circular means of explaining why supposing P will render Q fs-unimaginable.

In order to determine whether P conceptually entails ~Q in a possible world W, we have to determine whether we have a rational commitment to infer ~Q given P in W. Recall that in Section V, I argued that rational commitments with respect to the actual world are commitments in belief, while rational commitments with respect to possible worlds are commitments in imagination. Thus, in this case we are concerned with whether we have a rational commitment to infer ~Q given P in *imagination*. Since we must determine whether we have this rational commitment in order to determine whether P conceptually entails ~Q, determining what P conceptually entails in possible worlds *does* require us to employ our imaginations.

Thus, Gregory and Yablo rely on conceptual entailments that correspond to rational commitments in imagination while Ichikawa and Jarvis' positive view relies on conceptual

entailments that correspond to rational commitments in belief. Given that making the former type of commitment requires us to employ our imaginations, it's not the case that appealing to Ichikawa and Jarvis' conceptual entailments framework requires Gregory and Yablo to abandon the imagination as a modal epistemological tool. Gregory and Yablo's use of conceptual entailments is instead compatible with their accounts giving us reason to think that the *imagination* will guide us towards knowledge of possibilities. As such, I conclude that their two error theoretic accounts are the most promising for the project at hand and it is them that I will evaluate alongside competing imagistic accounts in Chapter III.

CHAPTER II: IMAGISTIC ACCOUNTS

That some of our imaginings contain mental imagery is not novel to us.[13] When asked to imagine a cat on a mat, I may form a mental image of a cat in order to do so. On an imagistic account, it is precisely the imagistic medium of certain imaginings that makes them suitable guides to knowledge of possibilities. We are justified in ascribing possibility to our imagistic imaginings in case their depicted content has the necessary good-making features. Further, contra the error theoretic lines of reasoning that we saw in the previous chapter, the imagistic view holds that we cannot be mistaken about what we imagine. I imagine X in case I take myself to be imagining X, and I err in ascribing possibility to X when I fail to recognize that the depicted content of my imagining lacks the requisite good-making features for providing justification for my thoughts on possibilities.

In this chapter, I canvass Peter Kung's (2010) and Dominic Gregory's (2019) imagistic accounts of the imagination as a guide to knowledge of possibilities. In Section I, I explicate Kung's positive view. In doing so, I highlight the places where his line of reasoning relies on a tight analogy between the imagination and our perceptual faculties. I then explicate a method that Kung proposes in order to facilitate imaginings of mental images that depict complex objects.

In Section II, I take up Gregory's positive view. Gregory introduces a justificatory distinction that allows him to block our imaginings of certain impossible figures from being probative. In order to do so, he too relies upon a tight analogy between visual perception and imagination. I explicate the justificatory distinction with respect to vision and then illustrate how that tight analogy facilities the applicability of the distinction to imagination. I conclude this chapter by underlining some key features that set both Kung and Gregory's accounts apart from the error theoretic accounts that we saw in Chapter 1.

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[13] There is controversy about whether non-imagistic imaginings count as *imaginings* or whether we ought to restrict the scope of 'imaginings' to refer only to those mental states that include mental imagery. This debate is outside the scope of this thesis. For our purposes, imaginings can either be imagistic or non-imagistic.

Section I: Kung's (2010)

I.A. Terminology:

In order to understand Kung's view, it is necessary to get clear on several pieces of terminology that are critical to it. First, an imagining that provides evidence for possibility will be a probative imagining.[14] Second, to imagistically fs-imagine P is to imagine a scenario of which P is true (622). I imagistically imagine that the cat is on the mat in case it is true of my imagined scenario that it is. Kung distinguishes two constitutive parts of imagistic imagined scenarios: basic qualitative content and assignments. Basic qualitative content consists in "basic observational properties" and includes size, shape, color, regions, and surfaces (623).[16] For example, if I imagistically imagine Barack Obama jogging down the street, I will have a mental image of a rectangular shape with yellow stripes and a complexly shaped multi-colored figure situated slightly above that rectangular shape. Those shapes, colors, regions (etc.) will be the basic qualitative content of my imagining.

Assignments are of two kinds: labels and stipulations (624). Labels are what either identify an imagined object or identify parts of that object (624). Suppose again that I imagine Barack Obama jogging down the street. Assigning the label <Barack Obama> to the figure jogging down the street makes it such that the figure is Barack Obama rather than some other person (624). I can also use labels to identify parts of him (e.g. I can assign the round sphere towards the top of him the label <head>). Here it is important to note that Kung does not endorse any sort of two-step process with respect to assigning labels. When I imagine Barack Obama jogging down the street, it is not that I imagine a figure and then label that figure <Barack Obama>. Rather, I imagine the jogging figure *as* Barack Obama (624). My imagining of Barack Obama includes both the basic qualitative content

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[14] From hereon I will use the terms 'probative imagining' and 'm-imagining' interchangeably. In this chapter, both terms will refer to an imagining where the depicted content of that imagining has the requisite good-making features for modal salience.

[16] Kung relies on an analogous distinction in perception when making this distinction in imagination. Thus, faults of the distinction (rather than of Kung's particular use of it) are not specific to Kung's framework.

and the label that identifies it, and thus labels are themselves part of my qualitative experience of imagining Barack Obama. However, since labels are not themselves *basic* qualitative content, Kung categorizes them as non-basic qualitative content. We can thus think of labels as assigned content that is partly constitutive of the qualitative content of our imaginings, because labels are depicted in our mental images.[17]

The other type of assignment are stipulations, which either make claims about the objects in our imagined scenarios or provide background context for those scenarios. Unlike labels, stipulations are not part of the qualitative content of our imaginings because they are not depicted in those imaginings (625). First there are foreground stipulations, which make claims about the objects in our imagined scenarios. For example, if I imagine that Michelle Obama and Anita Hill are out on a walk together as friends, that they are friends is a claim about them, but there is nothing about the image of Michelle and Anita walking that depicts that friend relation (625). 'Michelle and Anita are friends' is thus a foreground stipulation. In contrast, background stipulations do not make claims about anything in the imagined scenario but instead give us background information about it (625). For example, if I imagine that Michelle Obama and Anita Hill are on a walk on a Tuesday, that it is Tuesday will be a background stipulation.

While labels and stipulations are both assignments, labels can be depicted in our imaginings while stipulations cannot. For example, suppose again that we imagine Barack Obama. Kung endorses a view in which we imagine a figure *as* Barack Obama rather than imagine something depicted that is Barack Obama-like and contextually labeled as such. In this way, that label is part of the qualitative content of our imagining. In contrast, recall that 'that it is Tuesday' or 'that Michelle

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[17] Kung's basic qualitative content/assigned content distinction is largely borrowed from the philosophy of perception. Note then that by saying that labels are depicted in our imaginings, Kung is endorsing a not uncontroversial claim in the philosophy of perception. Whether things like labels are in fact *depicted* in either our visual appearances or mental images is up for debate.

and Anita are friends' are not imagined *as* such. They are instead propositions that are predicated of our imaginings, but not represented in their imagistic medium. Recall that Kung thinks that there is something special about the imagistic medium of certain imaginings that allows those imaginings to be probative. When Kung contrasts these imagistic imaginings with non-imagistic imaginings then, he takes the latter to be imaginings whose content is purely stipulations (632).

I.B: Limitations of the Imagination:

Kung, contra Gregory and Yablo, allows that we can fs-imagine *a posteriori* impossibilities regardless of whether we are attempting to fs-imagine those impossibilities under certain suppositions. His conception of the imagination is thus more liberal than theirs. However, Kung does introduce one constraint that he takes to limit our imaginative abilities (629). I name this constraint 'Certainty.' Certainty says that we will be unable to fs-imagine X if we are absolutely certain that X is false (630).

There are only two types of propositions about whose truth value we can be absolutely certain: analytic propositions and statements of conceptual relations (630). To say that we are absolutely certain about the truth value of X is to say there is no way that we might be wrong about the truth value of X. On this definition, we can be absolutely certain both that analytic truths are true and that analytic falsehoods are false (630). For example, there is no way that we might be mistaken in thinking that 'Kevin, an unmarried male, is a bachelor,' given that a bachelor just is an unmarried male. Conversely, there is no way that we could be wrong in thinking that 'Clark, who is a bachelor, is currently married to Carla,' is false. Since Certainty says that we are unable to fs-imagine X if we are absolutely certain that X is false, we can conclude that we are unable to fs-imagine X if X is an analytic falsehood.

We can likewise be absolutely certain with respect to propositions that describe conceptual relations (630). This is to say that we can be absolutely certain both that propositions that affirm

conceptual relations are true and that propositions that violate conceptual relations are false. By 'conceptual relations,' Kung means instances where a set of higher-level facts has an 'in virtue of' relation to a set of lower-level facts (630). For example, suppose that Sally is holding a five-fingered leaf (631). Suppose that someone asserts that Sally's leaf is an oval. Since an object is an oval (higher-level fact) in virtue of its shape (lower-level fact), then a five-fingered shape is not an oval (631). To say that Sally's five-fingered leaf is an oval is thus to violate an 'in virtue of' conceptual relation that obtain between being a certain shape and being an oval. We can thus be absolutely certain that 'Sally's five-fingered leaf is an oval' is false (631). According to Certainty, propositions like these that violate conceptual relations will also be fs-unimaginable (630-631).

Both basic qualitative content and assigned content are restricted by Certainty. Thus, we cannot stipulate either that an analytic falsehood or a violation of conceptual relations obtains in our imagined scenarios. However, since suppositions are not a type of imagining for Kung, our ability to make suppositions is not restricted by Certainty. We can thus suppose both analytic falsehoods and propositions that express violations of conceptual relations. Though both suppositions and stipulations have propositional content and are not depicted, suppositions are distinct from stipulations because they are not restricted by Certainty.

I.C: Assignments Alone do not Provide Evidence of Possibility

Kung argues that solely recognizing that our imaginative abilities are constrained by Certainty does not suffice to justify inferences from fs-imaginability to possibility. Inverting Certainty, we can say that we will be able to fs-imagine X so long as we find X believable, or true for all we know for certain (630). Unlike being absolutely certain about the truth value of X, if we think that X is true (or false) for all we know for certain, we leave open the possibility that we might be wrong about X (629).

Since the only things about which we can be absolutely certain are analytic falsehoods and violations of conceptual relations, we are going to still be able to fs-imagine *a posteriori* impossibilities. For example, 'Madame Chiang-Kai Shek is Kung's great-grandmother' is neither an analytic falsehood nor a violation of an 'in virtue of' conceptual relation and is therefore fs-imaginable even though *a posteriori* impossible. All I need to do to fs-imagine that proposition is to fs-imagine an individual with the label <Madame Chiang-Kai Shek> and make the foreground stipulation that she is Kung's great-grandmother.

Kung provides even further reason to think that inferring from imaginings that do not violate Certainty to claims about possibility is unjustified. In doing so, he underlines how our unconstrained ability to make assignments in our imagined scenarios is both what allows us to fs-imagine things like *a posteriori* impossibilities and what makes Certainty alone an insufficient constraint. Recognizing how imaginings of impossibilities are facilitated by our unconstrained ability to make assignments will be critical to understanding the role that both basic qualitative content and assigned content play in Kung's positive view.

We saw above that making assignments allowed me to imagine 'Madame Chiang-Kai Shek is Kung's great-grandmother.' Recall that according to the inverse of Certainty, we are able to fs-imagine X so long as we find X believable. Since our ability to make assignments is so liberal, we can rephrase the inverse of Certainty to say that we are able to fs-imagine X by assignment so long as we find X believable (634). While we surely can fs-imagine things about which we *are* absolutely certain, all we need in order to be able to fs-imagine X by assignment is to meet this lower epistemic threshold of finding X believable. However, to find X believable is to fall short of being absolutely certain that X, which we can call being non-certain that X (634).[18] Suppose that we fs-imagine some X by assignment and we find X believable (634). Should we infer from that assignment-based

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[18] I use 'non-certain' instead of 'uncertain' here in order to stay consistent with Kung's own word choice.

imagining of X to the possibility of X, our fs-imagining would reflect our non-ideal epistemic position with respect to X and that imagining would count as evidence that X is possible (634). That we are in a non-ideal epistemic position with respect to X should not count as positive evidence that X is possible, particularly because one way to be in a non-ideal epistemic position with respect to X is to be ignorant of X (634).

Since assignments are so unconstrained, our lack of absolute certainty that X discounts the evidentiary value of our imagining when we fs-imagine X by assignment. Since 'Madame Chiang-Kai Shek is Kung's great-grandmother' is neither an analytic falsehood nor a violation of a conceptual relation, I cannot be absolutely certain that the proposition is false. I am thus able to imagine *that very proposition* by way of the assignments I made earlier, so long as I find it believable.

In contrast, suppose that I find it believable that there is some color called chartreuse, but I do not know what that color looks like. I can speculate about what it might look like by fs-imagining various colors, and I might label one of those various colors <chartreuse>. However even if when imagining various colors I happen to imagine chartreuse-basic-qualitative-content itself, that I do so does not amount to my successfully imagining *chartreuse* because I have no idea that the basic qualitative content that I have imagined is in fact *chartreuse*-basic-qualitative content (635). In order to successfully imagine chartreuse, I need to both imagine chartreuse-basic-qualitative-content and recognize that chartreuse-basic-qualitative-content is in fact what I am imagining. Unlike in the 'Madame Chiang-Kai Shek' case, my being in a less than ideal epistemic position with respect to what chartreuse is prevents my imagining *chartreuse* (635). In this way, the evidentiary value of my imaginings that contain basic qualitative content is not damaged by my lack of certainty, because my imaginative abilities with respect to basic qualitative content are not so unconstrained as to facilitate my successfully imagining just anything that I find believable (635).

Since our ability to make assignments is unconstrained enough to facilitate our imagining impossibilities, we do not have reason to think that P is possible if P is true in an imagined scenario S in virtue of assignment alone. Non-sensory imaginings, which are purely constituted by stipulations (a type of assignment), are thus ruled out as guides to possibility. The imagistic component of sensory imaginings will be necessary for justifying our inferences from imagining to possibility, and it is to Kung's positive picture of the imagination and the critical role of mental imagery in it that I now turn.

I.D: The Positive View: Gaining Knowledge of Possibility

At the center of Kung's positive view is the idea that the imagistic medium of our imaginings justifies our inferences from those imaginings to modal claims. This idea depends primarily on the more specific claim that the basic qualitative content of our imagistic imaginings offers *prima facie* evidence of possibility. Kung defends this base claim via analogy to the basic qualitative components of our perceptual experiences. For example, suppose that I have a perceptual experience of a blue surface in front of me. We would then say that a blue surface could be what is filling the space in front me (637). Kung draws a tight analogy between our perceptual and imaginative experiences, such that if having the perceptual experience above provides evidence that a blue surface could fill the space in front of me, then imagining a blue surface in front of me can likewise provide evidence that that is one way the space in front of me could be filled (637).

I.D.1: Mixed Imaginings:

It is critical to Kung's positive view that basic qualitative content is *prima facie* probative in virtue of its imagistic medium. However, most of our imaginings will be more complex than the basic spatial/color properties above and will instead be mixtures of both basic qualitative and assigned content. Since the previous section gave us reason to be suspicious of assigned content,

Kung needs to provide a means of determining whether an imagining is probative when that imagining contains assigned content.

Kung argues that imagistically fs-imagining a scenario S of which a proposition P is true provides evidence that P is possible in case both the qualitative and assigned content of S together make it intuitive that P is the case in S (640). This is the central thesis of his positive view, and he calls it 'modal evidence from imagination' (MEI) (640). By 'intuitive,' Kung echos Kripke in meaning that P is intuitive in S in case, when we grasp P and its relevant concepts, we are rationally compelled to judge that P is true in S (640). For example, suppose that I have a black cat, Ravenpaw, and I am trying to figure out whether it is possible for someone to have dyed her fur orange. Suppose that I imagine a situation in which Ravenpaw's fur has been dyed orange, which is to say that I imagine a situation in which there is a complexly shaped object, and that object is orange. I imagine that object *as* a cat and *as* Ravenpaw. It is labeled <cat> and <Ravenpaw>. Suppose that it is intuitive to me that 'Ravenpaw's fur has been dyed orange' is the case in my imagined scenario. Kung thinks that I am thus justified in concluding that Ravenpaw's fur could have been dyed orange.

MEI comes with the important condition that the qualitative content Q of our imagined scenario S must play a role in making it intuitive that P is the case in S (640). In other words, it must be that without Q, it would not be intuitive that P is the case in S (640). Note here that Kung is speaking of 'qualitative content' instead of 'basic qualitative content' as playing this critical role (639) 'Qualitative content' includes both basic and non-basic qualitative content, and thus allows that labels, in addition to basic qualitative content, can play a critical role in making it intuitive that P is the case in S. MEI thus does not require that assigned content be entirely set aside, especially since our imaginings almost always contain it. Rather, this condition is meant to exclude imaginings in which stipulations alone make it intuitive that in P is the case in S. Stipulations are not constitutive of qualitative content, and we have already been given reason to think that our ability to stipulate is

too unconstrained for us to infer from a stipulation-based imagining (i.e. which is the equivalent of inferring from an assignment alone) to a claim about possibility.

While labels are closely tethered to the basic qualitative content that they identify, they are still assignments, and we have already seen that our ability to make labels is likewise unconstrained. In order for imaginings that contain both basic qualitative content and labels to be suitable guides to possibility then, we need to provide independent evidence that something we have labeled could in fact take on the labels we have given it (642). Kung defines this evidence-providing process as 'authentication' (642) Authentication is critical to Kung's positive view because it is the process by which we need to justify all of the assignments in an imagining before that imagining can be probative (642).

Prior to seeing how we might go about authenticating a label, it is necessary to note that each object that we imagine entails an existential claim (643). For example, my imagining of Ravenpaw entails that there is something in my imagined scenario that is Ravenpaw: $\exists X(IsRavenpaw(X))$. When we authenticate, we do not need to authenticate that there is some object ($\exists X$). We have gathered as much from basic qualitative content (643). What we need to authenticate is that the $\exists X$ could take on the identity <Ravenpaw> (643).

There are two ways we can go about authenticating. On the one hand, we can provide evidence that our object could take on the label we have given it by appealing to states of affairs in the actual world (642). I can do this with respect to the case above. Since Ravenpaw exists in the actual world, it suffices to authenticate $\exists X(IsRavenpaw(X))$ for me to point to my actual cat, Ravenpaw.

We cannot get by with this means of authentication alone though, because oftentimes we imagine situations that contain non-actual things whose identity we clearly cannot authenticate by appealing to actual states of affairs. We thus need an alternative means of authentication, and for

this purpose Kung introduces a recursive step. First, we imagine a scenario in which there is some object 'X' where the label 'X' refers to something non-actual (e.g. Santa Claus) and we have stipulated that the object takes on the label X.[19] In order to authenticate this label, we perform a recursive step that consists in imagining an additional scenario in which it is intuitive that our imagined object is *X*, where the qualitative content of our imagining is essential to making it intuitive that our imagined object is *X* (653). In other words, we authenticate our assignment via imagining another scenario that 1) contains our assignment and 2) of which MEI holds. It is the fact that we are imagining another scenario and evaluating that scenario for adherence to MEI that makes this step a recursion.

For example, suppose that we want to find out whether I could have had a second cat (653). In order for an imagining of this situation to provide evidence of its possibility, we need to make it intuitive that I have a second cat without stipulating that very thing. Suppose that I first imagine a scenario in which I am feeding both Ravenpaw and another cat. In this imagining, the only way to make it intuitive that the second cat is *my* cat (rather than, e.g., a friend's cat or a stray cat) is to stipulate it as such. I am thus not yet justified in taking this imagining to be probative. I need to imagine a different scenario where the qualitative content of my imagining plays a necessary role in making it intuitive that the second cat is in fact *my* cat.

One way to do this is to imagine the origin story of my acquiring the second cat. I can imagine going to the animal shelter, picking up the cat and signing the required paperwork. I can imagine bringing the cat home, registering it with the vet, naming it, introducing it to Ravenpaw, and so on. Assuming that I authenticate the many other assignments in these scenarios (e.g. that there is $(\exists X)(IsRavenpaw(X))$, and so on, mostly by appeal to the actual world) we should find it intuitive

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[19] Whether non-actual things can be referents at all is both controversial and outside the scope of this thesis. For our purposes, we need only recognize that we can imagine non-actual things and that the non-actual things in our imaginings can have labels that identify them as such.

that in my first imagining in which I am feeding both Ravenpaw and the other cat, that other cat is

my cat. I have authenticated the label <GenaesSecondCat> in my first imagining via the recursion

that took me through those other imaginings. Since my non-actual label has been authenticated, I

am justified in concluding that I could have had a second cat.

There are two final requirements that must hold of probative imaginings. First, they must be

literal, not metaphorical (656). For example, we might imagine metaphorically that Russia is a bear

(656). However, we must exclude cases like these wherein we imagine representations of the object

in question rather than the object itself from being modally salient (656). Here we are imagining a

representation of Russia as a bear, not literally imagining that *Russia* is a bear, and we have no reason

to think that a representation of X gives us any insight as to how X could be (e.g. Suppose that I

imagine that a painting of Barack Obama spontaneously combusts. Even if my imagining is

probative, it does not provide evidence that *Barack Obama* could spontaneously combust).

The last condition for MEI is as follows: "there cannot be some R such that either that (a) R

follows 'from assignment alone' yet it is intuitive that not-R; or (b) it is intuitive that R and intuitive

that not-R (654)." For example, suppose that I imagine that Sally is holding a leaf and it is intuitive

to me that the leaf is five-fingered. Suppose that I then stipulate that the leaf is an oval. Even if in

other cases basic qualitative content makes it probative that some X is an oval, in this case it is

already intuitive to me that Sally's leaf is not an oval. I cannot authenticate my stipulation that it is an

oval, because any origin story that I tell about how the leaf came to be an oval will be counteracted

by the fact that I antecedently find it intuitive that the leaf is *not* an oval.

I.E: Complex Images

Kung admits that his imagistic account must accommodate the fact that we seem to be

unable to form clear mental images of complex objects. He addresses this problem by taking up

Descartes' chiliagon case (646). Descartes asserts that we cannot form a mental image of something

like a one-thousand sided figure where our mental image is distinct enough to actually resemble a one-thousand sided figure (646). Endorsing Kung's framework allows us to be able to say that we can imagine a chiliagon by stipulation. However, if we take that route, then the qualitative content of our imagining is not playing any role in making it intuitive that our imagining is of a chiliagon and our imagining therefore cannot be probative. This is a problem because we have independent reason to think that chiliagons are possible and as such, they should be probatively imaginable.

Kung resolves this case by what introducing he calls "imaginative induction (647)." It is best to first consider how imaginative induction works with respect to simple cases. For example, imagine a triangle (647). Now imagine inserting an additional side into the triangle, thereby creating a square (647). I can imagine a triangle without stipulation, and my imagining of inserting the additional side to the triangle is also qualitative (perhaps I imagine one of the triangle's points 'opening up' as two sides swing away from each other, to make room for another side to fit between them). Since qualitative content thus plays a part in making it intuitive that I am now imagining a square, my imagining of that square provides evidence that there could be a square.

Kung uses this procedure for the chiliagon case. Suppose that we imagine an n-sided figure where n is a significantly large number (e.g. 1000), such that we cannot form a distinct mental image of the n-sided figure (647). Here Kung is willing to grant that if we imagine an n-sided figure, we do so because we stipulated it (647). Now suppose that we imagine inserting one side into our n-sided figure, thereby forming an n+1-sided figure.

Kung argues that the fact that we now imagine an n+1-sided figure instead of an n-sided figure does not follow from stipulations (647). We can have a mental image of an additional side (i.e. a line segment), and we can picture inserting that line segment into our n-sided figure, even if we cannot form a clear mental image of that n-sided figure (647). Just as in the triangle-to-square case, the image of the additional side and the image of it being inserted into the n-sided figure consist of

basic qualitative content, and basic qualitative content is *prima facie* probative. In order be justified in thinking that our imagining of an n+1-sided figure is probative then, we have to authenticate our initial stipulation that there is an n-sided figure. If we cannot authenticate that stipulation, then we have no reason to think that an n+1-sided figure is possible, even if the move that we made to get to a n+1-sided figure from an n-sided figure did not rely on stipulation.

Kung argues that we can authenticate our stipulation that there is an n-sided figure via the same recursive step that we use in authentication. We can imagine an n-sided figure by following the same process that we followed in imagining an n+1-sided figure. We imagine an n-1-sided figure and imagine inserting one side, making it an n-sided figure. Given that our imagining of that insertion contains basic qualitative content, we arrive at an imagining of an n-sided figure without relying on stipulation. Now it is the status of the n-1-figure that we need to check. If we can imagine the n-1-figure without relying on stipulation, then there is no problem. Our imagining of the n-1-sided figure would be probative. Since we have authenticated the one assignment that we needed to make in order to imagine an n-sided figure, we are justified in concluding that we have evidence that there could be such a figure.

Suppose that, contrary to the procedure above, we also need to stipulate that there is an n-1-sided figure. We would then need repeat the recursion procedure. We imagine an n-2-sided figure and then imagine adding one side, and so on. Once we have authenticated our stipulation that there is an n-2-sided figure, we are justified in concluding that there could be an n-1-sided figure, which justifies us in concluding that there could be an n-sided figure, etc. It is in this way that we are supposed to be able to authenticate the stipulations that facilitate our imagining of figures with multiple sides, like chiliagons. Kung grants that once n becomes a significantly large number, the qualitative content of an n-sided figure versus the qualitative content of an n-1-sided figure will not

differ. He simply requires that "there just has to be enough qualitative content to make it clear that, given that it is an n-1-sided figure, after the change it is an n-sided figure (648)."

Suppose that we imagine a 1799-sided figure by stipulation and that we authenticate that stipulation by going through a (likely very long) recursion. We might think that Kung's clarification above mandates that in order for there to be enough qualitative content to make it clear that my 1799-sided figure is now a 1800-sided figure, there would need to be some way for me to tell the difference (however small) between my imagining of the first figure and my imagining of the latter. However, it seems implausible that I could in fact accomplish this given the complexity of the figures. Here Kung would argue that imagining the qualitative content that is the additional side and imagining inserting it into the 1799-sided figure suffices to make it clear to me that I now have an 1800-sided figure instead of a 1799-sided one. I need not be able to distinguish the qualitative content of my imagining of a 1799-sided figure from the qualitative content of my imagining of the 1800-sided one in order for the qualitative content of the additional side to make it clear to me that, since I inserted that additional side into my 1799-sided figure, that figure now has 1800 sides.

MEI succeeds in accommodating imaginings of complex figures. That it likewise provides a tenable means by which to evaluate both imaginings with mixed content and imaginings that depict non-actual things makes it a fruitful line of reasoning. MEI thus constitutes one image-based view that I will take up against competing error theoretic accounts in Chapter III.

Section II: An Alternative Imagistic View: Gregory (2019)

In this section, I present Gregory's (2019) imagistic account. In my explication of Gregory's view, I focus on a justificatory distinction that appears to be doing most of the work in allowing him to make a cut between those imaginings that are probative and those that are not. I first summarize Gregory's introduction of the justificatory distinction with respect to vision. I proceed to explain the analogy that he takes to hold between vision and mental imagery. It is this tight analogy that gives us

reason to think that the same justificatory distinction that applies to visual appearances also applies to mental imagery. I then show how that justificatory distinction allows Gregory to block certain of our imaginings from being probative.

Though our visual systems reliably orient us in our surroundings, things can sometimes go awry. When I have an eye infection for example, the way things appear to me will most likely not reflect how they actually are. Gregory distinguishes cases like these from successful uses of my visual system by introducing what he calls 'visual reliability conditions' (3). I employ my visual system under visual reliability conditions in case the way things look to me "tends to be the way things are around [my] perspective (3)." A given group of conditions suffices to be visual reliability conditions in case whichever appearances my visual system generates under those conditions tend to be accurate (3).[20] Since visual reliability conditions tend to ensure the accuracy of my visual experiences, I am *prima facie* justified in concluding that any visual experience I have under visual reliability conditions will yield a representation of how the world around me actually is. For example, if I have a visual experience of my cat, Ravenpaw, sitting in front of me and I have good reason to think that I am having that experience under visual reliability conditions, I am *prima facie* justified in believing that Ravenpaw is in fact sitting in front of me.

Gregory claims that we have reason to think that we are visually discerning enough to recognize when we are having a visual experience that is *not* under visual reliability conditions. We will recognize when we are not under visual reliability conditions via recognizing unusual phenomenological features of our visual experiences (7). For example, I will be immediately wary of the accuracy of my visual system if I notice that any visual experiences that I have via my left eye are

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[20] Any sort of detailed example of a set of visual reliability conditions is not something that anyone can provide *a priori* (4). However, Gregory thinks that there is a lot to be said *a posteriori* about the kinds of conditions that ensure visual accuracy. He illustrates this when he says: "the forces of optics, neurophysiology, and perceptual psychology are combining to construct increasingly detailed theoretical accounts both of the conditions under which our visual systems work well, and why our visual powers will tend to function reliably under those conditions (4).

blurry, as they would be if I had an eye infection. Recognizing that phenomenological feature will suffice for me to recognize that I do not enjoy visual reliability conditions (i.e. my eye is infected!) That we are good visual discerners suffices to give us reason to think that most of our visual experiences (i.e. the ones that do not strike us as phenomenologically aberrant) do in fact occur under some set of visual reliability conditions. If this is the case, then we are *prima facie* justified in taking the majority of our visual experiences to be accurate with respect to how the world around us actually is.

However, to say that I am *prima facie* justified in accepting the accuracy of my visual experiences is not to say that I have straightforward justification for doing so. For example, suppose that I have a visual experience of my cat, Ravenpaw, sitting in front of me. To say that I am *prima facie* justified in taking that visual experience to be accurate is to say that I am justified in believing that Ravenpaw is in front of me so long as I have no reason to doubt the accuracy of my visual experience (4). In contrast, to say that I have straightforward justification for believing that Ravenpaw is in front of me is to say that I have good reason to think that the accuracy of my visual experience will not be proved otherwise.

Gregory calls the set of things that prove our visual experiences to be non-accurate and thus block our *prima facie* justification from becoming straightforward justification 'defeating considerations (4).' For example, suppose that on a given afternoon I enjoy several visual experiences under conditions that are normally visually reliable (4). However, suppose that later that evening, I find out that I have been hallucinating (4). Gregory argues that while I am *prima facie* justified in taking whatever visual experiences I had during my hallucination to represent the world around me as it actually is, there is a defeating consideration around. That defeating consideration

blocks my *prima facie* justification from converting to straightforward justification for accepting that the visual experiences I had all afternoon represent what was in fact the case.[21]

Prior to seeing how this justificatory distinction in vision also applies to the imagination, it is necessary to get clear on a final definition. When a visual appearance looks a certain way under visual reliability conditions, we can say that that visual appearance is reliability compatible (5). This is to say that if I have a visual experience of Ravenpaw sitting in front of me and I enjoy visual reliability conditions, it follows that the way it looks for Ravenpaw to be sitting in front of me is reliability compatible (5). Recognizing whether things are reliability compatible will be important because doing so is what will guide us towards knowledge of possibility.

We are now in a position to see how the claims above about vision apply to the imagination. Suppose that I imagistically imagine a pink horse (5). My mental image is an image of a pink horse because it shows things as looking as certain way (5). Gregory asks us to then see whether we can imagine a possible world in which there is some subject who is having a visual experience under visual reliability conditions, where the way things look to her is the way my mental image of the pink horse shows things as looking (5). Plausibly, we can in fact imagine such a possible world.

Given that the possible world contains a subject who is having a visual experience under visual reliability conditions, we can say that the possible world contains some X, the appearance of which is reliability compatible (6). Since the way things appear to her is the way my mental image of a pink horse shows things as looking, I am *prima facie* justified in thinking that in that possible world,

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[21] We might think that finding out that I have been hallucinating blocks me from being even *prima facie* justified in thinking that my visual experiences during my hallucination yield accurate appearances (4). On this view, my visual experience occurs in a manner that automatically rules out the accuracy of any appearances that it yields (5). Gregory recognizes that there are in fact two options with respect to what defeators can do: they can block our *prima facie* justification from converting to straightforward justification or they can make us recognize that we were not *prima facie* justified in the first place (5). He endorses the first of those two disjuncts because doing so makes his responses to certain objections more parsimonious (5). In doing so, he takes it that the entirety of his positive view could be rewritten on an endorsement of the second disjunct instead of the first and yield the same positive conclusion (albeit reached via a lengthier and more wordy argument). It should also be noted that Gregory does not take the strength of his view to turn on which of those two disjuncts he endorses (5).

there is a pink horse, the appearance of which is reliability compatible (6). Given that there is a possible world of which we are *prima facie* justified in concluding that there are pink horses, we are *prima facie* justified in concluding that pink horses are possible (6).

Thus on Gregory's view, we begin with a mental image in which things are depicted in a particular way. We then determine whether we are justified in thinking that the way things look in our mental image is reliability-compatible. Making this determination amounts to determining whether we can imagine a possible world where things look *that* way to a subject who enjoys visual reliability conditions. If we can do this, we can then conclude that there is a possible world in which there is some X, the appearance of which is reliability compatible. Since our visual image displays things as looking like *that* (i.e. like they do to the subject in the possible world) we are justified in concluding that what our visual image displays is possible.

We are thus justified in thinking that recognizing certain visual images (where the contents of those images are reliability-compatible) will guide us towards knowledge of possibilities. In this way, our *prima facie* justification with respect to the accuracy of our visual appearances under visual reliability conditions is what justifies us in taking certain visual images to portray possibilities. Given that we are only *prima facie* justified, we will have to determine whether there are any defeating considerations around before we can take ourselves to be straightforwardly justified in inferring from our visual images to modal claims.

III: Conclusion

Both Kung and Gregory make clear that the depicted content of our mental images must have certain features in order for us to be justified in forming modal beliefs on the basis of those images. For Kung, our images must be authenticated and for Gregory, we must have reason to think that what our images display is reliability compatible. We thus err in ascribing possibility to our images if we do not realize either that they cannot be authenticated or that they fail to be reliability

compatible. This contrasts with error theoretic lines of reasoning, in which our modal errors arise when we take ourselves to be imagining X in a modally salient way when we are in fact not imagining *X* at all (i.e. we are in fact imagining something like X1).

Further, we saw in the first chapter that both Gregory (2004) and Yablo (1993) pick out a certain type of imagining as the modally salient one (i.e. m-imagining). M-imagining is supposed to be constrained such that impossibilities are m-unimaginable, which gives us reason to think that what is m-imaginable will be possible. Contra this line of reasoning, neither Kung nor Gregory (2019) take m-imagining to be a specific type of imaginative mental act that contrasts with fs-imagining. Rather, imagining is one mental act and certain of our imaginings are probative in virtue of their good-making features. So, while Kung and Gregory (2019) do pick out a set of imaginings that are probative, they are not probative in virtue of the fact that we imagine them in a different way than we do their non-probative counterparts.

In this chapter, we have seen two tenable imagistic accounts of the imagination as a guide to knowledge of possibilities. Unlike the error theoretic accounts, neither imagistic account appears vulnerable to anything like a 'modal conclusions first' charge. Since they are instead epistemically non-circular in and of themselves, it may seem as though we ought to prefer them.

In the next chapter, I will argue that both imagistic accounts are subject to problems that ultimately make them worse off than the error theoretic accounts. In order to do so, I evaluate how all of the accounts fare when confronted with what I define as test cases. While the imagistic accounts provide successful evaluations of the test cases, they do so via an error theoretic move rather than by identifying modally salient features in imagistic imaginings of the cases. The imagistic nature of the accounts instead weakens their evaluations of the test cases due to uncertainties about what counts as a mental image of each case. So, while the two imagistic accounts are epistemically non-circular, I take the test cases to reveal that they are vulnerable to other damaging worries.

CHAPTER III: TEST CASES

A good-making feature of any account of the imagination as a guide to knowledge of possibilities is its ability to confront what I categorize as test cases. Test cases will be either propositions or images that we have reason to think are not possible. As such, a successful account of the imagination ought to classify these cases as not imaginable in the modally salient way.

One type of test case is propositions about which we have no prior modal knowledge. Previously, we saw how both error theoretic and imagistic accounts fared when classifying both propositions that we had reason to think are possible and propositions that we had reason to think are impossible. If a given account classified as probative imaginings of propositions that we had independent reason to think are possible and excluded from that set imaginings of propositions that we had independent reason to think are impossible, we had reason to think that the account in question would fare well when confronted with cases about which we have no antecedent modal knowledge. Taking up modally uncertain propositions is one way of seeing whether those otherwise successful accounts can in fact help us in situations where we have no independent modal knowledge.

Another type of test case is mental images that depict impossibilities. These mental images include depictions of things like Escher Staircases and Penrose Triangles. In earlier sections, we saw how two imagistic accounts fared when classifying mental images that depict things that we had reason to think are possible. Both accounts manage to classify mental images of possible things as probative by picking out features of those images that justify us in ascribing possibility to them. However, neither account is explicit about how lacking such possibility-making features might either block an ascription of possibility to an image or require an ascription of impossibility to it. We might think that if an account classifies as probative imaginings of objects that we have independent reason to think are possible, we have good reason to think that the same account would fare well in

classifying images of depicted impossibilities as impossible. Just as with modally uncertain propositions, evaluating images that depict impossibilities is one way to see whether those otherwise successful accounts can in fact help us in this harder scenario. Further, since the error theoretic accounts canvassed in the first chapter focus on propositional imaginings and do not provide explicit evaluations of mental images, taking up such a case is a good means of seeing whether those accounts can make the correct classifications in that respect as well.

In this chapter, I argue that error theoretic accounts are best equipped to handle both types of test cases. In order to do so, I take up an example of each type of test case in sequence. The first case is a proposition about whose modal status we are unsure, while the second case is an image whose contents depict an impossibility. At the beginning of each section, I explicate the case in question and make clear what a successful evaluation of it ought to look like. I then present Dominic Gregory's (2004) and Stephen Yablo's (1993) error theoretic evaluations and Peter Kung's (2010) and Dominic Gregory's (2019) imagistic evaluations of it. At the end of each section, I identify the account(s) that I take to handle the case most successfully. While all four accounts meet the burden of proof for both of these cases, it turns out that imagistic accounts only do so by relying upon an error theoretic maneuver. As a result, I conclude that error theoretic lines of reasoning are best equipped to handle the test cases.

As we saw in the two previous chapters, all four of the accounts pick out a set of imaginings that are modally salient. I will continue to use m-imaginings to refer to these modally salient imaginings and fs-imaginings to refer to full stop, non-modally salient imaginings. Since each of the four accounts characterize m-imaginings in a different way, I will indicate which imaginings are m-imaginings on each account.

Section 1: Goldbach's Conjecture:

The first test case is Goldbach's Conjecture (GC). GC states that every even number greater than two can be expressed as the sum of two prime numbers. While GC is unproven, it is necessary if true and if impossible if false. Thus, if GC is possible, then not-GC is impossible and if GC is impossible, then not-GC is necessary.

Prior to looking at what the respective error theoretic and imagistic accounts have to say about GC, it is necessary to get clear on what exactly the burden of proof is. I argue that in order to provide a successful evaluation of GC, a given account ought to:

1. Classify GC as modally undecidable and;
2. Not rely upon *a posteriori* modal knowledge in order to do so.

Per (1), it is not that the accounts must give us reason to conclude either that GC is possible or that GC is impossible. Given that GC is necessary if possible and necessary things are actual, an account that concludes that GC is possible ought to provide us with an m-imagining of an actual proof of GC. However, requiring that the imagination provide us with an m-imagining of an actual proof of GC sets the burden of proof too high. GC is unproven and so a proof of it is unknown, but its proof will be an *a priori* proposition and *a priori* propositions are only m-imaginable when they are known. Absent recognizing the conceptual relations constitutive of a given *a priori* proposition, we will lack knowledge of it. So too recognizing those conceptual relations is necessary for m-imagining it.

For example, we would not think that someone who lacks knowledge of the conceptual relation between 'bachelor' and 'unmarried' can m-imagine the *a priori* truth 'that the bachelors on the park bench are unmarried' where the word 'bachelor' corresponds to our concept of bachelor. In other words, she cannot m-imagine that very proposition if she does not know that bachelors are unmarried males (on our concept of bachelor). We would instead think that *a priori* truths about

bachelors will be m-unimaginable to her until she recognizes the conceptual relations between being a bachelor and being unmarried.

Similarly, our lack of knowledge of the conceptual relations constitutive of a proof of GC prevents us from being able to m-imagine the *a priori* truth (the proof of GC) constituted by those very conceptual relations. We will thus be unable to m-imagine an actual proof of GC until we have knowledge of an actual proof of GC. This same line of reasoning applies to the conclusion that GC is impossible. If GC is impossible then not-GC is necessary and therefore actual. As such, if we require an account to conclude that GC is impossible then the account ought to provide us with an m-imagining of an actual proof of not-GC but again, since not-GC too is unknown that is likewise an unrealistic burden of proof.

While the imagination need not provide us with an actual proof of GC, this does not rule out what it *can* provide as helpful. Rather, our inability to m-imagine unknown *a priori* propositions reveals that our imagination is not so unconstrained as to facilitate our m-imagining just any proposition regardless of which conceptual relations we recognize. Thus if an account successfully classifies both GC and not-GC as m-unimaginable we have good reason to conclude that the account in question has the correct constraints on our imaginative abilities. We then have further justification for taking propositions that we *can* m-imagine on that account as being probative.

Prior to proceeding, it is important to recognize that per (2) we are justified in relying on antecedent modal knowledge of propositions known *a priori*. Recall that in Chapter 1 we established this on the grounds that we can recognize both the truth value and the modal status of *a priori* propositions solely in virtue of grasping the conceptual relations constitutive of those propositions. In contrast, we have no such independent source of modal knowledge with respect to *a posteriori* propositions. Contra appeals to *a priori* modal knowledge then, to appeal to *a posteriori* modal knowledge is to appeal to modal knowledge gained from the imagination in order to determine

whether the imagination is a trustworthy provider of modal knowledge. Given that this move is epistemically circular, while a successful account of the imagination as a modal epistemological tool can appeal to antecedent *a priori* modal knowledge, it cannot appeal to antecedent *a posteriori* modal knowledge.

I.A: Error Theoretic Solutions

I.A.1: Gregory (2004):

In Chapter 1, we took up Gregory's unshakeable imaginability line of reasoning as a potential guide to knowledge of possibility. Recall that according to Gregory, no impossible and accessible non-modal proposition is supposed to be unshakeably imaginable (i.e. m-imaginable), and a proposition is not unshakeably imaginable in case we are unable to fs-imagine it under at least one supposition. Recall also that an accessible proposition is a proposition whose truth value we would know were we to be aptly situated such that we could determine it.

Though GC is unknown, its unknown status does not make it inaccessible. Rather, to be situated such that we could determine the truth value of GC would be to possess knowledge of the conceptual relations constitutive of a proof of GC. While we do not yet possess the conceptual knowledge necessary to be in such a position, this does not mean that there is no such position.

Since we gain knowledge of GC *a priori*, we ought to refer to the line of reasoning that Gregory uses with respect to *a priori* propositions. According to Gregory, for every *a priori* impossibility P there is a convincing demonstration of not-P (338). A convincing demonstration of not-P consists in an argument that not-P where we could never fs-imagine that one of the argument's premises fails or that one of its inferences leads from truth to falsity (337). For example, take the proposition that 'some barber shaves all and only barbers who are not self-shavers.' That proposition is *a priori* impossible. Further, we can create a convincing demonstration of its negation by *reductio*. We know that any given barber either shaves or does not shave himself, so any barber

who shaves all and only barbers who are not self-shavers either shaves or does not shave himself. However, if that barber shaves himself, he does not shave himself (remember that he shaves only barbers who are not self-shavers!) and therefore our barber does not shave himself. Yet if that barber does not shave himself, he shaves himself (since then he is not a self-shaver and thus must shave himself). Thus, if there is a barber who shaves all and only barbers who are not self-shavers, that barber both shaves and does not shave himself.

The argument above constitutes a convincing demonstration that it is not the case that there is a barber who shaves all and only barbers who are not self-shavers. We could never fs-imagine that one of the arguments' premises is false nor could we fs-imagine that one of its inferences leads from truth to falsity. If this is the case, then making the non-modal, accessible supposition that the argument above exists will render us unable to fs-imagine that there is some barber who shaves all and only those barbers who are not self-shavers.

Recall that since GC is necessary if true, either GC or not-GC will turn out to be impossible. We thus need either a convincing demonstration of GC or a convincing demonstration of not-GC in order to recognize one of them as impossible. However, I take it that a convincing demonstration of GC (or not-GC) must consist in a proof that GC (or not-GC) is true. Acquiring the convincing demonstration that we need in order to recognize the impossibility of either GC or not-GC thus requires us to have the very thing that we set out to look for in the first place: evidence of the actuality (which is *a fortiori* evidence of the possibility) of GC (or not-GC).

Given that we do not have a convincing demonstration of not-GC, we do not have a supposition under which we can shake our fs-imagining of GC. As such, we are not justified in concluding that GC is impossible. However, we also do not have reason to think that GC will be unshakeably imaginable (i.e. m-imaginable) and therefore possible. Since GC is necessary if true, if

GC is unshakeably imaginable then there ought to be a convincing demonstration of GC, and we have already seen that we do not have this convincing demonstration either.

However, our lack of knowledge of the convincing demonstration that we need in order to ascribe either possibility or impossibility to GC does not justify us in assuming that there is neither a convincing demonstration for not-GC nor a convincing demonstration for GC. Since we cannot rule out either that it is possible that there is a convincing demonstration of not-GC or that it is possible that there is a convincing demonstration of GC, we are not justified in taking a stance as to whether it will be GC or not-GC that turns out to be unshakeably imaginable and therefore possible.

GC thus comes out neither as impossible nor as possible on Gregory's account and so we ought to conclude that it is modally undecidable. As such, his account meets (1). Since he does not rely upon any *a posteriori* modal knowledge, he does so without violating (2).

I.A.2: Yablo:

On Yablo's (1993) view, I am justified in concluding that P is possible in case I can fs-imagine a world that I take to verify P (29). To fs-imagine a world that I take to verify P is thus to m-imagine P. In contrast, I am justified in concluding that P is impossible in case I cannot fs-imagine any world that I do not take to falsify P (29). The modal status of P is undecidable if I fail to m-imagine either what is needed to justify a belief in P's possibility or what is needed to justify a belief in P's impossibility. In other words, I am justified in concluding that P is undecidable if I can neither fs-imagine a world that verifies P nor fs-imagine worlds that I do not take to falsify P (29).

Yablo argues that Goldbach's Conjecture (GC) is one such undecidable case. First, we will be unable to fs-imagine a world that we do not take to falsify GC (i.e. a world that verifies not-GC) and thus cannot conclude that GC is impossible. This is because every scenario that we can fs-imagine falls short of being a scenario in which not-GC is veridical (29). For example, suppose that a computer prints out an even number N and the mathematical community recognizes that number as

a counterexample to GC (i.e. the number cannot be expressed as the sum of two primes). On Yablo's view, that imagined scenario does not justify us in concluding that not-GC is possible because it could also be true of the scenario that N was *erroneously* recognized as a counterexample to GC. He concludes from this that the veridicality of the computer printing out a number N as a counterexample does not depend on there being a world in which N is *in fact* a counterexample to GC. We can imagine that a computer does that even in a possible world in which there are no actual counterexamples to GC and all apparent counterexamples are erroneously recognized as such.

Suppose that instead of attempting to m-imagine a number N that is a counterexample to GC, we attempt to m-imagine a computer producing an elaborate proof of not-GC. Such a proof cannot be erroneously hailed as such if it is in fact a proof. However, Yablo argues that we will not be able to m-imagine a proof that is in fact a correct proof of not-GC. He claims that, "given that it is inconceivable to me that addition facts should vary between possible worlds, my ability to imagine the proof as *correct* is limited by my confidence that some number is *in fact* unavailable as the sum of two primes. Alas I have no idea whether such a number exists and neither (I assume) does anyone else (32; first italics mine, second italics from original)."

According to Yablo, we will be unable to m-imagine a correct proof of not-GC unless we are confident that a number is *in fact* unavailable as the sum of two primes. However, we will be confident of this only when this number is known. Absent this knowledge, we will not be confident that this number *in fact* exists.

Similarly, we cannot fs-imagine a world that we do not take to falsify not-GC. In order to do this, we would have to fs-imagine a world of which GC is veridical.[22] Just as before, we can do this by trying to fs-imagine a world in which there is a proof of GC. In order for our proof to give us reason to think that GC is possible, it will have to be convincing. However, the only way for our

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[22] Recall that fs-imagining a world in which GC is veridical just is to m-imagine GC.

imagined proof to be convincing is if we fs-imagine it as such and Yablo points out that stipulating in our imagining that a proof is convincing does not make it such that the proof is actually convincing (32). Again, we will only find a given proof actually convincing if we are confident in it *in fact* being correct (i.e. in fact being *a priori* true) and we will only be confident in that if the proof itself is known.

Since we can neither fs-imagine a world that we take to verify not-GC, nor fs-imagine a world that we do not take to falsify not-GC, we must conclude that not-GC is modally undecidable. Since the modal status of not-GC is undecidable, then so is the modal status of GC. Yablo's account thus succeeds in meeting (1) and since it does not rely upon *a posteriori* modal knowledge to do so, also meets (2).

I.B: Imagistic Solutions

I.B.1: Kung:

In order to evaluate the modal status of GC on Kung's account, it is necessary to have a mental image of it. Kung takes all non-imagistic imaginings to not be probative and so we cannot begin to evaluate GC without forming this mental image. If we accept that we cannot form a mental image of GC then the extent to which Kung's account can help us stops here.

Since it is controversial whether we can in fact form such an image, I take it to be more useful to assume that forming such an image is possible. One way of doing so would be to fs-imagine one of the two scenarios that Yablo canvassed in the previous section. We could fs-imagine a computer printing out a proof of GC.[23]

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[23] I have chosen this particular mental image because I take it to depict one way that a proof of GC might come to be. Recall that in Chapter 2, Kung explicated that one way of authenticating the assignments in our images is to recursively imagine some kind of origin story about the assignments. For example, I authenticated the assignment <GenaesSecondCat> in my mental image of myself holding two cats by imagining picking the cat up from the shelter, bringing it home, and so forth. With respect to the GC case, suppose that I try to form a mental image of GC by imagining looking at whiteboard on which there is a proof of *GC*. In order for the proof on the whiteboard to be a proof of GC, I must stipulate it. In order to authenticate that assignment, I would presumably have to recursively imagine some scenarios that depict how that proof came to be. By beginning with a mental image that already depicts

Even if we accept that this mental image is in fact a mental image of GC, it will not count as probative. This is to say that we will not be able to fs-imagine it without stipulating that the proof is a proof of GC. While Kung allows probative imaginings to have stipulations so long as we authenticate them, I argue that we will be unable to authenticate our stipulations in this image. This is to say that even if the image is in fact an image of GC, it will lack the requisite good-making features for being an m-imagining of GC.

Recall that on Kung's account, an m-imagining of X is one in which it is intuitive that X, where the qualitative content of that imagining is necessary to it being intuitive that X. If in a given imagining we need to stipulate X, we can authenticate that imagining by fs-imagining another scenario in which it is intuitive that X. That recursive imagining then authenticates our assignment that X in our original imagining.

Suppose that we fs-imagine the scenario in which a computer prints out a proof of GC. In order to do so, we stipulate that the proof is a proof of GC. One way to authenticate this stipulation is to appeal to actual world states of affairs, but we cannot do this because of course there is no existent proof of GC. We thus need to utilize Kung's method for authenticating assignments of non-actual things. That is, we need to recursively fs-imagine a scenario in which it is intuitive that GC and the qualitative content of the scenario is necessary for eliciting that intuition.

We might think that we can do this by fs-imagining a proof of GC coming to be (where the qualitative content of our imaginings is necessary for making it intuitive that *GC* is coming to be in them) because this will make it intuitive that the proof in our original imagining is in fact a proof of GC. This recursive authentication would then make it such that our original imagining is an m-imagining of GC. In order to do this, we might fs-imagine someone inputting certain algorithms into

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one way that a proof of GC might come to be, I thus begin with the kind of mental image that has the best chance of being authenticatable on Kung's account.

a computer, fs-imagine a group of mathematicians coming up with the correct inputs, and so on. However, even in these recursive imaginings, plausibly the only way that we can fs-imagine any one of those factors being a factor that in fact leads to a correct proof of GC (rather than to some erroneous proof) is if we stipulate it as such.

In order to see how this is the case, it is first necessary to determine in what kind of imagined content the symbols that constitute a proof of GC consist. Plausibly, bare depictions of mathematical symbols consist in basic qualitative content. They are no more than basic lines and shapes. However, this is compatible with us fs-imagining each of those mathematical symbols *as* numbers (i.e. in the same way that we imagine some amalgamation of basic qualitative content *as* Barack Obama). For example, those of us who are familiar with our mathematical system assign the basic qualitative content '2' the label 'two.' We fs-imagine the symbol '2' *as* 'two' and we authenticate that label by appealing to our knowledge of our mathematical system. Our imaginings of '2', consist in the basic qualitative content of the symbol and the non-basic qualitative content of the label 'two'.

In any fs-imagining of mathematical symbols, the qualitative content of those symbols will only make it intuitive that the symbols take on certain labels if we fs-imagine those symbols *as* those labels. Fs-imagining a set of symbols *as* their respective labels amounts to m-imagining the content of those labels. For example, it is intuitive that an imagining of the symbols '2+2=4' is an imagining of 'two plus two equals four' because we fs-imagine the former *as* the latter (i.e. in the same way that it is intuitive that some amalgamation of basic qualitative content is Barack Obama if we imagine it *as* such). So in order to m-imagine a proof of GC, we need to imagine a set of mathematical symbols and imagine them *as* the labels that they take on in our mathematical system.

Even fs-imagining a certain arrangement of mathematical symbols *as* such does not suffice for m-imagining a proof of GC. It must also be the case that in virtue of recognizing the arrangement of mathematical symbols as such, we recognize that the arrangement constitutes a

proof of GC. However, recognizing that an arrangement of mathematical symbols constitutes a proof of GC requires that we have antecedent knowledge of what arrangement of mathematical symbols in fact constitutes such a proof. In other words, in order for it to be intuitive to us that a set of symbols on a paper constitutes a proof of GC, we must have antecedent knowledge of the specific arrangement of symbols that in fact constitutes that proof. Given that antecedent knowledge of GC is required in order to authenticate our stipulation that a proof is a proof of GC, we cannot m-imagine GC without already knowing that GC is possible. Thus, we cannot m-imagine GC on Kung's account.

Though we cannot m-imagine GC, we have not yet been given reason to think that GC is impossible. However, we know that Kung argues that known *a priori* falsehoods and violations of conceptual relations are both impossible *and* fs-unimaginable. Since GC will be *a priori* impossible if false, once we know its modal status either it will be m-imaginable or fs-unimaginable. Thus our justification for classifying GC as fs-unimaginable *qua* being impossible depends on knowledge of the modal status of GC that we do not yet have. Given that we neither can m-imagine GC nor conclude that it is impossible, we must conclude that the modal status of GC is undecidable. Kung has thus met (1) without violating the conditions specified by (2).

I.B.2: Gregory (2019):

According to Gregory (2019), in order for the imagination to justify a belief that GC is possible, we must form a mental image of GC that is reliability compatible. Forming a mental image of GC that is reliability-compatible thus amounts to m-imagining GC for Gregory. In order to determine whether a mental image is reliability compatible, we must determine whether there could be a possible world in which there is a subject who is having a visual appearance where things look like *that* (i.e. how they look in our mental image) where she enjoys visual reliability conditions. Making that latter determination suffices for making the former.

According to Gregory, the contents that can feature in our mental images are constrained by the contents that have featured in our previous visual experiences. Note that this is not to claim that we can only form mental images of certain contents arranged exactly as they have been arranged in our previous visual experiences. Rather, we can combine different items that have featured in the contents of our visual experiences in order to form mental images of things of which we have not actually had visual experiences.

For example, suppose that I form a mental image of my cat wearing a pink bow tie. I have never had a visual experience of this (i.e. I have never seen my cat wearing a pink bow tie), but I have had visual experiences of both my cat and of pink bow ties. On Gregory's view, if I can form a mental image in which I connect those visual appearances to the conceptual descriptions of 'my cat' and 'pink bow ties,' I can form the conceptual conclusion that what my visual image contains is 'my cat wearing a pink bow tie.' Since the content of my visual image depicts things of which I have antecedently had visual experiences, I can conclude that I have a mental image of my cat wearing a pink bow tie.

Provided that I can imagine a possible world in which there is a subject who has a visual appearance where things look like *that* (i.e. like how my visual image depicts them as looking) where she enjoys visual reliability conditions, I am justified in concluding that it possible for my cat to wear a pink bow tie.[24] More formally, an antecedent 'P' where P is 'my visual image contains my cat and a pink bow tie' combines with 'if my visual image contains my cat and a pink bow tie, then possibly my cat is wearing a pink bow tie' to yield the consequent 'Q' where Q is 'possibly my cat is wearing a pink bow tie.'

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[24] That I can in fact imagine this possible-world subject is plausible. Given that a given subject enjoys visual reliability conditions in case there is nothing aberrant about her visual system, she can presumably have a visual appearance of the cat in question under visual reliability conditions. In other words, there will be nothing about being under visual reliability conditions that will prevent her from having such a visual appearance. We can contrast this with cases such seeing odd visual appearances while hallucinating. In those cases, enjoying visual reliability conditions will be incompatible with having certain visual appearances.

It may seem as though we can form a mental image of a proof of GC this same way. We need only to form a mental image in which we combine the mathematical symbols of which we have previously had visual experiences. This would yield the antecedent P where P is 'my visual image contains the symbols $X^1….X^N$.' Provided that I can image a possible world in which there is a subject to whom things look like *that*, I should be able combine that antecedent with 'if my visual images contain symbols $X^1...X^N$, then possibly $X^1....X^N$ constitute a mathematical proof' to yield 'possibly, $X^1...X^N$ constitute a mathematical proof.'

I argue that it's not the case that we can form a mental image of a proof of GC in this way without having antecedent knowledge that GC is possible. Forming a mental image of some mathematical symbols $X^1…X^N$ will not amount to forming a mental image of a proof of GC unless we imagine the mathematical symbols $X^1…X^N$ that in fact constitute a proof of GC. In order to pick out those symbols we need to have knowledge of which mathematical symbols in fact constitute a proof of GC, but of course picking out the requisite mathematical symbols requires having antecedent knowledge of a proof of GC. Thus, forming a mental image of GC requires possessing the very piece of knowledge that we set out hoping to gain. Since we cannot even form a mental image of GC that is evaluable for reliability compatibleness, we can make no conclusions about either the possibility or impossibility of GC. Its modal status is thus indeterminate.

Though Gregory (2019) does fulfill (1), he does so only because we cannot form the minimum mental image of GC needed to get his line of reasoning off the ground. We might think then that (2019) fulfills (1) not in virtue of its own good-making features but because it is inadequately equipped to handle the case in the first place. Since Gregory (2004) focuses solely on the modal status of propositional imaginings, it is plausible that (2019) is inadequate in this way because it is Gregory's imagistic account that was never intended to the take up the propositional cases that (2004) already addresses. However, given that Gregory (2004), Yablo, and Kung all meet

(1) in virtue of the work that their respective lines of reasoning accomplish, that (2019) meets (1) in this weaker way makes it the least compelling of the four options. If any account offers the strongest evaluation of GC it will insead be one of the former three and it is those accounts that I will evaluate in the proceeding section.

I.C: Evaluation

I argue that Yablo, Kung, and Gregory (2004) each provide a successful evaluation of GC by arguing that we are unable to m-imagine propositions of unknown truth value if they are necessary if true. This move is most apparent with respect to Yablo because he claims explicitly that our ability to imagine a *correct* proof of not-GC is limited by our lack of confidence that some number is *in fact* unavailable as the sum of two primes (32). Recall that plausibly, our lack of confidence will only dissipate once we know that some number is in fact unavailable as the sum of two primes. If lack of knowledge leads to lack of confidence, then to claim that lack of confidence makes us unable to imagine a correct proof of GC is to commit to the claim that lack of knowledge leads to that imaginative inability. We are thus unable to imagine a correct proof of not-GC (or imagine a correct proof of GC) because it is unknown.

However, not-GC's unknown status likewise renders it m-unimaginable only because GC is *necessary* if true. We can m-imagine both contingent propositions and their negations even if they are unknown. For example, I do not know whether Barack Obama in fact has a home library. Even so, I can m-imagine a world of which it is veridical that Barack Obama has a home library and I can m-imagine a world of which it is veridical that Barack Obama does not have a home library. In contrast, given that GC is necessary if true, its negation is impossible if false and vice versa. Since we cannot m-imagine impossibilities, we will be equally unable to m-imagine GC as not-GC. Since we do not know which of the two propositions is *in fact* impossible, we can draw no conclusions about

what is m-imaginable or m-unimaginable. GC thus comes out as modally undecidable because it is necessary if true.

Kung seems to endorse the claim that propositions of unknown truth value that are necessary if true will be m-unimaginable. According to Kung, we will only be able to authenticate our fs-imagining of GC if we find it intuitive that in our imagining, GC. We find it intuitive that GC if in virtue of recognizing a given arrangement of mathematical symbols *as* their labels, we recognize that the arrangement constitutes a proof of GC. Recall though that recognizing that an arrangement of mathematical symbols constitutes a proof of GC requires that we have antecedent knowledge of what arrangement of mathematical symbols in fact constitutes such a proof. As a result, we can find it intuitive that GC and thus authenticate our imagining of GC only if we have knowledge of GC. Since we of course do not have knowledge of GC, we will be unable to authenticate our imagining of GC. This line of reasoning likewise applies when we try to imagine a proof of not-GC.

Again, it is GC's necessity if true that allows its unknown status to render it m-unimaginable on Kung's account. We can m-imagine both contingent propositions and their negations even if their truth values are unknown. For example, I can find it intuitive in an imagining that Barack Obama has a home library (provided that I authenticate my assignments) and I can likewise find it intuitive that Barack Obama does not have a home library. Thus, we can neither find it intuitive that GC nor find it intuitive that not-GC because GC is necessary if true. In other words, GC's necessity if true makes it modally undecidable.

That Gregory makes the same move as Yablo and Kung is less apparent only because he explicates his line of reasoning in less detail than do the two of them. On Gregory's account, we need a convincing demonstration for GC in order to render not-GC not unshakeably imaginable (or vice versa). Since GC is necessary if true, concluding that not-GC is not unshakeably imaginable and therefore impossible (or vice versa for GC) justifies us in concluding that the other is possible and

therefore necessary. However, we will not be able to have a convincing demonstration of not-GC without having knowledge of a proof of not-GC and vice versa for GC. Thus, we will be unable to conclude anything about the modal status of GC unless a proof of not-GC is known (and vice versa). Gregory is able to classify GC as modally undecidable because we lack a convincing demonstration of either GC or not-GC, but we lack a convincing demonstration of either because GC is unknown.

We need a convincing demonstration of not-GC (or of GC) in the first place because GC is *a priori* necessary if true and impossible if false. If GC were contingent, we would have no reason to think that there would be a convincing demonstration of GC (or of not-GC). Rather, we would instead try to establish GC's modal status by trying to imagine it under certain accessible, non-modal suppositions. However, we have already seen that suppositions render certain propositions fs-unimaginable only if those suppositions ensure that subsequent conceptual entailment relations obtain. Recognizing those conceptual entailment relations renders the propositions in question fs-unimaginable because they demonstrate that there is no possible world in which those propositions can obtain. If a conceptual entailment relation demonstrates that there is no possible world in which a proposition X can obtain, we have reason to think that X is impossible.

However, we have supposed that GC is contingent. So, we know that no conceptual entailment relation will demonstrate that there is *no* possible world in which GC can obtain. Thus, if GC were contingent, we would have reason to think that there will be no supposition under which GC will be fs-unimaginable. We could instead include that, since no supposition will shake its imaginability (FS), GC is m-imaginable if contingent. Thus, it is that GC is necessary if true that renders it modally undecidable on Gregory's account.

Though all three accounts offer a successful evaluation of GC, their joint reliance on the

m-unimaginability of propositions of unknown truth value that are necessary if true makes the success of each hinge on an error theoretic move. Since we can imagine unknown necessary if true propositions in senses that are not modally salient, we need to be discerning in order to distinguish the modally salient sense from the others. Plausibly, we will not always be so discerning and thus err in thinking that we have imagined GC in the modally salient way when in fact we cannot imagine *GC* in that way. Since Yablo and Gregory both have error theoretic views, it is unsurprising that they make this kind of error theoretic maneuver. In contrast, Kung otherwise purports to rely on there being something about the imagistic content of our imaginings that justifies our modal beliefs.

I argue that even though Kung fulfills (1), it is this error theoretic move and not the imagistic nature of his account that allows for his success. First, recall that Kung picks out no modally salient sense of imagining as imagistically distinct from the others. Rather, our imaginings are probative in case all of the assignments in them have been authenticated.[25] Recall that assignments in our imaginings are authenticated in case we find it intuitive that the depicted imagined content of our imaginings could take on the labels and stipulations we have predicated of it. One way that we will find it X intuitive in an imagining is if X corresponds to an actual world X. Alternatively, we can find X intuitive in an imagining if we imagine the origin of X where it is intuitive that it is *X* that is coming to be (i.e. recall the authentication of <GenaesSecondCat> where we imagined me bringing the cat home from the shelter). In this latter case, the imaginings of me obtaining the cat can be authenticated by appealing to actual world facts about shelters and cats, and I can authenticate my original imagining by appealing to these recursive imaginings.

What is doing the work in justifying our inferences from imaginability to possibility is thus not the imagistic nature of our imaginings but rather the authentication work that occurs with respect to the assignments that we predicate of our mental images. Recall that it is our failure to

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[25] Imaginings that solely contain basic qualitative content are probative without qualification.

authenticate, not our failure to imagistically imagine, that prevents us from m-imagining GC. Further, given that we can explain any mistaken attributions of possibility to our images by pointing to errors in our authentication efforts (e.g. taking it to be intuitive that X when we are in fact still stipulating that X and it is in fact only intuitive that X1), the line of reasoning on which we authenticate our assignments is itself error theoretic.

Kung's account thus does not meet (1) in virtue of its imagistic nature. While the account relies on an error theoretic move that is not explicitly specified as such, this alone does not give us reason to prefer the two error theoretic accounts. Rather, it simply reveals that even accounts that do not take a strictly error theoretic approach require such an error theoretic move in order to classify GC as modally undecidable. If this is the case, then error theoretic lines of reasoning are needed for fruitful evaluations of test cases like GC.

Section II: Image of an Apparent Impossibility

In this section, I argue that error theoretic accounts are similarly best equipped to guide us towards modal knowledge with respect to images that depict impossibilities. I do so by using one of the images below as case study. I explicate how each of the four accounts might evaluate the image. I proceed to argue that though all of the accounts provide successful evaluations of it, it turns out that they all rely on the same error theoretic move in order to do so. I conclude by arguing that Gregory (2004) and Yablo (1993) offers the strongest defenses of that move.

Prior to beginning, it is again necessary to get clear on what the burden of proof is. Recall that it was critical in the previous case that no account took a firm stance with respect to the modal status of GC. In contrast, I argue that each account ought to conclude that the images below depict impossibilities.
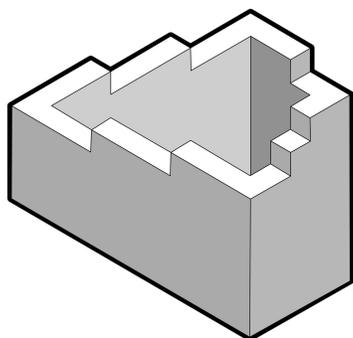
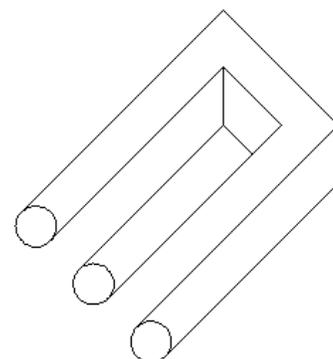Figure 1: Impossible Stairs   Figure 2: Impossible Triangle   Figure 3: Impossible Trident

In this section, I explicate how each of the four accounts might evaluate Figure 1. However, given that all three of the figures above depict impossibilities, the evaluations that follow will likewise apply to Figures 2-3. Further, I take all of the claims that I make below with respect to Figure 1 to apply to Figures 2-3. Thus, in order to deny any of the proceeding conclusions with respect to Figure 1, you must also deny those conclusions with respect to Figures 2-3.

Figure 1 is a modified version of an Escher Staircase and depicts a set of stairs that appear to be ascending only to end up at a point lower than the point at which they begin. Given that I ascend from X to Y if and only if Y is spatially above X, I cannot ascend from X to Y if Y is a point lower than where I began. So, if the stairs depicted in the image end up at a lower point than the point at which they begin, it's not the case that the stairs ascend. However, the image depicts a scene in which it appears as though a set of stairs does in fact *ascend* from one end to the other. The image

thus depicts an impossibility. As a result, any account must accomplish the following in order to

offer a successful evaluation of it:

1) It must classify Figure 1 as impossible; and
2) It must accomplish (1) without relying on antecedent modal knowledge about propositions whose truth value we come to know *a posteriori*.[26]

II.A: Error Theoretic Solutions

II.A.1: Gregory (2004):

While Gregory (2004) does not explicitly take up cases of impossible objects, that omission

does not prevent him from being able to evaluate this case. When we assess the modal status of

Figure 1, we are concerned with whether a staircase can ascend only to end up at a point lower than

the point at which it begins. We can thus evaluate the modal status of the proposition that 'there is

some X that ascends only to end up at a point lower than the point at which it begins.' Whether that

proposition is possible will determine whether it is possible for a staircase to take on the property

predicated by it. Error theoretic accounts like Gregory's can thus evaluate the modal status of

imagined objects by evaluating whether those objects can take on the properties predicated of them

by certain propositions.

Given that we have antecedent *a priori* reason to believe that the proposition above is

impossible, we ought to find that proposition m-unimaginable. However, the proposition is not an

obvious *a priori* impossibility like 'that there is a married bachelor.' Rather, that 'some X ascends only

to end up at a point lower than the point at which it begins' is more like the less obvious

impossibility that 'there is barber who shaves all and only those barbers who are not self-shavers.'

Even though the proposition above is not obviously impossible, we still find less obvious *a

priori* impossibilities m-unimaginable once we recognize that there are convincing demonstrations of

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[26] Recall that we are justified in relying upon antecedent *a priori* modal knowledge. As such, the four accounts can appeal to antecedent a priori modal knowledge in order to evaluate this case.

their negations. Recall that a convincing demonstration of X amounts to an argument that X where we could never imagine either that one of the argument's premises fails or that one of its inferences leads from truth to falsity (337). We have good reason to believe that there will be a convincing demonstration by *reductio* for 'it's not the case that some X ascends only to end up at a point lower than the point at which it begins' like the following:

Suppose that there is some X that ascends only to end up at a point lower than the point at which it begins. If X ascends to Y, then Y is spatially above X. But X ends up at a point Y that is lower than the point at which it begins. So, if X ascends to Y but Y is a point lower than the point at which X begins then X both ascends and does not ascend.

On Gregory's account, if we suppose that the convincing demonstration above for exists, we will find 'some X ascends only to end up at a point lower than the point at which it begins' fs-unimaginable under that supposition. As a result, we will not be able to m-imagine that latter impossible proposition. If that proposition is m-unimaginable, then it is likewise m-unimaginable that an object can in fact possess the property that the proposition would predicate of it. Gregory has thus met (1) without violating (2) and fulfilled all of the conditions necessary for a successful evaluation of Figure 1.

II.A.2: Yablo (1993)

Yablo (1993) offers an error theoretic solution to Figure 1 that, like his solution to the GC case, relies upon possible worlds. He first makes a distinction between objectual and propositional imaginings. Objectual imaginings have referential content, which is the type of content that depicts an object (27). In contrast, propositional imaginings have alethic content, which is the type of content that can be evaluated for truth or falsity. Objectual imaginings are often accompanied by propositional imaginings, because we often fs-imagine *that* certain objects have certain properties. For example, suppose that I imagine a tiger. In doing so, I might imagine *that* the tiger has unusually long limbs. Thus even though the referential content of my imagining cannot be evaluated for truth

or falsity, we can evaluate whether it is veridical in a scenario that a given object has a certain property.

We can thus use Yablo's method in order to evaluate whether objectual imaginings can in fact take on the characteristics that their propositional accompaniments predicate of them. Recall that we are justified in concluding that P is possible in case we can fs-imagine a world of which P is veridical.[27] For example, suppose that I form a mental image of a tiger that has unusually long limbs. I am justified in concluding that a tiger could have unusually long limbs so long as I can fs-imagine a world of which it is veridical that a tiger has unusually long limbs. I take it to be plausible that we are capable of such an imagining. We need only fs-imagine a world in which conditions allow a tiger to be born with unusually long limbs.[28] We are thus justified in concluding that it is possible that a tiger could have unusually long limbs.

We can apply the same method in order to evaluate Figure 1. First, form a mental image of it. Since Figure 1 appears to depict a set of stairs that ascend only to end up at a point lower than the point at which they began their ascent, predicate of the figure that it does this. You thus have an objectual imagining of Figure 1 that is accompanied by the propositional imagining that the set of stairs ascends only to end up at a lower point than the point at which it begins. You can then evaluate whether Figure 1 could in fact take on the property predicated of it by that proposition by attempting to imagine a world in which that proposition is veridical of the object. In other words, you can attempt to imagine a world of which it is veridical that there is a set of stairs that ascends only to end up at a lower point than the point at which it begins.

We might think that Yablo would argue that you will not be able to m-imagine this. Previously, Yablo argued that it is m-unimaginable to him that addition facts vary between worlds.

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[27] This amounts to m-imagining P.

[28] I am not committed to this being the only way that we could imagine a world in which it is veridical that a tiger has unusually long limbs.

On his view, addition facts are *a priori* necessary. If what we take to be a mathematical truth turns out to be false in a given world, we ought to conclude that the world in question assigns different meanings to the mathematical symbols rather than conclude that *our* mathematical facts are false.

We might think that Yablo would mount the same defense against our being able to m-imagine the staircase in question. Given that the staircase ascends only to end up at a lower point than the point at which it begins and X ascends to Y if and only if Y is spatially above X, we can say that the staircase both ascends and does not ascend. It thus violates the law of non-contradiction.

However, we might think that the law of non-contradiction is *a priori* necessary.[29] If so, then a world in which the law of non-contradiction is false would be m-unimaginable. Should there be a world in which there is a staircase that appears to both ascend and not-ascend, it would not be a world where the staircase is in fact ascending and not-ascending and to ascend and not-ascend mean what *we* take them to mean. Just as in the GC case, Yablo could appeal to the unimaginability of impossibilities in order to conclude that we cannot m-imagine that Figure 1 has the property predicated of it (i.e. being ascending and not-ascending).

Note that this is not to commit Yablo to the claim that Figure 1 is unimaginable in every sense of 'imagine.' It is not a question of whether we will be able to form a mental image of Figure 1. What is in question is whether we can fs-imagine that the proposition that predicates ascension and non-ascension of it is true.

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[29] The status of the law of contradiction is controversial. It is up for debate both whether the law is necessary and whether it is *a priori* and thus *a fortiori* up for debate whether it is both necessary *and a priori*. Dialetheists even deny that the law is true (Priest 1998).

An evaluation of the status of the law of non-contradiction is outside the scope of this thesis. However, given that the dialetheist view is a minority one and that dialetheists would arguably take the law to hold in the kinds of cases presented here, I take us to be justified in accepting the law of non-contradiction as true. For our purposes, I also take it to be plausible that the law is both necessary and *a priori*. Suppose that it turns out that the law of non-contradiction is not necessary. Given that contradictions entail any proposition, a possible world in which the law of contradiction is false would be a possible world in which anything goes. This would cause us to have to restructure the overarching project at hand because we would then have reason to think that what we thought were impossibilities might in fact be *possible*. Determining what such a restructured project might look like is likewise outside the scope of the thesis, and as such I conclude that the assumptions I attribute to Yablo with respect to the law of non-contradiction are plausible ones.

Though we have reason to think that the Figure 1 is not m-imaginable, that reason does not suffice to justify our belief that Figure 1 is impossible. We need to provide positive evidence that Figure 1 is m-unimaginable. Absent such positive evidence, we have no more reason to think that Figure 1 is impossible than to think that its modal status is undecidable, as it would be if we found that Figure 1 is not only m-unimaginable but also not m-imaginable.

Recall that according to Yablo, P is m-unimaginable in case I cannot fs-imagine a world that I do not take to falsify P (29). In order to m-imagine a world that I do not take to falsify P, where P is the proposition that predicates of the staircase that it both ascends and does not-ascend, I have to m-imagine a world of which the law of non-contradiction is false. However, if we think that Yablo would conclude that we cannot m-imagine that the law of non-contradiction varies between worlds, then we can infer that he would conclude that we will likewise be unable to m-imagine a world of which the law of non-contradiction is false. As a result, we are plausibly justified in concluding that it is m-unimaginable that there is a staircase that both ascends and does not ascend. Given that it is m-unimaginable that there is such a staircase, we are justified in concluding that Figure 1 (which depicts such a staircase) depicts an impossibility.

II.B: Imagistic Solutions:

II.B.1: Kung (2010)

Whether Kung's (2010) imagistic account can block an ascription of possibility to an imagining of Figure 1 depends in what kind of content we take an imagining of it to consist. If we think that an imagining of Figure 1 contains only basic qualitative content, then Kung must classify it as probative. If this is the case, then he immediately fails to meet (1). In contrast, if we think that an imagining of the figure contains both basic qualitative and assigned content, then Kung meets (1). Thus, whether Kung meets (1) hangs both on what type of imagined content Figure (1) consists in

and more generally on what type of content we take to count as assigned instead of as basic qualitative.

    First, it is plausible that an imagining of Figure 1 contains only basic qualitative content. Recall that basic qualitative content includes basic shapes, lines, and spatial properties. Arguably, Figure 1 contains no more than simple shapes, lines, and the spatial relations between them. Second, we might think that it is plausible that we will be able to form a mental image of the figure in its entirety. This contrasts with the chiliagon case, where we lack the capacity to imagistically imagine the chiliagon in its entirety and instead are only able to form a mental image of an additional side being inserted in between two other sides.

    If we find those two claims plausible, then we can categorize our imagining of Figure 1 as probative. Remember that according to Kung, we are immediately *prima facie* justified in taking imaginings that solely contain basic qualitative content to be probative. For example, when I imagine a blue surface in front of me, I am immediately *prima facie* justified in thinking that there could be such a surface in front of me. However, if our mental image of Figure 1 also only contains basic qualitative content, then we are also immediately *prima facie* justified in taking *that* imagining to be probative.

    Since he allows basic qualitative content to be probative without qualification, Kung cannot argue that our imagining of Figure 1 fails to be probative in virtue of failing to meet additional justificatory conditions. Either he must say that an imagining of it has assigned content *and* that the assigned content cannot be authenticated, or he must concede that we cannot be immediately justified in taking just any imagining that solely contains basic qualitative content to be probative. Given that it is plausible that an imagining of Figure 1 does in fact only contain basic qualitative content, one option is to conclude here that Kung's account fails to meet (1).

Alternatively, we might think that there are at least some (even if minimal) assignments in Figure 1. At first glance, it may appear that we can authenticate those assignments and so we might think that Kung's account again fails to meet (1). However, even if we authenticate our assignments, our imagining will fail to be probative in virtue of a further condition that Kung introduces. I will explicate how we might try to authenticate our assignments and proceed to explain how even our authenticated imagining will not be probative given Kung's additional condition.

We can try to authenticate our assignments in Figure 1 via the same method that Kung uses to authenticate his imagining of the chiliagon. First, suppose that just as we stipulated the n-sided figure, we must stipulate the stairs in Figure 1 as <stairs> and stipulate that the various lines and shaded sections are oriented the way that they are. Making these stipulations is not disqualifying, because they can be authenticated via the same method by which we authenticated the n-sided figure. As before, we begin with a shape or line that we do not need to stipulate. In this case, suppose that we begin with the farthest left line of the stairs. We then fs-imagine attaching an additional line to that original line, thereby forming the far left stairstep. We continue this process of attaching lines until we have a mental image of the entirety of the figure. As in the chiliagon case, that both our original line was not stipulated and that our imagining of each line insertion is qualitative makes it such that we do not arrive at our imagining of the final image via stipulation. Given that we have authenticated our imagining of Figure 1, it seems like we are justified in taking that imagining to be probative.

However, an ascription of possibility to our imagining will instead be blocked by the last condition of MEI.[30] That condition states that there must be no R such that our imagining makes it intuitive that both R and not-R (657). Since the stairs in our imagining appear to both ascend and not-ascend, our imagining violates that condition. The last condition of MEI thus prevents our

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[30] Recall that "MEI" stands for "Modal Evidence from Imagination" which is just the name of Kung's positive view.

imagining from being probative even if we have authenticated our assignments, and Kung's account succeeds in meeting (1).

Though Kung offers a successful evaluation of Figure 1, we might wonder why we ought to endorse the last condition of MEI that facilitates it. Kung explicitly states the condition as:

"There is no R such that either (a) R follows from 'the assignments alone' yet it is intuitive that not-R; or (b) it is intuitive that R and intuitive that not-R (654)."

However, all of the cases to which Kung applies the condition when introducing it are examples of (a). We are first presented with a case in which Justin Timberlake imagines a square-like figure and stipulates that it is round (654). The condition above blocks Timberlake's imagining from being probative because that the figure is round follows from assignments alone given that it is intuitive to him that the figure is a square. Timberlake's imagining is thus a case of (a).

Kung then provides a more complicated case where we are to imagine that Thomas Nagel is a fried egg. The condition above will also block this case from being probative because that the eggy thing is Thomas Nagel will follow from assignments alone even though it is intuitive that the imagined object is in fact not Thomas Nagel (655). It becomes clear that will have to follow from stipulation alone that the eggy thing is *Thomas Nagel* when we attempt to authenticate that stipulation. One way to attempt to do this would be to imagine Thomas Nagel coming to be a fried egg (e.g. imagining a bird laying an egg that contains Thomas Nagel). However, the only way in which the egg like substance will be *Thomas Nagel* is if we stipulate it as such and thus recursive imaginings fail to authenticate our stipulation. Kung concludes from this that even if we might initially think that it is in fact intuitive that an imagined fried egg is *Thomas Nagel*, attempting to imagine scenarios like Thomas Nagel coming to be as a fried egg reveals that what we thought were intuitions were actually stipulations, and that what is intuitive is just that the fried egg is simply a fried egg. The Thomas Nagel case thus also turns out to be a case of (a).

That neither of these cases are examples of (b) gives us reason to wonder what exactly Kung has in mind as a case of (b). It might be that mental images of things like Escher Staircases count as those kinds of cases, but even if so we have not been given reason to think that cases like these ought to count as non-probative. With respect to (a) cases, Kung has antecedently shown us why we should not classify things that are merely stipulated as probative. As a result, when we find that X follows from stipulation alone and find it intuitive that not-X, we have reason to think that our imagining is not a probative imagining of X.

We might think that we can instead supplement reason to block ascriptions of possibility to (b) cases by appealing to the kind of defense that we took Yablo to offer us. On a Yablo-esque line of reasoning, fs-imaginings that depict contradictions cannot be probative (i.e. m-imaginings) because the law of non-contradiction is necessary. Fs-imaginings that depict contradictions thus cannot be probative because anything that violates the law of non-contradiction will be impossible.

Suppose that we grant Kung that kind of Yablo-esque defense for the last condition of MEI. Even so, that we need that condition to sort our imagining of the Escher Staircase into the impossible camp reveals that our imagining fails to count as probative not because its depicted content lacks possibility-making features. The depicted content is either probative without qualification (if it consists in basic qualitative content) or authenticatable (if it consists in mixed imagined content). What allows Kung to sort our imagining of the Escher Staircase into the right place is rather a condition that appeals to modal facts about the law of non-contradiction. Further, relying upon such a condition is itself error theoretic. Our imaginings are not probative if they fail to meet certain conditions and we can err in thinking that X is probative when in fact those conditions make it such that we cannot imagine *X* probatively.

Recall that in the GC case, I argued that the fact that Kung's success turns on an error theoretic move that he does not explicitly classify as such does not suffice to cast his account aside

in favor of an explicitly error theoretic one. However in that case, the key error theoretic move itself was one for which Kung provides support. We were given reason to think that our mental image of GC was non-authenticatable on the grounds that we could not find it intuitive that the image was an image of *GC* unless we had antecedent knowledge of GC. In contrast, the key move in this case is a condition that Kung introduces with no defense. We have no reason to think that imaginings that depict contradictions ought not to be probative unless we supply our own Yablo-esque line of reasoning. Unlike in the GC case, we are supplying support for an error theoretic move in addition to merely classifying it as such.

I claim that Kung's neglect to provide reason to endorse the last condition to MEI *does* suffice to prefer the two error theoretic accounts canvassed above. Further, even if we reject a preference for Gregory (2004) and Yablo on these grounds, we must remember that Kung only meets (1) so long as we accept that our imagining of the Escher Staircase has assigned content. So even if we do not think that Kung's appeal to the necessity of the law of non-contradiction is *ad hoc*, his ability to meet (1) still depends on a charitable interpretive move. Since the two previous error theoretic accounts meet (1) via methods that both are not so *ad hoc* and do not rely on interpretive ambiguities, we have reason to prefer them instead.

II.B.2: Gregory (2019)

Whether we can ascribe possibility to a mental image on Gregory's (2019) imagistic account depends upon whether the depicted content of that image has the requisite good-making features. According to Gregory, we are *prima facie* justified in concluding that what our mental images display is possible if we have reason to think that what those mental images display is reliability compatible. We have reason to think that what our mental images display is reliability compatible if we can fs-imagine a possible world in which there is a subject who has a visual appearance that things look like

that (i.e. like how our image displays them to look) where that subject enjoys visual reliability conditions.

However, it is not clear what would count as having a visual appearance of something like the Escher Staircase. Earlier I claimed that plausibly, one such visual appearance might be of a sculptural representation of the Staircase. However, it is unclear whether Gregory would grant that this is a visual appearance of an *Escher Staircase* rather than something that is merely very Escher Staircase-like. This uncertainty is bad for Gregory because whether this case gets off the ground on his account depends upon whether we can imagine a subject having a visual appearance of an *Escher Staircase* under visual reliability conditions. If it turns out that a mental image of a sculptural representation does not count as a mental image of an Escher Staircase and we can in fact form no such mental image, then the case becomes unevaluable on Gregory's (2019) account.

Let us grant for now that the sculptural representation *does* count as a visual appearance of an Escher Staircase and that we can fs-imagine a possible world in which there is a subject who has that visual appearance under visual reliability conditions. We are thus justified in concluding that our mental image of the staircase is reliability compatible. Though meeting this condition allows us to be *prima facie* justified in concluding that Escher Staircases are possible, our *prima facie* justification will only convert to straightforward justification if we have reason to think that there are no defeating considerations around.

In this case, our *prima facie* justification will be blocked from converting to straightforward justification because "our knowledge of the nature of space tells us straightaway that the scenarios shown by [the Escher Staircase] cannot be realized (10)." Here our knowledge of the nature of space serves as a defeating consideration. Given that straightforward justification is required to ascribe possibility and that defeating consideration blocks us from attaining straightforward justification, we cannot ascribe possibility to the figure.

Whether this justificatory block succeeds in meeting (1) without violating (2) depends upon what kind of knowledge we take knowledge of the nature of space to be. On the one hand, we might think of knowledge of the nature of space as *a posteriori* knowledge. Plausibly, there are facts about the nature of space whose recognition requires our observing space itself. If this is the case, then appealing to knowledge of the nature of space in order block our justificatory conversion makes it such that Gregory would violate (2).

Alternatively, we might think that the way that space can be arranged is confined by what is logically possible. Knowledge of the nature of space (i.e. what can be realized in space) would then reduce to knowledge of logical possibilities. Given that we obtain knowledge of logical possibilities *a priori*, Gregory's account would no longer violate (2) on this interpretation.

If we grant that knowledge of the nature of space reduces to knowledge of logical possibilities and Figure 1 depicts a contradiction, then saying that "the scenarios shown by the image above cannot be realized," is to say that contradictions cannot be realized. However, this is just to make the same move that Yablo made earlier. The claim that contradictions cannot be realized entails the claim that non-contradiction is necessary. Thus by blocking our justificatory move on the grounds that the Escher scenario cannot be realized, Gregory implicitly commits himself to the claim that the law of non-contradiction is necessary and anything that depicts a contradiction is therefore impossible.

Just as with the Kung and the GC case, that Gregory makes this Yablo-esque move without explicitly saying that he does so will not disqualify him given that the move itself is legitimate per (2). However, recall that his account meets (1) in the first place only because we made the interpretive assumption that we can in fact have a visual appearance of an Escher Staircase. If our assumption is wrong, then the case cannot get off the ground for Gregory (2019). In contrast, Gregory (2004) and

Yablo meet (1) without us needing to make questionable interpretive moves on the part of their accounts in order for them to do so. I take this to put those two accounts on sturdier footing.

II.C: Evaluation

In this section, I argue that Gregory (2004) and Yablo provide the most compelling evaluations of the Escher case in virtue of providing the strongest defenses of the error theoretic move on which all four accounts hinge. First, the previous sections reveal that all four accounts provide successful evaluations of GC only by assuming that the law of non-contradiction is necessary. However, we saw that the two imagistic accounts leave this move either under defended or potentially unutilized. Kung sets up a line of reasoning in order to authenticate the assignments in our mental images, but that line of reasoning does not suffice to block mental images of the Escher Staircase from counting as probative. He instead arrives at a successful evaluation of the case via a seemingly *ad hoc* condition. While we could defend that condition via justifying an assumption about the necessity of the law of non-contradiction and the subsequent impossibility of its negation, Kung leaves the condition undefended.

It initially appeared that Gregory (2019) could defeat our ascription of possibility to Figure 1 via a condition that likewise assumes the necessity of the law of non-contradiction. While we were *prima facie* justified in ascribing possibility to an imagining of Figure 1, his condition blocked our *prima facie* justification from converting to straightforward justification. However, his account requires that we fs-imagine a subject having a visual appearance of Figure 1 in order to get off the ground. Given that it is unclear whether we can have in fact a visual appearance of an *Escher Staircase* (i.e. instead of something that is merely Escher Staircase-like)*,* it is uncertain whether the case is evaluable on his line of reasoning. Gregory's condition thus cannot do much for us if it is not clear whether our mental image is the kind of mental image to which that condition is supposed to apply.

Unlike the two imagistic accounts, Gregory's (2004) assumption about the necessity of the law of non-contradiction is defensible on his line of reasoning. On Gregory's view impossibilities (both *a priori* and *a posteriori)* are not m-imaginable (i.e. not unshakeably imaginable) (335). However, we will not always recognize a given impossibility as such and 'there is a staircase that ascends only to end up at a point lower than the point at which it begins' is one such less obvious *a priori* impossibility. Further, we might take ourselves to be able to m-imagine impossible propositions prior to recognizing them as impossible. For example, someone who does not know that it is impossible for there to be a barber who shaves all and only those barbers who are not self-shavers may take herself to be able to m-imagine that there is such a barber (335). However, once we recognize that proposition as an impossibility, we will find it m-unimaginable.

Recognizing convincing demonstrations helps us recognize less obvious *a priori* impossibilities as such. When we recognize that there is a convincing demonstration for a given *a priori* necessity, we recognize the negation of that *a priori* necessity as impossible. We will thus find it fs-unimaginable 'that there is a staircase that ascends only to end up at a point lower than the point at which it begins' under the supposition that there exists a convincing demonstration for its negation because making that supposition reveals that its negation is *a priori* necessary. Thus, when Gregory assumes that there will be a convincing demonstration for the law of non-contradiction under which the proposition above will be fs-unimaginable, he assumes that the law is *a priori* necessary. As a result, it is assuming the necessity of the law of non-contradiction that renders 'there is a staircase that ascends only to end up at a point lower than the point at which it begins' m-unimaginable because *a priori* impossibilities are m-unimaginable. Given that we already have reason to think that *a priori* impossibilities are m-unimaginable, the appeal is defensible.

Yablo's assumption about the necessity of the law of non-contradiction is likewise defensible on his line of reasoning. On Yablo's view, we are justified in concluding that 'a staircase both

ascends and does not ascend' is impossible if we cannot m-imagine a world in which 'it's not the case that a staircase both ascends and does not ascend' is false. Whether we can m-imagine such a world depends upon whether we can m-imagine that the law of non-contradiction varies between worlds. If we take the law to be necessary, then it will be m-unimaginable that it is false in a given possible world. As a result, we will not be able to m-imagine a world in which 'it's not the case that a staircase both ascends and does not ascend' is false and we are justified in taking 'a staircase both ascends and does not ascend' to be impossible.

Yablo thus also endorses the assumption that if a proposition is *necessary*, worlds in which that proposition is false will be m-unimaginable. Yablo's appeal to the necessity of the law of non-contradiction renders the Escher case m-unimaginable because *a priori* impossibilities are m-unimaginable. Since we have reason to think that *a priori* impossibilities are m-unimaginable, Yablo's appeal is defensible.

Earlier, I argued that relying upon *a priori* modal knowledge is legitimate. Looking at the respective accounts also shows that appealing to antecedent *a priori* knowledge can be a bad-making feature if an account makes the appeal without providing reason for doing so. Given that both appealing to *a priori* knowledge and supporting such an appeal do not require us to consult the imagistic content of our imaginings, image-based accounts are not going to be the strongest modal epistemological tool. We ought to rely on error theoretic lines of reasoning instead.

CONCLUSION

In this thesis I have argued that error theoretic accounts give us stronger reason to think that the imagination will guide us towards knowledge of possibilities than do their imagistic counterparts. I first took up two error theoretic accounts and showed that each account is epistemically circular and in need of revision. I then argued that after revision, both accounts provide tenable error theoretic reason to think that the imagination will guide us towards knowledge of possibilities. I then canvassed two imagistic accounts that, unlike error theoretic accounts, take there to be something about the imagistic content of our imaginings that makes them suitable guides to knowledge of possibilities.

After making clear how both types of accounts are supposed to work, I evaluated how each of the accounts fared when confronted with what I categorized as test cases. While each of the accounts provides successful evaluations of the test cases, it turns out that they all rely on an error theoretic move in order to do so. The error theoretic accounts predictably offer the strongest defense of that move. Since the test cases probe how the imagination fares as a modal epistemological tool, we have reason to think that error theoretic accounts of the imagination are best equipped to guide us towards knowledge of possibilities.

Some of the difficulties for the imagistic accounts arise because they require that we have a mental image of X in order to evaluate X but do not say much about what counts as a mental image of *X*. For example, whether I can evaluate the Escher Staircase on Gregory's (2019) account depends upon whether an image of a sculptural representation of the staircase to count as a mental image of it. As we have seen, it is not clear that the mental image in question would in fact count as an image of the Escher Staircase on his account.

It is likewise unclear whether that image counts as a mental image of the staircase for Kung. While it is plausible that I can authenticate it (e.g. suppose that I have seen such a sculpture in

actuality) it is unclear whether my authenticated mental image will count as a mental image of an *Escher Staircase*. Given that whether I can form a mental image of X determines whether I can evaluate X on both imagistic accounts, uncertainty about what makes an image of X an image of *X* weakens their respective lines of reasoning.

Further, both imagistic accounts must take sides with respect to various controversial issues in the philosophy of perception because they rely heavily on parallels between imagination and perception. For example, Kung assumes that some labels are depicted in our imagistic imaginings but this requires him to assume that labels are likewise depicted in the contents of our visual experiences. That assumption is controversial within the philosophy of perception.

Recall that we saw in Chapter 3 that both imagistic accounts ultimately make the correct cut between probative and non-probative imaginings by making an error theoretic move. Therefore, drawing on an analogy between the visual content of our perceptual experiences and the mental imagery of our imaginings does not end up doing much work for the imagistic accounts. Relying on the analogy with perception necessitates both imagistic accounts to take sides on controversial issues (e.g. what counts as basic qualitative versus assigned content, whether assignments are depicted), without reaping much benefit from that analogy.

While I conclude that the error theoretic accounts offer the most compelling reason to endorse the imagination as a modal epistemological tool, we might think that the fact that they fail to be epistemically non-circular absent Ichikawa and Jarvis' supplement suffices to block this conclusion. Instead, it may seem that we ought to prefer imagistic accounts that, while less compelling, are at least epistemically non-circular in and of themselves.

I argue, contra this objection, that if we reject the error theoretic accounts on the basis of that revisionary move then we must reject all four of the accounts I have canvassed. We have seen that the two imagistic accounts successfully evaluate the test cases by appealing to the same error

theoretic move as Gregory and Yablo. Thus, in order to defend that move the imagistic accounts too will need to rely on an error theoretic line of reasoning similar to theirs. To argue that we cannot endorse that line of reasoning would thus be to reject the line of reasoning on which all of the accounts will ultimately rest. It is therefore not the case that we can both reject the error theoretic accounts on the epistemic circularity charge and simultaneously endorse the imagistic accounts.

However, we *can* question the assumptions that Gregory and Yablo must make in order to successfully evaluate the test cases. First, recall that in order to evaluate an image that depicts an impossibility on their accounts, we evaluate whether the objects that image depicts can in fact take on the properties predicated of them by certain propositions. We draw conclusions about the modal status of the propositions in question and apply those conclusions to the objects of which the properties specified by those propositions are predicated. For example, in the Escher Staircase example we found it m-unimaginable that there is a staircase that both ascends and does not ascend. We concluded from the m-unimaginablity of that proposition that objects of which the properties specified by those proposition are predicated will also be m-unimaginable.

Gregory and Yablo thus must assume that we can make a slide from conclusions about imagined propositions to conclusions about imagined objects in order for their lines of reasoning to accommodate the latter. However, we might wonder whether an evaluation of the modal status of an *object* in fact amounts to nothing more than an evaluation of the modal status of the propositions that predicate properties of it. In the Escher Staircase example, it does seem plausible that if 'there is a staircase that both ascends and does not ascend' is impossible, then no possible object can in fact possess those properties. Even so, if we think that the slide from conclusions about propositions to conclusions about objects works in the Escher case, we then might wonder both whether we are justified in thinking that such a slide will obtain in other cases and if so, where that justification is coming from.

Second, recall that in order to meet the burden of proof for both test cases, Gregory and Yablo must rely on antecedent knowledge of *a priori* necessities. They rely on the fact that GC is necessary if true in order to evaluate it and they rel on the necessity of the law of non-contradiction in order to evaluate the Escher Staircase. Recall that the fact that GC is necessary if true allows them to classify both GC and not-GC as modally undecidable. If GC were contingent, then its unknown truth value would not prevent us from being able to either m-imagine GC or m-imagine not-GC. We can m-imagine either that a given contingent proposition obtains or that it fails to obtain without knowing the actual truth value of that contingent proposition.[31]

In contrast, given that GC is necessary if true, its negation is impossible if false and vice versa. Since we cannot m-imagine impossibilities, we will either be unable to m-imagine GC or we will be unable to m-imagine not-GC. Since we do not know which of the two propositions is in fact impossible, we can make no conclusions about what is m-imaginable or m-unimaginable. That GC is necessary if true thus allows it to come out modally undecidable.

In the second case, we assume that the law of non-contradiction is necessary, and this makes it the case that the negation of the law of non-contradiction will be m-unimaginable. If the negation of the law of non-contradiction is m-unimaginable, then no object of which that property is predicated will be m-imaginable. Just as above, if the law of non-contradiction were contingent then we could m-imagine its negation because we can m-imagine that contingent propositions fail to obtain. It is thus the necessity of the law of non-contradiction that allows us to block all imaginings of scenarios in which it fails to obtain from being m-imaginings.

Given this reliance on *a priori* necessities, we might question what is actually allowing Gregory and Yablo to draw the correct modal conclusions when it comes down to the test cases. It

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[31] Take again the proposition that "Barack Obama has a home library." I do not know whether that proposition is true or false, but not knowing this does not prevent me from imagining that the proposition is true, nor does it prevent me from imagining that the proposition is false.

may seem as though it is not what we imagine that is doing the bulk of the work, but rather some necessary *a priori* truths operating in the background that are. Since, the error theoretic accounts are the most promising, if those lines of reasoning turn out to succeed in virtue of relying on something other than our imaginings themselves, we might wonder whether we ought to consider the imagination as a modal epistemological tool at all.

This conclusion is too hasty. We can grant that appealing to necessary *a priori* truths is doing the work in allowing us to draw the requisite modal conclusions in the test cases, but it does not follow that the imagination plays no role as a guide to those modal conclusions. While *a priori* necessities make it such that a proposition P takes on a certain modal status, it is picking out a modally salient sense of imagining and then trying to imagine P in that sense that gives us epistemic access to the work that the *a priori* necessities are doing. For example, that GC is necessary if true makes it such that GC is modally undecidable if unknown. However, we *recognize* that GC's necessity if true makes it modally undecidable by recognizing that neither GC nor not-GC is m-imaginable.

First, we have seen that without picking out a modally salient sense of imagining, we will not even recognize GC as modally undecidable because we will take ourselves to be able to imagine GC.[32] If we just took fs-imaginability to be a guide to knowledge of possibilities, we would wrongly conclude that GC is possible. Second, it's not the case that solely recognizing that GC is necessary if true (i.e. without trying to imagine GC in any sense) suffices for us to conclude that GC is modally undecidable. Recognizing that claim amounts to recognizing that either GC is the case in every possible world or there is no possible world in which GC is the case. However, after recognizing that claim we must then determine whether there is in fact a possible world in which GC is the case before we can form a modal conclusion about GC. We have already seen that one way to determine whether there is a possible world in which GC is the case to try to *imagine* a possible world in which

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[32] Kung (2016) takes himself to be able to do this very thing (96).

GC is the case. As we have already seen, to imagine a possible world in which X is the case just is to m-imagine X on Yablo's error theoretic account. Thus, we will not be justified in concluding that GC is modally undecidable just in virtue of the fact that GC is necessary if true. We must also determine whether there is a possible world in which GC is the case and we will need to employ the imagination in order to determine this. While I am not committed to this being the only means by which we can make that determination, I hold that it is one trustworthy means of doing so.

Using the imagination to form beliefs about possibilities is plausibly as familiar to us as using perceptual faculties to form beliefs about actualities. While we take ourselves to have a grasp on how perceptual errors arise, our ignorance of the etiology of modal errors puts our modal conclusions on shakier footing. By establishing a tenable explanation of modal error, Gregory and Yablo each offer an error theoretic line of reasoning on which our imaginings can boost the epistemic status of those modal conclusions. They each explicate what allows us to find impossibilities m-imaginable, and in doing so give us reason to think that absent those defeaters, we will be justified in ascribing possibility to what we *do* find m-imaginable. Equipped with the ability to recognize modal error, we can continue go about the already habitual act of using our imaginings to form modal beliefs. We will just be doing so on sturdier epistemic footing.

WORKS CITED

Byrne, A. (2007). Possibility and Imagination. *Philosophical Perspectives, 21*(1), 125-144.

Gendler, T. S., & Hawthorne, J. (2011). *Conceivability and possibility*. Oxford: Clarendon Press.

Gregory, D. (2004). Imagining Possibilities. *Philosophy and Phenomenological Research,69*(2), 327-348.

Gregory, Dominic (forthcoming, 2019). Imagery and Possibility. *Noûs*.

Hill, C. (2016). Conceivability and Possibility. *Oxford Handbooks Online*.

Ichikawa, J., & Jarvis, B. (2012). Rational Imagination and Modal Knowledge. *Nous,46*(1), 127-158.

Kind, A., & Kung, P. (2016). *Knowledge Through Imagination*. Oxford University Press.

Kung, P. (2010). Imagining as a Guide to Possibility. *Philosophy and Phenomenological Research, 81*(3), 620-663.

Kung, P. (2016). You Really Do Imagine It: Against Error Theories of Imagination. *Nous,50*(1), 90-120.

Kripke, S. (1973). Identity and Necessity. In Milton Karl Munitz (ed.), *Identity and Individuation*. New York: New York University Press, 135-164.

Kripke, S. (1980). *Naming and Necessity*. Oxford: Blackwell

Tidman, P. (1994). Conceivability as a Test for Possibility. *American Philosophical Quarterly, 31*(4), 297-309.

Yablo, S. (1993). Is Conceivability a Guide to Possibility? *Philosophy and Phenomenological Research,53*(1), 1-42.