Chapter 6
Modal Knowledge: Beyond Rationalism and Empiricism

Anand Jayprakash Vaidya

6.1 The Epistemology of Modality

The terms 'modal' and 'modality' admit of two kinds of qualification. On the one hand, the terms can be qualified by restriction to the alethic range or to the non-alethic range, such as in the cases of deontic modality and epistemic modality. On the other hand, within the range of alethic uses, the terms can be further restricted to the logical, metaphysical, or physical domains.[1] Where the restriction is on alethic metaphysical modality, the two central questions in the epistemology of modality are:[2]

 (i) What kinds of modal knowledge can we have?
 (ii) For a given kind of modal knowledge, M_k, how is it that we can come to know instances of M_k?

---

[1]A genuine restriction of 'modality' to either the logical, metaphysical, or physical domains depends on whether there is a real distinction between logical, metaphysical, and physical modality. The standard model holds that: (i) physical modality is a proper subset of metaphysical modality, because some physical laws, such as Plank's constant, are metaphysically contingent; and (ii) metaphysical modality is a proper subset of logical modality, since some metaphysically necessary truths, such as that water $=$ H_2O, are logically contingent. Against the standard model, *modal deflationists* argue that metaphysical modality deflates into logical modality; while *modal inflationists* argue that physical modality inflates and exhausts the space of metaphysical modality. Both accounts are anti-realist about genuine metaphysical modality.

[2]Historically, within the epistemology of modality, the core question has always surrounded the issue of metaphysical modality, as opposed to either logical modality or physical modality. Of course this means that if there is no distinct space of metaphysical modality, there is no genuine question about the epistemology of metaphysical modality.

A.J. Vaidya (✉)
San Jose State University, San Jose, CA, USA
e-mail: anand.vaidya@sjsu.edu

The first question admits of four potential answers. It might be the case that we can and do possess knowledge of: (a) the possible, which is also actual; (b) the possible, which is non-actual; (c) the necessary and the impossible; and (d) the essential. A *global skeptic* argues that we don't have modal knowledge of any of (a)–(d). A *local skeptic* only argues that we don't have knowledge in *some* of (a)–(d). The second question, both historically and in the contemporary literature, admits of many different responses.[3]

In the past two decades, 1993–2013, some form of rationalism about modal knowledge has been the dominant position in the epistemology of modality. Rationalism, at minimum, maintains that there is an abundance of modal knowledge of types (b)–(d) which we can acquire through *a priori* reasoning. By *a priori* reasoning the rationalist means reasoning whose justification is evidentially independent of experience, even if the reasoning is enabled by experience. Rationalism in the epistemology of modality can either take a strong or moderate form. The strong form maintains that all foundational modal knowledge is *a priori*. That is all basic modal principles, such as the necessity of identity, the essentiality of origins, the essentiality of fundamental kind, and linking principles between essence and modality are known *a priori*. The moderate form maintains that there is an important connection between *a priori* reasoning about modality and empirical facts. The key difference between moderate and strong forms of rationalism typically revolves around the status of our knowledge of the modal properties of natural kinds and

---

[3] Hale (1996) offers another set of distinctions that are quite important for understanding some kinds of answers to the central questions. The core distinction he draws is between *possibility*-based approaches and *necessity*-based approaches. The distinctions I offer here are intended to go beyond Hale's very important distinctions for the purposes of capturing new theories that have entered the epistemology of modality. See Fischer (2016b) for a critical discussion of Hale's distinction between necessity-based and possibility-based approaches.

On my view the primary distinction in the epistemology of modality is the distinction between reductive and non-reductive theories. A *reductive* account holds that metaphysical modality reduces to some other kind of modality, such as logical or physical modality in the case of the alethic range, or deontic modality in the case of the non-alethic range. The core idea of reductive approaches is that our knowledge of metaphysical modality can be explained through an unproblematic access to a distinct kind of modality. A *non-reductive* account holds that metaphysical modality is a real feature of reality that cannot be reductively explained either within the alethic range or outside of the alethic range. More importantly, non-reductive views hold that there is a genuine question about how metaphysical modality is known, which cannot be given by an account of our knowledge of some other phenomenon. The secondary distinction in the epistemology of modality is between rationalist and empiricist theories of modal knowledge for a given kind of modality, M_k. A *rationalist* theory holds that instances of M_k are known *a priori*. An *empiricist* theory holds that instances of M_k are known *a posteriori*.

Underneath the primary and secondary distinctions there are two additionally useful distinctions. A *uniform* theory holds that all instances of all M_k are either fundamentally rational or fundamentally empirical. A *non-uniform* theory holds that for some M_k, instances of it are known *a priori*, and that for some other M_k, instances of it are known *a posteriori*. A *pure* theory holds that modal knowledge can be cleanly demarcated into being either *a priori* or *a posteriori* for all cases. An *impure* theory holds that modal knowledge in some cases cannot be cleanly demarcated into being either *a priori* or *a posteriori*.

anand.vaidya@sjsu.edu

social kinds, as opposed to mathematical kinds. Some version of the rationalist line has been defended by: Peacocke (1997, 1999), Chalmers (2002), Bealer (2002), Ichikawa and Jarvis (2011), and Lowe (2012). Although Williamson (2007) and Hale (2013) are key contributors to the development of the epistemology of modality from 1993 to 2013, neither are rationalists of either the strong or moderate variety. On the one hand, Williamson (2007) explicitly acknowledges a category of armchair knowledge where many cases of modal knowledge gained via counterfactual reasoning will count as being neither strictly *a priori* nor strictly *a posteriori*. On the other hand, Hale (2013) holds that in the case of geometric kinds, such as a circle, our modal knowledge is *a priori*; while in the case of natural kinds, such as water, our modal knowledge is *a posteriori*.

Over the past 10 years, 2005–2015, there has been, and continues to be, a growing interest in exploring some form of non-rationalism about modal knowledge. The shift in interest derives from at least two sources. On the one hand, there are those who have supplied critical insight into the structure of rationalist theories of modal knowledge, such as Roca-Royes (2010, 2011). These critiques have aimed to expose pressure points or gaps in the rationalist program. On the other hand, there are those that have articulated non-rationalist theories, such as Elder (2005), Jenkins (2010), Kung (2010), Biggs (2011), Sveinsdóttir (2012), Legg (2012), Thomasson (2013), Bueno and Shalkowski (2014), Kment (2014), and Fischer (2016a).

In my view the movement away from rationalist theories of modal knowledge is good for at least two reasons. First, a comprehensive understanding of the epistemology of modality requires an exploration of both rationalist and non-rationalist views of the metaphysics and epistemology of modality. Given that the last 20 years has been focused primarily on modal rationalism, through which many rationalist theories were developed and explored, it is at present useful to enable the growth of non-rationalist theories so as to counterbalance our understanding of modal knowledge. Second, through the use of new research in cognitive science, mathematics, metaphysics, epistemology, and the philosophy of science we might find that contemporary modal empiricism distinguishes itself from historical views offered by:

(i) Modern Philosophers, such as George Berkeley, David Hume, Thomas Reid, John Stuart Mill, and William Whewell.
(ii) Early twentieth century analytic philosophers, such as A. J. Ayer, Ludwig Wittgenstein, and Gilbert Ryle.

and

(iii) Late twentieth century analytic views, such as Simon Blackburn (1987) and Alan Sidelle (1989).

In what follows I will be examining some components of rationalism and some components of empiricism. My ultimate goal is to show that rationalism did suffer from foreseeable problems, and that empiricism will likely face a foreseeable issue. Concerning rationalism, in Sect. 6.2, I present the historical work of Descartes and Arnauld concerning conceivability as a guide to possibility. I argue that there are

three important insights and questions that we can learn from the exchange between Arnauld and Descartes over the nature of conceivability. One lesson can be used to present a critique of a strong form of rationalism about modal knowledge, defended by David Chalmers, known as modal rationalism. The narrative I build out explains the significance of *a posteriori* necessities to the project of strong rationalism, as well as Chalmers's own account of how these necessities do not pose a problem for *a priori* access to modal knowledge about natural kinds. I close Sect. 6.2 with an articulation of Pruss's (2015) argument for the claim that consistency cannot be an account of possibility. I suggest that this is a real problem for certain forms of rationalism that take what is possible for an idealized Laplacian reasoner to be a model for how humans can acquire modal knowledge. Moving on to empiricism, in Sect. 6.3, I examine the question of whether modal empiricism requires modal realism. I argue that although the issue is inconclusive at this stage, there are and could be good reasons for embracing some form of modal anti-realism. In Sect. 6.4 I articulate a new debate about the relation between modal knowledge and non-modal knowledge. The debate is generated off of the work of E. J. Lowe on the priority of modal knowledge to that of non-modal knowledge. I argue that although Lowe's arguments suggest that modal empiricism suffers from a fundamental problem, there are ways to block the argument. In Sect. 6.5 I articulate a novel way of avoiding Lowe's position, I close with a brief sketch of a simple modal epistemology grounded in reasoning about compatibility and incompatibility.

6.2 Conceivability in the Context of Rationalism

6.2.1 Descartes and Arnauld

In contemporary discussions of the epistemology of modality the historical point of departure for presenting rationalism about modal knowledge is the work of Rene Descartes.[4] Descartes both articulated and defended an important and novel strategy for explaining the source of our knowledge of possibility and necessity. He is the main source for contemporary rationalist accounts of modal knowledge based on conceivability. More importantly, contrasting his account with more recent versions of conceivability, such as offered by Yablo (1993) and Chalmers (2002) is useful and insightful. In this section I will present parts of the exchange between Descartes and Arnauld over conceivability with an eye toward articulating three general complaints one can have about the use of conceivability as a guide to possibility. In the following two sections I will build out how these general complaints can be applied to post-Kripkean work on conceivability. Ultimately, I will show that Yablo's account does not suffer from a deep threat, although Chalmers's account does.

---

[4]A great example in the contemporary literature for engaging Descartes is Gendler and Hawthorne's (2002) introduction to *Conceivability* and *Possibility*.

Descartes' epistemology of modality rested on the rule that clear and distinct perception of possibility entails possibility. In the *First Meditation*, Descartes argues that we do not know many of the things we think we know, such as that there is an external world. He reaches this conclusion on the grounds that if we did know it we could not doubt it, but since we can doubt it, we do not know it. In the *Second Meditation*, though, he argues that unlike skepticism about the external world, he is certain (i.e. that he knows) that he is a thinking thing, since he cannot doubt that he is a thinking thing. Using this fact, in the *Third Meditation*, Descartes articulates a general epistemic rule for the direction of the mind in its search for truth. The principle is stated by him as follows:

> I am certain that I am a thinking thing. Do I not therefore also know what is required for my being certain about anything? In this first item of knowledge there is simply a clear and distinct perception of what I am asserting; this would not be enough to make me certain of the truth of the matter if it could ever turn out that something which I perceived with such clarity and distinctness was false. So, I now seem to be able to lay it down as a general rule that whatever I perceive clearly and distinctly is true. (CSM II 1985: 24)

Descartes idea is the following. If in the one piece of knowledge that he has, the marks of clarity and distinctness are present, *then* clarity and distinctness *must* be marks of the truth, since what is known is true. The principle Descartes articulates is:

(CDP)   If *x* clearly and distinctly perceives that *P*, then *P* is true.

Here perception is to be understood as mental perception, which for Descartes is tied to intentional notions, such as understanding and grasping, as opposed to sensational notions. For example, as Descartes notes, we can understand that a 1000-sided figure is larger than a 100-sided figure even though we cannot imagine the difference visually, since the grain of mental representation does not allow for the construction of either a 1000-sided figure or a 100-sided figure. His epistemology of modality can be derived from (CDP), if *P* is taken to be a statement of modality (a statement involving either the concept of possibility, necessity, or impossibility). For example, on (CDP) if one clearly and distinctly perceives that it is possible for the statue of David to exist without David's left arm, then it is true that it is possible for the statue of David to exist without David's left arm, and one knows that it is true in virtue of their clear and distinct perception of the truth. The core idea is that clear and distinct perception of modality provides one with knowledge of modality.

Descartes' most famous application of (CDP) occurs in his *Sixth Meditation* proof of the real distinction between mind and body. Knowledge of this argument is central to contemporary discussions of the epistemology of modality, and it is partly a source for the resurgence of interest in the epistemology of modality. The primary reason for this is that discussions of the epistemology of modality are often linked to the debate over whether materialism, substance dualism, or property dualism is the correct metaphysical characterization of the relation between mind and body. In the *Sixth Meditation* Descartes says:

> First I know that everything which I clearly and distinctly understand is capable of being created by God so as to correspond exactly with my understanding of it. Hence the fact that I can clearly and distinctly understand one thing apart from another is enough to make me

certain that the two things are distinct, since they are capable of being separated, at least by God. The question of what kind of power is required [to do this] does not affect my judgment that the two things are distinct. Thus, simply by knowing that I exist and seeing at the same time that absolutely nothing else belongs to my nature or essence other than that I am a thinking thing, I can infer correctly that my essence consists solely in the fact that I am a thinking thing. It is true that I may have (or, to anticipate, certainly have) a body that is very closely joined to me. But, nevertheless, on the one hand I have a clear and distinct idea of myself, in so far as I am simply a thinking, non-extended thing; and on the other hand I have a distinct idea of body, in so far as this is simply, an extended, non-thinking thing. And accordingly, it is certain that I am really distinct, and certainly can exist without it. (CSM II 1985: 54)

Here Descartes argues for the real distinction between mind and body on the basis of the conceivability of the mind existing independently of the body. According to (CDP), since Descartes clearly and distinctly perceives that his mind can exist independently of his body, it is possible for his mind to exist independently of his body. And since, *x* is *really distinct* from *y* just in case *x* can exist without *y*, Descartes' mind is really distinct from his body.

Although many of the correspondents in the *Objections and Replies* to *The Meditations* raise important and related worries over (CDP), no discussion of Descartes' epistemology of modality is complete without consideration of Antoine Arnauld's objections contained in the *Fourth Set of Objections*.

The core critique Arnauld offers centers on the discussion of a right triangle and the Pythagorean property.

Suppose that someone knows for certain that the angle in a semi-circle is a right angle, and hence that the triangle formed by this angle and the diameter of the circle is right-angled. In spite of this, he may doubt, not yet have grasped for certain, that the square on the hypotenuse is equal to the squares on the other two sides; indeed he may even deny this, if he is misled by some fallacy. But now, if he uses the same argument as that proposed by our illustrious author, he may appear to have confirmation of his false belief, as follows: 'I clearly and distinctly perceive', he may say 'that the triangle is right angled; but I doubt that the square of the hypotenuse is equal to the squares on the other two sides; therefore it does not belong to the essence of the triangle that the square on its hypotenuse is equal to the square on the other two sides'. (CSM II 1985: 142)

There are three ways one can understand Arnauld's triangle objection.

On the *false* interpretation, the triangle objection falsifies (CDP). If (CDP) is understood as an epistemic rule which allows one to move from a clear and distinct perception of possibility to the affirmation of a genuine possibility, then if the situation above is coherent, one would be moving from the clear and distinct perception of a right-triangle lacking the Pythagorean property, to the possibility of a right-triangle lacking the Pythagorean property. However, given that the Pythagorean property is an essential property of any right-triangle, the link between clear and distinct perception and possibility is broken.

On the *irrelevant* interpretation, it could be argued that the triangle objection does not show that (CDP) is false, but rather that the kind of possibility that is involved is one that does not correspond to the real nature of things. Clear and distinct perception of possibility does not imply metaphysical possibility, but instead it implies formal possibility. Where formal possibility has to do with how

our concepts are related or with some way of understanding a thing, rather than with the mind-independent metaphysical nature of the thing. The idea is that it is possible for a triangle to lack the Pythagorean property with respect to a subject's conceptualization of right triangles and the Pythagorean property, but the knowledge of possibility that is thereby gained does not reveal automatically what is objectively true of right triangles.

On the *useless* interpretation, it could be argued that (CDP) is true, and that the kind of possibility involved is the metaphysical kind, but that the central problem is that we can never tell from the inside whether we actually have a clear and distinct perception. A weak version version of this critique maintains that we as subjects are fallible with respect to determining whether a state of affairs is clear and distinct, but we are not unreliable. A strong version of this critique maintains that we as subjects are not only fallible with respect to determining clarity and distinctness, we are also unreliable. The central question is: how do we know that the appearance of possibility in our mind via an exercise of conceiving is in fact non-distorted?

The three interpretations of Arnauld's objection are not intended to capture three complaints that Arnauld raised against Descartes. Rather, they are intended to raise three general worries that one could have about a conceivability-to-possibility thesis. More generally, the issues are as follows. Let CP be a general conceivability-to-possibility thesis:

(CP)   If S conceives that P, then P is possible.

With respect to (CP), one can critically ask all of the following questions.

Counterexample Question: Are there any counterexamples to CP? A counterexample is a case in which S has genuinely conceived of a scenario in which P is possible, but P is in fact not possible. For example, is the triangle case a case in which one has genuinely conceived of a right triangle that does not satisfy the Pythagorean property?

Modal Access Question: What kind of modality does conceivability give us reliable access to? For example, one could argue that whenever one claims to have conceived of something, there must something they have conceived of. As a consequence, conceivability must provide access to some kind of modality. But what kind of modality does conceivability provide us access to? Does conceivability reveal a kind of possibility that is tied only to the concepts we possess? Or does conceivability reveal a kind of possibility that has to do with how things in the world really could be?

Feasibility Question: suppose that conceiving and perceiving are similar in the following sense: in both cases one can never tell from the inside first-person point of view if what they have perceived or conceived is veridical (tracking the way things are). If this holds, one might ask: is conceivability an impractical guide to possibility? As a consequence we can also ask: Is there some special disanalogy between perception and conception that should lead us to put special pressure on conceivability being a poor guide to possibility? Or should we accept that conceivability is as reliable as perception?

6.2.2 *The Problem of* A posteriori Necessities

Although Arnauld's critique of Descartes is well known in the history of philosophy, in the twentieth century the primary problem that rationalist accounts of modal knowledge faced did not derive from his work. Rather, it derived from Saul Kripke's *Naming and Necessity*; in particular his development and defense of a class of propositions that are *necessary*, yet knowable only *a posteriori*. This class of propositions was thought to be non-existent in light of the logical positivists' critique of Kant. In general, by the mid twentieth century, in the aftermath of Quine's work, it was thought that there was no strong distinction between the analytic and the synthetic, and that for all intensive purposes the *necessary* and the *a priori* overlapped, and the *contingent* and the *a posteriori* overlapped. Kripke argued against the alignment of the *a priori* with the *necessary*. His argument involved a defense of the thesis that some terms of a natural language are *rigid designators*, terms that pick out the same thing in all possible worlds, as well as a theory of how we can arrive at knowledge of a necessary truth through *a posteriori* means. Where P stands for a proposition and '$\Box$' stands for 'it is necessary that', Kripke's deduction model for *a posteriori* modal knowledge is as follows:

1. $P \rightarrow \Box P$
2. P

$\therefore$

3. $\Box P$

The epistemological idea is that we can come to know, through *philosophical analysis* and *a priori* reasoning, that a certain conditional holds at (1). The conditional, generally, has a non-modal antecedent, and a modal consequent. For example, Kripke argued that the following is an instance of (1):

(I) $(a = b) \rightarrow \Box(a = b)$, where '$a$' and '$b$' are rigid designators.

At (2) we can come to know that a certain empirical identity claim holds true. For example, the scientific community did come to know:

(E)   Water $=$ H_2O

Furthermore, (E) is known through empirical scientific discovery. And on Kripke's theory both 'water' and 'H_2O' are rigid designators. As a consequence, we can infer (3):

(N) $\Box$(Water $=$ H_2O)

Since our deduction from (1) and (2) involves a premise that is known *a posteriori*, the knowledge we have inferentially gained at (3) is *a posteriori*. Furthermore, since (N) is a necessary truth, it enjoys the status of being an *a posteriori* necessity.

With this brief account of *a posteriori* necessities in place and with respect to the epistemology of modality one can now ask: what problem does the existence of *a posteriori* necessities raise for the project of coming to know that something is

possible on the basis of *a priori* conceivability? The general problem, discussed at length in Yablo (1993), can be understood for the case of water by considering the following claims.

(i) S believes that they have *a priori* conceived of a situation where water is present, but no hydrogen is present, by conceiving of a scenario where a liquid that has similar features to water is present, but mentally asserting that there is no hydrogen in the scenario. Importantly, the conceiving does not use anything other than *a priori* reasoning and scenario construction.

(ii) $\Box$(Water = H_2O) can only be known *a posteriori*.

(iii) If $\Box$(Water = H_2O), then no scenario can contain both water and the absence of hydrogen.

With (i)–(iii) in place the general problem is that *if there are a posteriori necessities, how can we ever be confident that what we have conceived of is not in fact impossible because some yet to be discovered a posteriori necessity shows that what we believe to be possible on the basis of a constructed scenario is in fact impossible*? The critical idea is that it could be the case that there is an *a posteriori* necessity that we don't know, and that ignorance of that necessity explains why we believe that we have conceived of a scenario that purportedly reveals a possibility that is in fact impossible. We can describe the problematic situation as follows:

(a) S believes they have conceived of the presence of water where there is no hydrogen.

(b) $\Box$(Water = H_2O)

(c) The best explanation of why S believes they have conceived of the presence of water in the absence of hydrogen has to do with the fact that they *do not know* that it is necessarily true that water = H_2O.

That is: *were* S to know that $\Box$(Water = H_2O) and that certain necessary truths rule out the construction of certain possibilities, S *would* believe that no situation they can conceive of is a situation in which water is present and hydrogen is absent. Thinking back now to the work of Arnauld, it is possible to bring the problem of *a posteriori necessities* into contact with his critique of Descartes.

In the case of the triangle example, Arnauld's main complaint can be put as follows. It is because S is *ignorant* of the fact that necessarily every right triangle has the Pythagorean property that S believes they have conceived of a scenario in which a right triangle is present but the Pythagorean property fails to hold. That is, in general, our ignorance of certain modal facts explains why we believe that we have conceived something that tracks a genuine possibility. The clarity and distinctness of an intellectual perception often rests on the background knowledge we are operating from. Similarly, one could say that it is because S is *ignorant* of the fact that necessarily water = H_2O that S believes that they have conceived of a scenario in which water is present but hydrogen is absent. The situation in which water is present without one of its essential components is clear and distinct because the subject lacks the knowledge that water essentially contains hydrogen. Just as Arnauld's subject can doubt that a right triangle T has the Pythagorean

property P, and thus be justified in holding that it is possible for a right triangle to exist without the Pythagorean property, a Kripkean subject can doubt that water has hydrogen and thus be justified in holding that it is possible for water to exist without hydrogen. Both of course would be wrong for the same reason: there exists a necessary truth, which is unknown to each, that would block the construction of the conceived of scenario or their ability to doubt, were they to know it. The difference is that in the case of the triangle *a priori* reasoning alone, such as discovery of the Pythagorean theorem, can enable the subject to come to revise their belief that a right triangle without the Pythagorean property is impossible. That is, in the case of a proposition that is believed to be mathematically possible, but is in fact impossible, it is generally, *a priori* discoverable, that what was once believed to be a possibility is in fact not a possibility. However, in the case of water, and its underlying nature H_2O there is no amount of *a priori* reasoning that would enable the subject to discover that what they think is a possibility is in fact not a possibility. In the case of water, and similar natural and social kinds, the problem is that it is not *a priori* discoverable that what was believed to be a possibility is in fact impossible. *A posteriori* investigation is required.

In the wake of Kripke's defense of *a posteriori* necessities it became important to explore the rationalist program in light of how to overcome the barrier presented by *a posteriori* necessities. One immediate reaction to the existence of *a posteriori* necessities is simply to deny that conceivability ever provides one with certainty about whether something is possible. That is, one response is simply to drop Descartes' view that clarity and distinctness of perception of possibility entails possibility. One way to draw out this thesis rests on drawing a distinction between *evidential* accounts and *entailment* accounts.

An evidential account maintains that conceivability only ever provides one with evidence of possibility. But of course conceivability is fallible for a number of reasons, and in certain cases it may even be unreliable. For example, one could say on an evidential account that conceivability provides a fallible but reliable guide to mathematical possibility. However, in the case of reasoning about natural kinds, such as water, it does not provide even a reliable guide, but only *prima facie* justification.

By contrast, an entailment account goes much further. An entailment account aims to show that under certain conditions a proposition *P* is conceivable only if *P* is possible. The core approach is to hold that conceivability, under certain conditions, entails possibility. Let me close this section by discussing briefly Yablo's (1993) evidential account before I turn to a critique of Chalmers defense of an entailment account.

A core thesis of Yablo's account of conceivability is that a certain kind of conceivability can provide a subject with defeasible justification for believing that something is possible. The account focuses on providing a picture of what conceivability is and how we can be justified on the basis of conceivability. It is important for us to look at the following analogy with perception as a way of generating a critical insight into the difference between these two modes of acquiring justification.

1. Perception is fallible and it provides us with justification for believing that something is actually the case.
2. Conception is fallible and it provides us with justification for believing that something is possibly the case.
3. Our knowledge of what defeats perception is larger than our knowledge of what defeats conception.
4. So, although both are fallible we ought to put less confidence in conception than we ought to put into perception.

The core idea is that we have a relatively stronger grasp of how and when perception will fail to deliver an accurate representation of the world. Thus, we can say that when we are in a certain environment we ought to discount how things seem to us. For example:

(i) Suppose *P* is a clear and distinct perception of an external object.
(ii) Either *P* is actual or there is some Q, such that Q explains why it appears that *P*, but in fact it is not the case that *P*.
(iii) There is a catalogue of things that Q could be, and we can come to know some of those instances.

With respect to perception one can come to know that they are, for example, undergoing a hallucination or that the room they are in distorts the light or that there are various fake-entities that are deceptively present in their environment. That is, they can come to know that either some feature of themselves or their environment requires them to hold off on taking the deliverances of perception too seriously. By contrast, the following happens in the case of conception:

(i) Suppose *P* is clear and distinct in conception.
(ii) Either *P* is possible or there is some Q, such that Q is contingent or necessary, and Q entails that P is impossible.
(iii) Other than determining what such a Q is, there are no relevant systematic defeaters we can look to.

That is, the cognitive situation with respect to conception is quite different. Aside from the fact that there could be necessary truths that we don't know that undermine our possibility conceptions, we have a relatively low grip on what kinds of defeaters might explain why our conceptions are going wrong. The base line issue appears to be the quality of our background beliefs. If our background beliefs are good, and our construction of a scenario on the basis of them is careful and attentive, then it is unlikely that our possibility judgments will be subject to any other criticism than that *there could be a necessity unknown to us that undermines the possibility claim we have justification for*. More importantly, though, in assessing evidential accounts it is important to contrast them with other sources of knowledge, such as memory, perception, and intuition, in order to comparatively evaluate how much weight we ought to put into conceivability even as a source of defeasible justification about modal knowledge.

6.2.3   Modal Rationalism

In contrast to Yablo's (1993) evidential account, David Chalmers (1996, 2002, 2004) has offered a sustained articulation and defense of an entailment account of conceivability. A core thesis of his view is *weak modal rationalism*.

(WMR)   Ideal primary positive conceivability entails primary possibility.

One can see how WMR works by first looking over the distinctions that Chalmers draws. The three distinctions are the following: (i) the distinction between *prima facie* and *ideal* rational reflection, (ii) the distinction between positive and negative conceivability, and (iii) the important distinction between primary and secondary possibility grounded in *epistemic two-dimensional semantics*. Using the case of water, the distinctions apply as follows.

Ideal rational reflection on water involves no cognitive limitations on reasoning and available information about water. In addition, it does not suffer from cognitive failings, such as being unable to detect a contradiction in an imagined scenario. *Prima facie* reflection on water is open to lack of appropriate information about water, inattention to detail when constructing a scenario about water, or lack of cognitive resources for reasoning about water. In general the idea is that ideal rational reflection on *x* admits of no better reasoning about *x*. Anything less than idea rational reflection on *x* admits of more superior reasoning about *x*.

A positive conception of water is one that involves the construction of an actual scenario with details that allows one to reason about the presence of water in the scenario. By contrast, a negative conception of water involves not being able to rule out something about a situation. The distinction between positive and negative conceivability can also be given in terms of the notion of *a priority*. S has a negative conception of *P*, when S cannot rule out *a priori* that *P* is true. Of course, S's not being able to rule out *a priori* that *P* is true is no guarantee that S can construct a scenario in which *P* is true. Thus, positive conceivability is more demanding than negative conceivability. Even if every negatively conceivable situation entails a positively conceivable situation, it would not follow that creatures such as ourselves can positively construct a situation simply because we cannot rule something out.

The distinction between primary vs. secondary conceivability rests on epistemic two-dimensional semantics. Because this theory is highly complex I will outline the rough idea of the view as it pertains to the example of water. Consider the question:

(W)   Is it conceivable for water to be present where there is no hydrogen?

The Kripkean answer to (W) is that there is no sense in which it is conceivable for water to be present where there is no hydrogen, because it is necessary that water $= H_2O$. Once we keep that fact in mind, it follows that it is impossible for water to be present without hydrogen. So: how does the distinction between primary and secondary conceivability ameliorate the Kripkean response to (W)? The core idea is to distinguish between two ways in which we can consider a possible world in our reasoning.

A counterfactual consideration of a possible world involves thinking about what 'water' refers to in a possible world based on what 'water' picks out in another possible world. Thus, if we are thinking about a possible world relative to the actual world, given that 'water' refers to H_2O in the actual world, no possible world counts as containing water, if it lacks hydrogen. Chalmers refers to the counterfactual evaluation of a possible world via the notion of *secondary conceivability*. On Chalmers's framework the Kripkean insight about water and the genuine inconceivability of water where there is no hydrogen is captured as:

(S)   It is secondarily inconceivable that water be present where there is no hydrogen, on the assumption that 'water' refers to H_2O.

However, Chalmers insightfully defends the idea that there is another way in which we can evaluate a statement in a possible world. The other way rests on considering the possible world as an epistemic hypothesis about how the actual world is. The actual world evaluation for Chalmers is called *primary conceivability*. When one engages in primary conceivability the reasoning they employ does not utilize what 'water' refers to in a possible world, such as the actual world. Rather, it utilizes the description associated with 'water' for the purposes of fixing the reference of 'water'. Let 'D' stand for the description associated with 'water' that was used for the purposes of fixing the reference of the term in the actual world. For example, D could have been:

(D)   The local potable liquid that fills the oceans, lakes, and streams. The substance that quenches thirst, and falls from the sky as rain, and is such that at a certain temperature turns to snow and ice.

Now if we consider a non-actual world *w* as actual, and in *w* we find that (D) picks out a substance with the chemical formula XYZ, which is not identical to H_2O, then we are rationally led to the conclusion that it could have turned out that water = XYZ. In Chalmers's framework this idea can be put as follows.

(A)   It is primarily conceivable that water is present where there is XYZ and no hydrogen, on the assumption that (D) is the description associated with fixing the reference of 'water', *w* is taken to be the actual world, and in *w*, XYZ satisfies (D).

Primary conceivability, unlike secondary conceivability, allows for an *a priori* link between conceivability and possibility. The general idea is that reasoning via primary conceivability doesn't require that we use any knowledge that comes from the actual world concerning what our terms pick out. Rather, it requires (i) using the descriptions associated with how the reference of our terms had their reference fixed and (ii) reasoning along a conditional whose antecedent provides us with information sufficient for determining whether the consequent is true. Taking our example again, the relevant conditional is:

(AC)   If (D) is the description associated with 'water' for fixing its reference in the actual world, but *w* is the actual world, and in *w* the substance XYZ satisfies (D) rather than H_2O, then water = XYZ.

The information encoded in the antecedent allows us to conclude that the consequent is true. As a consequence, we can *a priori* reason our way to the conclusion that it is primarily conceivable that water = XYZ. On Chalmers's account this in turn allows us to conclude that it is primarily possible that water = XYZ.

To summarize: *A posteriori* necessities, such as that water = H_2O, only restrict our reasoning and *a priori* access to possibility when we are engaging in secondary conceivability. As long as we are engaging in primary conceivability, and our reasoning is ideal, and we are operating with a positively constructed scenario, we can safely conclude that something is possible.

6.2.4   Criticisms of Conceivability-Based Rationalism

An insightful critique and understanding of Chalmers's modal rationalism can be generated off of looking at Arnauld's response to Descartes. Recall that there are three complaints that can be generated out of Arnauld's response to Descartes: the false, the irrelevant, and the useless. I will argue that Arnauld's irrelevant charge can be brought against Chalmers's account. First, it will be instructive to see how the other two charges cannot be waged against Chalmers's account.

The *useless* critique maintains that conceivability is useless since we can never tell from the inside whether what appears to us as being possible is a genuine appearance of possibility and not simply an appearance involving some distortion. This critique cannot be applied to modal rationalism since it makes a distinction between *prima facie* and *ideal* rational reflection. Of course, in the case of *prima facie* reflection we can discover, through further reasoning, that our initial conception is distorted. However, in *ideal* rational reflection there is no further reasoning that would reveal an error. Since weak modal rationalism only holds that we can infer possibility in the case of *ideal* rational reflection, the useless critique simply does not apply – unless of course one maintains that we are never in a state of *ideal* rational reflection, and thus, in another sense, the theory is useless because it does not apply to human conceivers.

The *false* critique maintains that there are counterexamples to the thesis that conceivability can provide infallible *a priori* access to modal knowledge of possibility. The case of the right triangle and the Pythagorean property serves as a test case counterexample. However, the critique does not apply to weak modal rationalism. Since the example does not make a distinction between two ways in which conceiving can be done. While it is true that the necessary truth that all right triangles have the Pythagorean property blocks any conception of a right triangle from failing to have the Pythagorean property we must recognize that the example is given against the background of Euclidean geometry. And thus were we reasoning about right triangles under the conception that there are non-Euclidean geometries, we could discover that there is a mapping of points from a right triangle in Euclidean geometry to a right triangle in non-Euclidean geometry, where the former, but not

the latter, only has the Pythagorean property. So, strictly speaking the *false* critique fails because what seems to be a counterexample can be explained away by appeal to the division between two types of conceiving and possibility. Were we to be reasoning about a possible world in which Euclidean geometry was not true, we could arrive at the conclusion that a right triangle without the Pythagorean property is possible.

However, the complaint that conceivability as a guide to possibility is *irrelevant* because it latches on to the wrong kind of possibility is not irrelevant to weak modal rationalism. The question is: what does primary possibility have to do with metaphysical possibility? Arnauld's question to Descartes was similarly put as how does formal possibility pertain to real possibility? We can grant that conceivability latches on to possibility and that we have reason to believe that something is possible when we have conceived of something, but we might very well wonder what relation there is between the possibility we have *a priori* access to and real possibility. Simply put, it is a real possibility for water that it can be frozen, it is not a real possibility for water that it can be made of a substance, XYZ, that is not at all chemically related to the chemical system we find on Earth and in our universe. Thus, it is important to ask with respect to natural kinds and social kinds, as opposed to mathematical kinds, whether the kind of possibility we have access to *a priori* latches on to the right kind of possibility for the purposes of modal reasoning about natural and social kinds. Ultimately, we must acknowledge that there is a gap between the kind of possibility that primary conceivability gives us access to and the kind of possibility we are interested in when thinking about natural and social kinds.

Finally, it will be useful to list out some critical questions about conceivability theories in rationalism. These questions allow for an evaluative understanding of conceivability.

The Conditions Question one of the central components of modal rationalism is the thesis that humans can actually instantiate the conditions under which reliable justification would be attributable to our exercises of conceiving distinct scenarios over time. If this is not the case, what use is conceivability as a guide to possibility? One question that humans face is: what modal knowledge can we have? If modal rationalism rests on idealizations about human cognition, we might critically ask: how does rationalism shed light on our actual attempt at acquiring modal knowledge? The conditions question is related to the useless critique in the following sense. Conceivability is useless as a reliable guide to possibility, if it turns out that we are never in the appropriate conditions for conceivability to be reliable.

The Dependence Question Does the reliability of conceivability depend on information of a certain kind that really explains how conceivability is successful? It could be that conceivability is a guide to possibility. And it may be that it is a reliable guide because one possesses a distinct form of knowledge, such as knowledge about essential properties, which guides conceivability reliably to a modal conclusion. For example, it is because I know that a right triangle essentially has the Pythagorean property that I find it inconceivable for there to be a right triangle that does not

possess the Pythagorean property. Similarly, it is because I know that it is essential that water $=$ H$_2$O, that I find it inconceivable for there to be water where there is no hydrogen. In both cases inconceivability is explained by knowledge of necessity or essence.

The Limitation Question   Conceivability is a mental operation of the mind. Possibility is a mind-independent feature of the world. Whether a rock located at *L* could have been located at *L** is a mind-independent fact about the world. So one might ask: since conceivability is mind-dependent and metaphysical modality is mind-independent, how confident should we be that our minds have the capacity to track modal reality? For it could be that our minds can only imagine certain kinds of things or only to a certain level of detail. If our minds are restricted in such ways, shouldn't we be correspondingly cautious in passing judgments on what is possible on the basis of conceivability?

The Kind Question   If conceivability operates primarily on concepts, should we hold that conceivability tracks genuine mind-independent possibility or should we hold that it tracks a concept dependent possibility, which may in some cases link up with mind-independent reality? For example, in the case of some concepts it would appear to be okay to draw the conclusion that something is really possible because something is conceptually possible. A blue circle is conceptually possible, since the concept circle and the concept blue are not conceptually contradictory. So we can conclude that it is really possible. However, water is present where hydrogen is absent is conceptually possible, since the concept of water does not entail the concept of hydrogen; however it is not really possible.

The Direction Question   There are two independent directions that one can take with conceivability. (CON) conceivability is a guide to possibility. (INC) inconceivability is a guide to impossibility. Is one direction more secure than the other? If so, which one? Why?

6.2.5   *Deductive Rationalism and the Gap Between Possibility and Consistency*

In this section I want to consider a recent line of reasoning about the relation between consistency and possibility that suggests a deep epistemic worry. I will aim to show how this line of reasoning is relevant by starting with a presentation of a component found in some rationalist lines of reasoning about modality.

   A natural creature we face when we explore rationalism about modal knowledge is the *Laplacian demon* that renders tolerably clear the idea that there can be a computational creature with infinite memory, infinite time, and infinite computing capacity. Such a creature is supposed to be able to perform relatively simple modal tasks and relatively complex modal tasks. Modal tasks typically involve (i) rendering an answer to the question, "Is *p* possible?" and (ii) constructing a scenario in order

to determine whether p is possible. Often the construction task is used as a way to determine an answer to the modal question.

Two ideas that are central to thought about how a Laplacian demon could compute a complex modal task are the ideas of consistency and halting. That is, although we cannot engage in a complicated modal task, because of our cognitive limitations, for any complex modal task, a Laplacian demon could answer the question, "is P possible?" by constructing a scenario, checking the scenario, and halting on the question with an affirmative or negative response. Furthermore, it is because we think that consistency can be a guide to possibility and inconsistency can be a guide to impossibility that we feel confident that the Laplacian demon operating on the notion of consistency could answer a modal question even if we cannot.

However, it is important to distinguish between two kinds of consistency: syntactic vs. semantic. Consider the sentence:

(i)   All bachelors are unmarried males.

In standard practice where Fx stands for x is a bachelor and Gx stands for x is an unmarried male, (i) would be symbolized as:

(ii) $\forall x\,[Fx \rightarrow Gx]$

Now, consider another sentence:

(iii) No bachelor is an unmarried male.

Whose symbolization under the same assignment of meaning to predicate letters is:

(iv) $\forall x\,[Fx \rightarrow \neg Gx]$

Sentence (iv) is consistent, since there is an interpretation under which it is true. Let F = even number and let G = odd number. From this we get:

(v)   No even number is an odd number.

We know that (iv) is consistent since (v) is a true interpretation of it. But this says nothing about (iv) where F = Bachelor and G = Unmarried Male. We cannot understand (iii). Moreover, (iv) is syntactically consistent, but there are interpretations where it is inconsistent, such as (iii).

(iii) No bachelor is an unmarried male.

Even though the sentence is an instance of (iv). The main point is that we can see the difference between syntactic consistency and semantic consistency quite easily. A sentence such as (iii) is semantically inconsistent, but it is syntactically consistent. It is semantically inconsistent because, given what the words mean, it couldn't be true. It is syntactically consistent because, given the rules for capturing the form of the sentence, there is an interpretation under which the form captures something that is true. Thus, we have two notions of possibility: syntactic possibility vs. semantic possibility. The distinction and the example in (iii) present an important theoretical option.

(vi) Some sentences are syntactically possible but semantically impossible.

Pertaining to (vi) Alexander Pruss (2015) has argued that possibility *cannot* be captured by way of consistency. His argument aims to undermine the following thesis:

(C)   If *P* is consistent, then *P* is possible.

He argues that (E) is a counterexample to (C):

(E)   ¬Con(*RA*) is both consistent and impossible.

His argument begins with a specification of the relevant elements that constitute the counterexample. He specifies as follows. Let *RA* be Robinson arithmetic, which is logically weaker than Peano arithmetic because the latter, but not the former, allows for mathematical induction. Take logical consistency to be defined via some logical system *L* based on a Hilbert calculus with recursively specifiable rules and axioms. Let $Con_L(T)$ say that theory *T* is *L*-consistent. With this in place Pruss argues as follows:

1. Either necessarily *RA* is consistent or necessarily *RA* is inconsistent.
2. *RA* is consistent. (Premise)
3. If $Con_L(RA)$, then $Con_L(RA \& \neg Con_L(RA))$. Gödel's Second Incompleteness Theorem.
4. $Con_L(RA \& \neg Con_L(RA))$. (By (2) and (3)).
5. $Con_L(\neg Con_L(RA))$. (By (4))
6. $\neg \diamond (\neg Con_L(RA))$. (By (1) and (2))

(5) and (6) together support (E), which simply says that the statement that Robinson arithmetic is inconsistent is both consistent and impossible. The statement undermines the idea that consistency can be a sure guide to possibility.

Now, on the assumption that Pruss's argument is sound, we can ask an important epistemological question: *what consequences follow from the gap between consistency and possibility for the epistemology of modality*? We can formulate the basic setup of a general argument in the epistemology of modality based on the gap as follows.

1. Theory *T* in the epistemology of modality posits that the detection of consistency is sufficient for inferring that something is possible.
2. Possibility cannot be inferred from consistency.

∴

3. Theory *T* is an untenable account of how we could arrive at all modal truths.

Interestingly, Pruss notes that no contemporary metaphysician actually holds that consistency is possibility. The main reason is as follows:

1. Suppose syntactic consistency captures possibility.
2. If syntactic consistency captures possibility, then by parity of reasoning syntactic inconsistency captures impossibility.

3. (Hesperus ≠ Phosphorus) is syntactically consistent, since it is of the syntactic form (α ≠ β), which is consistent, unlike (α ≠ α), which is inconsistent because it is a violation of the reflexivity of identity.
4. It is necessary that (Hesperus = Phosphorus), since it is true in every possible world, in which 'Hesperus' and 'Phosphorus' pick something out, that they pick out the same thing that they pick out in the actual world, and in the actual world Hesperus = Phosphorus.
5. If it is necessary that (Hesperus = Phosphorus), then it is impossible that (Hesperus ≠ Phosphorus).
6. If it is impossible that (Hesperus ≠ Phosphorus), then (Hesperus ≠ Phosphorus) is inconsistent.

∴

7. (Hesperus ≠ Phosphorus) is consistent and inconsistent. (From 3 to 6)

When we look at (7) we have to note that Hesperus ≠ Phosphorus is syntactically consistent but semantically inconsistent. This is one reason why many theorists would not automatically identify syntactic possibility with semantic possibility. Nevertheless, Pruss goes on to argue that there is a problem for a certain family of views that have the following structure:

(i)   All possibility claims are derivable from a base set of claims that constitute the system L. The system contains the following in its base:

   (a) Logical axioms, such as $\forall x \neg (x \neq x)$;
   (b) Mathematical axioms, such as the axioms of *Robinson arithmetic*;
   (c) Conceptual axioms, such as $\forall x [(\text{Red }(x) \rightarrow \text{Colored}(x)]$;
   (d) Non-conceptual necessities, such as Hesperus = Phosphorus;
   (e) Metaphysical principles, such as the essentiality of origins.

(ii) There is a partition of L into those axioms that pertain specifically to mathematical truths and those that do not. Call the subset of axioms of L that pertain only to mathematics L_M.
(iii) All the axioms of L_M are recursively specifiable and conservative.
(iv) As long as none of the truths in L, that are not in L_M, generate new mathematical truths that alter the axioms of L_M, it will be possible to reproduce the argument that $\neg\text{Con}_L(RA)$ is both consistent and impossible, given that the consistency of RA entails that $\text{Con}_L(RA)$ is necessarily true.

In sum, the problem is that any account of possibility that functions according to (i)–(iv) will have the consequence that consistency is not sufficient for detecting possibility because Gödel's Second Incompleteness Theorem can always be used to generate the problematic statement that $\neg\text{Con}_L(RA)$ is consistent and impossible. Even though Pruss argues that the problem hits a family of views with a certain structure, with respect to epistemology we might wonder whether the problem is a problem for both rationalism and empiricism or just for one. Here I would like to close by suggesting that the result is a problem for any form of deductive rationalism

that rests on the idea of determining what is possible through a Laplacian demon like computing system. It is likely that this result is independent of whether the premises are known only by empirical means or also in virtue of *a priori* means.

6.3   The Threat of Anti-realism Within Empiricism

In this section I want to consider how the transition from rationalism to post-rationalism might go. One direction is to *accept* along with rationalism the thesis of modal realism, but to *deny* the epistemic project of rationalism concerning realism. Another direction is to reject modal realism as part of the rejection of rationalism. The two options bring to light an important question: Does the move away from rationalism ultimately require the adoption of a form of anti-realism about modality? As an entry point into the discussion we should consider four views with respect to the last two decades of research.

	Epistemology of modality	
Metaphysics of modality	Empiricism	Rationalism
Realism		Peacocke (1997, 1999)
Anti-realism	Blackburn (1987)	

In the period in which modal rationalism was prominent, (1993–2013), most, if not all of the views, were associated with a commitment to some form of modal realism. This commitment is most prominent in the work of Peacocke (1997, 1999), who sets out to build a principle-based account of modality that aims to solve the Generalized Benacerraf Problem for the case of metaphysical modality. An opposing view, prior to Yablo's (1993) paper, that involves the combination of modal empiricism and modal anti-realism is advocated by Blackburn (1987). Blackburn develops a projectivist account of metaphysical modality.

What I am suggesting is that in the post-rationalist period of the epistemology of modality we might look at the development of British Empiricism from Locke's empiricism + realism to Hume's empiricism + anti-realism as a case study guide of what is to come. Berkley is taken to have refuted the consistency of Locke's attempt at the combined project of empiricism + realism through his attack on the distinction between primary and secondary qualities, and Hume is thought to have furthered the problem and rendered precise the relevant concerns in the cases of necessity and causation. The exploration of the question at present is whether we can expect a similar trajectory in research on the epistemology of modality from a post-rationalist perspective. Might it ultimately be that in going beyond rationalism about modality we must also reject realism? There is some reason to take this seriously, as is evidenced by the recent and impressive work of Thomas Holden and Amie Thomasson.

At present there are two forms of reductive modal empiricism that put pressure on the idea that we need to hold onto modal empiricism and modal realism jointly:[5] Thomasson (2013) and Holden (2014). In general, a reductive form of modal empiricism aims to reduce or deflate the descriptive component of modal talk to something that is non-descriptive in nature. A way to articulate this point is to see the core move as involving a reduction of alethic modal talk to deontic or epistemic modal talk. However, this is not the only way to see the reduction. Moreover:

Thomasson defends *modal normativism.*

(MN)   The basic function of talk about metaphysical necessity is not to try to describe modal features of the world, but rather, to provide a particularly useful way of expressing constitutive semantic and conceptual rules in the object language.[6]

Holden defends *modal expressivism.*

(ME)   Absolute necessity lies in an act of understanding in that our talk and thought about absolute necessity is a systematic manifestation of our sense of what, as a causal-psychological matter, the human mind can and cannot conceive. When we assert that a given proposition is absolutely necessary, we are expressing an attitude that is prompted and controlled by our sense that we could never successfully formulate the contrary combination of ideas, and that we are in this way forced to regard the original proposition as psychologically inexorable.[7]

What they share in common is *modal non-descriptivism*, which is a rejection of *modal descriptivism*-the thesis that modal talk aims to describe modal reality. What consequences does modal non-descriptivism have for the epistemology of modality?

---

[5]Note that the term 'reductive' is not being used here in the classical sense in which to reduce something is to allow for the elimination of it. Rather, the term 'reductive' is being used more liberally to mean roughly that talk of *x* is really talk about *y*.

[6]See Thomasson (2013: 145).

[7]See Holden (2014: 6–7). Holden clarifies his rendering of Hume on absolute necessity in two important passages. First, he notes: "we can more plausibly interpret Hume as advancing an expressivist account of absolute necessity – an account, that is, that regards our talk about absolute necessity as giving voice to certain non-representational attitudes that we take toward certain propositions, its superficially representational appearance notwithstanding. When we call a given proposition 'absolutely necessary' it is not that we are describing it; nor are we describing the limits of our own imaginations. Rather, we are expressing a certain non-representational attitude . . . " (pg. 7). Second, he clarifies what he means by expressivism as follows: [According to the expressivist treatment of absolute modality] when we pronounce that a certain proposition is absolutely necessary we are giving voice to a non-representational attitude – most likely, the *prescriptive* attitude of insisting that the proposition in question [. . .] be treated as a non-negotiable element in our systems of belief, as a mandatory commitment that we must stick with no matter what empirical data comes in. In labeling a proposition 'absolutely necessary' we are *insisting* upon it, legislating that we are *obliged* to accept it come what may. This prescriptive attitude might be prompted by a sense of the ineradicable imaginative blocks that are a part of human nature, but it does not constitute a report or description of those blocks." (pg. 27).

Does modal empiricism + modal realism offer a more attractive picture of the epistemology of modality than modal empiricism + modal non-descriptivism?

Thomasson argues that one of the most attractive payoffs of MN is that it dissolves problems within the epistemology of modality.

> The most important attraction [of Modal Normativism] is the epistemic advantage of resolving the notorious difficulties in accounting for our knowledge of modal facts. We can rid ourselves of the troubling picture that we must peer into this world or other possible worlds to discover modal facts – troubling since specifically modal facts seem not to be empirically detectable – and so demystify modal knowledge. (Thomasson 2013: 152)

Thomasson's central claims for demystifying modal knowledge based on MN are the following:

1. MN demystifies modal knowledge by considering the move from *using* language in one's home language to be a matter of moving from mastering the rules for properly applying and refusing expressions (as a competent speaker), to being able to explicitly convey these constitutive rules in the object language and indicative mood, and to generalize and reason from them.
2. On MN there is no need to look for truth-makers capable of explaining what makes our modal facts or propositions true.
3. On MN there is no need to posit modal features of the world as the basis for modal knowledge.
4. MN does not entail modal eliminativism under which there are no modal facts or properties.

At this stage of the turn away from rationalism it is not clear that these benefits are truly attractive in the final analysis. For it is possible to capture some of the benefits offered by MN through other accounts of modality that are non-reductive. More importantly, though, it should be noted that the turn away from rationalism does not automatically bring along with it a commitment to realism. And that reductive modal empiricism is a live option.

6.4   Empiricism, Existentialism, and Essentialism

Are there any reasons to be skeptical about a thorough going form of modal empiricism that are not based on the threat of anti-realism? I believe that there is one potential problem for modal empiricism. That is, a modal empiricism that maintains that in the case of natural kinds all modal knowledge can be derived from either empirical investigation or mathematical knowledge alone. No knowledge of metaphysical principles is necessary for genuine knowledge of the modal properties of various kinds of entities. The problem gives rise to a debate that can be used to explore modal empiricism and its consequences. The epistemic problem is developed on the basis of work done by Lowe (2008, 2012). The problem surrounds the question of whether it is possible for us to derive knowledge of possibility and necessity without reference to any prior modal facts. Supposedly the empiricist would want to allow for the possibility of such a derivation. A rationalist would deny that this is possible.

In this section I offer a picture of the problem as well as a diagnosis of how one could respond to the problem. In the next section I develop a specific kind of response to the problem based on an assumption in the generation of the issue.

In his (2008), working off of Kit Fine's (1994) argument against modal accounts of essence, Lowe articulates and defends a position concerning essence and existence that bears significantly on the conceptual landscape of contemporary modal epistemology. He claims that:

> [I]n general, *essence precedes existence*. And by this I mean that the former precedes the latter both *ontologically* and *epistemically*. That is to say, on the one hand, I mean that it is a precondition of something's existing that its essence – along with the essences of other existing things – does not preclude its existence. And, on the other hand . . . .I mean that we can in general *know* the essence of something *X* antecedently to knowing whether or not *X* exists. Otherwise, it seems to me, we could never find out *that* something exists. For how could we find out *that* something, *X*, exists before knowing *what X* is – before knowing, that is, *what it is* whose existence we have supposedly discovered? (Lowe 2008: 40)

Although Lowe does not use the term 'existentialism' in any of his characterizations of his thesis, there is a straightforward way in which his claim about the relation between essence and existence can be understood by reference to the classical thesis of existentialism. Where *existentialism* is understood as the general thesis that existence precedes essence, Lowe can be read above as having defended *essentialism*, the thesis that essence precedes existence. Given that Lowe breaks essentialism into both an ontological and epistemological component, there are four separate theses at play:[8]

Ontological existentialism: *x*'s existence necessarily precedes *x*'s essence.
Ontological essentialism: *x*'s essence necessarily precedes *x*'s existence.
Epistemic existentialism: knowledge of *x*'s existence necessarily precedes knowledge of *x's* essence.
Epistemic essentialism: knowledge of *x's* essence necessarily precedes knowledge of *x's* existence.

The four theses are logically separable in the sense that one can either adopt a symmetry thesis or an asymmetry thesis about the relation between the ontology and epistemology of essence and existence. A *symmetry* thesis maintains that ontological existentialism/essentialism go together with epistemological existentialism/essentialism. While an *asymmetry* thesis maintains that it is possible to combine ontological existentialism/essentialism with epistemic essentialism/existentialism. From the passage above, it is clear that Lowe endorses a symmetry thesis. He provides a defense of epistemic essentialism.

Suppose one is trying to deduce the Kripkean *a posteriori* necessity concerning the planet Venus and the historical names 'Hesperus' and 'Phosphorus' that were used to pick out Venus:

(i) □(Hesperus = Phosphorus).

---

[8]I would like to thank Sonia Roca-Royes for explaining to me why existentialism and essentialism need to be articulated with modal force. That is, with the use of *necessity*.

For a deduction of (i) to succeed on the Kripkean model, two claims have to be established. First, the *a priori* claim that if '*a*' and '*b*' are rigid designators, and $a = b$, then $\Box (a = b)$. Second, the *a posteriori* claim that Hesperus = Phosphorus. Lets assume that the *a priori* claim has already been established and ask the following question: Is it possible to supply a non-modal deduction of the claim that Hesperus = Phosphorus? That is: is it possible to provide an argument that involves no modal claims as premises? Lowe argues against this possibility through consideration of the following argument, which I have reconstructed here as follows:[9]

1. Spatio-temporal coincidence is not the same as strict identity.
2. There is enough empirical evidence to warrant the claim that A and B spatio-temporally coincide.
3. A = B if and only if A and B do not merely coincide spatio-temporally.
4. Objects of kind K, and not objects of kind J, *can* be non-identical and coincide spatio-temporally.
5. Hesperus = Phosphorus if and only if Hesperus and Phosphorus do not merely coincide spatio-temporally.
6. Hesperus and Phosphorus are objects of kind J, and not objects of kind K.

∴

7. Hesperus = Phosphorus.

(1)–(7) constitute what I take Lowe to be offering as the basic ingredients that go into a proof of the truth that Hesperus = Phosphorus. And so (7) can be known by the argument only if (1)–(6) are known. Although (1) is *a priori* and (2) is *a posteriori* both are background assumptions of the argument – claims that would be accepted by both existentialists and essentialists. (1) is grounded, for example, in the claim that two beams of light can be spatio-temporally coincident without being identical, because the locations from which the beams of light are projected are not identical. (2) is grounded in the fact that observation of A and B over time can support the claim that A and B are spatio-temporally coincident. (3) follows from (1), and (5) is an instance of (3). The controversial claims are (4) and (6). If (4) is knowable only *a priori*, then it would appear that knowledge of certain empirical world identity claims depends on *a priori* knowledge of modality.

The debate between epistemic essentialism and existentialism has consequences for one variety of modal empiricism. *Pure* modal empiricism is the thesis that one can arrive at modal knowledge without reliance on any knowledge of necessity or essential properties. Consider the following argument that moves from actual world knowledge to a non-controversial form of modal knowledge.

Actuality-to-Possibility Deduction (APD)

1. S knows that actually *Fa*.
2. If S knows that actually *Fa*, then S knows that it is possible that *Fa*.
3. So, S knows that it is possible that *Fa*.

---

[9]I have reconstructed this argument from section 1: pg. 24–34, based on Lowe's discussion of the case of Hesperus and Phosphorus.

(APD) can provide the basis for developing some forms of modal empiricism. However, if epistemic essentialism is true, then pure modal empiricism, based on (APD) may not work in certain cases. As Lowe's argument suggests, in some cases S *cannot* know that ($a = b$) without knowing some essentialist truths prior. As a consequence, some modal knowledge would depend on essentialist knowledge. However, if epistemic existentialism holds, it is possible to build some form of pure modal empiricism based on (APD). Thus, for some forms of modal empiricism the debate between epistemic essentialism and epistemic existentialism must be engaged.

The direct way to clear a path forward for modal empiricism is to engage (4) of Lowe's argument. There are two main strategies: (a) deny that (4) can only be known *a priori*; (b) accept that (4) can only be known *a priori*, deny that (4) is a problematic kind of modal knowledge for modal empiricism.

Approach (a) could be grounded in the idea that one is only inductively warranted in believing (4) based on actual scientific investigation into material objects in one's environment. The idea is that one believes that objects of kind K, and not objects of kind J, can be non-identical and not coincide only on empirical evidence from considering objects in one's environment.[10] Approach (b) could be grounded in the idea that modal empiricism is consistent with epistemic dependence on essentialist knowledge. The core idea concerns the following question: where does essentialist knowledge (knowledge about the essential properties of entities) fall? On the *inner* modal account, essentialist knowledge is a kind of modal knowledge, and so any dependence of modal knowledge on essentialist knowledge is a problem for a comprehensive modal empiricist. On the *outer* modal account, essentialist knowledge is not a kind of modal knowledge, it is de-modalized, but has modal force (it has the capacity to make certain necessary truths and contingent truths hold). As a consequence, modal empiricism has no problem of dependence when essentialist knowledge is interpreted on the *outer* modal account. However, what is required on the outer modal account is that we have a story of how we know that essential properties determine metaphysical modality.

6.5 Entanglement

There is another response option that one can take to the debate between epistemic existentialism and epistemic essentialism. The option is generated off of how the demarcation between essentialism and existentialism is generated. I would like to close with a consideration and articulation of this option. Consider the initial positions.

Ontological essentialism: *x*'s essence necessarily precedes *x*'s existence.
Epistemic essentialism: knowledge of *x*'s essence necessarily precedes knowledge of *x*'s existence.

---

[10]I would like to thank Sonia Roca-Royes for discussion of this point.

In opposition to *essentialism* is *existentialism*.

Ontological existentialism: *x's* existence necessarily precedes *x's* essence.
Epistemic existentialism: knowledge of *x's* existence necessarily precedes knowledge of *x's* essence.

The contrast between essentialism and existentialism as stated reveals that the two options do not exhaust the possibilities of how the essence of an entity can be related to its existence. The contrast between essentialism and existentialism assumes that the only relation that can obtain between *x's* essence and *x's* existence is the asymmetric relation of *precedence* – either essence precedes existence or existence precedes essence.

However, one might break the assumption and formulate a view that contrasts with both essentialism and existentialism by utilizing the notion of entanglement. *Entanglement* is a symmetric relation: *x* is *entangled* with *y* if and only if *y* is *entangled* with *x*. It can be deployed as an option for theorizing about the relation between *x's* existence and *x's* essence as follows:

Entanglement: *x's* existence is *entangled* with *x's* essence if and only if it is not the case that *x's* existence necessarily precedes *x's* essence and it is not the case that *x's* essence necessarily precedes *x's* existence.[11]

There are two versions of entanglement that line up with the ontological and epistemological varieties of existentialism and essentialism.

Ontological entanglement: *x's* existence is entangled with *x's* essence.
Epistemological entanglement: knowledge of *x's* existence is entangled with knowledge of *x's* essence.

The ontological variety of entanglement is either trivial or incoherent. As a consequence, entanglement theory is an asymmetric account, since epistemological entanglement is not a consequence of ontological entanglement. More importantly, though, the interesting thesis is epistemological entanglement.[12] While it has been initially formulated here so as to involve knowledge, so as to be consistent with essentialism and existentialism as presented by Lowe, in closing I will now briefly develop a version of it that focuses on a notion of *understanding*. The modified thesis is:

KUE: Knowing that *x* exists is entangled with understanding what *x* is.

---

[11]The entanglement thesis was generated off of an objection that Timothy Williamson made at a presentation of my research. His objection was based on the fact that the disjunction between existentialism and essentialism may itself be problematic. His comment was: Why can't both existentialism and essentialism be false?

[12]I would like to thank T. Tahko for bringing to my attention that in Lowe (2014) he articulates a cyclical relationship between certain *a posteriori* facts and certain *a priori* exercises of reasoning. Unfortunately, I cannot work out the exact relation between the entanglement view and the cyclical view. But it appears as if there is a common theme.

There are several features of both *entanglement* and *understanding* that are relevant to unpacking KUE.

With respect to understanding there are three important conditions. First, understanding what x is generally involves either explicitly taking x to have certain essential properties or implicitly operating from a grasp of specific essential properties. Borrowing a phrase from Gareth Evans (1982), I will refer to the implicit or explicit grasp that is involved in one's understanding of a thing x as *a controlling conception* of x, Cx. A controlling conception Cx for a subject S determines when S would withhold judgment about whether x is present in a given situation. For example, if S holds that a table t is no longer present in a described scenario because in the scenario t is presented as *being F*, then it follows that S operates with a controlling conception of t under which t's *being F* is impossible.

Second, the notion "understand what x is" is *not* factive. On the use of understanding involved here, one can understand that a is F, and be wrong about the attribution of F to a.[13] The non-factivity of the notion 'understand what x is" can also be rendered by the phrase: S has an *understanding of a as being F*.

Third, the notion of understanding employed here is such that in certain cases it is neither strictly *a priori* nor strictly *a posteriori*. I will make the assumption that mathematical knowledge is strictly *a priori* so as to offer an example of a case where understanding what a thing is can be seen to be strictly *a priori*. By contrast, I will assume that knowledge about the underlying structure of natural kinds is *a posteriori*. With these assumptions in place it is possible that understanding in the case of mathematics for the purposes of making modal judgments is *a priori*, and that understanding in the case of natural kinds for the purposes of making modal judgments is *a posteriori*. However, there maybe cases which are neither *a priori* nor *a posteriori*. The notion of understanding deployed here is sensitive to that possibility.[14]

With respect to entanglement there are two important properties. First, entanglement involves the notion of *no-clean demarcation*. The idea is that we cannot genuinely separate out the difference between our conceptual schemes for categorizing the world from how the world is independently of our categorizations of it. As a consequence, our very understanding of what exists is caught up and entangled with what there could be on the basis of our conceptual scheme.

Second, entanglement generally occurs with respect to essential properties and not essences. If the essence of an entity x is the sum of x's essential properties, then in many cases we don't have access to all the essential properties of an entity, since there are an infinite number of them. As a consequence, in most cases entanglement will be with respect to essential properties. It is likely the case that in mathematics

---

[13]The notion of understanding used here is not similar to the one presented in Vaidya (2010), where Kvanvig's (2003) account of understanding is applied into the space of the epistemology of essence.

[14]Thus the account of understanding used here is not similar to that of Bealer (2002). Bealer articulates a theory of *determinate understanding*.

and with respect to social kinds we can operate with the essence of an entity, but we cannot in the case of natural kinds. Simple cases of mathematical entities, such as circles, have real definitions that provide us with an essence we can operate with. And simple cases of social kinds, such as tables, have real definitions that we can operate with.[15]

The entangled option also provides a framework for thinking about judgments of possibility and impossibility. The account is based on the relation between a subject's controlling conception of an entity and what the subject takes to be incompatible or compatible with their controlling conception. Consider the following deductive apparatuses.

Possibility:

1. S understands what *x* is via S's controlling conception of *x*, *Cx*.
2. S believes that *Fx* is compatible with *Cx* via some non-syntactic theory of compatibility.
3. S judges on the basis of (1) and (2) that *Fx* is possible.

Impossibility:

1. S understands what *x* is via S's controlling conception of *x*, *Cx*.
2. S believes that *Fx* is incompatible with *Cx* via some non-syntactic theory of incompatibility.
3. S judges that *Fx* is impossible.

The twin deduction schemes provide for a basic theory of modal beliefs that are based on evidence through an understanding of what an entity *x* is. In each case the quality of the evidence that the modal belief is based on is dependent on three epistemic factors: (a) the quality of the understanding that S possesses of *x* via S's controlling conception of *x*, *Cx*; (b) the quality of S's reasoning in determining that *Fx* is incompatible or compatible with *Cx*; (iii) the quality of the theory of incompatibility that S operates with. If S's *Cx* is not epistemically well grounded, then S's corresponding modal beliefs based on *Cx* will not be good. If S's *Cx* is epistemically well grounded, but S reasons poorly in determining the compatibility of *Cx* with *Fx*, then their resultant belief will be based on poor evidence. If S's *Cx* is epistemically well grounded, and their reasoning about the compatibility of *Cx* with *Fx* is sound, but they deploy the wrong theory of incompatibility, then S's resultant modal belief will be based on poor evidence.

---

[15]I would like to thank Bob Hale for bringing to my attention the importance of distinguishing between an essence-based approach to modal knowledge as opposed to an essential-property based approach to modal knowledge. The core advantage of the later over the former is that if the essence of an object contains multiple essential properties it maybe the case, at least with respect to natural kinds, that we can arrive at knowledge of some of the essential properties of an object, and thus make provisional modal judgments based on them, but we cannot make absolute modal judgments, when, for example, we may be ignorant of what additional essential properties an object may have.

The three factors also provide a model for diagnosing modal disagreement. Perhaps the reason why two parties, A and B, disagree about whether *Fx* is possible is because the two parties share different controlling conceptions of *x*. By contrast, perhaps they share the same controlling conception of *x*, but the quality of A's reasoning about the compatibility of *Cx* with *Fx* is superior to B because A and B are not epistemic peers, A being the expert between the two. Finally, it could be that A and B are epistemic peers operating with the same controlling conception of *x*, but the disagreement arises because they don't share the same theory of incompatibility for how one should think about *x*'s compatibility with other entities. For example, A could hold that reasoning about *x* requires thinking about *x* via rules of classical logic. By contrast, B could hold that reasoning about *x* requires thinking about *x* via rules of paraconsistent logic.

The entanglement conception rests on the idea that ultimately our judgments about what is actual and possible are tied up with our judgments about what exists and what things are. We can't cleanly demarcate essence from existence in our basic conceptual scheme. It is unlikely that a full realist account of modality can be made to be consistent with the entangled conception. However, the entangled conception may fall well short of a reductive empiricist account of modal knowledge, on which alethic modality reduces to some form of deontic or epistemic modality.

References

Bealer, G. (2002). Modal epistemology and the rationalist Renaissance. In T. Gendler & J. Hawthorne (Eds.), *Conceivability and possibility* (pp. 71–125). Oxford: Oxford University Press.

Biggs, S. (2011). Abduction and modality. *Philosophy and Phenomenological Research, 83*(2), 283–326.

Blackburn, S. (1987). Morals and modals. In *Essays in quasi-realism* (pp. 52–74). New York: Oxford University Press.

Bueno, O., & Shalkowski, S. (2014). Modalism and theoretical virtues: Toward an epistemology of modality. *Philosophical Studies, 172*(3), 671–689.

Chalmers, D. (1996). *The conscious mind*. Oxford: Oxford University Press.

Chalmers, D. (2002). Does conceivability entail possibility. In J. Hawthorne & T. Gendler (Eds.), *Conceivability and possibility* (pp. 145–200). Oxford: Oxford University Press.

Chalmers, D. (2004). Epistemic two-dimensional semantics. *Philosophical Studies, 118*(1–2), 153–226.

Cottingham, J., Stoothoff, R., & Murdoch, D. (1985). *The philosophical writings of Descartes* (2nd ed.). Cambridge: Cambridge University Press.

Elder, C. (2005). *Real natures and familiar objects*. Cambridge: MIT Press.

Evans, G. (1982). *The varieties of reference*. Oxford: Oxford University Press.

Fine, K. (1994). Essence and modality. *Philosophical Perspectives, 8*, 1–16.

Fischer, B. (2016a). A theory-based epistemology of modality. *Canadian Journal of Philosophy, 46*(2), 228–247.

Fischer, B. (2016b). Hale on the architecture of modal knowledge. *Analytic Philosophy, 57*(1), 76–89.

Gendler, T., & Hawthorne, J. (2002). Introduction: Conceivability and possibility. In T. Gendler & J. Hawthorne (Eds.), *Conceivability and possibility*. Oxford: Oxford University Press.

Hale, B. (1996). Absolute necessities. *Philosophical Perspectives, 10*, 93–117.

Hale, B. (2013). *Necessary beings: An essay on ontology, modality, and the connections between them*. Oxford: Oxford University Press.

Holden, T. (2014). Hume's absolute necessity. *Mind* early view.

Ichikawa, J., & Jarvis, B. (2011). Rational imagination and modal knowledge, *Nous*: 1–32.

Jenkins, C. (2010). Concepts, experience, and modal knowledge. *Philosophical Perspectives, 24*, 255–279.

Kment, B. (2014). *Modality and explanatory reasoning*. Oxford: Oxford University Press.

Kung, P. (2010). Imagining as a guide to possibility. *Philosophy and Phenomenological Research, 81*(3), 620–663.

Kvanvig, J. (2003). *The value of knowledge and the pursuit of understanding*. Cambridge: Cambridge University Press.

Legg, C. (2012). The hardness of the iconic must: Can pierces existential graphs assist modal epistemology? *Philosophia Mathematica, 20*(1), 1–24.

Lowe, E. J. (2008). Two notions of being: Entity and essence. *Royal Institute of Philosophy Supplements, 83*(62), 23–48.

Lowe, E. J. (2012). What is the source of our knowledge of modal truths. *Mind, 121*(484), 919–950.

Lowe, E. J. (2014). Grasp of essences versus intuition: An unequal contest. In A. R. Booth & D. P. Rowbottom (Eds.), *Intuition* (pp. 256–269). Oxford: Oxford University Press.

Peacocke, C. (1997). Metaphysical necessity: Understanding, truth and epistemology. *Mind, 106*, 521–574.

Peacocke, C. (1999). *Being known*. Oxford: Oxford University Press.

Pruss, A. (2015). Possibility is not consistency. *Philosophical Studies, 172*(9), 2341–2348.

Roca-Royes, S. (2010). Modal epistemology, modal concepts, and the integration challenge. *Dialectica, 64*(3), 335–361.

Roca-Royes, S. (2011). Conceivability and De re modal knowledge. *Noûs, 45*(1), 25–49.

Sidelle, A. (1989). *Necessity, essence, and individuation: A defense of conventionalism*. Ithaca: Cornell University Press.

Sveinsdottir, A. (2012). Knowledge of essence: A conferralist story. *Philosophical Studies, 166*(1), 21–32.

Thomasson, A. (2013). Norms and necessity. *Southern Journal of Philosophy, 51*(2), 143–160.

Vaidya, A. (2010). Understanding and essence. *Philosophia, 38*(4), 811–833.

Williamson, T. (2007). *The philosophy of philosophy*. Malden: Wiley-Blackwell.

Yablo, S. (1993). Is conceivability a guide to possibility? *Philosophy and Phenomenological Research, 53*, 1–42.

anand.vaidya@sjsu.edu