

Introduction

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The Central Questions

The contributions and exchanges in this volume aim to address two main questions:

- a *The epistemology of modality*: How can we come to know, or be justified in believing, that something is necessary, possible, contingent, essential, or accidental?
- b *The methodology of philosophy*: What is philosophical knowledge and how can we acquire it? In particular, what are the distinctions between *a priori*, *a posteriori*, armchair, and experimental methods and the prospects of these for the acquisition of philosophical knowledge?

In order to situate the reader, this introduction will only present the major approaches to the epistemology of modality, the experimental critique of rationalist approaches to philosophical methodology, and recent developments in the epistemology of modality.

Kant

Kant is my point of departure, since it is within his work that one finds discussion of both questions. It is standard to interpret him as holding that necessity is the same as universality. Simplifying a bit, I will interpret this as the view that necessity is truth in all possible worlds; and that contingency is truth in some possible worlds, but not all possible worlds.

In his *Critique of Pure Reason*, Kant drew three distinctions between: (i) the epistemic notions of *a priori* and *a posteriori* knowledge, (ii) the metaphysical notions of necessity and contingency, and (iii) the semantic notions of analytic and synthetic truth. A primary concern of the *Critique* was the question: how is metaphysics possible as a discipline, if it is partly based on reason and partly based on experience? Simply put, Kant wondered: how can we acquire informative knowledge about the world, which is nevertheless necessary?

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He held that for a statement to be known *a priori* is for it to be capable of being known independently of sense experience; and for a statement to be known *a posteriori* is for it to be knowable only on the basis of sense experience. For example, while mathematical statements are knowable *a priori*, external world knowledge is essentially *a posteriori*.

Kant's distinction between analytic and synthetic statements is drawn through the notion of conceptual containment. An analytic statement is a statement in which the concept expressed by the predicate term is contained in the concept expressed by the subject term. Using these distinctions, Kant held that:

- i S is *a priori* iff S is necessary.
- ii S is *a posteriori* iff S is contingent.
- iii If S is analytic, then S is *a priori*.
- iv If S is synthetic, then either S is *a priori* or S is *a posteriori*.

Kant's account of philosophical methodology is grounded in synthetic *a priori* cognition. Kant identified philosophy, in particular metaphysics, with the search for synthetic *a priori* knowledge. He held that metaphysics, like mathematics, is a synthetic *a priori* discipline. To arrive at philosophical knowledge, one must gain synthetic *a priori* knowledge—knowledge that is knowable independent of sense experience, which is yet necessary and informative. In virtue of the connections he drew between the *a priori* and the *a posteriori* and the necessary and the contingent, he established a connection between the methodology of philosophy and modal knowledge. In particular, he thought that we acquire philosophical knowledge through rationality and intuition. Kant is often seen as being the first philosopher to set up a partial semantic approach to the epistemology of modality because of the connection he drew between analytic truths and *a priori* truths.

Kripke

In his 'Identity and Necessity' (1971) and *Naming and Necessity* (1980), Kripke challenged Kant's claim that necessity coincides with *a priori* knowledge and contingency coincides with *a posteriori* knowledge.

One of Kripke's counterexamples to Kant's (i) is the identity statement 'Hesperus = Phosphorus'.

1. 'Hesperus = Phosphorus' is true and knowable only *a posteriori*.
2. 'Hesperus' and 'Phosphorus' are both rigid designators, where a term is a rigid designator only if it picks out the same entity in every world in which it has reference.
3. 'Hesperus = Phosphorus' is necessarily true.
- ∴
4. 'Hesperus = Phosphorus' is necessary and *a posteriori*.

One of Kripke's counterexamples to Kant's (ii) is the statement 'I exist'.

1. 'I exist' when asserted by a person is true of and known by that person *a priori*.
2. No human person necessarily exists. Each human person has a contingent existence.
- ∴
3. 'I exist' is contingent and known *a priori*.

Although Kripke himself does not advance a thesis about the nature of how philosophy should be done, he does offer a template for the epistemology of necessity. Where '□' stands for the necessity operator, and '→' for the material conditional, Kripke argues that the following is a model for knowledge of some necessary truths

- | | |
|------|----------------------------|
| (AP) | $P \rightarrow \square(P)$ |
| (E) | P |
| ∴ | |
| (C) | $\square(P)$ |

The basic idea is that through *a priori* philosophical analysis, we can come to know certain conditionals that relate non-modal (probably essentialist) truths to modal truths. For example, Kripke (1980: 114, fn. 56) argues that given that an object *o* originates from a certain particular material origin *m*, it is essential that *o* originate from *m*. It is an *a priori* philosophical matter whether the origin of an object is an essential property of the object. However, once we accept that origin is essential, we are in a position to accept a conditional in the form of (AP). Using a conditional in the form of (AP) as our background metaphysical principle, in addition to empirical truths, such as that a certain table *T* originates from *M*, one can deduce that it is metaphysically necessary that *T* originate from *M*.

1. If *T* originates from *M*, then it is metaphysically necessary that *T* originates from *M*.
2. *T* originates from *M*.
- ∴
3. It is metaphysically necessary that *T* originates from *M*.

(3) serves as an instance of philosophical knowledge that is known *a posteriori*, which is nevertheless necessary and informative. Thus, contradicting Kant's general thesis that philosophical knowledge is *a priori*, *necessary*, *non-analytic*, and *informative*.

Kripke's position on the necessary *a posteriori* presents an obstacle for substantive philosophical knowledge independent of contributions from science. The reason why is that often enough we can think something is

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possible merely because we lack knowledge of what is necessary or essential. Consider the following line of reasoning found in the work of Yablo (1993).

1. S finds p conceivable, because S can construct a situation in which p seems true because there are no obvious contradictions in the scenario that seems to show that p is true.
2. However, Q is true, necessary, only knowable *a posteriori*, and $\Box Q$ rules out that p is possible.
- ∴
3. *A priori* conceiving of the possibility of p is, in general, always open to being undermined by a necessary truth that can only be known *a posteriori*.

Rationalist Accounts

In the wake of Kripke's work, many philosophers sought to rebuild an account of the nature of philosophical knowledge that is *a priori* and rationalistic. The following are the main contributions to this enterprise: Christopher Peacocke's (1999) *Being Known*, George Bealer's (2002) 'Modal Epistemology and The Rationalist Renaissance', and David Chalmers' (2002) 'Does Conceivability Entail Possibility?'

Peacocke (1999) argues that while it is true that some instances of necessity are known *a posteriori* as Kripke shows, we can factor those instances of knowledge into an *a priori* component and an *a posteriori* component as Kripke himself does. Peacocke defends three theses; thesis II is most relevant for moderate rationalism.

Thesis (II): In every case in which a content containing a metaphysical modality is known, any modal premises in the ultimate justification which underwrites the status of the belief as knowledge are *a priori* premises.

Chalmers (2002) argues for weak modal rationalism (WMR).

(WMR): Primary Positive Ideal Conceivability entails Primary Possibility.

Central to WMR is the distinction between primary and secondary intentions, which for our purposes I will skip over. The important result that Chalmers defends is that *a posteriori* necessities don't rule out an *a priori* rational route to possibility and necessity because there are two methods by which we can evaluate a modal claim. Consider (T).

(T): It is possible that water contains carbon and oxygen only and no hydrogen.

On the one hand, (T) can be evaluated as a hypothesis about how our world is, an actual world evaluation. On the other hand, (T) can be evaluated counterfactually with respect to what water could be at another world, given what it is at the actual world. On the counterfactual world evolution, (T) is false taking our world, Earth, as the actual world. Given that water contains hydrogen on Earth, no counterfactual situation relative to Earth contains water, if it fails to contain hydrogen. On the actual world evaluation, however, (T) is true at some scenario, if the description associated with water at that scenario rationally leads one to the conclusion that water contains only carbon and oxygen. For example, if all the lakes and rivers and oceans, and what falls from clouds, and what people use to quench thirst contains only carbon and oxygen, then it is rational to conclude that (T) is true at the scenario. It is furthermore a mistake to hold that water must contain hydrogen from an epistemic point of view because when such a situation is considered as actual, we are rationally led to the conclusion that water doesn't contain hydrogen.

Bealer (1987, 1999) argues for the autonomy of philosophical knowledge based on the claim that philosophical truths must be necessary truths. He states:

In being interested in such things as the nature of mind, intelligence, the virtues, and life, philosophers do not want to know what those things just happen to be, but rather what those things must be.

Bealer (1987, 289)

Bealer's theory of modal reliabilism offers an account of how we have modal knowledge of what is necessary so as to give us access to philosophical knowledge. Bealer's account rests on a theory of determinate understanding of concepts and the notion that intuitions are evidence. The core idea is that we have reliable modal knowledge about what a concept can apply to and what it cannot apply to, based on our determinate understanding of the concept. When our intuitions about concept application are not truth-tracking, it is best explained by the fact that either we were not attentive or we lack determinate understanding. Thus, the autonomy of philosophy from science is grounded in necessary truths and our access to these necessary truths via intuitions based on determinate understanding.

Counterfactual Armchair Accounts

Williamson (2005, 2007a,b) offers a counterfactual theory of modal knowledge that makes an explicit connection between the twin questions of modality and methodology. The key theses of Williamson's counterfactual theory are:

Logical Equivalence: Metaphysical possibility and necessity can be proven to be logically equivalent to counterfactual conditionals.

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Epistemic Pathway: Counterfactual reasoning in imagination through the method of counterfactual development can provide one with justified beliefs or knowledge about metaphysical possibility and necessity.

Consider the following example from Williamson:

Suppose that you are in the mountains. As the sun melts the ice, rocks embedded in it are loosened and crash down the slope. You notice one rock slide into a bush. You wonder where it would have ended if the bush had not been there. A natural way to answer the question is by visualizing the rock sliding without the bush there, then bouncing down the slope into the lake at the bottom. Under suitable background conditions, you thereby come to know the counterfactual: If the bush had not been there, the rock would have ended in the lake.

(2007b: 142)

Simply put, we are justified in *asserting* that *A* is possible when a robust and good counterfactual development of the supposition that *A* does not yield a contradiction. We are justified in *denying* that *A* is possible when a robust and good counterfactual development of *A* yields a contradiction.

Williamson's account of the connection between modality and methodology derives from his commentary on the traditional distinction between *a priori* and *a posteriori* knowledge. Many contemporary theorists maintain that what separates the *a priori* from the *a posteriori* is that in the former case, experience only plays an *enabling* role—a role in enabling possession of a concept for an individual thinker—while in the latter case, experience plays not only an enabling role, but an *evidential* role—the justification for a claim involving the concept requires appeal to experience by the thinker making the claim. However, Williamson (2009) maintains that several instances of counterfactual knowledge (the route by which we acquire modal knowledge) will be neither *a priori* nor *a posteriori* but would fall into the category of what he calls *armchair* knowledge. Williamson's *armchair* knowledge is neither strictly *a priori* nor *a posteriori*.

Hybrid Essentialist Deduction Accounts

E.J. Lowe (2008a, 2012) and Bob Hale (2013) provide a picture of our knowledge of modality that contrasts with accounts that take conceivability (such as Chalmers), intuition (such as Bealer), or counterfactuals (such as Williamson), to be our fundamental source of justification for believing metaphysically modal truths. Lowe and Hale have independently developed accounts of the epistemology of modality based on metaphysical essentialism. The two core theses of *metaphysical essentialism* are:

(i) entities have essential properties or essences that are not merely dependent on language, and (ii) not all necessary truths capture an essential truth or the essence of an entity. Although their views differ at crucial points in the epistemic landscape, the program they share maintains the following:

Metaphysical Grounding: The essential properties or essences of entities are the metaphysical ground of metaphysical modality. When we look for an explanation of why something is metaphysically possible or necessary we ultimately look to the essential properties or essences of the entities involved.

Epistemic Guide: The fundamental pathway to acquiring knowledge of metaphysical modality derives from knowledge of essential properties or essences of the entities involved. When we look for an explanation of how we can know metaphysical modality, we ultimately look to our knowledge of essential properties or essences as the basis upon which we make inferences to metaphysical modality.

Following Fine (1994), who is building off Aristotle's work on essence, Lowe and Hale share the view that the essential properties of an entity are distinct from the mere metaphysical necessities that are true of the entity, given that essential properties are more fine-grained than necessary properties. As a consequence, we cannot simply take essential properties or essences to be what an object has in every possible world in which it exists. While Lowe sees a strong connection between the twin questions of modality and methodology where he uses knowledge of essence arrived at through intuition and understanding as central to philosophical methodology, Hale is more or less silent on the issue of methodology.

Hale is a necessity-first theorist in the epistemology of modality. A necessity-first approach holds that we first arrive at knowledge of necessary truths, and then derive knowledge of possibility through compatibility with knowledge of necessity. So, he is interested primarily in giving an account of our knowledge of necessity. In addition, Hale is not merely concerned with showing that there are necessary truths that can be known *a posteriori*, but rather with showing how the simple inferential model can be used in a great variety of cases.

For example, the *real definition* of a circle is that it is a set of points in a plane equidistant from a given point. Thus, the essence of the kind *circle* is that anything that is a circle is a set of points in a plane equidistant from a given point. The property of being a *circle* is incompatible with the property of being a *rectangle*. Thus, given the essence of circles, it is metaphysically impossible for anything that is a circle to be a rectangle at the same time. Note that the discussion here is not about whether a given circle *c* could have been a rectangle. Rather, the point here is that

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the kind *circle* is incompatible with the kind *rectangle*. Where ‘ES’ is an essentialist operator (read: it is essential that), we move from essence to necessity to knowledge of possibility via the following route.

1. $P \rightarrow ES(P)$, premise
2. $ES(P) \rightarrow \Box(P)$, premise
3. P , premise
- ∴
4. $\Box(P)$, from 1-3 by hypothetical syllogism
5. $\Box(P) \rightarrow \neg\Diamond(Q)$, premise
- ∴
6. $\neg\Diamond(Q)$, from 4-5 by modus ponens

Hale’s aims to offer a robust inferentialist account of modal knowledge that is necessity-first and can handle both *a priori* cases, such as geometric objects, and *a posteriori* cases of natural kinds, such as water, light, and heat.

Empiricist Accounts

Work on the epistemic value of intuitions is part of the base for rationalism, especially in the work of Bealer. However, in the first part of the 2000s, new work on intuitions was used to challenge their epistemic value. Experimental philosophers, such as Jonathan Weinberg, Shuan Nichols, and Stephen Stich (WNS) argued that empirical research challenges the idea that we have reliable intuitions about the application of concepts to cases. They argued that intuitions vary across cultures. Experimental philosophers also argued that one’s intuitions, for example, about whether a given case was a case of knowledge, are sensitive to the order in which the cases are presented.

The period also produced work that argued for empiricist approaches to the epistemology of modality. Empiricists working in the epistemology of modality argued that there were inadequacies in the rationalist program. Sonia Roca-Royes (2010, 2011) argued that rationalist approaches, such as those forwarded by Peacocke (1999) and Chalmers (2002) implicitly rested on knowledge of essence or constitutive principles. In the case of Peacocke (1999), Roca-Royes (2010) draws attention to the fact that on Peacocke’s epistemology of modality, our knowledge of modality is parasitic on our knowledge of constitutive principles, whether these principles are implicitly or explicitly known. For example, we determine that something is possible or necessary for an entity in part through our knowledge of what is constitutive of the entity. If we know that being human is a constitutive property of a given human, such as Tom, then we can come to know that it is *impossible* for Tom to be a zebra, but that it is *possible* for Tom to be born somewhat later than he was actually born. As a consequence, a comprehensive account of modal knowledge is incomplete

without a picture of how we come to know the relevant essentialist or constitutive principles involved in modal knowledge.

Empirically inclined modal epistemologists, like Fischer (2017) and later Mallozzi (2018, 2020, 2021) and Wirling (2020) noticed the relevance of proposing non-uniform accounts of the epistemology of modality. The basic idea of non-uniformism is that modal knowledge can be acquired in different ways depending on what kind of thing one is aiming to get modal knowledge of.

Perceptualists, such as Legg (2012), Strohming (2015), and Legg and Franklin (2017), advanced the non-uniformist approach by challenging the idea that modal knowledge cannot be gained via perception. Strohming (2015) challenges Kant's notion that perception can only tell us what is or is not the case, but not what must be the case or what merely could be the case, by focusing on a class of cases where one gains modal knowledge through perception. For example, consider the case of a cup C on a table T at location L . Arguably, one can see that C could have been at L^* . Non-uniformism is also a driving force in two of the most prominent empiricist approaches to modal knowledge: inductive and abductive accounts.

Sonia Roca-Royes and Bob Fischer both take a modest approach to the epistemology of modality. Roca-Royes (2017, 2018) divides the space of epistemological investigation via the ontological distinction between concrete and abstract entities, thus offering a non-uniform account. Fischer (2017) divides the space of epistemological investigation via a topical distinction between *ordinary* and *extraordinary* claims. Fischer's basic idea is that we are justified in believing an extraordinary modal claim, m , only if we are justified in believing a theory T from which m follows. For example, we are justified in believing that mind-body dualism is metaphysically possible only if we are justified in believing a theory T from which mind-body dualism follows. Fischer holds that *abductive* methods for theory choice, such as using theoretical virtues like simplicity, are central to being justified in believing a theory. If the theory T from which one would be justified in believing that mind-body dualism is metaphysically possible is *not* the simplest theory, all else being equal, one would *not* be justified in believing it, and thus not be justified in believing that mind-body dualism is metaphysically possible.

Finally, while Legg and Roca-Royes defend empiricist accounts of modal knowledge, they remain silent over the proper methodology of philosophy. In contrast, Fischer is interested both in the epistemology of modality and in the proper methodology of philosophy, favoring a theory-based approach.

Beyond the Standard Model

Contemporary work in the epistemology of modality and philosophical methodology aims to go beyond the foundational questions laid out in

the work of Yablo's (1993) paper on conceivability and possibility, Van Inwagen's (1998) skepticism about modal knowledge, and WNS's (2001) skepticism about the reliability of intuitions about cases. Here are some recent developments.

Otávio Bueno and Scott Shalkowski in a series of papers (2009, 2013) have developed a modalist account of modality. They argue that modality is fundamental and cannot be analyzed in terms of quantification over worlds. Simply put, modality cannot be reduced to anything that is completely non-modal. The challenge for their view is to develop an account of the epistemology of modality that makes sense of it. How does one know that something is possible when possibility is irreducibly modal?

Boris Kment (2006a,b, 2014, 2021) offers an account of modality that focuses on comparative possibility. How easily something could have been the case in comparison to something else. Linguists have long focused on comparative modal claims, while philosophers for the most part have stayed away from them. Although Lewis offers an analysis of modality on which the notion of a closest possible world plays a central role, until Kment's work most philosophers had not thought to develop an account of the metaphysics and epistemology of modality that takes the idea of spheres of possibility where something is more easily possible relative to other things.

Amie Thomasson (2020) offers a normative account of modality. On this account, metaphysical modal discourse is not descriptive. Instead, modal vocabulary serves the function of signaling (in the object language) constitutive semantic and conceptual rules. This is, she contends, compatible with the meaningfulness of modal vocabulary and, as such, modal claims are truth-apt and mind-independent: even if no one ever existed, seals would necessarily (still) be mammals.

Barbara Vetter (2015, 2020) continues in the empiricist tradition by offering a perceptual and agency-based account of modal knowledge. She is a thorough-going naturalist. And she joins Timothy Williamson (2009) in being an anti-exceptionalist about philosophical methodology—neither holds the view that philosophy is discontinuous with the sciences because it has a special methodology. However, she differs from Williamson in that she takes potentiality to be a non-reductive basis for modality because modality is explained by potentiality and abilities. And, in addition to Kment (2014), Vetter has also contributed to the development of comparative modality. She has articulated a view where modality is closely tied to potentiality in a way that allows for a graded view of modality. She has argued that necessity is a kind of maximal potentiality. A potentiality that cannot fail to manifest. As a consequence, her view also shows that there are grades of possibilities. Antonella Mallozzi has recently articulated three important moves in the epistemology of modality. In Mallozzi (2018), she argues for a metaphysics-first approach to an account of the

epistemology of modality. This means that she favors epistemic accounts that have solid foundations in the metaphysics of modality. The leading idea is that it doesn't make sense to think that modality can be known if we don't have a strong enough grasp of what the entities are that we know about. Second, Mallozzi (2018) has defended an account of essences that are superexplanatory. The leading idea here is, on the one hand, to demystify essences, and, on the other hand, to show how ordinary scientific explanation can be used to give a serviceable account of what essences are. Finally, in Mallozzi (2020), she applies her account of essences as superexplanatory properties to criticize and improve Williamson's (2009) counterfactual approach, via imagination, to the epistemology of modality.

Anand Vaidya and Michael Wallner (2021) have articulated and defended, what they call, *The Problem of Modal Epistemic Friction*. Take imagination as the candidate for the mental capacity we use in our pursuit of modal knowledge. In order for us to be properly guided to modal knowledge, we cannot apply imagination in a completely unrestricted manner. If no restrictions apply, we could imagine all sorts of impossible things like water without hydrogen, transparent iron, etc. Hence, some restrictions have to be in place. Thus, a central problem in the contemporary study of the epistemology of modality is how to solve the problem of modal epistemic friction in a way that captures the freedom of imagination to generate new information, while at the same time restricting it enough so that the imagination has normative epistemic force.

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