

# Constructive Empiricism and the Metaphysics of Modality

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## ABSTRACT

James Ladyman ([2000]) argues that constructive empiricism is untenable because it cannot adequately account for modal statements about observability. In this paper, I attempt to resist Ladyman's conclusion, arguing that the constructive empiricist can grant his modal discourse objective, theory-independent truth-conditions, yet without compromising his empiricism.

- 1 *Ladyman's dilemma*
  - 2 *Constructive empiricism and modal agnosticism*
  - 3 *Conclusion*
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## 1 Ladyman's dilemma

James Ladyman ([2000]) argues that constructive empiricism is incompatible with van Fraassen's deflationary metaphysics. Specifically, he argues that in order to draw a principled distinction between observable and unobservable states of affairs, the constructive empiricist is committed to believing some of the modal implications of his theories. This is because there are some states of affairs that will never actually be observed, yet which constructive empiricism would still classify as observable. The constructive empiricist is thus committed to believing certain *counterfactual* claims made by his theories—if we were to travel to Jupiter, we would observe the moons—and thus believing some of the modal implications of his theories.

The dilemma for the constructive empiricist is whether a state of affairs being observable is an objective modal fact. For if there were no objective modal facts, whether or not a particular state of affairs counts as observable would depend on which theory we use to describe it; and if this were the case, 'the distinction between the observable and the unobservable really would have no epistemic relevance and constructive empiricism could not be sustained'

([2000], p. 850). Yet on the other hand, if there are objective modal facts ‘it is totally incompatible with constructive empiricism to allow that we could *know* about such things, since that would amount to allowing that scientific theories tell us about more than the actual phenomena’ ([2000], p. 852).

In their reply to Ladyman, Monton and van Fraassen ([2003]) have attempted to deny the first horn of this dilemma. They defend the claim that there are no objective modal facts, and propose instead an essentially metalinguistic account of counterfactuals, which they argue can provide a non-arbitrary distinction between observable and unobservable states of affairs. Monton and van Fraassen have also challenged the second horn of the dilemma, arguing that it is in fact consistent for the constructive empiricist to know objective modal facts, since constructive empiricism—*qua* attitude towards science—is fully compatible with modal realism (cf. Monton and van Fraassen [2003], p. 406). Both responses however have been rejected by Ladyman ([2004]), who questions whether the metalinguistic account is really up to the task, and whether the combination of constructive empiricism and modal realism—although logically consistent—is in fact a retreat to structural realism.

In this paper I explore a third response. Ladyman’s central premise is that in order to distinguish between observable and unobservable states of affairs, the constructive empiricist is committed to believing some of the modal implications of his theories. It is this premise I wish to challenge. In order to draw such a distinction, the constructive empiricist is committed to certain counterfactuals. Moreover, in order for the distinction to be non-arbitrary, these counterfactuals must have objective, theory-independent truth-conditions. Yet it does not follow that the constructive empiricist is committed to the beliefs that Ladyman assumes, nor that he is drawn into the dilemma Ladyman presents. For on the one hand, the constructive empiricist can argue that belief towards his modal commitments is not *existentially committing*, and therefore does not generate Ladyman’s dilemma; and on the other hand, he can argue that his modal commitments can be satisfied by an attitude *weaker than belief*.

## 2 Constructive empiricism and modal agnosticism

The first response draws upon a recent paper by Divers ([2004]), and which I shall refer to as *uncommitted* modal agnosticism. The basic idea is that agnosticism about worlds—in conjunction with a Lewisian analysis of modal discourse—does not entail agnosticism about modality. As Divers argues ([2004], pp. 669–73), many of our modal statements make unrestricted, negative existential claims (‘there is no world where...’), and many of these can be known to be true or false *irrespective* of our belief in other possible

worlds. In particular, since a counterfactual claiming that if A had been the case, then C would have been the case can be analysed as saying that there is no (relevantly similar) world where  $(A \& \neg C)$ , we can know the truth-value of these statements even if we remain agnostic about the existence of other possible worlds.

This suggests the following response to Ladyman. The constructive empiricist concedes that he is committed to certain counterfactuals in order to draw his distinction between observable and unobservable states of affairs, and that these counterfactuals must be given objective, theory-independent truth-conditions. However, he argues that since the counterfactuals in which he is interested are all negative existential statements, he can know their truth-values *without* endorsing the existence of other possible worlds.<sup>1</sup> Consequently, the constructive empiricist denies that his modal statements are entirely arbitrary, for he is endorsing a full-blooded realist analysis; and moreover, he denies that he cannot know the truth-values of these counterfactuals, since such knowledge does not require the existence of epistemologically troublesome worlds.

Nevertheless, there does appear to be a serious difficulty with uncommitted modal agnosticism. The problem lies with the sort of modal statements the uncommitted modal agnostic *cannot* know the truth-value of. If the constructive empiricist wishes to draw a distinction between observable and unobservable states of affairs, not only is he committed to various counterfactuals of the form 'if A had been the case, then C would have been the case', he is also committed to *denying* various counterfactuals of the form 'if A had been the case, then  $\neg C$  would have been the case'. That the first counterfactual is insufficient follows from the fact that it may be vacuously true: maybe we know that there is no world where we travel to Jupiter but fail to observe its moons; yet unless we also deny the second counterfactual—and thus assert the existence of a world where we do travel to Jupiter and see the moons—we cannot ensure interplanetary observability, since we also need to know that it is possible to travel to Jupiter. But even if the truth of the first counterfactual can be known without existential commitment to other worlds, the denial of the second is definitely a *positive* existential claim, and hence not something the uncommitted modal agnostic can maintain. The best he can argue is that we simply do not have sufficient warrant to assert 'if A had been the case, then  $\neg C$  would have been the case'. But lacking warrant to assert such a counterfactual is a far cry from being able to *deny* such a counterfactual. Arguably then, since in order to draw his distinction between

<sup>1</sup> Such knowledge, arguably, is conditional knowledge of similarity: knowledge of which combinatorially generated worlds, if there are any, will count as relevantly similar. For more, see (Divers [2004], pp. 672–3).

observable and unobservable states of affairs, the constructive empiricist needs to both assert and deny various counterfactuals, it looks as if uncommitted modal agnosticism can only offer a partial response to Ladyman.<sup>2</sup>

Uncommitted modal agnosticism seemed a promising strategy for the constructive empiricist to adopt because it conceded a realist analysis of his modal discourse, yet did so in a way that undercut Ladyman's dilemma. Unfortunately, such a strategy only works for a limited domain of modal statements. It does however provide a useful contrast for the second strategy canvassed above: that the constructive empiricist concedes that he is committed to certain objectively construed counterfactuals—including those counterfactuals that are existentially committing—but denies that he is thereby committed to *believing* these counterfactuals, since the modal commitments forced upon him can be satisfied by an attitude weaker than belief.

For consider the sense in which the constructive empiricist is 'committed' to the modal implications of his theories: for certain states of affairs, in order to determine whether or not they count as observable, he must base his judgement upon what would happen in certain circumstances. The constructive empiricist must therefore *employ* various modal statements in order to distinguish between observable and unobservable states of affairs. But it is not clear why the constructive empiricist needs to *believe* these statements. Consider statements about unobservables. For the constructive empiricist, such statements have objective, theory-independent truth-conditions, and are used in all sorts of inferences. But the constructive empiricist is not thereby committed to believing such statements, since he refuses to assert whether or not such entities really exist. Instead, the constructive empiricist adopts a kind of 'committed agnosticism' towards statements about unobservables, and this is found to be sufficient for subsequently using these statements for a variety of purposes.

Similarly then, all that the constructive empiricist needs to do in order to draw his distinction is to adopt a similar kind of *committed* agnosticism towards the modal implications of his theories. Indeed, when the constructive empiricist accepts a theory, the attitude he takes towards statements about unobservables involves not only a literal interpretation of the semantics, but also a substantial epistemological commitment: it 'involves a commitment to confront any future phenomena by means of the conceptual resources of [that which is accepted] . . . it is exhibited in the person's assumption of the role of explainer, in his willingness to answer questions *ex cathedra*' (van Fraassen, [1980], p. 12). Maintaining a similar attitude towards the relevant modal

<sup>2</sup> However, for a programmatic survey of the various strategies open to the uncommitted modal agnostic for dealing with the sort of modal statements he cannot know the truth-values of, see (Divers [2004], pp. 675–83).

statements therefore also seems to be sufficient for subsequently using these statements to determine the distinction between observable and unobservable states of affairs.

Essentially, the constructive empiricist can adopt the same stance of literal semantics plus epistemological commitment towards possible worlds as he does towards unobservable phenomena. But he is also to refuse to assert whether these worlds really exist, and thereby maintain an attitude of *committed* agnosticism towards the modal implications of his theories. This makes the distinction between observable and unobservable states of affairs objective and theory-independent, and thus non-arbitrary. Further, since the constructive empiricist remains agnostic about the existence of other worlds, he does not incur the inflationary metaphysics of modal realism, and hence resists structural realism. And most importantly (in contrast to uncommitted modal agnosticism), given the substantial epistemological commitments associated with his committed agnosticism towards the modal implications of his theories, the constructive empiricist earns the right to *use* these implications to draw a principled distinction between observable and unobservable states of affairs without thereby committing himself to *believing* the modal implications of his theories. Thus again, Ladyman's dilemma is undermined.

Ladyman identifies committed modal agnosticism in his original paper ([2000], pp. 846–7), and rejects it as a possible strategy for the constructive empiricist. Essentially, Ladyman argues that committed modal agnosticism does not 'involve belief in any modal statements objectively construed', while the problems of modality show that the constructive empiricist 'ought to be positively committed to there being objective relations between the actual and the possible' ([2000], p. 849). But as I hope the preceding arguments have made clear, this belief constraint is too severe; whether or not the constructive empiricist *believes* that these truth-conditions are met is irrelevant, provided he is suitably committed to the claim that they are. To respond directly to Ladyman, the constructive empiricist can concede that committed modal agnosticism does not involve belief in any modal statement objectively construed, but that this is not a problem, since one can be 'positively committed' to this objectivity, without thereby believing in it.<sup>3</sup>

A second line of criticism can be found in (Divers [2004], p. 677), who considers committed modal agnosticism, and investigates whether

<sup>3</sup> This is not to say that the committed modal agnostic is committed to all modal statements, or that the distinction between the modal statements he is committed to, and those that he is not, is entirely arbitrary. The modal statements that he is committed to will be those that are consequences of the scientific theories he believes to be empirically adequate. Thus, just as the constructive empiricist has a warrant to be committed to certain statements about actual, unobservable states of affairs, on the grounds that they are consequences of theories believed to be empirically adequate, so too does the committed modal agnostic have a similar warrant to be committed to certain statements about non-actual states of affairs.

countenancing the weaker epistemic attitude of committed agnosticism can help circumvent deficits in what the modal agnostic can assert. Divers however rejects this approach for two important reasons. The first is simply doubt over whether the distinction between believing a statement, and being committedly agnostic towards a statement, can be plausibly maintained. This is of course an old objection to constructive empiricism, and a debate I do not wish to engage with here.<sup>4</sup> Let it suffice to say that *unless* such a distinction can be maintained, constructive empiricism is an untenable position within the philosophy of science, quite independently of the problem of modality: to put it bluntly, either such a distinction is available for the constructive empiricist's response to Ladyman, or constructive empiricism is in such bad shape that Ladyman's dilemma is simply irrelevant.

Divers' second objection is one of motivation. He argues that since one can know the truth-value of various (negative existential) modal statements, there is little motivation for the wholesale modal scepticism entailed by committed modal agnosticism. However, the primary motivation for this position is not modal scepticism, but methodological continuity. The proposal is for the constructive empiricist to simply extend his attitude towards actual, unobservable states of affairs to non-actual states of affairs. Committed modal agnosticism can therefore be seen as a natural extension of constructive empiricism, and is therefore primarily motivated by its ability to provide a simple and economical response to Ladyman's dilemma. Moreover, committed modal agnosticism does not entail wholesale modal scepticism. The position is compatible with most of the modal knowledge Divers mentions. After all, the constructive empiricist who adopts committed modal agnosticism still believes statements about actual, observable states of affairs. Consequently, any of the modal knowledge Divers mentions that is based upon actual, observable states of affairs will still count as legitimate knowledge for the committed modal agnostic: if it is the case that A is true in the actual world (and if A is observable), then the constructive empiricist who endorses committed modal agnosticism is also in a position to know the falsity of 'necessarily  $\neg A$ ', and for exactly the same reasons as Divers gives.

Committed modal agnosticism thus provides at least as good a response to Ladyman's dilemma as uncommitted modal agnosticism. But importantly, it also provides a more successful strategy for dealing with the modal statements the modal agnostic *cannot* know the truth-value of. Recall that if the constructive empiricist wishes to draw a distinction between observable and unobservable states of affairs, not only is he committed to various counterfactuals, he is also committed to *denying* various counterfactuals. However, since the correct analysis of these second counterfactuals involves a

<sup>4</sup> See for example (Horwich [1991]).

positive existential claim, they are not something the modal agnostic can know the truth-value of, and thus they are not counterfactuals the uncommitted modal agnostic can deny. For the *committed* modal agnostic however, the falsity of the second counterfactual is as easily accepted as the truth of the first. Although the committed modal agnostic does not believe in the existence of any possible world besides the actual one, he does adopt an attitude of committed agnosticism towards the existence of various possible worlds<sup>5</sup>; in particular, he can be committed to the existence of an (A&C)-world, and hence has grounds to be committed to both the truth of the first counterfactual, and the falsity of the second.

### 3 Conclusion

Ladyman objects that constructive empiricism faces a dilemma over its account of modal statements: either such statements are about objective modal facts, and are thus unknowable; or such statements are not about objective modal facts, and are thus too arbitrary to do any important work. In this paper I have argued that such a dilemma can be avoided. The constructive empiricist can either argue that such modal statements are not existentially committing, and that therefore Ladyman's dilemma is not vicious; or that he is not committed to believing such modal statements, and that therefore Ladyman's dilemma does not arise.

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<sup>5</sup> The sorts of worlds that the committed modal agnostic will be committed to will be determined by the modal consequences of the scientific theories he believes to be empirically adequate; see footnote 3.

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