

Conceivability, Possibility and Two-Dimensional Semantics

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Abstract

[Kripke \(1980\)](#) famously separates the metaphysical and epistemic modal domains, with supposed necessary a posteriori identity statements such as ‘Hesperus is Phosphorus’, appearing to create an irreconcilable gap between conceivability and possibility. In response to this problem, [David Chalmers \(2002, 2004a, 2006\)](#) uses two-dimensional modal semantics (2DS) to claim that conceivability entails possibility. Specifically, Chalmers makes five claims:

1. metaphysical is ‘secondary’, ‘horizontal’ or counterfactual modality;
2. conceivability is epistemic possibility;
3. epistemic is ‘primary’, ‘diagonal’ or ‘counteractual’ modality;
4. possibility consists in metaphysical and/or epistemic modalities;

thus,

5. conceivability entails (or is a species of) possibility.

In this paper, I accept (1) and (2) (although I question these elsewhere), and deny (3) and especially (4). This being the case, I reject (5) in its two-dimensional variant; 2DS does not show that conceivability entails possibility (even if another argument does). In detail, I argue that no version of 2DS shows that ‘diagonal’ or ‘counteractual’ modality is epistemic modality, or that possibility should best be understood in terms of metaphysical or epistemic modalities. Moreover, reading such metaphysical and epistemic conclusions from logico-semantic premises is illegitimate; to echo Salmon’s (1982) criticism of Kripke’s semantic essentialism, it is akin to pulling a metaphysical rabbit from a semantic hat. Therefore, no version of 2DS validates the move from conceivability to possibility.

1. Introduction

Kripke famously separated necessity and the *a priori*, with supposed necessary *a posteriori* identity statements, such as ‘Hesperus is Phosphorus’,¹ appearing to create an irreconcilable gap between conceivability and possibility; ‘Hesperus is not Phosphorus’ being (apparently)² conceivable but impossible. David Chalmers uses two-dimensional modal semantics (2DS) to claim that conceivability entails possibility.³ In short, Chalmers and other ‘epistemic’ two-dimensionalists⁴ provide the following analyses:

1. *Metaphysical* is ‘secondary’, ‘horizontal’ or *counterfactual* modality.
2. *Conceivability* is *epistemic* possibility.
3. *Epistemic* is ‘primary’, ‘diagonal’ or ‘*counteractual*’ modality.⁵
4. *Possibility* consists in metaphysical *and/or* epistemic modalities.⁶

Thus,

5. Conceivability entails (or is a species of) possibility.⁷

Consequently, despite its being metaphysically impossible, ‘Hesperus is not Phosphorus’ is conceivable *and therefore* possible. Assuming conceivability and possibility to be epistemic and metaphysical modalities respectively however, there are several interpretations of 2DS that differ on precisely these points. Most versions offer some account of metaphysical—or ‘horizontal’—modality, but there is disagreement as to whether 2DS provides an account of the epistemic on the ‘diagonal’, thereby implying a link between conceivability and possibility. Thus the guiding question is; does any version of 2DS show that ‘diagonal modality’ is epistemic modality and that ‘wider’ possibility is best understood in terms of metaphysical *or* epistemic modalities?

In a similar vein to Nathan Salmon’s criticisms of Kripkean essentialism,⁸ my answer is in the negative—reading metaphysical and epistemic conclusions from

¹ Kripke (1980, 109–10). Strictly, this should read, ‘if Hesperus exists, Hesperus is Phosphorus’, in order to avoid the problem of contingent existence. Hereafter, ‘Hesperus is Phosphorus’ is shorthand for the longer locution.

² I doubt this elsewhere (Winstanley, forthcoming), where I argue that what is impossible is, strictly, inconceivable.

³ Chalmers (2002); cf. also (Chalmers, 1996, 1999, 2004a,b, 2006).

⁴ E.g. Jackson (1998). The numbered claims are fairly generic but for present purposes I focus on Chalmers’s work.

⁵ Hereafter, I simplify the terminology, using Stalnaker’s (1978) ‘horizontal’ and ‘diagonal’ to indicate the relevant modalities. See note 14 below.

⁶ I.e. logical, inclusive or. I use the italicised ‘or’ for emphasis hereafter.

⁷ Given the constraints of this paper, there is much more that could be said here. See note 9 below.

⁸ Salmon (1982).

logico-semantic premises is illegitimate. In this paper then, I accept (1) and (2) (although I question these elsewhere)⁹ but I deny (3) and (4). This being the case, I reject (5) in its two-dimensional variant; 2DS does not show that conceivability entails possibility (even if another argument does). Before reaching this conclusion, I outline the move from standard one-dimensional to two-dimensional semantics (§1). I also discuss the epistemic, ‘simple’ and ‘meta-semantic’ interpretations of 2DS (§§2 and 3) and I explain why no interpretation shows either that diagonal modality is epistemic modality or that possibility is best understood in terms of metaphysical *or* epistemic modalities (§4).

2. From one-dimensional to two-dimensional semantics

Kripke’s famous examples of the necessary *a posteriori* appear to create an irreconcilable gap between conceivability and possibility.¹⁰ According to a fairly standard interpretation of a Kripkean, direct theory of reference, intensions are functions from possible worlds to extensions; sentence intensions—i.e. propositions—are functions from worlds to truth-values; predicate intensions are functions from worlds to classes or properties; and singular intensions are functions from worlds to individual objects. In particular, assuming Kripke to be correct, proper names are rigid designators (designating the same referent in all possible worlds in which that individual exists), and the necessity of identity¹¹ holds, such that true identity statements involving proper names are (logically or metaphysically)¹² necessarily true, but only knowable *a posteriori*, not *a priori*. Thus, whereas ‘Hesperus is Phosphorus’ (*H*) is necessarily true but only knowable *a posteriori*, the negation $\neg H$ appears to be conceivable but impossible—hence the gap between conceivability and possibility.

Following the work of early two-dimensionalists,¹³ recent writers such as David Chalmers and Frank Jackson offer an interpretation of 2DS such that $\neg H$ is entirely conceivable *and possible*. These *epistemic* two-dimensionalists agree with Kripke that *H* is true in all worlds *considered as counterfactual*, but add a second dimension of worlds *considered as actual*, such that ‘Hesperus’ could have rigidly designated something else (e.g. Mars) had another world been actual. So

⁹ Winstanley (2005, forthcoming). Normally, I understand metaphysical possibility to be broad logical possibility, but for present purposes it is necessary to view metaphysical possibility as per 2DS and ‘possibility’ as a separate, ‘wider’ notion; ‘logical possibility’ perhaps. Where I write ‘possibility’, this should be understood to be logical possibility in the intended sense (but this is perhaps a central confusion of 2DS!). Occasionally I make this explicit with the relevant insertion. I also understand conceivability as ‘*a priori* possibility’. Chalmers claims that this just is epistemic possibility. Any rejection of (2) therefore, hinges on the question of whether epistemic possibility is *a priori* possibility. This question is considered at the end of §2 and in §4 (and rejected in my (2005) and (forthcoming)).

¹⁰ There is now some history of writers rejecting Kripke’s original example of the contingent *a priori* as a genuine example. Hence, for present purposes, I focus on the necessary *a posteriori*.

¹¹ $\forall xy[x = y \rightarrow \Box(x = y)]$.

¹² See note 9.

¹³ Such as Stalnaker (1978); Kaplan (1978); Evans (1979); Davies and Humberstone (1980).

instead of the standard one-dimensional intension H , ‘Hesperus is Phosphorus’ now expresses two intensions (‘horizontal’ and ‘diagonal’), represented by the following two-dimensional matrix:¹⁴

$$H$$

	w_a	w_b
w_a	T	T
w_b	F	F

With w_a representing the actual world and w_b a world where ‘Hesperus’ happens to designate Mars, in terms of standard, Kripkean one-dimensional semantics, the proposition expressed by H is represented by the top horizontal line. In terms of two-dimensional semantics, this corresponds to H ’s *horizontal intension*, which is necessarily true, i.e. true in all worlds considered as *counterfactual*. Considering w_b as *actual* however, H would be necessarily false, when evaluated at w_a and w_b , given that in w_b ‘Hesperus’ rigidly designates Mars (this is represented by the bottom horizontal line). From this two-dimensional matrix, it is possible to construct H ’s *diagonal intension* (represented by the dashed line), which is contingently true when expressed in and evaluated at each world considered as actual, in turn. Assuming such *counteractual* worlds to be *epistemic* possibilities, diagonal modality is taken to correspond to epistemic modality. In this case, since the diagonal intension is contingent, it is epistemically contingent, i.e. *a posteriori*. Consequently, the necessary *a posteriori* is explained in terms of horizontal necessity and diagonal contingency. So, despite H being metaphysically necessary, $\neg H$ is entirely conceivable (epistemically possible) in virtue of expressing a contingent diagonal intension. In addition, epistemic two-dimensionalists urge that wider, logical modality is best understood in terms of metaphysical *or* epistemic possibility; hence $\neg H$ ’s epistemic possibility entails its *possibility*. That is, conceivability entails possibility.

3. For epistemic two-dimensionalism

Now, for the foregoing argument to be sound, it is necessary that premises (3) and (4) of the ‘Introduction’ be true; that is, (3) diagonal modality must be epistemic modality and (4) logical possibility must consist in metaphysical *or* epistemic modalities. It is on these points that the various interpretations of 2DS most profoundly disagree. It is necessary therefore, to assess Chalmers’s arguments for these theses (in the remainder of this section) and to present briefly opposing interpretations of 2DS (§3).

In ‘The foundations of two-dimensional semantics’, Chalmers argues that epistemic 2DS is the only account that vindicates the ‘Core Thesis’:

¹⁴ Given the spatial constraints, this glosses over many differences in the work of the writers mentioned. For present purposes, I present Chalmers’s account of 2DS using Stalnaker’s terminology (being the most neutral). Stalnaker’s ‘diagonal’/‘horizontal’ broadly corresponds to Chalmers’s ‘primary’/‘secondary’, Jackson’s ‘A’/‘C’ and Evans’s ‘deep’/‘superficial’ distinctions.

(CT) ‘For any sentence S , S is *a priori* iff S has a necessary diagonal intension.’¹⁵

Chalmers takes (CT) to link ‘the rational notion of apriority, the modal notion of necessity and the semantic notion of intension.’ Furthermore, ‘[i]f the Core Thesis is true, it restores a golden triangle of connections between meaning, reason and possibility’ and it promises ‘a view of modality on which there are deep links between the rational and modal domains (potentially grounding a link between conceivability and possibility)’.¹⁶ This being the case, (CT) is exactly issue (3) of the ‘Introduction’—is diagonal modality epistemic modality?

Chalmers sets out his account of ‘Core Two-Dimensionalism’ as follows:¹⁷

- (C1) Every utterance token is associated with both diagonal and horizontal intensions. Diagonal intensions are functions from ‘scenarios’ to extensions; horizontal intensions are functions from possible worlds to extensions.
- (C2) The extension of an utterance token S is identical to (i) the value of the diagonal intension of S evaluated at the actual scenario of S ; and (ii) the value of the horizontal intension of S evaluated at the world in which S is uttered.
- (C3) An utterance token S is metaphysically necessary iff its horizontal intension is true at all possible worlds.
- (C4) S is ‘*a priori* (epistemically necessary)’¹⁸ iff its diagonal intension is true at all scenarios.

The key to understanding the different varieties of 2DS turns on the nature of the modality involved in the counterfactual dimension. Most accounts agree that horizontal or counterfactual modality is metaphysical—i.e. (C3)—but for epistemic 2DS, unsurprisingly, diagonal or counterfactual modality is *epistemic*. That is, as well as the standard space of metaphysically possible worlds, there is in some sense, an epistemic space of ‘worlds considered as actual’, or ‘ways the world might be, for all we know’. For example, Hesperus might be Mars or it might not, and our lakes and Oceans might be full of H_2O or (as is likely) they might not. These ways the world might be are taken to be epistemic possibilities, or ‘scenarios’; possibilities that are not ruled out *a priori*. This being the case, before assessing the argument for (C1), (C2) and (C4), we need to understand the notion of an epistemic possibility or ‘scenario’.

How close are epistemic possibilities to metaphysically possible worlds? Possible worlds, as typically understood, are maximal metaphysical possibilities. Similarly epistemic possibilities, or ‘scenarios’, can be understood to be maximally specific ways the world might be, for all one can know *a priori*. That is,

¹⁵ Chalmers (2004a), 9 (Stalnaker’s terminology).

¹⁶ Ibid. and following.

¹⁷ Chalmers (2004b), 1-2.

¹⁸ *Op. cit.*, 1. Cf. note 13.

scenarios are to epistemic possibility as possible worlds are to metaphysical possibility. This does not entail separate spaces of possible worlds and scenarios, since the latter should be understood as a special case of the former; i.e. ‘centred possible worlds’—an ordered pair of a world and a location within that world.¹⁹ For example, let w_b be centred on a subject (Bob) who thinks that ‘Hesperus is Phosphorus’. Of course, in w_b , ‘Hesperus’ names Mars; hence Bob’s belief is false. And no amount of *a priori* reasoning can rule out the hypothesis that w_b is the actual world. This is what it is to be an epistemic possibility or scenario.

From the notion of epistemic possibility Chalmers argues that there is a strong epistemic dependence of an utterance’s extension on the state of the world. If we know the world is a certain way, we can conclude that the utterance has a certain extension. That is, knowledge of extension depends on which epistemic possibility turns out to be actual. Taking the case of ‘Hesperus is Phosphorus’, if the world turns out as we think it actually has, then Hesperus is Phosphorus. If however, we were to discover that Hesperus is actually Mars, we would judge that Mars is Phosphorus. That is to say, w_b ‘verifies’ the sentence ‘Mars is Phosphorus’.²⁰ More generally, a scenario w_n verifies a sentence S, when the epistemic possibility that w_n is actual is an instance of the epistemic possibility that S is the case. Chalmers takes this to suggest that ‘[v]erification captures the way we use language to describe and evaluate epistemic possibilities.’²¹ This dependence can be represented by the ‘epistemic intension’ of an utterance. In the same way that I described intensions as functions from possible worlds to extensions at the beginning of §1, epistemic intensions are functions from scenarios to extensions. If we are considering sentences, epistemic intensions are functions from scenarios to truth-values; that is diagonal intensions. Thus we have the first move in the game to prove that diagonal necessity is apriority; diagonal intensions are best understood as epistemic intensions. This is the main argument for the diagonal points in theses (C1) and (C2) of Chalmers’s Core Two-Dimensionalism. Thesis (C3) is agreed by most two-dimensionalists, so let us move on to (C4).

Chalmers now needs to argue that diagonal—or epistemic—necessity is apriority. Note however, that (C4) equates apriority with epistemic necessity. So, if we accept that diagonal intensions are epistemic intensions, then by (C4), diagonal necessity just is apriority, since epistemic necessity and contingency *just are* apriority and aposteriority respectively. However, to recall Nathan Salmon’s anti-Kripkean phrase, ‘the metaphysical rabbit is already out of the semantic hat’. Why should we believe that diagonal intensions *are* best understood as epistemic intensions? Aside from a more or less plausible story, Chalmers has done little to convince us that this is the case. Now, a 2DS satisfying the Core Thesis would be appealing, and a response to the Kripkean necessary *a posteriori* would be

¹⁹ Or, with increasing complexity, an ordered triple of (world, location, time), or an ordered quadruple of (world, location, time, person (or point of view)). For present purposes I shall understand a centred possible world to be an ordered pair.

²⁰ Chalmers (2004a), 21. See Evans (1979); Yablo (1993, 1999) for related uses of the ‘verify’.

²¹ Chalmers *op. cit.*

philosophically gratifying. In addition, running repairs to the ‘golden triangle’ of meaning, reason and modality would be out of this world. However, Chalmers has so far, given us no reason to believe that the golden triangle is anything other than ‘out of this world’, qua illusory or unreal, or, at least, non-actual. Moreover, there are compelling reasons that tell against the plausible story.

4. *Against epistemic 2DS*

We began with the question: is diagonal modality epistemic modality? Chalmers tells a plausible story that diagonal intensions are epistemic intensions and insists that apriority is epistemic necessity; hence diagonal necessity is epistemic necessity (apriority). According to Chalmers then, we have a biconditional represented by thesis (C4) of ‘Core Two-Dimensionalism’ and the Core Thesis:

(C4*) *S is a priori* iff *S is diagonally necessary*.

This being a biconditional, there are two potential directions of objection; *S* might be *a priori* and not diagonally necessary; and *S* might be diagonally necessary and not *a priori*. These two objections are present in the different interpretations of 2DS; *contextualist* or *meta-semantic 2DS* on the one hand and *semantic 2DS* on the other. Let us examine each in turn.²²

First, the *meta-semantic* interpretation is put forward by Robert Stalnaker, in a series of papers.²³ Without presenting the details of Stalnaker’s account, he begins by assuming a standard, externalist, one-dimensional semantics along more or less Kripkean lines. 2DS is then introduced to understand context, and the ‘baggage’ that listeners and speakers bring to bear in conversations (*à la* Gricean conversational implicature). A key distinction within Stalnaker’s semantics is that of ‘semantic value’ and ‘foundational (or meta-) semantics’.²⁴ Briefly, the semantic value of a linguistic item *L* is its extension (and for certain *L*s, intension), whereas *L*’s meta-semantics concerns how its extension is fixed. For Stalnaker, the semantic value of a name is simply its extension, whereas for Chalmers it is both intension and extension. Hence, for Stalnaker, if 2DS were to be ‘semantic’, names could not vary in semantic value, whereas for Chalmers the semantic value of a name can vary in the diagonal or epistemic dimension. Alternatively, for Stalnaker the meta-semantics of a name might be descriptive, even though at bottom, the descriptions turn out to be direct or causal. Thus, according

²² The following is a very brief summary of the salient features of the interpretations of 2DS most relevant to the two lines of objection I mention. For a more detailed criticism of general 2DS (from within philosophy of language and semantics—as opposed to my more ‘external’ criticisms), the reader is referred to Soames (2002) and especially (2005). For some response to Soames, see Chalmers (2004*b*, 2006).

²³ Stalnaker (1978) is contextualist despite the ‘apriorist’ remarks at p. 320. The meta-semantic Stalnaker emerges in (1997) and (2004).

²⁴ See Stalnaker (1997) and (2004).

to ‘meta-semantic’ 2DS, given descriptive or non-rigid foundational semantics, meaning can vary in the diagonal dimension.

Stalnaker’s main example comes from mathematics. Consider an utterance of ‘ $7 + 5 = 12$ ’ (M), where the speaker is uncertain whether the intended meaning is the usual base-10 meaning or one that uses base-8 notation.²⁵ Statements such as M are usually considered paradigm expressions of necessary and *a priori* truths. However, allowing the meta-semantics to vary in the way described, M would have a necessary horizontal and contingent diagonal. Similar examples would be ‘the internal angles of a triangle add up to 180° ’ when the speaker is uncertain whether the relevant geometry is Euclidean or Riemannian; and even ‘Hesperus is Hesperus’ when the speaker is unaware whether the first ‘Hesperus’ names Venus or Mars. The point being, that ‘any utterance, no matter how trivial the proposition that it is in fact used to express, might have been used to say something false, and a person might have misunderstood it to say something false’.²⁶ That is, if we can vary the meta-semantics on the diagonal, a necessary *a priori* statement can have a *contingent* diagonal intension; i.e. apriority does not entail diagonal necessity.

Second, *semantic* 2DS is put forward by Martin Davies,²⁷ who argues that names have their extensions essentially; have their meanings exhausted by their extensions; and are, consequently, ‘deeply rigid’ designators:

I assume that the semantic contribution of an ordinary proper name is to be stated in an object-dependent way... An ordinary proper name cannot refer to an object other than its (actual) bearer without a change in meaning.²⁸

Assuming the (meta-) semantics so fixed, meaning cannot vary on the diagonal, so the 2D matrix for an utterance such as ‘Hesperus is Phosphorus’ would be true in every cell. That is, apparently *a posteriori* identity statements between proper names would have necessary diagonals; i.e. diagonal necessity does not entail apriority.

So, we appear to have—at least—three viable interpretations of 2DS. Meta-semantic 2DS assumes that meaning can vary on the diagonal, hence there are *a priori* statements that are diagonally contingent. Semantic 2DS assumes that meaning is fixed on the diagonal; hence some *a posteriori* statements will be diagonally necessary. *With* Chalmers, neither meta-semantic, nor simple 2DS vindicates the Core Thesis (C4*) that diagonal necessity is apriority. Thus, neither Stalnaker nor Davies’s 2DS can provide an account of the *a priori*, and therefore neither can fully respond to Kripkean gap between conceivability and possibility.

²⁵ Where ‘ $7 + 5 = 12_8$ ’ states that ‘ $7 + 5 = 10_{10}$ ’, since base-8 notation uses the same numerals from 1 to 7, then $10_8 = 8_{10}$, so $12_8 = 10_{10}$.

²⁶ Stalnaker (2004), 312.

²⁷ Davies (2004). Stalnaker might call this the ‘strict semantic’ or ‘externalist’ interpretation.

²⁸ Davies (2004), 110–1.

Chalmers's epistemic 2DS at least offers such a promise, so perhaps we should accept his version after all? Well, *against* Chalmers, it is not clear that epistemic 2DS vindicates (C4*) either. A potential criticism of all three accounts—and of Chalmers's in particular—is that they read metaphysical conclusions from the two-dimensional conclusions; i.e. something akin to pulling a metaphysical rabbit from a two-dimensional hat, which has in turn materialised from semantic thin air. I now turn to my argument for this negative claim.

5. Why no version of 2DS shows that conceivability entails possibility

Let us accept for the sake of argument Chalmers's account of 2DS; that is, diagonal necessity is apriority, such that 'Hesperus is Phosphorus' is necessary *a posteriori* qua horizontally necessary and diagonally contingent. Accordingly, it is entirely conceivable *and possible* that Hesperus is not Phosphorus, given the epistemic possibility of w_b . The key problem with the claim that diagonal is epistemic modality however is what it entails; specifically, any diagonally possible intension is epistemically possible. Assuming that conceivability is equivalent to epistemic possibility,²⁹ this entails that any utterance with a diagonally possible intension, expresses a conceivable *and therefore possible* intension. The problem with this implication is related to—indeed underlies—Chalmers's argument for the possibility of zombies in *The Conscious Mind*.³⁰ Let us briefly turn to that argument, in order to understand the current problem.

The argument for the logical possibility of zombies is used to demonstrate that consciousness does not logically supervene on the physical. Briefly, zombies are conceivable, hence logically possible, so there is a possible world where there are non-conscious physical duplicates of conscious beings—i.e. consciousness does not logically supervene on the physical. In *The Conscious Mind*, Chalmers seems to suggest that the relevant possibility is conceptual and that conceptual coherence establishes logical possibility:

[T]he question is whether the notion of a zombie is conceptually coherent. The mere intelligibility of the notion is enough to establish the conclusion. . . . If no reasonable analysis of the terms in question points toward a contradiction, or even makes the existence of a contradiction plausible, then there is a natural assumption in favour of logical possibility.³¹

This—along with the ensuing argument—seems to amount to: if p is conceptually coherent then p is logically possible. In 'The foundations. . .' Chalmers points out that the earlier argument was confused in terms of conceptual and

²⁹ As Chalmers does in (1996) and (2002).

³⁰ Chalmers (1996), 94ff.

³¹ *Op. cit.*, 96.

epistemic possibility and so should now be understood as invoking epistemic possibility alone.³² Nevertheless, Chalmers claims that epistemic possibility is *still* genuine possibility, since the arguments of *The Conscious Mind*, so reconstructed, are sound; that is epistemic possibility entails possibility *simpliciter*:

I think that [diagonal] intensions as I conceived them [in Chalmers (1996)] were much more like epistemic intensions than like contextual intensions [...] Certainly, one must interpret [diagonal] intensions as epistemic intensions to make sense of the applications of [2DS in this work]. If one does, I think the resulting arguments are sound.³³

This being the case, what are we being asked to accept? I think the implications of the reconstructed argument are as follows, and as pictured in the matrix for the utterance ‘Dave is not Chalmers’ ($\neg D$):³⁴

$\neg D$

	w_a	w_z
w_a	F	F
w_z	T	T

First, in line with his analysis of H (and more relevantly $\neg H$), Chalmers ought to say that $\neg D$ would be horizontally (metaphysically), necessarily false when uttered in w_a (the actual world) and evaluated at w_a and w_z (a putative zombie-world containing a non-conscious physical duplicate of Dave, perhaps called ‘z-Dave’). This is because, although z-Dave appears to be a genuine possibility, when we assume the usual Kripkean paraphernalia (which all two-dimensionalists do in the horizontal dimension), since Dave is (horizontally, metaphysically) necessarily Chalmers, Dave is necessarily not z-Dave. So, counterfactually, $\neg D$ expresses a necessarily false horizontal intension.

Second, considered horizontally and with w_z as actual, $\neg D$ would be necessarily true when evaluated at w_z and w_a . This is because, with w_z as actual, we can vary the (meta-) semantics, such that Dave now happens to name z-Dave, hence necessarily, Dave is z-Dave. Third, considered diagonally, $\neg D$ expresses a contingent diagonal intension, i.e. $\neg D$ is epistemically possible or conceivable. In virtue of its conceivability, and given that logical possibility should be understood in terms of metaphysical or epistemic possibility, $\neg D$ is (logically) possible. Thus we have our link between conceivability and possibility: Dave’s being z-Dave is conceivable qua diagonally qua epistemically qua logically possible.

The problem now is that this argument posits such a strong link between conceivability, diagonal and logical possibility, that all sorts of modal conclusions are available. For example:

- (i) I can conceive of a necessarily existing being—God.

³² Chalmers (2004a), 63–4.

³³ *Op. cit.*, 64.

³⁴ Assuming that D is ‘Dave is a Chalmers’.

- (ii) There is at least one diagonal world (scenario) where God exists—God is epistemically possible.
- (iii) Therefore God is logically possible—God exists in at least one possible world.
- (iv) Therefore God exists in all possible worlds.³⁵

Of course, this argument is poor, obvious failings being the move from diagonal or epistemic possibility to logical possibility; i.e. (ii) to (iii), and even (i) itself; how *conceivable* is a necessarily existing being? Chalmers has in fact replied to such an objection, arguing that a necessarily existing God is strictly inconceivable:

Such a god may be conceivable in the sense of “not obviously inconceivable”, but in no stronger sense. I certainly can form no clear and distinct conception of such a god...³⁶

The problem with this reply is that the sense of conceivability that Chalmers dismisses is exactly the sense of conceivability invoked in *The Conscious Mind*, i.e. non-contradiction; conceptual coherence; intelligibility. Putatively necessarily existing entities—e.g. gods; propositions; numbers; universals—do not seem obviously conceptually incoherent. So perhaps we need a better notion of conceivability? How about epistemic possibility? Well, surely I can imagine a scenario (epistemic possibility) that verifies the existence of a necessary deity—something like Monty Python’s *Holy Grail* springs to mind. The point is, conceivability is the very notion that Chalmers’s 2DS is designed to explain and the move from (ii) to (iii) is the very move he wants to validate; conceivability qua diagonal possibility entails logical possibility. The near equation of epistemic and logical possibility however allows too much into the realm of possibility, necessity and actuality; e.g. zombies, gods, propositions, numbers—more to the point, whatever, I can imagine to be epistemically possible. Now, if I can imagine an epistemic scenario to verify both p and $\neg p$, we seem to be in trouble. And, surely it is possible to imagine scenarios verifying both God’s existence and his non-existence. This being the case, instead of saying that conceivability entails possibility, we ought to say that such entities as gods and zombies are ‘open conceivabilities’ that radically underdetermine possibility. So, it appears that we do need better notions of conceivability and possibility than are suggested by *this* version of 2DS. Conceivability and possibility are epistemic and modal, metaphysical notions, and 2DS is a semantic framework. It looks like something has gone seriously wrong.

The diagnosis, as I have been hinting all along, is that Chalmers is trying to draw epistemic and modal conclusions from semantic premises. This pattern

³⁵ Stephen Yablo makes a similar, and I think, successful point in [Yablo \(1999\)](#).

³⁶ [Chalmers \(1999\)](#), 484.

of reasoning is illegitimate. As I have stated above—and re-calling Salmon’s criticisms of Kripkean essentialism—this is akin to pulling a metaphysical rabbit from a two-dimensional hat, which has in turn materialised from semantic thin air. In order to draw such metaphysical conclusions we need to understand conceivability and possibility themselves, not two-dimensional reconstructions thereof.

6. Conclusion

My initial question concerned the relationship between metaphysical and epistemic possibility, conceivability and (logical) possibility. Chalmers claims that epistemic two-dimensional semantics provides justification for an entailment relationship between conceivability and possibility; assuming that diagonal modality is epistemic and that what is epistemically possible—conceivable—is possible *simpliciter*. Chalmers’s story in ‘The foundations...’ and elsewhere is initially plausible, but it is more of a story, than a compelling argument that we *should* interpret 2DS to show that diagonal modality is epistemic modality. Moreover, there are alternative interpretations of 2DS that suggest contradictory conclusions; what is *a priori* might not be diagonally necessary; and what is diagonally necessary might be *a posteriori*. So, the *prima facie* plausibility of Chalmers’s 2DS is undermined. Despite this, epistemic 2DS is one of the leading theories in the game of accounting for apriority and of responding to the apparent Kripkean gap between conceivability and possibility. So perhaps we should accept epistemic 2DS after all? This would be appealing but premature, since there are independent problems with the implications of Chalmers’s account. In particular, if what is diagonally—epistemically—possible is (logically) possible, it appears that certain open conceivabilities are both logically possible and impossible; for example it is conceivable both that there is and there is not a necessarily existing being, but that such a being is both possible and impossible is a contradiction. Thus epistemic 2DS (or any other version) does not show that conceivability entails possibility.

Against this conclusion, it might be pointed out that I have conceived that arguing from conceivability to possibility is impossible, i.e. I have contradicted myself or, at least, undermined my own conclusion. Against this, I would argue that my negative conclusion is limited, such that although conceivability might ‘entail’ or ‘be a guide to’ possibility, this is not proved by any version of two-dimensional modal semantics.

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