

Intensions and Indeterminacy: Reply to Soames, Turner, and Wilson

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1 Introduction

I am grateful to Scott Soames, Jason Turner, and Mark Wilson for their comments on *Constructing the World*. Soames and Wilson are two of the primary opponents I had in mind in writing the book, and it is useful to see just where our disagreements lie. Both of them raise central issues about the semantic applications of the epistemological framework in the book, especially the use of the scrutability to ground intensions and other aspects of meaning. Turner raises important issues about indeterminacy that were passed over quickly in *CTW*. His discussion helps to bring out ways in which the treatment of indeterminacy in the book is suboptimal, and it points the way to a better treatment.¹

2 Reply to Soames on two-dimensionalism

Scott Soames reads my book as one that “resists advances in philosophy of the last four decades”, and says that the “key attack” in *CTW* is on Kripkean metaphysical necessity. This is not how I see things. I see the book as setting out a way to accommodate the key insights of Kripke, Putnam, Burge, and others, while nevertheless preserving key insights of Carnap, Russell, Frege, and others. Furthermore, metaphysical possibility and necessity play only a minor role in the book. For the most part the focus is on epistemology rather than metaphysics, and on epistemic rather than metaphysical necessity.

Soames focuses especially on epistemic (or primary) intensions, the functions from epistemically possible scenarios to extensions that are defined in terms of scrutability and serve as the distinctive semantic values of epistemic two-dimensional semantics.

¹Thanks to Cian Dorr, Melissa Ebbers, Jeremy Goodman, Jason Turner, and Robbie Williams for comments.

Soames' first major objection is that the thesis of modal haecceitism, on which qualitatively identical worlds can contain different objects, entails that epistemic intensions are undefined. (Throughout I use "world" for metaphysical possibilities and "scenario" for epistemic possibilities.) For example, there will be a world (the actual world) in which William Whitworth invented the zip, and a qualitatively indistinguishable world in which Twin Whitworth invented the zip. Then Soames' objection is that a single scenario (as I understand scenarios) will correspond to multiple worlds, so that the epistemic intension of a term such as 'Julius', which picks out the inventor of the zip, will pick out different objects (Whitworth and Twin Whitworth) in different worlds, and will not pick out any determinate object in the scenario that corresponds to these worlds.

In *CTW*, epistemic intensions and scenarios are defined wholly in terms of epistemic modality, with metaphysical modality playing no role. It is not obvious how haecceitism, a thesis about metaphysical modality, makes contact with this "epistemic" construction of scenarios and intensions. On this construction, scenarios are not identical to metaphysically possible worlds, and concrete objects in them cannot in general be identified with objects in metaphysically possible worlds. As I argue in the discussion of trans-scenario identity in "The Nature of Epistemic Space", concrete objects in different scenarios cannot even be identified with each other.² So in various scenarios with Whitworth-esque entities, these are not to be identified with either Whitworth or Twin Whitworth. Nevertheless, the entities are perfectly well-defined, and so are the corresponding intensions.

Soames' objection seems directed at a different way of understanding epistemic intensions that played a larger role in earlier work of mine. This is the "metaphysical" construction, on which epistemically possible scenarios are understood as centered worlds or sets thereof. The metaphysical construction plays only a minor role in *CTW*, in a part of the tenth excursus where I note that *if* two key theses (Apriority/Necessity and Generalized Super-Rigid Scrutability) hold, epistemically possible scenarios will correspond to centered worlds. That opens the way to constructing scenarios from metaphysically possible worlds from the start. I do not pursue that project in *CTW*, and I think that the epistemic construction is more fundamental. Still, it is interesting to see whether Soames has a strong objection to the construction.

²Soames (2004) has developed his own framework of epistemically possible worlds, on which objects of epistemic possibility are singular propositions and objects can be reidentified between epistemically and metaphysically possible worlds. As discussed in "The Nature of Epistemic Space", the two frameworks are useful for different purposes, and the availability of one does nothing to render the other incoherent.

I discuss the impact of modal haecceitism on the metaphysical construction in “The Nature of Epistemic Space”. I class it as a potential objection to the principle of parsimony, which says that any two scenarios that verify the same sentences are identical. In response, I say that the proponent of the metaphysical construction can either give up on parsimony and have two scenarios that do the same epistemic work here, or else identify scenarios with equivalence classes of centered worlds (in a brief discussion in *CTW* I suggest the latter route). I note that the resulting mismatch between epistemic and metaphysical possibility provides some motivation to pursue the epistemic construction. Still, it does not make epistemic intensions ill-defined, even on the metaphysical construction.

This is especially straightforward where epistemic intensions for sentences are concerned. All of the centered worlds in question will have a canonical specification (qua scenario) in terms of super-rigid expressions and indexicals. In fact, they will share the same canonical specification. Given the Super-Rigid Scrutability thesis and Apriority/Necessity thesis (which modal haecceitism provides no objection to), sentences can straightforwardly be evaluated at these worlds by scrutability from the specification, yielding the same result for each world. So ‘Julius is tall’ will come out true at all these worlds (assuming that Whitworth is tall). Whether we identify scenarios with worlds or equivalence classes thereof, there is no problem of coherence here.

Soames’ objection is formulated in terms of epistemic intensions for subsentential expressions (such as ‘Julius’). I do not formally define epistemic intensions for these expressions in *CTW*, but I do so in “The Nature of Epistemic Space”, at least for the epistemic construction and for the version of the metaphysical construction where scenarios are identified with worlds. On the latter, it is easy to see that the epistemic intension of ‘Julius’ picks out the same thing as that of ‘the inventor of the zip’, and so will pick out Whitworth in one world and Twin Whitworth in another. This is perhaps inelegant as above, but there is no problem of coherence here.

What about the version of the metaphysical construction on which scenarios are equivalence classes of worlds? I have not defined subsentential epistemic intensions over these entities, but it is easy enough to see how a definition should go. If scenarios are classes of worlds, objects in scenarios should be classes of objects in worlds. So in a scenario corresponding to worlds w_1 and w_2 in which Whitworth and Twin Whitworth invented the zip, the epistemic intension of ‘Julius’ will pick out a class consisting of Whitworth (bound to w_1) and Twin Whitworth (bound to w_2). This means that the value of the intension is not itself a concrete object; instead, it is an abstract object that serves as a proxy for an epistemically possible concrete object. We also need proxy abstract objects on the epistemic construction of scenarios, and indeed in most constructions of

metaphysically possible worlds (at a world where someone who does not actually exist invented the zip, we need an abstract object to serve as the inventor's proxy). It is no special objections that we need them here too. What results is again inelegant, but it is serviceable and perfectly coherent. For a more elegant construction, we need only embrace the epistemic construction.

On both the epistemic and metaphysical constructions, there is perhaps a question about how these epistemic intensions determine reference in the actual world. One wants to say that an expression's referent is given by the value of its intension at the actualized scenario, but now the referent and the value will be quite different things: the former may be concrete and the latter abstract, and the former haecceity-specific where the latter is not. This problem (in at least the concrete/abstract version) already arises for many models of possible worlds, and the answer is familiar: the referent of an expression is the entity that *realizes* the abstract (proxy) object in question. On any of these approaches it is easy to define realization to give the right result.

Stepping back, we can summarize the situation by noting that modal haecceitism falsifies the thesis of Super-Rigid Necessitation (all truths are necessitated by super-rigid truths) and its generalized counterpart, but epistemic intensions require at most a scrutability thesis such as Super-Rigid Scrutability (all truths are scrutable from super-rigid truths) and its generalized counterpart. Modal haecceitism has no force against Super-Rigid Scrutability. For example, it certainly does not undermine the claim that 'Julius is the *F* (if anyone is)' is a priori for some super-rigid *F*; at best it undermines the claim that any such sentence is necessary. To think otherwise would be to fall into Soames' favorite trap of confusing apriority and necessity.

That said, Soames has other arguments against Super-Rigid Scrutability. One point is that the apriority of scrutability conditionals cannot be supported by the apriority of claims such as 'If it turns out that the stuff that falls from the sky is XYZ, then water is XYZ', as the latter are never shown to be a priori. But I never support scrutability claims in this way. Part of the point of the move from definitions to scrutability was that scrutability is plausible even if no such short claim is a priori. The extensive arguments for Conditional Scrutability and then A Priori Scrutability in chapters 3 and 4 does not rest on the apriority of these claims. Oddly, Soames does not address this argumentation at all. This is disappointing, as the argument was laid out in a step-by-step way in part for the benefit of opponents like Soames, and I would be interested to know just where he thinks those arguments go wrong.

Soames offers a proto-argument against a generalized scrutability thesis holding that in all epistemically possible scenarios, all truths are scrutable from truths about appearances and microstates (akin to my *PQTI*). He notes that in scenarios without conscious agents there will be

no appearances, and so not enough to determine reference. I think that this is plausible for some expressions (perhaps 'red') and not others (perhaps '2' or 'philosopher'). But even if it is right for many expressions, this just shows that many sentences are indeterminate when evaluated at the scenarios in question. I think that indeterminacy is widespread, especially in far-off scenarios, so this does not provide an objection to the framework. I also note that Soames gives no objection to the (non-generalized) scrutability thesis concerning the actual world, holding that all truths are scrutable from *PQTI*.

Soames worries about the notion of super-rigidity, which requires a priori access to reference in such a way that there can be no Frege cases with a posteriori identities involving super-rigid expression types. He suggests that no expression is super-rigid, since any expression is subject to Burge-style Frege cases e.g. where a subject is not in a position to know, say, 'two is deux'. I respond that when subjects use these terms correctly and nondeferentially, as is stipulated (excursus 3) in characterizing the role of expression types in a scrutability base and in sentential apriority, Burge-style considerations do not arise and these sentences are always knowable a priori. This response differs somewhat from the response that Soames considers, which derives from my discussion of the scrutability of deferential utterances in the dependent class (rather than the scrutability base). Super-rigid expressions play their role for me as members of a scrutability base, which are expression types rather than utterances.

Soames also invokes a strong social externalism on which all uses of expressions (and all thoughts?) have reference determined through a linguistic community, with no "nondeferential" exceptions along the lines above. I think this view is extremely implausible. It seems obviously possible for someone to possess a concept such as conjunction (and to express it with a word) in a way that is not sensitive to how others around them use expressions such as 'and'. Soames suggests that I have to deem various strong externalist theories to be conceptually impossible, since if they are even possible, then subjects cannot be certain of the relevant claims. I respond that it is plausible that some claims, such as 'If A&B then A' or '2+2=4', can be known with certainty a priori (note that on my account in Excursus 3, knowing these claims does not require knowing anything about or even using the expressions). If the mere possibility of some version of externalism entails that they cannot be so known, this is good reason to deny that possibility claim. Finally (as I say on pp. 191-2), certainty is not a sine qua non for apriority here. I am happy if scrutability conditionals (and claims such as 'two is deux') meet the standards of apriority that are met by '2+2=4'. If it turns out that this standard is lower than certainty for the reasons Soames suggests, then so be it.

Regarding deferential utterances, Soames suggests that scrutability of these will require scrutability of the referents of other people's utterances, and that the latter will require a theory of reference to be built into the scrutability base. I do not think such a theory is needed in the base. For a start, it is not implausible that a fundamental theory of reference will be a priori, in which case it is scrutable from any base. Further, as I discuss in the relevant sections of chapter 6 (section 11 and preceding sections), truths about reference are plausibly scrutable from intentional truths and other background truths. The tricky question of whether intentional truths are themselves scrutable is discussed at length in section 7. I argue there that they are plausibly scrutable from physical and phenomenal truths (where the latter may themselves have an intentional element). In any case, even if some intentional truths are primitive and built into the base—truths about the primary intentions of people's thoughts, say—then this does not pose a problem for the framework. Potential worries about circularity, which Soames hints at, are addressed directly on p. 277.

Finally, Soames raises a class of objections due to Laura Schroeter and Jeff Speaks, according to which my framework classifies sentences a priori that are not plausibly a priori. One example is 'If N exists, I bear R to agents who use "N" to refer to N', where N is an expression used deferentially.

A simplified version: suppose Anne hears Bob say 'Chloe is tall', and Anne has never before heard the name 'Chloe'. Then Anne can nevertheless use the term, perhaps saying 'Do I know Chloe?', intending to refer to whoever Bob referred to by 'Chloe'. Then on a classic metalinguistic descriptivist view, a sentence such as "If Chloe exists, then someone has used the term 'Chloe'" and therefore "If Chloe exists, then language speakers exist" is a priori for Anne. My own two-dimensionalist view predicts that conditional sentences somewhere in this vicinity are a priori for Anne too. But Soames thinks it is implausible that any such sentences are a priori.

Rather than addressing all such examples individually, I will offer a general way to address them all. In analyzing cases like these, there is a crucial diagnostic question involving the key sentence *S*. From the speaker's perspective, could it turn out that not-*S*? Or alternatively: is there some (specific and detailed) scenario that could clearly turn out to obtain, such that from the speaker's perspective, if that scenario obtains, then *S* is not the case? Such a scenario need not be specified in a canonical super-rigid language, but we can stipulate that the key expression (such as 'Chloe') should not be used in specifying it (though it might be mentioned). That will avoid the trivialization of saying, for example, that the sentence will turn out to be false in a scenario in which Chloe exists but language does not, when part of what is at issue is whether such a scenario could really obtain, from Anne's perspective. We need some independently specified scenario,

such that it is independently obvious that this scenario is epistemically possible, under which the sentence in question turns out to be true.

If the answer to these questions is yes: then there will be a *counterscenario* suggesting that the sentence is not a priori. This counterexample will make trouble for a descriptivist who thinks that the sentence in question is a priori. But it will make no trouble at all for the two-dimensionalist who appeals to intensions rather than descriptions. The two-dimensionalist can simply find scenarios in their framework that correspond to the intuitive counterscenario in question (although counterscenarios are specified informally and scenarios are specified formally, the latter will usually be easy to find), and adjust their characterization of the intension for a key expression in order that it gives the correct verdict at these scenarios.

If the answer to these questions is no: then it is now unclear why we should deny that the sentence is a priori. It is certainly hard to see how one could ever discover that the sentence is false, given that there is no scenario that falsifies it. The opponent might hold that there are some scenarios that leave *S* open, because ‘Chloe’-truths are not scrutable from non-‘Chloe’-involving truths. But now the arguer needs to provide grounds for this claim or to provide more general reasons to deny the apriority claim.

Kripke’s epistemic argument against descriptivism involves a counterscenario. Where a descriptivist suggests that ‘Gödel provided the incompleteness of arithmetic’ is a priori, Kripke argues that it could turn out to be false. To do this he presents a counterscenario: one in which the Princeton mathematician called ‘Gödel’ stole the proof from someone called ‘Schmidt’.³ This poses a problem for a descriptivist view on which ‘Gödel’ is a priori equivalent to ‘the prover of incompleteness’, but (as I discuss in chapter 1 of *CTW*) it poses little problem for two-dimensionalism. The two-dimensionalist need only stipulate an intension for ‘Gödel’ that picks out the stealer rather than the prover at a scenario corresponding to the counterscenario in question.

What about the Soames-style case of “If Chloe exists, then someone has used the term ‘Chloe’”? Could this turn out to be false for Anne? One could conceivably argue that there are counterscenarios here. For example, someone could suggest a scenario in which Anne misheard Bob, who

³In Kripke’s own presentation he uses as well as mentions the term ‘Gödel’, describing a situation in which Schmidt proved incompleteness and Gödel stole the proof. However, it is clear that Kripke could just as easily have specified the scenario in metalinguistic terms as above, and the availability of this specification makes his argument much stronger. The first specification really turns on a brute intuition that ‘Gödel stole the proof’ is epistemically possible (one that a descriptivist opponent could reject, at least in a case involving a more plausible description), while the second specification provides an independently specified scenario that vindicates the intuition.

said 'Zoe' rather than 'Chloe', and in which no-one has ever used the term 'Chloe'. It might be held that in this scenario, Anne's actual use of 'Chloe' refers to Zoe, so that the conditional will be false. The two-dimensionalist can easily accommodate this by stipulating an intension for 'Chloe' that gives the right verdict at this scenario. This is just the standard process of refining intensions in light of counterexamples to purported definitions. So counterscenarios are no problem here.

Alternatively, Soames may forgo appeal to counterscenarios and simply argue that it is implausible that this sentence is a priori. But why should we believe this? Counterscenarios would provide a good reason, but those can easily be handled as above. Certainly the sentence does not look like a traditional a priori sentence, but this fact does not count for much, especially as (as discussed in Excursuses 3 and 8) we are now dealing with a special sort of speaker-relative apriority rather than apriority of a sentence type in general. Perhaps Soames would suggest that it is implausible that the existence of a certain person and the existence of language could be connected a priori in this way. This objection would carry more force if we supposed a conception of apriority (like the one Soames often uses) that is tied to singular propositions and not modes of presentation. But as noted in excursus 8 of *CTW*, the notion of sentential apriority that I use is sensitive to modes of presentation by definition, and takes away any implausibility of this kind.

To further diagnose this case, one can ask: What if Anne *stipulates* that 'Chloe' (as she uses it) refers to whoever Bob referred to by 'Chloe'? I take it that in this case, Anne can know the conditional claim ('If Chloe exists, someone has used the term 'Chloe') with certainty, and there will be no counterscenarios. Will Soames say that it is also obviously implausible in this case that the conditional is known a priori for Anne? If yes, I think he has lost contact with intuitions about the case and is now arguing from theory. If no, then this seems to remove any clear reason for saying that apriority is implausible in the original case.

Speaks' example can be treated the same way.⁴ He supposes that a speaker's use of 'Mick Jagger' is equally associated with two sets of properties, conjunctions of which are specified by *F* and *G* respectively. He argues that a two-dimensionalist should hold that in a scenario in which distinct people are the *F* and the *G*, 'Mick Jagger' (as used by the speaker) cannot refer to one but not the other. If so, the sentence 'If MJ is the *F* but not the *G*, then no-one is the *G*' is a priori for the speaker. But Speaks and Soames say it is implausible that such a sentence is a priori.

I am inclined to think that relative to scenarios like this the reference of terms such as 'MJ' will be highly indeterminate. When such scenarios turn out to be actual, with two individuals sharing properties associated with a name we often react as if there is no fact of the matter about whether the name refers to one, the other, both, or neither. Still, as Soames suggests, one can then raise

the same questions concerning ‘If MJ is determinately the F , then no-one other than MJ is the G ’. In this case, assuming F and G are appropriately selected, I think such a sentence could well be a priori for a speaker. A speaker could know through a priori reasoning alone that if distinct things are F and G , neither of them is determinately Mick Jagger. Suppose a speaker is told that it is determinate that Mick Jagger did only the things associated with him on odd days. The speaker could then reason that if someone else did the things associated with him on even days (there were twins, perhaps), then it would not be determinate that the odd-day twin is Mick Jagger. They could then conclude that no single other person did those things.

In any case, we can once again apply the diagnostic test. From the speaker’s perspective, is there a counterscenario in which the sentence is false? If there is, then (as Elliott, McQueen, and Weber 2013 suggest in response to Speaks) the two-dimensionalist need only stipulate an intension that delivers the appropriate referent for ‘MJ’ at a relevant scenario.⁵ If there is not, then it is far from clear why we should deny that the sentence is a priori. As before, it is hard to see how it could ever be discovered to be false.

Speaks (2010) concedes at least for the sake of argument that there are no counterscenarios,⁶ and gives an argument against apriority that is not based on a counterscenario. He appeals to a principle saying that when F and G are independent in a certain way, no-one can know a priori that if one particular thing n is F , then nothing else is G . Perhaps this principle has some initial plausibility where *de re* knowledge or knowledge of singular propositions are concerned, but as before my notion of sentential apriority is sensitive to modes of presentation. Using apriority so construed, we need only look at cases where G is involved in the mode of presentation of n , such as a case where we stipulate that ‘MJ’ picks out the F iff nothing is G (and otherwise picks out nothing). Here there is no intuition that ‘If MJ is F , nothing else is G ’ is not a priori. Indeed, as Elliott et al suggest, cases like these arguably provide counterexamples to Speaks’ principle as stated above, and certainly suggest that it is not an intuitive datum.

⁵Speaks (2013) replies to Elliott, McQueen, and Weber by noting that not every apriority-based argument against two-dimensionalism can be countered in this way. My analysis is that (i) Elliott et al are correct where counterscenario arguments are concerned, (ii) Speaks is correct that some arguments cannot be countered in this way, and his own argument appears to stem from his independence principles rather than counterscenarios, but (iii) Elliott et al give separate reasons to reject Speaks’ independence principles, reasons that Speaks does not respond to. My argument in the following paragraph very much follows EMW’s ‘Cobber’ argument against these principles.

⁶Speaks (2010, p. 76) says that even if every situation described in non-name-involving terms verifies his key sentence S , it may still be epistemically possible that $\neg S$. This seems wrong, given that it is epistemically necessary that some situation (described in non-name-involving terms) obtains. For Speaks to maintain non-apriority without

Soames says in finishing that my methodology forces me to conflate reference-determining conditions with aspects of propositional content. Of course any Fregean will deny that this is a conflation. From a Fregean perspective, Soames and other Millians are conflating propositional content with reference, and this conflation explains their highly implausible claims about apriority and knowledge. Speaking for myself, I think an adequate view must acknowledge both referential and pre-referential elements of propositional content. Only this sort of view can accommodate all the relevant intuitive and semantic data.

3 Reply to Jason Turner on indeterminacy

Jason Turner raises a number of fascinating issues connecting scrutability and indeterminacy. In what follows, I use Dp and Ip to abbreviate “it is determinately the case that p ” and “it is indeterminate whether p ” (so $Ip = \neg Dp \& \neg D\neg p$), where p can be either a sentence or a proposition. I use A, K, N, S, T as operators for apriority, knowability, necessity, scrutability, and truth (from some specified base) respectively.

In excursus 1 of *CTW*, I lay out a challenge that indeterminacy poses for scrutability theses. I note that from (1) $p \vee \neg p$ (the law of the excluded middle) and (2) $p \rightarrow Sp$ and $\neg p \rightarrow S\neg p$ (instances of the scrutability thesis), it follows that (3) $Sp \vee \neg Sp$. But the conclusion seems intuitively implausible in the case of indeterminacy. For example, if Jack is a borderline case of tallness, so that it is indeterminate whether he is tall, it seems implausible that anyone could know that he is tall or know that he is not tall, and it likewise seems implausible that it is scrutable that he is tall or that it is scrutable that it is not tall.

There are three ways to handle this situation: refrain from accepting (1), refrain from accepting (2), or accept (3). In the book I briefly consider all three options.

The first option is the *nonclassical option*: denying the law of the excluded middle, or at least withholding assent from it. I think that this step can be reasonably well-motivated where indeterminacy is concerned, but it leads to many complications, and I will set it aside here as I do in *CTW*. Given this, Turner is right that although I have no commitment to supervaluationism or any other specific model-theoretic treatment of vagueness, the view in *CTW* is naturally seen as a semi-classical view (all classical tautologies are determinately true, disjunctions can be determinate even when neither disjunct is) that also preserves the T-schema (p iff Tp).

counterscenarios, it would be better for him to hold as above that some scenarios leave both S and $\neg S$ open.

The second option is the *Hawthorne option*. It is so named because it parallels a suggestion made by John Hawthorne (2005) on behalf of the supervenientist regarding vagueness and knowledge: all *determinate* truths can be known, at least by an omniscient being. Where scrutability is concerned, we say that all *determinate* truths are scrutable. The scrutability thesis says not “If p then $S p$ ” but “If $D p$ then $S p$ ”. This avoids the problem above by saying that indeterminate sentences are inscrutable.

The third option is the *Dorr option*. It is so named because it parallels a suggestion of Cian Dorr’s (2003; see also Barnett 2010) in considering the relationship between p and $K p$ (like Hawthorne, Dorr has no commitment to the analogous view about scrutability). On this option, we retain the law of the excluded middle and the original scrutability thesis and accept the conclusion: for all p , it is either scrutable that p or scrutable that $\neg p$. When it is indeterminate whether John is tall (and indeterminate whether John is not tall), it is also indeterminate whether it is scrutable that John is tall (and indeterminate whether it is scrutable that John is not tall). On this view, borderline cases of truth are borderline cases of scrutability, rather than cases of inscrutability.

In *CTW*, I favored the Hawthorne option and discussed the Dorr option mainly in a footnote. Turner’s challenges are presented mainly as challenges to the Hawthorne option. Since writing *CTW*, I have come to favor the Dorr option over the Hawthorne option. While I think the Hawthorne option has answers to Turner’s challenges, those challenges help to bring out serious discomforts for the view. In any case it is useful to work through how each of these options might deal with Turner’s challenges.

Turner’s first challenge is that the move from $p \rightarrow S p$ to $D p \rightarrow S p$ is ad hoc. After all, if p , then p is true, so shouldn’t p be scrutable? There is something to this. Where the Dorr model captures the spirit of the original scrutability claim, the Hawthorne model is weaker. But Turner suggests a reply on behalf of the Hawthorne model: p is either determinate or indeterminate. When p is determinate we have scrutability, as we should. When p is indeterminate, there is nothing to be known, so p should also be inscrutable.

Still, if there were cases where $I p$ held and p also held, the problem above would still arise. This leads to Turner’s key question: Is $p \& I p$ consistent? He says I need it to be inconsistent, since if it is consistent $I p$ would leave open both p and $\neg p$ as epistemic possibilities, and even after a sayer knows $I p$, they will need to go on and scry whether p or $\neg p$. On the other horn of the dilemma, Turner argues that inconsistency leads to problems with conditional proof that may problematize some of my arguments for the scrutability thesis.

It is not obvious what Turner means by ‘consistent’ here. A standard notion would be that

p is consistent (in a given logical system) if $\neg p$ cannot be proved (in that system) or if p is true in some model (of that system). This notion requires a background logical system, though, and the scrutability framework as I understand it does not give a special role to any particular logical system. Instead the key notions are that of apriority and a priori entailment. So we might instead interpret consistency as “a priori consistency” or epistemic possibility (Turner confirms in personal communication that he meant something along these lines). So we might say that p is inconsistent iff $A\neg p$, and p is consistent if $\neg A\neg p$. Or we might relatedly say that p is consistent is there is an epistemically possible scenario where p is true, and p is inconsistent if there is not.

Is $p\&Ip$ consistent in these senses? It is tempting to suggest that since actual instances of $p\&Ip$ are always indeterminate or false, it is at best indeterminate whether $p\&Ip$ is consistent. But for some empirical claims involving vague expressions, we can plausibly know that $p\&Ip$ is true at some scenario (though it is indeterminate which), implying that $p\&Ip$ is consistent by the second definition above.

For a simple case, let p be ‘There are exactly K people’, where K is a vague mathematical term such that it is a priori that it is determinate that $K = 1$ or $K = 2$ but indeterminate which. Let v and w be scenarios with one and two people respectively. Then at both scenarios, Ip . LEM suggests that p is either true or false at v , and if p is false at v , p is true at w . So p is true at either v or w . So $p\&Ip$ is true at either v or w . So there is a scenario at which $p\&Ip$ is true, and $p\&Ip$ is epistemically possible and consistent (on the second definition). Furthermore, the key claims here all hold determinately, so it is determinate that $p\&Ip$ is consistent. If so, we have to face the “consistency” horn of Turner’s dilemma.

Although Turner raises his dilemma for the Hawthorne model, the reasoning above goes through straightforwardly on the Dorr model, so this model must face the problem too. Fortunately a reasonable reply is available for the Dorr model. Contra Turner, the consistency of $p\&Ip$ (and $\neg p\&Ip$) does not entail that a scryer who has scried Ip needs to go on and scry p or $\neg p$. The latter point requires not just that $p\&Ip$ is consistent, but that $d\&p\&Ip$ and $d\&\neg p\&Ip$ is consistent for a relevant potential scrutability base d , such as $PQTI$. But it is not clear why we should this. Certainly in the case such as the above, specifying d will narrow things down to v or w , so that the reason to accept that $p\&Ip$ is consistent does not yield reason to accept that $d\&p\&Ip$ is consistent. And it is not hard to see that on the Dorr model, although $p\&Ip$ is consistent (on either definition), it is indeterminate whether $d\&p\&Ip$ is consistent, so Turner’s worry does not arise. In other cases, including mathematical borderline cases such as ‘17 is small’, it is indeterminate whether $p\&Ip$ is consistent (on either definition), so again Turner’s worry does not arise.

What about the Hawthorne model? In the case of ‘There are K people’, $p \& Ip$ will be consistent in the first sense above: in borderline cases it is indeterminate, so it cannot be ruled out a priori. Likewise $d \& p \& Ip$ will be consistent in the first sense. At the same time, given a relevant scenario description d , $A(d \rightarrow (p \& Ip))$ will be false, so $p \& Ip$ will be false at that scenario and at every scenario. So $p \& Ip$ will be inconsistent in the second sense above, as will $d \& p \& Ip$.

What is going on here? Part of the issue is that on the Hawthorne model, when p is borderline at a scenario in the sense that $A(d \rightarrow Ip)$, $A(d \rightarrow p)$ and $A(d \rightarrow \neg p)$ are always false. It follows that despite LEM, neither p nor $\neg p$ are true at relevant scenarios. I return to this odd situation later. Another aspect is that the two apparently equivalent definitions of epistemic possibility are not equivalent on the Hawthorne model. Because apriority patterns with determinacy rather than truth on this model, various apparent equivalences have to be modified in borderline cases.

To handle this inequivalence, one might try modifying the definitions. A modification of the first is already suggested on p. 235 of *CTW* (note 3), where I suggest that on the Hawthorne model, we should say that it is epistemically possible that p when $\neg A \neg Dp$, rather than when $\neg A \neg p$. If we equate consistency with epistemic possibility in this sense, we will now have the result that $p \& Ip$ is inconsistent (since plausibly $A \neg D(p \& Ip)$). This at least brings the two definitions into line.

Can the Hawthorne model escape Turner’s dilemma? If we understand the consistency of p as $\neg A \neg p$, we have to face the first horn. Here both $d \& p \& Ip$ or $d \& \neg p \& Ip$ will be indeterminate in borderline cases, so both will be consistent in this sense. An advocate of the model must say that consistency in *this* sense does not mean that scrying Ip from d leaves p or $\neg p$ to be scried. Instead, the scryer knows that Ip , knows that p or $\neg p$ but it is indeterminate which, and that is all there is to say. So no questions are left open. This is formally modeled within the framework by noting that there are not distinct epistemically possible scenarios in which $PQTI \& p \& Ip$ and $PQTI \& \neg p \& Ip$, because the epistemic possibility of p requires the stronger claim $\neg A \neg Dp$, which is not satisfied in these cases.

On the other hand, if we understand the consistency of p as $\neg A \neg Dp$, or as truth at some scenario, then $p \& Ip$ is inconsistent and we have to face the second horn. Turner uses the claim that $p \& Ip$ is inconsistent to conclude that one can derive Dp from p , and from there to raise problems for conditional proof (since we do not want to prove $p \rightarrow Dp$). However, the senses in which $p \& Ip$ is inconsistent do not lead to endorsing this inference. Although $p \& Ip$ is not true in any scenarios, and although $A \neg D(p \& Ip)$, $p \& Ip$ is indeterminate in some scenarios in the sense that $A(d \rightarrow I(p \& Ip))$, as is $p \rightarrow Dp$. All this is consistent with there being scenarios that verify p without verifying Dp (because $A(d \rightarrow p \& IDp)$). So we need not endorse the inference from p to

Dp.

Still, there is no question that things are more complicated on the Hawthorne model than on the Dorr model. We have seen that natural equivalences break down. The Hawthorne model also yields many other complications involving apriority. Take the mathematical domain where plausibly $Sp \leftrightarrow Ap$. Then where we may have wanted to say $p \rightarrow Ap$, we instead have to say $Dp \rightarrow Ap$. This put pressure on two theses I endorsed in *CTW*: the S4 thesis $Ap \rightarrow AAp$, and the Apriority/Necessity thesis $Ap \leftrightarrow Np$ (when p is super-rigid). Unless we make further strong assumptions (e.g. $Ap \rightarrow DAp$ and/or $Dp \rightarrow DDp$), we will have to replace the S4 thesis with $DAp \rightarrow AAp$. And if we endorse the S4 thesis for necessity $Np \rightarrow NNp$, we will have to replace the Apriority/Necessity thesis with $Ap \leftrightarrow NDP$.

There are worse problems when the Hawthorne model is combined with further commitments of the scrutability framework. There is a near-decisive argument against the model using these commitments, as follows:

- (1) $p \leftrightarrow Tp$
- (2) $Tp \leftrightarrow T(p, @)$
- (3) $T(p, @) \leftrightarrow Sp$
-
- (4) $p \leftrightarrow Sp$.

Here @ is the actual scenario, and $T(p, @)$ says that p is true at the actual scenario. Premise (1) is the T-schema. Premise (2) says that p is true if it is true at the actual scenario. This is an instance of the claim that (actual) extension coincides with extension at the actual scenario, which is crucial for my Fregean/Carnapian semantic purposes on which intensions determine extensions. Premise (3) says that p is true at the actual scenario iff it is scrutable from (actual) base truths. This is an instance of the definition of intensions in terms of scrutability, which is crucial to the use of scrutability in grounding epistemic two-dimensionalism. On my framework all of the premises should be determinately true and a priori, so that the conclusion should be too. But the conclusion is the claim that the Dorr model endorses but the Hawthorne model does not.

We can illustrate by taking p to be a sentence such as ‘17 is small’ which we may take to be indeterminate. On the Hawthorne model, Ap will be false, as will $A(d \rightarrow p)$ for any relevant d . It follows that p is not scrutable from base truths in the actual world, so that p is not true at the actual scenario. That is, it is indeterminate whether p is true, but it is not the case that p is true at

the actual scenario. One could perhaps retain a weak sense in which extension matches extension at the actual scenario, as long as we allow that ‘indeterminate’ is an extension and say that p is indeterminate at the actual scenario. By the definition on p. 237 of *CTW*, this requires $A(d \rightarrow Ip)$, which will plausibly be hold as long as DIp . But now we have the odd misalignment (noted earlier) that whereas Ip always goes along with ITp , we can have $I(p, @)$ without $IT(p, @)$. If there can be cases of $p \& IDp$, we will get the worse misalignment that p is true, but it is indeterminate whether p is true at the actual scenario.

There is not much room for fiddling with (1) and (3). Regarding (1), perhaps one could replace the T-schema with $Dp \leftrightarrow Tp$, but this would come with other costs. Regarding (3), there is no obvious alternative definition of truth at a scenario in terms of scrutability that will save the day. One could change the left hand side of (3) to $T(Dp, @)$ or $DT(Dp, @)$, but this would leave us without a definition of truth at a scenario in general. The remaining option is to refrain from endorsing (2), without rejecting it, by holding that it can sometimes be indeterminate. This will lead to serious complications along the lines in the previous paragraph, however.

All in all, I think this makes a strong case for endorsing $p \leftrightarrow Sp$ and embracing either the Dorr model (with $Sp \vee S\neg p$) or the nonclassical model (withdrawing endorsement from $p \vee \neg p$). I do not entirely rule out the latter, but I am inclined to explore the Dorr model first due to its theoretical elegance.

The main cost of the Dorr option is the apparently counterintuitive claim that when p is indeterminate, it is nevertheless scrutable that p or scrutable that $\neg p$, so that it is scrutable whether p . It is not easy to see how an indeterminate claim could be scrutable. Still, this is a little reminiscent of the counterintuitiveness of LEM in this context. When p is indeterminate, it is nevertheless true that p or false that p , so that p has a truth-value of either true or false. It is not easy to see how an indeterminate claim could have a true/false truth-value. But once we have bitten the bullet of saying that it has such a truth-value (it is just indeterminate which), it is perhaps not so much worse to say that a truth-value is scrutable (it is just indeterminate which).⁷

A further problem is that when we imagine someone scrying the status of ‘John is tall’ in a borderline case, it is natural to imagine them hesitating and giving no true/false verdict. Dorr suggests that there can be pragmatic explanations of why someone might hesitate when they know

⁷To further combat the counterintuitiveness here, it may help to reclassify cases that one initially took to be indeterminate and therefore “not true” as false. Then the real cases of indeterminacy will lie in what one initially took to be around the border between determinate truth and indeterminacy. After this shift, the verdict that scrutability is indeterminate in borderline cases may seem more palatable.

the answer. An alternative analysis is that there are cases where they will answer true ('John is tall') and cases where they will answer false ('John is not tall'). Scrying involves a reasoning process that takes time, and there might be precisification of 'tall' along the way. One might think that precisification involves conceptual change. But one could reasonably say that in such a case, where an intension moves from being indeterminately true to being true at a scenario, it is indeterminate whether this is a case of conceptual change. In the framework of *CTW*, it is indeterminate whether the thought expressed by 'John is tall' at the start persists as the thought expressed by 'John is tall' at the end. If so, then given that scrutability is defined in terms of persistence (pp. 84-85), it will also be indeterminate whether 'John is tall' is scrutable.

Turner ends by raising a worry about cases of indeterminacy in philosophy. I have endorsed an ontological anti-realism on which many ontological claims (at least those involving a heavyweight "absolute" quantifier) are indeterminate. For example, the claim *CN* saying that there are no composite objects is indeterminate. Turner suggests that from this indeterminacy claim we could rule out a priori the hypothesis *G* that our world is "gunky": that is, it has things with parts each of which has further parts, and so on all the way down without a bottom level. Gunky worlds require complex objects, so *CN* determinately entails $\neg G$, and $I(CN)$ entails $I(G) \vee \neg G$. But it cannot be indeterminate whether there is gunk, so $I(CN)$ yields $\neg G$. But on the face of it, it is epistemically possible that our world is a gunky world.

I reply by holding that it can be indeterminate whether there is gunk, and by denying that it is determinately epistemically possible that our world is gunky in Turner's sense (at least when these hypotheses are specified using an absolute quantifier). What is clearly epistemically possible that we live in a "gunkesque" world: one that looks like a gunk world insofar as it has stuff arranged gunkily, in a way that seems decomposable all the way down. On my view, it is indeterminate whether a gunkesque world is a gunky world (which on Turner's definition requires the existence of complex objects). Relative to different ontological frameworks it might be seen as a world with no objects at all (only stuff), a world with a single entity with no parts, a world with objects all the way down, or various other permutations. So I do not have to deny any clear intuitions.

Still, Turner is certainly right that to say that *CN* is indeterminate is not to get oneself off the hook where scrying is concerned. The indeterminacy claim is itself a strong claim that requires support, and that must itself be scrutable if it is true. I think that support can be given and I have tried to give some of it myself. I think the scryer's job is a little easier given anti-realism and indeterminacy than given realism and determinacy. At least, if anti-realism is scrutable, then the truth-value of *CN* will be scrutable, while if realism is scrutable, the truth-value of *CN* remains

open. But of course the scrutability of anti-realism is nontrivial. Scrutability still takes work.

4 Reply to Mark Wilson on conceptual dynamics

Mark Wilson uses a number of interesting cases from the history of science to cast doubts on the framework of *CTW*. He focuses especially on the case of ‘temperature’ and the way it has been applied differently to different systems. He suggests that on each case the history has involved a sort of “adventitious retooling” that renders slogans such as “temperature is mean kinetic energy” far too simple.

It is surprisingly difficult to pin down exactly where Wilson and I disagree. He does not directly deny any of the theses in *CTW*, and he does not engage much with the arguments. At points it appears that he might deny the A Priori Scrutability thesis, but his considered position seems to be that although true, it is too idealized to be important in modeling human epistemology. This suggests that he might be skeptical of some of the applications for which I use the scrutability thesis, but he does not clearly reject any of those applications either, and neither does he address my discussion (in chapter 2) of objections holding that idealization undermines applications of scrutability.

Wilson often seems to be engaged with philosophical views quite different from mine. He engages at length with the Kripke/Putnam view that terms like ‘temperature’ pick out natural kinds, such as molecular kinetic energy. I have no strong commitment to this natural-kind view, which is largely independent of scrutability theses, and plays no essential role in *CTW*. When he does address my semantic views, he seems to assimilate them to a stereotypical sort of descriptivism, where primary intensions correspond to fixed descriptions that are held self-consciously in mind, and only judgments about reference or secondary intensions change over time. Here I have a hard time recognizing my own view, on which primary intensions are typically embodied tacitly in inferential roles, are far more open-ended than descriptions, and may change frequently over time in response to various pressures.

I am left with the suspicion that Wilson’s deepest objection is that scrutability does not explain the phenomena he is most interested in, namely the “wandering significance” of scientific expressions over their complicated careers. Here we are on the same page. At the end of excursus 8 of *CTW* on scrutability and conceptual dynamics (which Wilson does not address, although it is framed in terms of his own previous work), I concede to Wilson that the scrutability framework has a problem of incompleteness here: although it allows that concepts can evolve over time, it

does not explain why and how they evolve in the way that they do. For example, an expression's having a given primary intension cannot explain the common "adventitious retoolings" in which (by my lights) intensions themselves change over time. The framework is consistent with many such explanations, and I suggest that it may help in framing them, but the details of such an explanation remain an open question. It is quite plausible that these matters of conceptual dynamics are deeply tied to details of human psychology, and Wilson is quite right that scrutability idealizes away from them.

Because of this, I accept what Wilson says is the "main contention" of his note: that observational and computational incapacities constrain our intellectual development in important ways, and that the idealized notion of scrutability cannot explain these constraints. At the same time, I argue at length in *CTW* that this limitation suggests no incorrectness in the framework, just an incompleteness. And it does nothing to undermine the applications that I make of the framework, which are largely distinct from Wilson's central concerns.

That said, there are a few points at which Wilson engages in a reasonably direct way with my theses. For example, he expresses clear skepticism about scrutability theses, at least for human reasoners as opposed to ideal agents.

First, Wilson suggests that a human reasoner equipped with a Cosmoscope would not be able to predict the future. Because of chaotic dynamics, prediction requires an unmanageable amount of information that could not be presented to a human. Now, part of the point of the Cosmoscope was to offload this information to the device so that the human would not need to process it all. But in any case, it is unclear why this is relevant to any of my scrutability theses, which never concern the scrutability of the future from the present. I am always concerned with scrutability from truths such as *PQTI* which build in a complete physical specification of the world *across* time. These will include specifications of all sorts of physical trajectories over time. Assuming a Cosmoscope that builds in all this information (never mind how it gets it!), chaos poses no obstacle to predicting the future.

Second, Wilson suggests that if a Cosmoscope builds in just low-level information (about the molecular lattice of a metal, say), a human reasoner will not be able to derive macrophysical information (about lines of dislocation at a higher scale, say). Even if Wilson is correct about this, it is irrelevant to the Cosmoscope as I describe it, for I specify that the Cosmoscope includes macrophysical truths (in the language of physics) at all levels, not just the microphysical level. Presumably there will be macrophysical truths about lines of dislocation (if these are not build in explicitly, they will be recoverable from macrophysical facts about mass density and the like),

and by zooming to the appropriate level, the user of the Cosmoscope will be able to inspect these dislocations directly. So there is no objection here to scrutability from *PQTI* as I understand it, even for a human reasoner.

Now, it is true that later in the book I argue that *PQTI* so understood is scrutable from *PQTI-*, which includes only microphysical truths and not macrophysical truths. I do not think the lattice cases provides a clear reason to reject this. At least setting aside the deepest worries about quantum mechanics, it is not clear why we cannot recover the distribution of macrophysical mass from the distribution of microphysical mass, and recover dislocations and the like from there. I do not suggest that these matters are obvious, but the careful treatment of scrutability for composite mass and other high-level domains by McQueen (2013) suggests that scrutability is feasible here. But in any case, even if we were left with scrutability from *PQTI* rather than *PQTI-*, this would still be good enough for many of my purposes. I suspect that the fundamental disagreements between Wilson and me go deeper than this.

Wilson's fascinating discussion of temperature in rubber bands appears to be directed mainly at the Kripke-Putnam natural-kind view. But at the end of it, Wilson draws a connection to my work. He suggests that the application of 'temperature' in these cases requires "corrective adjustments" and "adventitious retoolings" due to a "ragtag range of scientific and mathematical considerations", so that it is very hard to anticipate where the word will eventually settle. In these cases, simply looking in a Cosmoscope will not allow us to determine the referent of 'temperature'.

I acknowledged cases like this in chapter 5 and excursus 8 of *CTW*, both of which focus on conceptual dynamics. In many cases, there will be adjustments and retoolings that could not be predicted in advance; on my account these will correspond to changes in intension. So to point out the existence of such retoolings is not yet to object to my account. In fact, I offered a diagnostic to distinguish those judgments in response to evidence that involve a change of intension from those that do not. The distinction turns on whether the responses are *prefigured* or *postfigured*. Very roughly, a prefigured response is one that could in principle be predicted in advance, whereas a postfigured response is one that could not be.

Better (although still roughly), we can put things in terms of supposition. We take the subject (or the community) at an initial stage before the evidence is acquired, ask them to *suppose* that this evidence obtains, and ask for a conditional judgment in light of that supposition. For example, we might ask them to suppose that rubber bands have the structure that we eventually found that they do have, and ask about for their considered judgment about temperature in rubber bands. In some cases, the results of this exercise will mirror the judgment that was eventually made. In this case,

the eventual judgment is prefigured, the relevant inferential dispositions stay the same over time, and there is no need to postulate a change in intension. In other cases, the judgment on supposition will be quite different from the eventual judgment in light of evidence. In that case, the eventual judgment is postfigured, the relevant inferential dispositions change over time, and there is reason to postulate a change in intension.

Now there is much to say about reasoning of this sort. Perhaps Wilson would be skeptical about whether the prefigured/postfigured distinction can be drawn. But in his commentary he does not even mention the distinction. Rather, he repeatedly draws attention to cases in which later judgments are unpredictable, somewhat arbitrary, and involve inferential retoolings. This seems in effect to be drawing attention to the category of postfigured judgments. As Wilson notes, these judgments cause serious problems for overly “static” views of meaning. As he does not note, they are easily accommodated by the dynamic view that I endorse.

Wilson’s assimilation of my view to static views causes all sorts of oddities. For example, he says: ‘Chalmers is prone to declare that our employment of “temperature” is “irrational” in that its employers would regularly violate “Bayesian conditionalization”’. In fact, I say that postfigured judgments violate conditionalization, and that such cases involve *either irrationality or conceptual change*. The historical cases (I do not mention temperature) are much more plausibly cases of the latter, not the former. Once the role of conceptual change is noted, we are certainly not left in a position on which “most real-life scientific practice winds up as irrational”.

Wilson notes the phenomenon of “early a priori” judgments that quickly become overwritten. One such case, perhaps, is the Leverrier’s judgment that Neptune perturbs the orbit of Uranus, which is definitional early but not for long. Another is Joseph Camp’s case of “Clyde the Moose” in which a community initially takes it as definitional that Clyde is whoever/whatever makes a certain noise, and later discovers that Clyde is a moose who satisfies most of the theory they have built up but did not make the noise. I discuss these cases at length in *CTW*, arguing that the “inferential retoolings” here involve postfigured judgments and conceptual change. Wilson suggests that this phenomenon is at the center of Quine’s rebuttal of Carnap, but in fact Carnap’s intensional framework is perfectly designed to accommodate these cases as involving changes of intensions.

Wilson suggests that “the tidy sort of strong intensions” that I favor are a “philosophical myth” that I am “merely postulating”. But in fact the existence of intensions (perhaps untidy ones) is a consequence of (idealized) scrutability theses which I argue for at length and which Wilson does not give any reason to reject.

I suspect that Wilson's criticism would better be put by saying that because these intensions are idealized, they cannot explain our fine-grained epistemological reasoning. We have already seen that they do not explain conceptual change. And even in cases of conceptual constancy (say, prefigured reasoning), an intension is in effect defined in terms of the *results* of a complex reasoning process, so it is not at all clear that they serve as something that drives that process. Considerations of this sort might be used to question the psychological reality of intensions and/or the causal role of grasping them.

Of course this is an issue that arises for any inferentialist view of meaning: if meanings are constituted by inferential role, they do not explain inferential role. But the issue arises all the more once the inferential roles are idealized. The dialectic here is complex. My own view is that as in other domains, idealized entities are well-placed to explain some phenomena but not others, and can be seen to have at least a limited psychological reality. It is also possible that we may be able to ground intensions in a more psychologically direct way, for example by grounding them in states of consciousness. Intensions so construed might then ground and explain at least some of our fine-grained epistemological reasoning. In any case, this is a debate worth having.

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