Scrying an Indeterminate World*

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A claim p is *inferentially scrutable* from B if and only if an ideal reasoner can infer p from B. It is *conditionally* scrutable from B if and only if an ideal reasoner can know the (indicative) conditional '$B \rightarrow p$,' and it is *a priori* scrutable from B if and only an ideal reasoner can know the (material) conditional '$B \supset p$' a priori.[1] If p is scrutable (in one of these senses) from B, then B is a *scrutability base* for p.

A class of claims is *compact* if it can be constructed from a suitably limited vocabulary.[2] In *Constructing the World* (2012), David Chalmers argues for the *generalized scrutability thesis* (GST) which roughly says that, no matter how the world had turned out, all truths would have been a priori scrutable from a compact base.

GST is a bold thesis. The done thing when faced with a thesis this bold is to argue against it, either directly, by counterexample, or indirectly, by undercutting its motivation. But I'm not going to do the done thing, leaving it to those better suited. I want instead to explore some issues at the margins, about the relationship between scrutability and indeterminacy.

1 Scrying the Indeterminate

Here's a tempting thought: There's no fact of the matter as to whether the generalized continuum hypothesis is true, or as to whether any arbitrary collection of things compose a further thing. These are *indeterminate*. Chalmers expresses sympathy with this temptation (263, 269, 272).[3]

Call accounts of indeterminacy *semi-classical* if they make all classical tautologies determinate and allow disjunctions to be determinate even when neither disjunct is. This includes standard supervaluational accounts (e.g. Fine 1975) and other, non-standard ones (e.g. Edgington 1997). Chalmers seems to endorse semi-classicism (31–32) while remaining neutral about many of its details.[4]

Semi-classical accounts of indeterminacy can treat truth in one of two ways. If truth is *transparent*, it obeys the T-schema; if *definite*, it tracks determinacy.

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[1] I will slide freely between treating B as a class of claims and their conjunction, run roughshod over use and mention, and be otherwise slapdash when I think it doesn't matter.

[2] Chalmers canvasses several options for the objects of scrutability (propositions, sentences, etc.); I use 'claims' to remain more-or-less neutral, but if it helps, think of them as sentence-types, and scrutability relativized to something that fixes the values of the indexicals 'I' and 'now'.

[3] Otherwise unexplained page numbers refer to *Constructing the World*.

[4] On virtually all treatments, determinacy is factive and distributes over conditionals; I assume he will also accept these.

Semi-classicists can't have both, or else no claim could be indeterminate.[5] Chalmers never directly addresses the question, but if I'm reading him right he takes truth to be transparent. For instance, he moves freely between '$B \rightarrow p$' and 'If all of B is true, p is true'; but these are only equivalent for transparent truth.

On pages 31–32, Chalmers considers the following argument (citing Hawthorne 2005 as inspiration):

(a.i) Either p or $\sim p$.

(a.ii) If p, then p is scrutable.[6]

(a.iii) If $\sim p$, then $\sim p$ is scrutable.

(a.iv) So either p is scrutable or $\sim p$ is scrutable.

Chalmers worries that the conclusion is implausible when p is indeterminate (31). But premises (a.ii)–(a.iii) are licensed by GST, and (a.i) by semi-classicism. Something must go. Chalmers' solution is to revise GST: it does not say that p is scrutable if true, but rather that p is scrutable if *determinate*.

Is Chalmers right about (a.iv)'s implausibility? One line of thought holds that, if it's indeterminate whether p, then it will also be indeterminate whether p is scrutable. In such cases we can accept (a.iv). (Cf. Dorr 2003) When faced with such indeterminacy, the ideal scryer presumably needs to get herself into a state where its indeterminate whether she believes '$B \supset p$' or '$B \supset \sim p$'.

If we think scrutability can't be indeterminate, we won't like this move. But Chalmers is happy to let p's scrutability be indeterminate in cases of 'higher-order indeterminacy' — that is, cases where p's determinacy is itself indeterminate (32, 235 n. 3). But if indeterminate scrutability is okay when the indeterminacy is higher-order, it's not clear why it's not okay when the indeterminacy is first-order.[7]

Suppose Chalmers is right and (a.iv) is objectionable. This motivates revising GST; but why isn't the revision *ad hoc*? I imagine the following reply: 'We should care about whether an ideal reasoner can scry *whatever there is to be known* from a given base. But if it's indeterminate whether p, there just isn't anything there to be known, so an ideal scryer shouldn't be embarrassed if she can't scry it. So the revision is well-motivated.'

This line of thought seems reasonable only if claims of the form

[5] The T-schema says that it's true that p iff p; the definiteness of truth says that it is true that p iff it is determinate that p. These with disjunctive syllogism and excluded middle tell us either p is determinate or $\sim p$ is.

[6] I take 'is scrutable' here to mean 'is a priori scrutable from the actual base': if B is the actual scrutability base, then (a.ii) can be read as 'If p, then $B \supset p$ is a priori knowable.'

[7] Indeterminate scrutability isn't the only way to accomodate (a.iv); Williams (forthcoming) suggests a *permissive* option according to which, very roughly, the indeterminacy of p is compatible both with knowing that p and with knowing that $\sim p$.

$(*)\ \ p \wedge Indet(p)$[8]

are inconsistent. They are on ordinary supervaluational accounts;[9] but semi-classicism doesn't force this.[10]

Why does Chalmers need $(*)$ to be inconsistent? Because if it were consistent, p's indeterminacy would leave open both p and $\sim p$: those would remain epistemic possibilities. If that were so, then even after an ideal reasoner scried p's indeterminacy from a base, we could reasonably expect her to go on and scry from that base whether p or $\sim p$. There would be something further to know. So I take Chalmers to be implicitly committed to $(*)$'s inconsistency.

2 Suppositions and Conditionals

Semi-classical accounts that make $(*)$ inconsistent also invalidate conditional proof: Even if you can demonstrate q on the assumption that p, you cannot conclude $p \supset q$.[11] But some of Chalmers arguments seem to rely on conditional proof. For instance, Chapter Three's Cosmoscope Argument begins by convincing us that an ideal reasoner can infer all ordinary[12] truths from a set of claims $PQTI$. We move from this to her ability to know the indicative conditional $PQTI \rightarrow p$. Chalmers then argues that her ability to know this conditional doesn't depend on empirical knowledge, in which case the ideal scryer can know it — and $PQTI \supset p$, which follows from it — a priori.

If conditional proof is invalid, then so is one of the moves in the above argument. *Which* move depends on how indicative conditionals interact with determinacy operators. If $p \rightarrow Det(p)$ is essentially a logical truth, then indicative conditionals don't entail material ones, and the move from conditional to a priori scrutability is invalid.[13] If $p \rightarrow Det(p)$ is not a logical truth, then the move from inferential to conditional scrutability is invalid. Either way, the argument breaks down somewhere.

Conditional proof only fails for certain 'determinacy-exploiting' inferences. We might hope that the Cosmoscope Argument will avoid these inferences and turn out okay. But this isn't entirely clear. Once cause for suspicion is that, if

[8]'$Det(p)$' means 'determinately, p'; '$Indet(p)$', defined as '$\sim Det(p) \wedge \sim Det(\sim p)$', means 'it is indeterminate whether p'.

[9]More precisely, they're *globally* inconsistent, but *locally* consistent; see Williamson 1994: ch. 5. What Chalmers needs to motivate GST's revision is something that lets the ideal scryer rule out $(*)$ a priori; I take it that global inconsistency is up to that job.

[10]Cf. Barnes 2010: 613–618; notice that on her account $(*)$ is consistent but cannot be *determinately* true (n. 55).

[11]Since Det is factive, $p \vDash \sim Det(\sim p)$. This plus the inconsistency of $(*)$ gets us that $p \wedge \sim Det(p) \vDash \bot$. By conditional proof, $\vDash [p \wedge \sim Det(p)] \supset \bot$. But this truth-functionally entails the unacceptable $p \supset Det(p)$. Since Det's factivity isn't up for grabs, conditional proof has to go.

[12]And 'non-Fitchian,' but that needn't detain us.

[13]On this picture, disjunctive syllogism will fail for indicative conditionals, lest we use it with LEM to conclude that everything is determinate.

there can be indeterminacy in the base itself, then certain classes of claims will count as inferential scrutability bases but not a priori ones.

Here's an example. Scrutability bases include *de se* information: a perspective for an ideal scryer to scry from. One such perspective is presumably mine. On one plausible treatment of the problem of the many, it is indeterminate which of many precise physical objects I am (cf. Keefe 2008: 318). There are lots of roughly me-shaped objects sitting in my chair, and there's no fact of the matter about which one is me. Let x be one of these objects, and let F be a complete physical description of it. Then any ideal scryer scrying from my perspective should conclude 'It's indeterminate whether I'm F'.[14]

Ideal scryers don't have to work from my perspective. Presumably, they could work from the perspective of one of the maximally precise objects that isn't determinately not-me, such as x. Scrying from that perspective they should conclude 'It's determinate that I am F'. Suppose y is another such object, one that is determinately not F, but G instead; from the perspective of y, the ideal scryer can conclude 'It's determinate that I'm not F, but G.'

For simplicity, suppose that x and y are the only two things that are not determinately not-me. (It's simple but tedious to expand the range.) Let f be the claim 'I am F' and g the claim 'I am G'. (Note that f and g are a priori incompatible.) Take $PQTI$ and remove all *de se* information, and then add to it $Det(f \vee g)$. Call the result PQT^+. Then these three should be (deeply) epistemically possible scrutability bases:

- $PQT^+ \wedge Det(f)$
- $PQT^+ \wedge Det(g)$
- $PQT^+ \wedge Indet(f) \wedge Indet(g)$

But if $PTQ^+ \wedge Det(f)$ is an inferential scrutability base, then so is $PTQ^+ \wedge f$. An ideal scryer can use the latter plus $(*)$'s inconsistency to infer the former. Since the former is a scrutability base for all the (determinate) ordinary truths, once an ideal scryer gets that far she can go the rest of the way. Similar reasoning applies to $PTQ^+ \wedge g$.

But these cannot both be a priori scrutability bases. Consider:

(b.i) $(PQT^+ \wedge f) \supset Det(f)$

(b.ii) $(PQT^+ \wedge g) \supset Det(g)$

(b.iii) $Det(g) \supset Det(\sim f)$

[14]Two potential worries. First, Chalmers' discussion of scenarios in the Tenth Excursus seems to suggest that the *de se* perspective of any (deeply) epistemically possible scenario will be maximally precise. Second, funny business might arise if I have phenomenal properties but x does not. To avoid the second, we can imagine I am a phenomenal zombie with imprecise boundaries. I'm less sure what to say about the first, but it seems to me that if the Tenth Excursus framework is unable to handle scenarios with fuzzy *de se* centers, that's a problem for the framework, not this argument.

(b.iv) $PQT^+ \supset (f \vee g)$

(b.v) So, $PQT^+ \supset \sim Indet(f)$.

We can know (b.iii) a priori thanks to the incompatibility of f and g,[15] and (b.iv) is trivial. But if the antecedents are a priori scrutability bases, we can know (b.i) and (b.ii) a priori, too. Thus we can know the conclusion a priori — but it rules out my having fuzzy boundaries. That's bad; so some inferential scrutability bases had better not be a priori ones.

3 Philosophical Indeterminacies

Philosophy is hard — so hard that it's difficult to believe the answers to all philosophical disputes are scrutable from a empirico-phenomenological base. At first glance GST would seem to say that they are.

Chalmers suggests three strategies for when the scrying gets tough. First: Tow the line and insist that, appearances be damned, the difficult question is scrutable after all. Second: Grant that its not scrutable from the limited base, and let the ideal scryer 'peek' by expanding the base. Third: Rule the answer indeterminate and thereby let the ideal scryer off the hook. (271–273)

In this last section I want to point out some surprising upshots of the third strategy. I will focus on the debate about *compositional nihilism* (CN), according to which all material objects are 'partless atoms' in the void; but I suspect the issues will re-arise for other philosophical debates.

Suppose we describe a composite-object-containing world. If our description is *atomistic*, then we describe every object either as a partless atom or as being ultimately built out of partless atoms.[16] It's plausible to think that we could re-describe an atomistic world in composite-free terms without loss of information. Instead of talking about the wholes, we simply talk directly about the atomic parts that make them up.

The debate over CN is about which of these descriptions is correct. CN says there are just the atoms: it's a mistake to describe them as making up further things. Its foes say there are composites: it's a mistake to leave them out of our description. But we might think that neither description is better than the other: the world just doesn't care whether you describe it as containing wholes made up of atoms or just the atoms themselves. If so, it would be indeterminate whether CN is true. Chalmers is independently sympathetic to this idea (2009), and recommends CN's indeterminacy as a salve to its apparent inscrutability (267–269 and 2009: 104).

We describe a *gunky* world if we describe it as having things with parts each of which has further parts, and so on all the way down. In gunky worlds, not everything decomposes into atoms, because any decomposition of some gunk

[15]We know a priori that $Det(g \supset \sim f)$, but Det distributes over $\supset$.

[16]By 'part' I intend 'proper part' throughout.

leaves things that can be further decomposed. Unlike atomistic worlds, it is very difficult to think that we could, without loss of information, re-describe gunky worlds in a composite-free way. (Cf. Sider 1993: 287)

Let G be the claim that there is some gunk. It's well-known that CN rules out the possibility of gunk. It's less obvious but nonetheless plausible that, if CN is false, gunk is possible after all. (The conjunction '$\sim$CN $\wedge$ G' seems to pass the relevant conceivability tests, for instance.) Furthermore both of these connections seem determinate, which suggests that, if CN is indeterminate, then it's also indeterminate whether gunk is possible:

(c.i) $Indet(\text{CN}) \supset Indet\Diamond G$

Since we can't re-describe a gunky world in composition-free terms, it can't be indeterminate whether gunk is *actual*. If gunk's possibility is indeterminate, that's not because there's a possible world that's indeterminately gunky, but because there's a determinately gunky world, and it's indeterminate whether it's possible. If that's right, then whether there is gunk cannot itself be indeterminate:

(c.ii) $G \supset Det(G)$

Two more observations. First, it's clear that whatever is true is possible, and that should it be determinately so:

(c.iii) $Det(G \supset \Diamond G)$

Second, if CN is indeterminate, that's thanks to something deep about the nature of the composition debate. The indeterminacy of CN should thus be both necessary and a priori. It should be determinately indeterminate, too: it's not like there's higher-order vagueness about whether that debate is in good standing. If the world doesn't care whether it's described with or without parts, then it should *determinately* not care.

But now we can argue that gunk is not an epistemic possibility. For suppose it were; then by GST, there would be a compact, deeply epistemically possible base B such that

(c.iv) $B \supset G$

is knowable a priori. But (c.i)–(c.iv) together entail

(c.v) $B \supset \sim Indet(\text{CN})$.[17]

Furthermore, we plausibly come to know each of (c.i)–(c.iii) a priori, so we can know (c.v) a priori, too. But given that we also know a priori that CN is indeterminate, we can now a priori rule out B and, by finishing the reductio, rule out G.

[17] From (c.iii) we get $Det(G) \supset Det\Diamond G$, which we use with (c.iv) and (c.ii) to get $B \supset Det\Diamond G$. Contraposing (c.i) gets us $(Det\Diamond G \vee Det\sim\Diamond G) \supset \sim Indet(\text{CN})$, and these two get us (c.v).

This is at least somewhat worrying, and for a couple of reasons. First, gunk seems to be a live epistemic possibility — not just in Chalmers' 'deep' sense, but in the sense that we might someday find, or even already have, good reason to think we live in a gunky world (cf. Schaffer 2010: 61–62 and Arntzenius 2008: §§2–6). It seems strange that we could a priori rule out, by reflecting on the nature of scrutability and the difficulty of ontology, a live theoretical hypothesis.

Second, arguments against CN sometimes run like so: 'Gunk is epistemically possible, so it is metaphysically possible. But if CN is true, gunk is not metaphysically possible. Therefore, CN is not true.' Friends of CN of course resist the argument (e.g. Sider 2013: §8). The point is not that the argument is right; it is, rather, that the premises themselves are hotly contested metaphysical theses, part and parcel of the broader debate about CN. The friend of GST who thinks CN indeterminate has now fallen into this debate. She denied an argument's premise, and now owes it to everyone else to engage with that premise's motivation. So we can't simply rule CN indeterminate to do an end-run around difficult metaphysical dispute; the thesis that CN is indeterminate is another metaphysical hypothesis in the mix, and not clearly any epistemically more tractable than the hypotheses that it is true. As such, it's not clear ruling it indeterminate has made an ideal scryer's job any easier.

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