The Frontloading Argument*

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Maybe the most important argument in David Chalmers's monumental book *Constructing the World* (Chalmers, 2012)[1] is the one he calls the 'Frontloading Argument', which is used in Chapter 4 to argue for the book's central thesis, A Priori Scrutability. And, *prima facie*, the Frontloading Argument looks very strong. I shall be arguing here, however, that it is incapable of securing the conclusion it is meant to establish. My interest is not in the conclusion for which Chalmers is arguing. As it happens, I am skeptical about A Priori Scrutability. Indeed, my views about the a priori are closer to Quine's than to Chalmers's. But my goal here is not to argue for any substantive conclusion but just for a dialectical one: Despite its initial appeal, the Frontloading Argument fails as an argument for A Priori Scrutability.

The paper is organized as follows. In section 1, I will explore the role that the Frontloading Argument plays in Chalmers's defense of A Priori Scrutability. As we will see, the argument depends crucially upon what Chalmers calls the 'Core Knowability Thesis', which states that all knowable truths are knowable (in principle) on the basis of a very limited sort of evidence. In section 2, then, I'll discuss several questions about how this thesis should best be understood, isolating one as particularly important: whether the Core Knowability Thesis allows for the possibility of dependence upon background knowledge. In section 3, we will see that the answer had better be negative: The Core Knowability Thesis otherwise cannot do the work it needs to do in the Frontloading Argument.

That much is purely expository. It is in section 4 that evaluation begins. I argue that, if the Core Knowability Thesis is understood in the form just mentioned, then it is already strong enough to imply

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[1] Further references to this book will be abbreviated "CTW".

A Priori Scrutability by itself, at least given a few other subsidiary premises that are also required by the Frontloading Argument. If that is right, then the Frontloading Argument is redundant. Finally, I consider an amended argument at which Chalmers seems to gesture—a sort of Iterated Frontloading—in section 5, arguing that it fails for broadly logical reasons.

1 From Conditional Scrutability to A Priori Scrutability

In Chapter 3 of *Constructing the World*, Chalmers argues for a version of the thesis he calls 'Conditional Scrutability', which states that there is a class B of base truths such that, for any truth M, the conditional $B \rightarrow M$ is knowable by a sufficiently idealized sort of reasoner.[2] Different forms of the view differ on what they take the base truths to be, and the arguments to be given below will not depend upon what the base class is, so long as it is, in Chalmers's sense, 'compact', i.e., so long as it deploys a restricted conceptual vocabulary. I will formulate my arguments, however, in terms of the particular base class Chalmers employs. This is what he calls $PQTI$: It consists of **P**hysical (ultimately, microphysical) truths, **Q**ualitative truths about the nature of each person's phenomenal experience, a **T**hat's All statement to the effect that nothing relevant has been left out, and certain **I**ndexical truths about who, where, and when one is.

Now, although I find Chalmers's arguments for Conditional Scrutability less than convincing,[3] I will set such concerns aside here, for Conditional Scrutability is too weak for Chalmer's larger purposes. It cannot be used to ground the treatment of epistemic modalities that underlies his construction of epistemic intensions in the Eleventh Excursus (CTW, pp. 244–58; see also Chalmers, 2002). For that, Chalmers needs the conditional $PQTI \rightarrow M$ not just to be knowable but to be knowlable a

[2] I shall generally prescind here from worries about the idealizations Chalmers requires. Like Jason Stanley (2014, §2), however, I think that these idealizations are so extreme that they call into question the extent to which Chalmers's treatment of epistemic intensions can throw any light at all on the thoughts of non-ideal agents, such as human beings. More specifically, I believe that no view that abstracts from deductive reasoning can possibly provide an accurate account of human thought, and Chalmers's view does just that.

[3] We'll discuss one of these arguments, the Argument from Knowability, in section 4.1, but mostly as a way of getting clear about its structure. See note 36, however, for an expression of skepticism about that argument.

priori. The stronger thesis of A Priori Scrutability[4] states that it is: For any truth M, the conditional $PQTI \rightarrow M$ is knowable a priori by, again, a sufficiently idealized sort of reasoner.[5] The difference between the two theses lies in the fact that Conditional Scrutability allows knowledge of the conditional $PQTI \rightarrow M$ to depend upon "empirical background knowledge" (CTW, p. 113), whereas A Priori Scrutability requires it not to do so.

The empirical background knowledge in question is whatever a sufficiently idealized version of ourselves might bring to the task of evaluating such conditionals as $PQTI \rightarrow M$. We are to imagine that we have been given a complete description of an epistemically possible world in the terms permitted by $PQTI$, and we are then asked to decide whether some non-basic truth M holds in that world, considered as actual.[6] Chalmers does *not* assume, in the arguments for Conditional Scrutability given in Chapter 3, that we come to this task with no prior empirical information. On the contrary, he assumes that we bring with us whatever we might know, and he allows us to make use of that knowledge in deciding whether M is true in the situation described. But if our judgement, say, that M is indeed true in that situation depends upon some of the empirical information we brought with us, then our knowledge that $PQTI \rightarrow M$ is not a priori.

In Chapter 4 of *Constructing the World*, then, Chalmers attempts to argue from Conditional Scrutability to A Priori Scrutability. In §4.2, he gives what he calls 'the argument from suspension of belief', but he himself describes the argument as "somewhat flat-footed" (CTW, p. 159), and not even two pages are devoted to it. The difficulty with this argument is that it requires us to assume that, when we attempt to determine whether M is true in some particular situation, we do so while suspending all our empirical beliefs. So the argument requires us to evaluate claims about what sorts of conditionals it would be possible for an idealized reasoner to know under conditions of Cartesian doubt.

[4] I'll capitalize this term when talking about this specific thesis concerning this specific base class. We'll also have occasion to discuss other a priori scrutability theses concerning other base classes, and in that case I won't capitalize.

[5] In the case of Conditional Scrutability, Chalmers takes the conditional not to be material, for reasons he discusses in §2.4. In the case of A Priori Scrutability, on the other hand, he claims that the conditional can be taken to be material (CTW, p. 59). The difference will not matter here.

[6] Part of the idealization involves assuming that we could comprehend such a description. Another involves assumptions about our capacity to reason about a world so described.

Even Chalmers allows that "we may be fallible in our reasoning about what counts as suspending all empirical belief" (CTW, p. 160). The problem is all the more serious since what counts as an *empirical* belief is part of what is at issue.

Chalmers's real argument for A Priori Scrutability thus comes in §4.3. This is the Frontloading Argument.[7] It is appealing in its simplicity. Consider some conditional $PQTI \rightarrow M$, and suppose that it is known only a posteriori. Let E be the 'empirical background knowledge' on which knowledge of the conditional rests. Then it seems reasonable to suppose that, if one can know $PQTI \rightarrow M$ with E playing the role of background knowledge, then one can know the conditional $PQTI \wedge E \rightarrow M$ without depending upon E as background knowledge and so without depending upon *any* background knowledge. So $PQTI \wedge E \rightarrow M$ is knowable a priori. As Chalmers puts it, E's "justifying role in reaching the conditional conclusion... can be played just as well by supposing it as by believing it" (CTW, p. 161). This is what I will call the Frontloading *Manoeuver*. It allows us to treat what was playing the role of background knowledge instead as a supposition and so to embed it into the antecedent of a conditional that will then be knowable a priori.

It is important to see how general these considerations are—and are intended to be. The argument is meant to apply whatever proposition M might be, and whatever the background knowledge E might include. Thus, at the beginning of Chapter 4, Chalmers recalls an objection once made by Ned Block and Robert Stalnaker (1999, pp. 21ff): Although the conditional $PQTI \rightarrow$ water $= H_2O$ may be knowable, it is not knowable a priori, but only on the basis of the background knowledge that the world is simple. Chalmers does not offer any response to this objection that would apply specifically to it. His strategy, rather, is to argue that *no* such objection can succeed. What we find in Chapter 4 are thus entirely general considerations that would apply no matter what background knowledge was in question. What is at issue here is whether these entirely general considerations do what is claimed for them.

There are a number of worries one might have about the Frontloading Manoeuver.[8] The more serious problem, however, is that we have

[7] There are also relevant considerations in §4.4, but Chalmers describes these as not really providing an argument for A Priori Scrutability so much as a helpful tool for dealing with particular sorts of counter-proposals. Some of the problems I shall raise below for the Frontloading Argument seem to me also to affect this 'diagnostic', but I shall not pursue the matter here.

[8] See, for example, the commentaries by Ram Neta (2014) and Laura Schroeter (2014).

no reason, at present, to suppose that the sorts of truths included in E are part of the base $PQTI$, and, for all that has been said so far, these background truths could be of any sort at all. Frontloading E by including it in the antecedent thus threatens to 'expand the base'. This need not undermine the spirit of the A Priori Scrutability thesis, since, as Chalmers notes, it might turn out that the sorts of empirical truths E that need to be frontloaded are "constrained in form" (CTW, p. 161). In that case, Chalmers's original base would indeed have to be expanded, but a larger, but still 'compact' (i.e, non-trivializing) base would nonetheless be available. "Only", Chalmers says, "if basic empirical evidence is open-ended—for example, if one must make irreducible appeal to evidence sentences about water, kangaroos, trees, and so on—will there be a problem for [a priori] scrutability" (CTW, p. 161). Suppose, in particular, that E trafficked in the same sorts of conceptual resources as M. In that case, $PQTI \wedge E \rightarrow M$ might be knowable a priori, but that would do nothing to reduce the scrutability base for truths of whatever sort M is. On the contrary, if that is the best one can do, then truths of that sort are scrutable only from other truths of that sort.

This problem, which we might call the 'level-crossing problem', is perhaps *the* central problem for Chalmers's program. Scrutability theses state that all truths are (in some sense) knowable on the basis of a more limited class of truths. The particular base Chalmers prefers is $PQTI$. So there are lots of truths—concerning water, kangaroos, trees, people, mathematics, morality, sociology, politics, and literature, *inter alia*—that are no part of that base. In order to recover these sorts of truths, Chalmers has to show how they can be known on the basis of (allegedly) more fundamental sorts of truths.

This is the main way in which Chalmers's project echoes the one Rudolf Carnap pursues in the *Aufbau*. Carnap's goal is to show that our concepts form a hierarchy, in which concepts at higher levels can always be defined in terms of those at lower levels, with the lowest level being purely phenomenal. Chalmers is not trying to define anything, and his base is more extensive than Carnap's. But Chalmers is trying to show that concepts at higher levels can, in some *epistemic* sense, be reduced to concepts at lower levels, in particular, that truths involving concepts at higher levels always follow a priori from truths at lower levels. If so, then, as said above, the crucial form of the objection to the Frontloading Argument that we are considering will concern the case in which the additional empirical information E on which knowledge of

$PQTI \rightarrow M$ depends involves the same sorts of concepts as appear in M, if not concepts at even higher levels.

Consider, for example, the case of moral truths, which Chalmers discusses in §6.3. The question whether such truths are a priori scrutable from $PQTI$ is then an epistemic form of the question whether moral truths can, in some relevant sense, be derived entirely from non-moral truths.[9] An opponent of A Priori Scrutability, in this case, can therefore be expected to claim that, even if conditionals of the form $PQTI \rightarrow M$ are knowable, such knowledge depends upon the availability of background information E that itself involves moral notions.[10] The Frontloading Manoeuver can then be used to argue that $PQTI \wedge E \rightarrow M$ is knowable a priori, but Chalmers's opponent can happily concede that point. By itself, then, frontloading cannot lead us from the conditional scrutability of moral truths from non-moral truths to their a priori scrutability.

Chalmers is well aware of this sort of problem. As we have seen, he raises it for himself. In response (CTW, p. 161), Chalmers suggests that we invoke what he calls the 'Core Knowability Thesis':[11]

(CKT) All knowable... ordinary truths are knowable with grounds in core evidence. (CTW, p. 131)

Core evidence consists in:

(i) subjects' introspective evidence about their own phenomenal states..., and (ii) perceptual evidence about the distribution of primary and secondary qualities in the environment. (CTW, p. 130)

The argument for A Priori Scrutability is then supposed to be completed as follows. Since the conditional $PQTI \rightarrow M$ is knowable, CKT implies that it is knowable with grounds C in core evidence. So, by the Frontloading Maneouver, $PQTI \wedge C \rightarrow M$ is knowable a priori. But, Chalmers argues, what is mentioned in part (i) of the statement of what constitutes

[9] It is important to understand that Chalmers's central theses go beyond any sort of metaphysical thesis. It is not enough for his purposes that moral truths, say, supervene on non-moral truths. Chalmers's position requires, in effect, that it must be knowable a priori *how* moral truths supervene on non-moral truths (or at least that it must follow a priori from the non-moral truths how the moral truths supervene on the non-moral truths).

[10] Whether we call such information 'empirical' is beside the point. What matters is that it is not itself a priori. (Note that it would not be sufficient for the relevant moral truths to be necessary.)

[11] I have elided a parenthetical restriction to "non-Fitchian" truths, since this is not relevant to our concerns.

core evidence is just evidence about the Q in $PQTI$, and evidence about Q provides no more than Q itself does; similarly, facts about primary qualities are included in P;[12] and finally, "[t]ruths about secondary qualities are plausibly scrutable from $PQI\ldots$" (CTW, p. 133).[13] So we may conclude that C provides no more information than is a priori scrutable from $PQTI$. Hence, $PQTI \wedge C \rightarrow M$ a priori implies $PQTI \rightarrow M$.[14]

It will be important later that this argument requires facts about secondary qualities to be *a priori* scrutable from $PQTI$, not just conditionally scrutable. In effect, Chalmers is arguing as follows

$$\begin{aligned} PQTI \wedge C &\rightarrow M \\ PQTI &\rightarrow C \\ \therefore PQTI &\rightarrow M \end{aligned}$$

and is observing that the conclusion will be knowable a priori if the premises are. But this requires $PQTI \rightarrow C$ to be knowable a priori. It will be only if facts about secondary qualities (which are included in C) are a priori scrutable from $PQTI$.[15]

2 The Core Knowability Thesis

As we have just seen, Chalmers proposes to invoke the Core Knowability thesis

(CKT) All knowable ordinary truths are knowable with grounds in core evidence.

[12] Perceptual evidence about the distribution of primary qualities might be introspectible, too, but the results of such introspection are already provided by Q.

[13] Chalmers does say "PQI" here, not "$PQTI$". This is a mistake, but not an important one. See note 28 for the details.

[14] It has been suggested to me that the arguments of §4.3 are not intended to establish that $PQTI \rightarrow M$ is knowable a priori, but only that $PQTI \wedge E \rightarrow M$ is knowable a priori. This does give a correct account of the argument Chalmers gives on p. 161, and the Frontloading Maneuver is the crucial move in that argument. But this interpretation ignores the argument Chalmers gives on p. 162, whose conclusion explicitly is that "M is a priori scrutable from $PQTI$". I take this argument to be the point of §4.3, and it is what I am calling 'The Frontloading Argument'. (Chalmers has confirmed this interpretation privately.)

[15] Note that this also means that Chalmers needs to establish that secondary qualities are a priori scrutable from $PQTI$ *without* using the Frontloading Argument, since this claim is needed in the Frontloading Argument itself. This means that the argument sketched in §6.14 needs to establish a priori scrutability, not just conditional scrutability, unlike the other arguments in Chapter 6.

at a crucial stage in the Frontloading Argument. To evaluate the role that CKT plays in that argument, then, we need to understand better what it says. There are (at least) five aspects of the thesis that need further explanation.

First, CKT as initially stated is restricted to 'ordinary' truths. It is not very clear, however, what Chalmers means by an 'ordinary' truth. We are told that an 'ordinary' truth is a "positive ordinary macroscopic truth"—roughly, it would seem, what we might call an 'everyday' truth—but among these is supposed to be the claim that water is H_2O (CTW, pp. 112–3), which is not a macroscopic truth at all, at least as I would understand the term 'macroscopic'. Fortunately, however, we need not resolve this interpretive puzzle. The reason CKT is initially restricted to 'ordinary' truths is that the entire discussion in Chapters 3 and 4 is restricted to such truths. This is a restriction that will ultimately have to be lifted. As Chalmers makes clear at the beginning of Chapter 6, the arguments he there sketches for the scrutability of psychology, sociology, morality, and the like are arguments for *Conditional* Scrutability. The A Priori Scrutability of such truths is then supposed to follow from the sorts of general considerations we are now considering (CTW, p. 259), namely, the Frontloading Argument.[16] If that is so, however, then the arguments given in Chapter 4—though they are focused on 'ordinary' truths, presumably for expository reasons—need to have more general application.[17]

For example, consider again the case of moral truths, and grant that such truths are Conditionally Scrutable from $PQTI$. So, if M is some moral truth, then the conditional $PQTI \rightarrow M$ is knowable. To reach the conclusion that $PQTI \rightarrow M$ is knowable a priori, we are supposed to rehearse the Frontloading Argument.[18] But since M is not an ordinary

[16] Though see note 15.

[17] See also note 25.

[18] Thus, Chalmers writes:

> Of course [a priori] scrutability is incompatible with a. . . view on which there are no a priori entailments from nonmoral truths to moral truths. But given that moral truths are conditionally scrutable from nonmoral truths, the arguments in chapter 4 can themselves be seen as good reasons to reject such a view. (CTW, p. 265)

So "the arguments in chapter 4" are supposed to show that, if moral truths are conditionally scrutable from non-moral truths, then moral truths are also a priori scrutable from non-moral truths. But the central argument for that conclusion is the Frontloading Argument.

truth, the conditional $PQTI \rightarrow M$ is not an ordinary truth, either.[19] If CKT is limited to 'ordinary' truths, then, it cannot be applied here, and Chalmers will have no answer to the objection that frontloading threatens to expand the base. Similar considerations apply to all the other sorts of truths that Chalmers dicusses in Chapter 6, so he in fact needs a form of CKT that is not restricted to 'ordinary' truths. I'll therefore ignore the restriction to 'ordinary' truths henceforth.

Second, note that CKT requires only that all knowable truths be know*able*[20] with grounds in core evidence. CKT does not require that all knowledge *in fact* be grounded in core evidence. That would be a stronger thesis that Chalmers calls the Core Evidence thesis:

(CET) Necessarily, all knowledge is grounded in core evidence.

Chalmers rightly regards CET as contentious and, in particular, as more contentious than CKT (CTW, pp. 130–1). So he offers CKT as a weakening of CET that is still strong enough to do the kind of work one might have wanted CET to do.

Third, recall that 'core evidence' consists in introspective evidence about one's own phenomenal states and perceptual evidence about one's environment, where the content of these perceptions is supposed to be limited to primary and secondary qualities. What is excluded here is perceptual evidence with 'rich' content, such as that there is a cat to my left. The question whether perception sometimes has 'rich' content has been the subject of much recent discussion (see e.g. Siegel, 2010), but Chalmers regards it as a specific advantage of CKT over CET that CKT does not commit us to denying that some of our perceptual beliefs are *in fact* justified by perceptual beliefs with 'rich' contents (CTW, pp. 131–2). CKT requires only that anything that *is* known on the basis of 'rich' perception *can* also be known on the basis of core evidence, and Chalmers argues for that claim in detail in §3.7. The success or otherwise of that argument will not matter here; i.e., I'm prepared to grant its success for present purposes. There is, however, a similar issue regarding 'empirical inference' that will become important in section 4.4.

[19] More worryingly, no matter what kind of truth M is, it would seem that $PQTI \rightarrow M$ should not be an 'ordinary' truth, since $PQTI$ itself is stated in whatever terms a completed microphysics might require. See the end of section 3 for a bit more on this issue.

[20] Chalmers does not say what the modality here is, but it does not matter for our purposes what it is, so far as I can tell.

Fourth, what does Chalmers mean when, in the statement of CKT, he says that something is "knowable with *grounds* in core evidence"? Officially:

> An item of knowledge K is grounded in... a set of empirical evidence propositions E when there is a doxastic warrant for K (as defined in the fourth excursus) whose empirical grounds include only elements of E. (CTW, p. 130)

It is thus to the Fourth Excursus that we must look for illumination. The main burden of the discussion there is to elaborate a notion of warrant in terms of what Chalmers calls 'support structures'.[21] Chalmers describes his account of support structures as being "inspired by the special case of proof" (CTW, p. 94). And, indeed, his account is very much along the lines suggested by some famous remarks Frege makes in explaining his notions of analyticity and a priority:[22]

> When a proposition is called a posteriori or analytic in my sense, this is not a judgement about the conditions, psychological, physiological and physical, which have made it possible to form the content of the proposition in our consciousness; nor is it a judgement about the way in which some other man has come, perhaps erroneously, to believe it true; rather, it is a judgement about the ultimate ground upon which rests the justification for holding it to be true.[23]
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> The problem becomes, in fact, that of finding the proof of the proposition, and of following it up right back to the primitive truths. If, in carrying out this process, we come only on general logical laws and on definitions, then the truth is an analytic one.... If, however, it is impossible to give the proof without making use of truths which are not of a general logical nature, but belong to the sphere of some special science, then the proposition is a synthetic one. For a truth to be a posteriori, it must be impossible to construct a proof of it without including an appeal to facts, i.e., to truths which cannot be proved and are not general, since they contain assertions about particular objects. But if, on the contrary, its proof can be derived exclusively from general laws, which themselves neither need not admit of proof, then the truth is a priori. (Frege, 1980, §3)

For Frege, then, a full justification for a proposition consists of a proof of that proposition in which each premise used in the proof is itself given a subsidiary proof, unless that premise is of a sort of that cannot

[21] The discussion aims to describe a very general notion that can be specialized either in doxastic or propositional terms. It is the former that matters here: We are concerned with how some item of knowledge is actually justified for some thinker.

[22] It's a reasonable guess that this discussion inspired Carnap's account in the *Aufbau*, which is stated in terms of definability. (Carnap was a student of Frege's.)

[23] So Frege is primarily (or even exclusively) interested in what we would nowadays call propositional justification.

be proven, because it is in some relevant sense primitive. And, for Frege, the individual steps of the proof are supposed always to be logical in character, or else to be supported by definitions. Chalmers seems prepared, reasonably enough, to countenance other forms of legitimate inference (CTW, pp. 96–7). But, like Frege, Chalmers wants us to think of the full justification for a proposition as being a directed hypergraph,[24] with the proposition to be justified sitting at the root node of the graph and the various propositions that figure in its justification sitting at the other nodes; the connections between the nodes correspond to relations of (unmediated) evidential support. The *grounds* for a proposition are then the propositions that sit at the non-root terminal nodes of the graph: the premises of the proof, in Frege's formulation.

Fifth, finally, and most importantly, we need to ask whether CKT allows for the possibility of dependence upon background knowledge. To put it differently, the question is whether CKT should be understood as:

(CKT+) All knowable truths are knowable with grounds in core evidence, with no reliance upon any sort of background knowledge.

The text of *Constructing the World* is not as clear about this matter as one might prefer. As we shall see in section 4.1, for example, CKT is not needed in this strong form in the context in which it is originally introduced. But it is needed in the stronger form in the Frontloading Argument. Or so I am about to show.

3 The Role of CKT in the Frontloading Argument

The Frontloading Argument, recall, proceeds as follows. Let M be some truth. We are assuming Conditional Scrutability and so are assuming that the conditional $PQTI \rightarrow M$ is knowable. The possibility remains open, however, that this conditional is knowable only on the basis of certain background knowledge E. Chalmers argues—this is the Frontloading Manoeuver—that, if $PQTI \rightarrow M$ is knowable on the basis of E, then $PQTI \wedge E \rightarrow M$ is also knowable and that "E will not play an essential role in justifying this conditional knowledge" (CTW, p. 161). So $PQTI \wedge E \rightarrow M$ is knowable a priori. But the worry now is that E might be no part of $PQTI$, that it might even involve conceptual resources

[24] The difference between a graph and a hypergraph is that, in the latter case, an 'edge' (or, in the directed case, an 'arrow') can connect more than two nodes. So, in this case, two (or more) propositions might jointly support some proposition.

similar to those present in M. Chalmers therefore suggests that we invoke CKT: Since $PQTI \rightarrow M$ is knowable, it is knowable on the basis of core evidence C. So start over. Since $PQTI \rightarrow M$ is knowable on the basis of C, the Frontloading Manoeuver delivers that $PQTI \wedge C \rightarrow M$ is knowable with justification independent of C and so is knowable a priori. But arguments we discussed at the end of section 1 show that C is a priori scrutable from $PQTI$, which is to say that $PQTI \rightarrow C$ is knowable a priori. And of course $PQTI \wedge C \rightarrow M$ and $PQTI \rightarrow C$ logically imply $PQTI \rightarrow M$, which is therefore knowable a priori as well.

It will be easier to evaluate this argument if we first examine a simpler version of it, one similar to an argument that Chalmers gives at the end of §3.4, in which he argues that CKT implies Conditional Scrutability. (We will examine this argument shortly.) He explicitly notes that this argument does not suffice to establish A Priori Scrutability, since knowledge of $PQTI \rightarrow M$ may depend upon background knowledge. "Still", Chalmers says, "one can extend the argument by applying [it] to background knowledge itself" (CTW, p. 134).

So let E be the background knowledge in question. By the Frontloading Manoeuver, $PQTI \wedge E \rightarrow M$ is knowable a priori. By CKT, E can be known on the basis of core evidence C.[25] So $C \rightarrow E$ is knowable. So now we can argue as follows:

$$\begin{aligned} PQTI \wedge E &\rightarrow M \\ C &\rightarrow E \\ PQTI &\rightarrow C \\ \therefore PQTI &\rightarrow M \end{aligned}$$

The argument is valid, and the first and third premises are knowable a priori (by the Frontloading Manoeuver and the arguments discussed at the end of section 1). So, if we could show that $C \rightarrow E$ was also knowable a priori, then it would follow that $PQTI \rightarrow M$, too, was knowable a priori. But CKT simply does not imply that $C \rightarrow E$ is knowable a priori, since it allows for dependence upon background knowledge. To get that conclusion, one needs the stronger thesis CKT+.

[25] Note here again that, if CKT is limited to 'ordinary' truths, this application of it would presume that E also is an 'ordinary' truth. But there is, in general, no reason to suppose that E must be an 'ordinary' truth. Indeed, that background knowledge must be (or, at least, can always be assumed to be) "constrained in form" (CTW, p. 161) is precisely what the appeal to CKT is being used to show. So the initial restriction to 'ordinary' truths in CKT must eventually be lifted.

Note that this has nothing to do with what I have been calling the Frontloading *Manoeuver*. I mean to be granting (for the sake of arugment) what Chalmers calls the "frontloading principle", that "if one knows M with justification from $E\ldots$, then one can have conditional knowledge of M given E with justification independent of E" (CTW, p. 162). So I am granting that $PQTI \wedge E \rightarrow M$ is knowable a priori. The issue is whether $C \rightarrow E$ is knowable a priori, and the point is that only the strong thesis CKT+ can deliver that conclusion.

Return now to Chalmers's own version of the Frontloading Argument:

> From Conditional Scrutability, it follows that s is in a position to know M given $PQTI$. The Core Knowability thesis... entails that s is in a position to know $[PQTI \rightarrow M]$, with the knowledge grounded in core evidence C. So s is in a position to know $[PQTI \wedge C \rightarrow M]$, with justification independent of C. But C was *the total relevant empirical evidence*, so this justification [of $PQTI \wedge C \rightarrow M$] independent of C will be justification *independent of all empirical evidence*. So M is a priori scrutable from $PQTI \wedge C$. Furthermore, $\ldots C$ is plausibly a priori scrutable from $PQTI$. If so, M is a priori scrutable from $PQTI$. (CTW, p. 162, emphasis added)

Note the emphasized remark that "C was the total relevant empirical evidence". This is essential. If this argument is to justify the claim $PQTI \wedge C \rightarrow M$ is not just knowable but knowable a priori, then $PQTI \rightarrow M$ needs to knowable not just on the basis of C, but on the basis of C with no reliance upon any sort of background knowledge. The Core Knowability thesis cannot deliver this conclusion unless it is being understood in the strong form CKT+.

Two Versions of the Frontloading Argument

As the reader will note, the difference between my version of the Frontloading Argument and Chalmers's concerns where CKT is invoked. In my version, we grant that $PQTI \rightarrow M$ is knowable on empirical grounds E and then use CKT to infer that E itself is knowable on the basis of core evidence C. Chalmers, by contrast, discards E altogether and uses CKT to infer that $PQTI \rightarrow M$ is knowable on the basis of core evidence C. It's worth reflecting for a moment on this difference.

In many ways, the former argument strikes me as more compelling.[26] Chalmers does not say very much in favor of CKT. What he does say,

[26] On the other hand, Chalmers's version of the argument does not actually need a principle quite as strong as CKT+. As CKT+ has been stated, it applies to all knowable truths. But the application Chalmers makes of it, in the context of the Frontloading

however, suggests that he regards CKT as a consequence of a form of epistemological foundationalism that is weak enough to be broadly acceptable (CTW, pp. 130–1). But that sort of foundationalism, one might have thought, cannot but be beholden to the particulars of our actual circumstances as epistemic agents. And, if so, then it is hard to see how that sort of foundationalism could ever entail anything about the knowledge of a highly idealized agent who is capable of possessing concepts, and of thinking thoughts, and of reasoning in ways that are wholly inaccessible to us, perhaps in principle. Since that is the only sort of agent who is supposed to be capable of knowing $PQTI \rightarrow M$, however, it is hard to see how CKT, so motivated, could ever have anything to say about such a super-being's knowledge of such conditionals.

I'll henceforth focus my attention on the first sort of argument, then, in which CKT is applied directly to background knowledge, since that is easier to discuss. It should be clear that nothing substantial turns upon this choice.

4 The Argument from Knowability

What we have just seen is that the Frontloading Argument is invalid unless CKT is understood in the strong form CKT+. By itself, that is not a problem, just an observation. But, already at first blush, there are ways in which CKT+ seems to be stronger than the A Priori Scrutability thesis Chalmers is using it to establish.[27] In his discussion of Conditional Scrutability, Chalmers emphasizes the role played by the microphysical truths contained in $PQTI$. For example, to be able to conclude, on the basis of $PQTI$, that some watery-looking stuff actually is water, one might need to know something about the chemical composition not just of that stuff but also of other watery-looking stuff to which one has been exposed (CTW, pp. 121–3). CKT+, by contrast, implies that all knowable truths are derivable a priori from evidence of a much more

Argument, is always to a conditional of the form $PQTI \rightarrow M$. So, in principle, Chalmers could make do with the following restricted form of CKT+:

CKT? For any truth M, if the conditional $PQTI \rightarrow M$ is knowable, then it is knowable on the basis of core evidence, with no reliance upon any sort of background knowledge.

It is extremely difficult, however, to see how one could argue for such a restricted thesis except by deploying resources that would be sufficient to establish the unrestricted thesis CKT+.

[27] Compare note 36 below.

limited sort, evidence that certainly does not include anything about chemical composition. It seems to me, therefore, that appealing to CKT+ in an argument for A Priori Scrutability would beg most of the questions at issue here. No one who is skeptical about A Priori Scrutability (and who has their wits about them) is going to be prepared to grant CKT+.

We need not rest there, however. CKT is first introduced in §3.4 as the central premise of what Chalmers calls the 'Argument from Knowability', which is one of three arguments he gives for Conditional Scrutability. If CKT is understood in the strong form CKT+, however, then the Argument from Knowability already suffices to establish A Priori Scrutability. The Frontloading Argument then threatens to become redundant: It depends upon a subsidiary premise that is strong enough, by itself, to imply the conclusion of that very argument. That, anyway, is what I shall now argue.

4.1 From CKT to Conditional Scrutability

In the context of the Argument from Knowability, CKT appears as the starting point of an argument for the following restricted form of Conditional Scrutability:

(CST$-$) All knowable truths are conditionally scrutable from PQI.

The main restriction here is to knowable truths.[28] We'll discuss how that restriction is to be lifted below. For now, we'll focus on the argument for CST$-$.

Chalmers's own presentation of this argument is somewhat compressed, consuming just two short paragraphs (CTW, p. 133). We need, therefore, to reconstruct and elaborate the argument. My version will

[28] There are two other ways in which Chalmers's version of CST$-$ is restricted. First, it is restricted to 'ordinary' truths. But we saw above that this restriction ultimately has to be lifted. And Chalmers himself remarks, in §3.4, that "... the restriction to ordinary truths plays no role here..." (CTW, p. 127).

Officially, attention is also restricted in Chapter 3 to 'positive' truths. This is supposed to make the That's All component of $PQTI$ otiose; adding T is supposed to take care of negative truths. This is why Chalmers talks just about PQI in several passages to be quoted below, and it is why I have stated CST$-$ in terms of PQI. This last restriction seems to be a mistake, however. Block and Stalnaker (1999, p. 18), for example, object at one point that identifying water as H_2O requires ruling out the existence of "ghost water". This sort of objection is supposed to be answered by the inclusion of the That's All clause (CTW, p. 124). If so, however, then positive truths are not conditionally scrutable from PQI but at best from $PQTI$. So far as I can see, however, this is easy enough to fix: Just add T. So I'll ignore this point in what folows.

not follow quite the same path that Chalmers's does, but I will try to make it clear that it uses the same argumentative resources.

Recall first that CKT, unpacked, assures us that, for any knowable truth M, there will be a 'proof' of it from core evidence C. This suggests that CKT is, or is at least equivalent to, an *inferential* scrutability thesis. As Chalmers defines this notion, a proposition M is inferentially scrutable for a subject S from some base B just in case, were S to come to know B, then S would be in a position to know M (CTW, pp. xiv, 47). But if it is possible to know some truth M with grounds C in core evidence, surely it must also be true that, if one actually possessed the evidence C, then one would be in a position to know M. That one can know M with grounds C amounts, after all, to there being a certain knowledge-yielding argument from C to M.[29] So CKT implies what we might call the Core Inferential Scrutability thesis:

(CIS) All knowable truths are inferentially scrutable from core evidence.

and the converse seems to follow from the very definition of inferential scrutability.[30] It will matter to us, though, only that CKT implies CIS.

There is a complication here, one that derives from the fact that core evidence consists of perceptual and introspective *evidence*, not of the propositions that are the content of that evidence. If one supposes that perception and introspection have contents that are conceptual, then of course one could reasonably understand talk of scrutability from such evidence as shorthand for talk of scrutability from the content of such evidence.[31] If, however, one thinks that perception has a different kind of content from belief (see e.g. Heck, 2007), then it will not make sense to speak of us as knowing or supposing the contents of our perceptions. But there is really no reason we cannot speak of inferential scrutability

[29] Indeed, Chalmers himself writes, at one point: "... [W]hen the possible knowledge of M grounded in E is grounded in inference from knowledge of E, ... knowledge of E puts [one] in a position to know M" (CTW, p. 133).

[30] In the Fourth Excursus, Chalmers suggests that the notion of scrutability ought really to be explained in terms of the existence of warrants. In particular, he suggests that "... q is inferentially scrutable from p when knowing p would provide a warrant for q..." (CTW, p. 94). But then it looks as if CKT really is just an inferential scrutability thesis—modulo the complications we are about to discuss.

[31] Chalmers himself remarks that the Argument from Knowability depends upon the claim that "if M is s-knowable with grounds in core evidence E, M is scrutable from E", and he speaks in his argument for this claim of "knowledge of E" (CTW, p. 133). But he is there making the simplifying assumption that perceptual content is conceptual. Without that assumption, the problem I am discussing here would also arise for Chalmers's version of the argument.

from a base including possible perceptual experiences. We would simply need to think of the agent both as knowing certain propositions and as having had certain experiences and, on that basis, being in a position to know M. So the notion of inferential scrutability, as it appears in CIS, is not quite Chalmers's, but it is a natural extension thereof.

Now let $Q12$ be a potential scrutability base consisting of facts about the qualitative experience of each person and about the distribution of primary and secondary qualities. Then we can derive the following intermediate conclusion from CIS:

(IST′) All knowable truths are inferentially scrutable from $Q12$.

The difference here is that, instead of appealing, say, to *perceptual evidence* about the distribution of primary qualities, say, we are appealing to *facts* about their distribution. Some such move obviously needs to be made on the way from CKT to CST−.[32]

Chalmers's strategy is to argue, as he puts it later in the book, that "... the justifying role of experience is plausibly screened off by its role in justifying certain perceptual beliefs and introspective beliefs" (CTW, p. 159). This claim has two parts. First, perception cannot justify any belief except by first justifying a corresponding perceptual (or introspective) belief. And, second, once perception has done its job justifying some perceptual (or introspective) belief B, anything that might in turn be justified by B would still be justified, whatever the justification for B. In particular, the fact that B was perceptually justified would be of no significance. So the fact that core evidence includes perceptual and introspective *evidence* is not critical. What matters is what this evidence is evidence *for*. The only justificatory work core evidence can do is in entitling us to knowledge about the distribution of primary and secondary qualities and about our own phenomenal experience. If so, however, then we can replace perceptual evidence about such matters with knowledge about them, and those are exactly the facts that $Q12$ includes.[33]

The next target is:

(CST′) All knowable truths are conditionally scrutable from $Q12$.

[32] If one wants to avoid the complication about inferential scrutability, then one can invert this step and the previous one: Argue first that all knowable truths are knowable with grounds in $Q12$ and then from that to IST′.

[33] I'm not entirely sure about this argument, but I'll prescind from any worries about it here. It's obviously an argument Chalmers accepts, and a version of these same considerations figures in the Frontloading Argument.

Here again, some such move will have to be made at some point in the argument from CKT to CST−. We need to be able to get from the claim that M can be known on the basis of certain other statements B to a claim that the corresponding conditional $B \rightarrow M$ can be known. Chalmers's argument here amounts to little more than an invocation of the rule of conditional proof:[34]

> Suppose that M is inferentially scrutable from PQI, so that if one were to come to know $PQ[I]$, one [c]ould[35] come to know M. This suggests that even before coming to know PQI, one could know that *if* PQI, then M. (CTW, p. 138, emphasis original; see also p. 133)

And now, with CST′ in hand, we can establish

(CST−) All knowable truths are conditionally scrutable from PQI.

simply by repeating an argument rehearsed above. Facts about the distribution of primary qualities are already included in P, and "[t]ruths about secondary qualities are plausibly scrutable from PQI" (CTW, p. 133). So all the facts included in $Q12$ are scrutable from PQI, and so CST′ implies CST−.

That, then, is (my version of) Chalmers's Argument from Knowability.[36]

4.2 From CKT+ to A Priori Scrutability

Chalmers himself regards the argument just presented as establishing only the *conditional* scrutability of knowable truths from PQI, not their

[34] It sometimes seems to me as if this a form of the Frontloading Maneouver. There are certainly similarities, but I think that has to be wrong. This move has nothing to do with background knowledge, and Chalmers does not defend it in anything like the way he defends the Frontloading Manoeuver. Moreover, I often find myself wondering just how significant the difference between Inferential and Conditional Scrutability really is. The two tend to divide on quasi-paradoxical cases, but most of the cases that matter aren't of that sort. So I'm not sure this step in the argument is really very important, however it is to be justified. If we skipped it, the rest of the argument would establish something like A Priori Inferential Scrutability, and such a thesis would serve many of Chalmers's purposes, maybe even all.

[35] The text has "would", but surely that is a typo.

[36] One of the things that is striking about the argument is how short the argumentative distance from CKT to CST− turns out to be. It is short enough, in fact, that I find it hard to imagine anyone who was skeptical about CST− not being equally skeptical about CKT. If that is right, then the argument is dialectically weak. Since Conditional Scrutability is not our present focus, I will not pursue the matter. For what it's worth, though, I tend to think that the Argument from Elimination, which Chalmers discusses in §3.3, is by far the strongest one he has for Conditional Scrutability.

a priori scrutability, since "we have allowed the subject to use empirical background knowledge" (CTW, p. 134). The question, however, is where exactly that allowance has been made. Here again is how the argument for CST− proceeds:

(CKT) All knowable truths are knowable with grounds in core evidence.

(CIS) All knowable truths are inferentially scrutable from core evidence.

(IST′) All knowable truths are inferentially scrutable from $Q12$.

(CST′) All knowable truths are conditionally scrutable from $Q12$.

(CST−) All knowable truths are conditionally scrutable from PQI.

It is difficult to see how an appeal to background knowledge might have crept in between CKT and CST−. The first step involved little more than the unpacking of definitions. The second step required only the claim that "knowledge is just as powerful as perception when it comes to grounding further knowledge" (CTW, p. 133). But then *less* reasoning is required at IST′ than at CIS—the former cuts out the transition from perception to belief—and so background knowledge cannot have intruded there, either. The third step Chalmers regards as involving little more than logic.

The last step requires further discussion. The move from CST′ to CST− rests upon the claim that facts about secondary qualities are scrutable from PQI. Now, for the purposes of establishing *Conditional* Scrutability, Chalmers needs only the claim that secondary qualities are *conditionally* scrutable from PQI. So one might suggest that an appeal to background knowledge could have been introduced at the last step of the argument. But we saw earlier (see page 7) that, in the Frontloading Argument, Chalmers needs the stronger claim that secondary qualities are *a priori* scrutable from PQI.[37] So it is not open to Chalmers to regard background knowledge as intruding only at the last step. The possibility that the subject has made use of background knowledge must, therefore, have been present from the outset. That is, it seems that CKT must *not* have been intended in the strong form CKT+ when it was first introduced in §3.4.

[37] And Chalmers (CTW, pp. 133, 290) makes it clear that, if that isn't so, he's willing to expand the base a bit, to $P2QI$. We could of course do the same here. In that case, an emended version of the Argument from Knowability would establish a priori scrutability from $P2QI$.

Nonetheless, as we have seen, CKT is needed in the strong form CKT+ in the Frontloading Argument. And, if we have it in that form, then we can emend the Argument from Knowability as follows:

(CKT+) All knowable truths are knowable with grounds in core evidence, with no reliance upon any sort of background knowledge.

(CIS+) All knowable truths are inferentially scrutable from core evidence, with no reliance upon any sort of background knowledge.

(IST+) All knowable truths are inferentially scrutable from $Q12$, with no reliance upon any sort of background knowledge.

(AST′) All knowable truths are conditionally scrutable from $Q12$, with no reliance upon any sort of background knowledge—i.e., they are a priori scrutable from $Q12$.

(AST$-$) All knowable truths are conditionally scrutable from PQI, with no reliance upon any sort of background knowledge—i.e., they are a priori scrutable from PQI.

Each of these statements strengthens the corresponding one from the original argument in exactly the same way that CKT+ strengthens CKT. As a result, the argument that took us from CKT to CST$-$ readily adapts to yield an argument from CKT+ to AST$-$. The only relevant difference between the arguments is at the last step. In moving from CST′ to CST$-$, we need, as was said, only to know that facts about secondary qualities are conditionally scrutable from PQI. In moving from AST′ to AST$-$, on the other hand, we need to know that facts about secondary qualities are a priori scrutable from PQI. But the latter claim is one to which Chalmers commits himself in the Frontloading Argument.

Moreover, the argument just presented deploys weaker resources than the Frontloading Argument does. The only controversial assumptions needed here are that belief 'screens off' perception—which is what justifies the move from CIS+ to IST+—and that secondary qualities are a priori scrutable from PQI, which is what justifies the move from AST′ to AST$-$. Both of these assumptions are needed in the Frontloading Argument, as well. By contrast, nothing like the Frontloading Maneouver is needed in the Argument from Knowability.

4.3 What About Unknowable Truths?

AST− is of course weaker than the A Priori Scrutability thesis Chalmers is attempting to establish via the Frontloading Argument, since AST− is restricted to knowable truths. But CST− is weaker, in the same way, than the Conditional Scrutability thesis Chalmers is trying to establish via the Argument from Knowability. There is thus a need for an additional step, in the original argument, to lift this restriction. The full form of the Argument from Knowability is thus (CTW, p. 126):

(CST−) All knowable truths are conditionally scrutable from PQI.

(LIFT) If all knowable truths are conditionally scrutable from PQI, then all unknowable truths are conditionally scrutable from PQI.

(CST) All truths are conditionally scrutable from PQI.

But we can give a parallel argument for A Priori Scrutability:

(AST−) All knowable truths are a priori scrutable from PQI.

(LIFT+) If all knowable truths are a priori scrutable from PQI, then all unknowable truths are a priori scrutable from PQI.

(AST) All truths are a priori scrutable from PQI.

Since both arguments are (clasically) valid, we need only ask whether Chalmers's arguments for LIFT also suffice to establish LIFT+. So how does Chalmers argue for LIFT? Simply by observing that the distinction between what's knowable and what's unknowable for a given subject is highly contingent, and that the idealizations he is making allow him to abstract from this difference. Chalmers himself notes that such considerations apply just as well in the case of a priori scrutability as in that of conditional scrutability (CTW, pp. 126–7). That is to say, those same considerations suffice, by Chalmers's own lights, to establish both LIFT and LIFT+.

To be sure, there may yet prove to be obstacles to LIFT+ that are not obstacles to LIFT. But I doubt that much matters. Perhaps the most familiar objection to A Priori Scrutability is the one due to Block and Stalnaker already mentioned: Even if $PQTI \rightarrow$ water $=$ H_2O is knowable, it is not knowable a priori, but only on the basis of the background knowledge that the world is simple. But the truth whose scrutability is at issue here—that water is H_2O—is one that is knowable, because

known.[38] What is worrying Chalmers's opponents, that is to say, is not that some truths that are, for whatever reason, not knowable by human beings might turn out not to be a priori scrutable from $PQTI$. The worry is that there are truths that are *known* by human beings that are not so scrutable. The really important issues here, that is to say, arise already for knowable (because known) truths, and CKT+ is strong enough to settle those issues.

4.4 Empirical Inference

To put it differently, there is an objection to CKT+ that closely parallels Block and Stalnaker's objection to A Priori Scrutability. A first approximation would be: Even if knowledge that water is H_2O can be grounded in core evidence, such knowledge might still depend upon background knowledge that the world is simple. That is not quite the right way to put it, however. The difficulty is that the 'grounds' of one's knowledge are supposed to include *all* the empirical evidence upon which that knowledge rests, so there does not seem to be any room for additional background knowledge to intrude.

Does that mean that Chalmers's opponents must already reject CKT? Not necessarily, and the reason emerges from Chalmers's discussion of the Core Evidence thesis, CET. "Many reject the Core Evidence thesis", he says, "on the grounds that there are sources of knowledge and justification that go beyond core evidence", such as "high-level perception" and "empirically grounded inference mechanisms that do not derive from core evidence and a priori reasoning alone" (CTW, p. 131). We saw earlier that one of CKT's advantages over CET is supposed to be that it is compatible with the claim that our *actual* knowledge sometimes rests upon high-level perception. Similarly, CKT is supposed to be compatible with the claim that our *actual* knowledge sometimes depends upon emprically grounded inference. But such inferences are supposed to be dispensible in principle, just as high-level perception is (CTW, p. 132).

As Chalmers would prefer to understand CKT, that is to say, no empirical inferences are supposed to be used in the derivation of non-core truths from core evidence. But we need not understand CKT that way.[39] Indeed, Chalmers himself writes, in his discussion of the Argument from

[38] I'm ignoring here questions about whether it is even true that water is H_2O. As Sarah-Jane Leslie (2013, §2.4) has emphasized, matters are rather more complicated than has usually been supposed.

[39] Special thanks to Robbie Williams here.

Knowability, that we can allow our "capacities for high-level empirical inference from core evidence [to] be used for the purposes of *conditional and inferential* scrutability from PQI" (CTW, p. 132, my emphasis), since those permit dependence upon background knowledge. That is, it is consistent with how CKT is used in the original Argument from Knowability that some of the steps in the 'proofs' that take us from core evidence to other truths should not be valid a priori but only, as we might put it, *empirically* valid (cf. CTW, p. 182). Such inferences are ones that are truth-preserving[40] in the actual world, and in near-enough other possible worlds, but are not truth-preserving in all worlds. We might, for example, have certain inferential dispositions that we have acquired as a result of exposure to a consistent correlation in our environment, "without the role of that experience being mediated by its justifying a current belief" (CTW, p. 181) or, I would suppose, without its being mediated by its ever having justifed any belief. Perhaps there are inferential dispositions that are innate: pre-programmed as a result of consistent correlations experienced by one's ancestors (cf. CTW, pp. 128, 147, 197). Maybe some inferential dispositions are acquired through socialization into a culture that privileges the rights of some people over those of others.

If that is the right way to think of the matter, then what is at issue isn't really background *knowledge* but something like background *facts*. Block and Stalnaker's now familiar objection to A Priori Scrutability thus need not be, as Chalmers consistently describes it, that $PQTI \rightarrow$ water $= H_2O$ is not a priori because it "depend[s] essentially on empirical background *knowledge*... that the world is simple" (CTW, p. 158, my emphasis). The objection might instead be that this knowledge depends upon the *fact* that the world is simple. That is, our knowledge that water is H_2O might depend upon inferences we are disposed to make that are valid, but only contingently. For example, such knowledge might depend upon the use of cognitive strategies that are knowledge-producing, but only because we live in a world that contains lots of natural kinds. And, indeed, there is very strong evidence, deriving from the work of Susan Gelman (2003) and others, that a cognitive preference for natural kinds develops very early in childhood, so early that it may well be innate. That is to say: There are cognitive strategies we employ that effectively presuppose that the world is full of natural kinds; and

[40] Or some appropriate analog thereof, if we are discussing probabilistic credence rather than belief.

we do so from infancy, i.e., long before we could possibly have acquired sufficient evidence to support such strategies. These strategies thus appear to have empirical presuppositions, though not to be grounded in empirical evidence.[41]

Someone who was sympathetic to this line of thought would therefore have reason not to commit themselves to CKT+ but at most to the following weaker form of the Core Knowability thesis:

(CKT−) All knowable truths are knowable with grounds in core evidence—but the derivation of such truths from such evidence may require inferences that are only empirically valid.

Some of Chalmers's opponents would presumably not be willing to accept even this much. But my present point is just that someone who did could still reasonably reject A Priori Scrutablity, since CKT− is too weak for the purposes of the Frontloading Argument. On the other hand, however, if empirical inference is indeed dipsensible, as Chalmers claims, then someone who accepts CKT− can be forced also to accept CKT+ and so to accept the Frontloading Argument, and we would at least have an argument that one cannot reject A Priori Scrutability without rejecting CKT−. So it looks to be an important issue for A Priori Scrutability whether empirical inference is indeed dipsensible.

Chalmers's argument that it is dispensible is contained in §4.9. He concedes that the role played by experience in grounding empirical inference need not depend upon experience's justifying some 'mediating belief', even a tacit one (CTW, pp. 181–2). But Chalmers insists that, for any such inference, there will nonetheless be

> . . . a closely related pattern of reasoning. . . using an inference that is mediated by such a belief. And when the [empirical] inference is empirically justified, the [closely related one] will be mediated by a justified empirical belief. We can then apply the original arguments for A Priori Scrutability to the new case, and the objection from unmediated inference will fall away. (CTW, p. 183)

To elaborate, suppose that knowledge of E is grounded in C, though some empirical inferences are employed in the 'proof' of E from C. Let

[41] Something similar seems to be true of many of our most fundamental cognitive resources (Carey, 2009). It is certainly true of our lingusitic capacities (Chomsky, 1986). Reflection on such matters might lead one to wonder just how rare what Chalmers calls "ungrounded reliable inferences" (CTW, p. 183) really are and so to wonder just how effective his stipulative strategy for by-passing them can be. The same is true, it seems to me, in the case of what Chalmers calls "high-level recognitional capacities", which he discusses in §3.7 (see especially pp. 146–7).

one such inference be that from P to Q, and let S be the empirical fact upon which the validity of this inference depends (e.g., that the world is simple). Now consider someone who actually does know S. Such a person could make the same inference from P to Q, but for them it would not be an empirical inference but an a priori one with an additonal premise, namely, S. So, although $P \rightarrow Q$ isn't knowable a priori, $P \wedge S \rightarrow Q$ is. Generalizing: If the S_i are 'mediating premises' corresponding to all of the empirical inferences that were used in deriving E from C, then $C \wedge \bigwedge_i S_i \rightarrow E$ will be knowable a priori. Empirical inferences can thus be eliminated in favor of additional empirical premises.

If this looks familiar, it should. What Chalmers is inviting us to do is to frontload the empirical facts that underwrite the validity of empirical inferences. Doing so, however, threatens to expand the base: There is no reason to suppose that S itself consists of core evidence or $PQTI$-like data. Chalmers therefore tells us that we should "apply the original arguments for A Priori Scrutability to the new case" (CTW, p. 183). But the main argument for A Priori Scrutability is the Frontloading Argument. So Chalmers is inviting us to apply the Frontloading Argument to conclude that S is a priori scrutable from core evidence (or $PQTI$). If we could assume the success of the Frontloading Argument, then all would be well. But what we are presently considering is precisely whether the considerations in §4.9 can be used to force someone who accepts only the weaker thesis CKT$-$ also to accept the stronger thesis CKT+, and the Frontloading Argument does not work without CKT+. So Chalmers's argument for the dispensibility of empirical inference works only if we assume CKT+, which itself presupposes the dispensibility of empirical inference. So the argument has gone round a circle.[42]

5 Iterated Frontloading

It's a natural idea to try iterating the process of frontloading.[43] As I'll present it, this amounts to an attempt to rest the Frontloading Argument

[42] This diagnosis seems to be confirmed by the fact that, if the Frontloading Argument had needed only CKT$-$, then the argument of §4.9 could indeed have been used to show that empirical inference poses no special problem. What §4.9 argues, in effect, is that the dependence of empirical inference upon background *facts* can be replaced by a dependence upon background *knowledge* of mediating premises, which in turn can be eliminated *via* frontloading. It's that last step that leads to circularity, but only because the Frontloading Argument needs CKT+.

[43] This idea was inspired by remarks Chalmers makes in the context of both the arguments with which we have been concerned (CTW, pp. 134, 161). But neither

just on CKT−. It might also be used, however, as a way of arguing from CKT− to CKT+. It should be clear how to adapt my discussion of the first approach to the second. Formally, one need only replace $PQTI$ in what follows with some relevant class C of core evidence.

So suppose that $PQTI \rightarrow M$ is knowable on the basis of some background knowledge E_0. Then by CKT, E_0 is knowable with grounds in core evidence C_0. So $C_0 \rightarrow E_0$ is knowable—but, since we are now assuming only CKT−, it might only be knowable on the basis of an empirical inference that presupposes E_1.[44] By CKT− again, there is core evidence C_1 such that $C_1 \rightarrow E_1$ is knowable, though possibly only on the basis of E_2. And so forth.

It should be clear that CKT−, by itself, cannot guarantee that this process ever terminates. As far as CKT− is concerned, each conditional $C_i \rightarrow E_i$ could be knowable only on the basis of some E_{i+1}. One might suggest, however, that all we need do is consider the infinite conjunction $\bigwedge_i C_i$ of all the various bits of core evidence invoked along the way, and then it will follow that $PQTI \wedge \bigwedge_i C_i \rightarrow M$ is a priori. But this argument fails. What the applications made of CKT− in the last paragraph yield is the following series of conditionals:

$$\begin{array}{c} C_0 \xrightarrow{E_1} E_0 \\ C_1 \xrightarrow{E_2} E_1 \\ \vdots \\ C_i \xrightarrow{E_{i+1}} E_i \\ \vdots \end{array} \tag{1}$$

where the notation means, e.g., that $C_0 \rightarrow E_0$ is knowable on the basis of E_1. Applying the Frontloading Maneouver then allows us to conclude

discussion quite suggests the argument to follow, so I do not feel entirely comfortable attributing it to Chalmers himself. But, as I said, it's a natural idea.

[44] I'll henceforth omit the phrase "an empirical inference that presupposes".

that all of these conditionals:

$$\begin{gathered} C_0 \wedge E_1 \rightarrow E_0 \\ C_1 \wedge E_2 \rightarrow E_1 \\ \vdots \\ C_i \wedge E_{i+1} \rightarrow E_i \\ \vdots \end{gathered} \tag{2}$$

are knowable a priori. But even if we assume the truth of all the C_i, the conditionals in (2) can all be true even if the E_i are all false—and, if the conditionals are material, then they *are* all true if the E_i are all false (since they all have false antecedents). So $\bigwedge_i C_i$ does not imply the truth of any of the E_i and so, in particular, does not imply E_0. Hence, it does not follow from $PQTI \wedge E_0 \rightarrow M$ and the conditionals in (2) that $PQTI \wedge \bigwedge_i C_i \rightarrow M$ is even true, let alone that it is knowable a priori.

That said, one might suggest that we can be confident in advance that the background knowledge to which we might appeal in coming to know such conditionals as $PQTI \rightarrow M$ is finite.[45] And in that case, one might think, we must eventually reach some conditional $C_n \rightarrow E_n$ that is knowable without any reliance upon any sort of background knowledge (or fact). Then we really will be able to conclude that $PQTI \wedge C_0 \wedge C_1 \wedge \cdots \wedge C_n \rightarrow M$ is knowable a priori. All these conditionals

$$\begin{gathered} C_0 \wedge E_1 \rightarrow E_0 \\ C_1 \wedge E_2 \rightarrow E_1 \\ \vdots \\ C_{n-1} \wedge E_n \rightarrow E_{n-1} \\ C_n \rightarrow E_n \end{gathered}$$

will be knowable a priori, and they together imply $C_0 \wedge C_1 \wedge \cdots \wedge C_n \rightarrow E_0$.

The real problem, however, is not that the chain of dependencies might be infinite. It is that it might not be well-founded, i.e., 'bottom out'. Return again to $PQTI \rightarrow M$ and suppose it known in light of background knowledge E_0. By CKT$-$, $C_0 \rightarrow E_0$ is knowable, but perhaps only on the

[45] Can we? It is important to remember that $PQTI$ itself is a potentially infinite conjunction, so there is no general restriction to finite information states. Moreover, CKT concerns only on what basis various facts are know*able*, so an infinite regress is not obviously problematic.

basis of E_1. By CKT$-$ again, $C_1 \rightarrow E_1$ is knowable, but perhaps only on the basis of E_2. But nothing here rules out the possibility that E_2 just is (or includes) E_0. That is, it could be that the situation is as follows:

$$PQTI \xrightarrow{E_0} M$$
$$C_0 \xrightarrow{E_1} E_0$$
$$C_1 \xrightarrow{E_0} E_1$$

It might seem as if this was unacceptably circular, but it is not. There might be a problem if E_0 were *in fact* known with grounds in C_0 and on the basis of E_1 and if E_1 in turn were *in fact* known with grounds in C_1 and on the basis of E_0.[46] But that is not what is being claimed, and it is not what CKT delivers. Rather, CKT implies only that E_0 *can* be known with grounds in C_0 and on the basis of E_1 and that E_1 *can* be known with grounds in C_1 and on the basis of E_0. There is nothing circular about that. There might be all sorts of other ways E_0 and E_1 *can* be known, and Chalmers's opponent probably does not think that they *actually are* known on the basis of core evidence at all.

It's a natural suggestion that we should focus now on the conjunction $E_0 \wedge E_1$. But, as earlier, it would be a mistake to think that it will follow from $C_0 \wedge C_1$. Frontloading will give us:

$$C_0 \wedge E_1 \rightarrow E_0$$
$$C_1 \wedge E_0 \rightarrow E_1$$

But if the C_i are true and the E_i are false, then these conditionals can still be true (and, if they are material, they are true). And if we now invoke CKT$-$ to get some C_2 which might ground knowledge of $E_0 \wedge E_1$, that just gives us some new E_2 in the background, and off we go again.

A final move would be to try to argue as follows: Consider the infinite conjunction $\mathbb{E}$ of all non-core truths; then $\mathbb{E}$ is knowable with grounds in core evidence C; since $\mathbb{E}$ incorporates all non-core truths, no non-core background knowledge can then be required. But this attempt to agglomerate rather than iterate also fails.[47] The most CKT$-$ can deliver is that $\mathbb{E}$ is knowable with grounds in C, though only *via* empirical

[46] So this objection could be answered if Chalmers were willing to rely upon CET. But, as we saw above, CET is very, very strong, and is not likely to be terribly appealing to anyone who was antecedently skeptical about A Priori Scrutability.

[47] And one might anyway be skeptical about the application of CKT$-$ to the infinite conjunction $\mathbb{E}$ of all non-core truths. For one thing, that application assumes that $\mathbb{E}$ is

inferences that presuppose various facts whose conjunction we may label $\mathbb{S}$. So what we have is

$$C \xrightarrow{\mathbb{S}} \mathbb{E}$$

from which frontloading will deliver

$$C \wedge \mathbb{S} \rightarrow \mathbb{E}$$

The fact that $\mathbb{S}$ is part of $\mathbb{E}$ does not give us any way of eliminating it from the antecedent. That is, the fact that $\mathbb{E}$ 'incorporates all non-core truths' does *not* imply that 'no non-core background knowledge $\mathbb{S}$ can then be required' in the derivation of $\mathbb{E}$ from C. To make the problem as stark as possible, if we focus not on $\mathbb{E}$ but on $\mathbb{S}$, then it appears that we may well find ourselves in this situation:

$$C \xrightarrow{\mathbb{S}} \mathbb{S}$$

Frontloading then yields

$$C \wedge \mathbb{S} \rightarrow \mathbb{S}$$

but that is obviously useless.[48]

knowable. Is it? By whom? Remember that CKT$-$ is supposed to be motivated by a weak form of foundationalism that itself seems dependent upon facts about our epistemic predicament as finite beings. It does not, therefore, seem unreasonable to want to restrict CKT$-$, in the first instance, to something like atomic facts. If it seems as if this would not really be weaker, then consider that strengthening it requires some sort of iteration or agglomeration, which is precisely what we are discussing.

[48] Suppose one thought the following: (i) Core evidence can ground knowledge of the external world; but (ii) it can do so only if we make use of empirical inferences whose knowledge-yielding character itself depends upon there being an external world; so that (iii) although one can know on the basis of core evidence that there is an external world, such a derivation itself depends upon the use of the sort of inference mentioned at (ii). Then, where M is, say, "I have two hands", we would have:

$$PQTI \xrightarrow{S} M$$
$$C \xrightarrow{S} S$$

from which frontloading delivers

$$PQTI \wedge S \rightarrow M$$
$$C \wedge S \rightarrow S$$

which is once again useless. Note that such a position need not be committed to any claims about our *actual* knowledge that there is an external world.

6 Closing

Admittedly, the sorts of considerations contained in the last section—and, for that matter, the rest of this paper—are extremely abstract. But that is because the Frontloading Argument itself is extremely abstract. It is advertised as providing us with a completely general strategy that we can use to pass from Conditional Scrutability theses to corresponding A Priori Scrutability theses, no matter what background empirical evidence might be alleged to play a role in knowledge of conditionals of the form $PQTI \rightarrow M$ (CTW, p. 259). What I been arguing here is just that:

(i) The Frontloading Argument does not work unless we assume CTK+.

(ii) CTK+ is arguably stronger than A Priori Scrutability and is, in any event, sufficient to imply A Priori Scrutability without any use of frontloading.

(iii) Iterating, whether intended as a way of rescuing the Frontloading Argument or as a way of arguing for CKT+, fails for broadly logical reasons.

Of course, there may yet be some other fully general argument from Conditional Scrutability to A Priori Scrutability. Perhaps, though, a better strategy for those sympathetic to Chalmers's position would be to argue one case at a time: to show, e.g., that the *specific* presuppositions allowed by the conditional scrutability of moral truths from non-moral truths are, for whatever reason, not an obstacle to a priori scrutability. If so, then *Constructing the World* might be understood not so much as establishing a view but as articulating an epistemological program. But that was already true: As is clear from Chapter 6, the case for the Conditional Scrutability of psychology, sociology, morality, and the like has already to be made piecemeal. It does not much diminish the achievement of *Constructing the World* if the case for A Priori Scrutability must also be made piecemeal.[49]

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