**A Priori Scrutability and That’s All**

 The central claim of David Chalmers’ book *Constructing the World* is that the world is comprehensible in the sense that all truths are knowable from a certain limited stock of truths. Chalmers takes this comprehensibility to have profound consequences for a number of debates across philosophy, including debates regarding the problem of skepticism, metaphysical fundamentality, the nature of meaning, the unity of science, and much else.[[1]](#footnote-1) As a way of making this comprehensibility claim more precise, Chalmers defends *A Priori Scrutability*, which he describes as his book’s most important thesis.[[2]](#footnote-2) What it says is that there is a compact class of truths such that for any truth, *p*, a Laplacean intellect—that is, a hypothetical being that comprehends all the truths in the class and possesses ideal reasoning capability to derive further truths from the class—could know a priori that if the truths in the class hold, then *p*.[[3]](#footnote-3)

In what follows I develop an objection to Chalmers’ defense of A Priori Scrutability that focuses on his reliance on a so-called *that’s-all truth*. After reviewing preliminaries in section 1, my objection, which draws heavily on Theodore Sider’s discussion of *border-sensitive properties*,[[4]](#footnote-4) is developed in sections 2 and 3. Section 2 argues against Chalmers’ analysis of the distinction between positive and negative truths, while section 3 argues that the that’s-all sentence formulated by Chalmers is a falsehood rather than a truth. Section 4 offers a concluding discussion of my argument.

**1. Preliminaries: Compactness, Negative Truths**

 To repeat, the A Priori Scrutability thesis Chalmers defends requires that the class of truths serving as the scrutability base must be *compact*, meaning that they use expressions from only a small number of families of expressions.[[5]](#footnote-5) To see how the compactness requirement could be violated, consider the class of conjunctive truths, *C*; that is, the class of all truths of the form *p* & *q*. If we ignore thoroughgoing skepticism about the a priori—as we shall do throughout—it should be uncontroversial that for any truth *p*, *p* is a priori scrutable from *C*. For, if *p* is a truth then the conjunction of *p* and any arbitrary truth, say 1+1=2, will be a member of *C*, and surely a Laplacean intellect could know a priori that if *p* & 1+1=2, then *p*. The problem is that this result is philosophically uninteresting. If *C* is included within the scrutability base, the A Priori Scrutability thesis is trivialized. What defenders of A Priori Scrutability need is a restriction on the base that prevents such trivialization.

 The compactness requirement helps play this role. *C* is not compact, given that for any family of expressions there is, if that family can be used to express some truth, *C* will contain a conjunction using expressions from that family. And so, even though all truths are a priori scrutable from *C*, this is not enough to establish the A Priori Scrutability thesis, given *C*’s incompactness. For defenders of the A Priori Scrutability thesis, this is the desired result.

 Chalmers proposes as a working hypothesis that the scrutability base consists in what he calls *PQTI* truths: Physical truths, whose expressions are taken from the science of physics; Qualitative truths, whose expressions describe conscious experiences; Indexical truths, whose expressions include terms like ‘I’ and ‘now’; and a That’s-all or Totality truth, whose exact formulation will be our focus below.[[6]](#footnote-6) The *PQTI* base is presumed to be compact since it is limited to truths from just these four families.[[7]](#footnote-7)

 To get a feel for what A Priori Scrutability amounts to when taken in conjunction with the *PQTI* base, consider the following truth.

(Tigers): The Detroit Tigers won the 1968 World Series.

Chalmers holds that a Laplacean intellect could know a priori that if the *PQTI* truths of the actual world obtained—including, for instance, physical truths about the distribution of particles in Detroit[[8]](#footnote-8)—then (Tigers). This is a philosophically interesting and controversial claim, in contrast with the triviality that a Laplacean intellect could know a priori that if (Tigers) & 1+1=2, then (Tigers).

 Chalmers’ motivation for including a that’s-all truth, *T*, within his scrutability base is that he hopes to use it to solve the problem posed by *negative truths*. In the next section we will examine Chalmers’ analysis of the distinction between positive and negative truths, but for now we can rely on an intuitive grasp: positive truths state what is the case, negative truths state what is not. (Tigers) thus seems to be a clear case of a positive truth. Chalmers’ paradigmatic example of a negative truth is,

 (No Ectoplasm): There is no nonphysical ectoplasm.[[9]](#footnote-9)

 The problem that negative truths pose for A Priori Scrutability is that they are not generally scrutable from physical, qualitative, and indexical truths taken jointly—the *PQI* truths.[[10]](#footnote-10) Consider a world indiscernible from the actual world with respect to *PQI* truths but differing in that it contains nonphysical ectoplasm while the actual world does not. That such a world is possible demonstrates that the *PQI* truths do not settle the question of (No Ectoplasm)’s truth value; thus, a Laplacean intellect given just the *PQI* truths would not thereby be positioned to know the truth of (No Ectoplasm). The upshot is that to solve the problem posed by negative truths, the scrutability base needs to be expanded somehow beyond just the *PQI* truths.

 One option worth considering is simply to include the class of all negative truths, *N*, within the scrutability base. This admittedly would be a rather flatfooted solution to the problem, but in other cases Chalmers is open to being flatfooted in this way. For instance, at one point he entertains the suggestion that there is a class of ontological truths, *O*, that are inscrutable from any other truths—for instance, truths about when parts compose a whole. If there are such inscrutable ontological truths, Chalmers suggests, the defender of A Priori Scrutability can respond simply by adding *O* to the scrutability base.[[11]](#footnote-11) But then, why not adopt a similar stance regarding *N*, adding it in its entirety to the base?

 Chalmers does not explain why he does not take this option, but there is a compelling reason not to do so: *N* is incompact. For any family of expressions there is, there figures to be some negative truth in *N* using expressions from that family. *N* will include truths using geological expressions (“The golden mountain does not exist.”), chemical expressions (“Phlogiston does not exist.”), astronomical expressions (“The planet Vulcan does not exist.”), and so on. The class of negative truths is thus like the class of conjunctive truths in that neither can be included within the scrutability base while honoring the compactness requirement.

 Again, this is not the option Chalmers pursues. Instead, he responds to the problem posed by negative truths by expanding his scrutability base with a that’s-all truth, the idea being that negative truths like (No Ectoplasm) are a priori scrutable from the *PQI* truths taken together with the further truth that that’s all there is. We turn in the next section to consider just how Chalmers formulates his that’s-all sentence. My central claim in what follows is that the that’s-all sentence formulated by Chalmers is a falsehood rather than a truth, and so cannot be included within the scrutability base. More generally, I am skeptical that any formulation of the that’s-all sentence can serve all of Chalmers’ needs in defending A Priori Scrutability. In making my case, we will return to the incompactness of *N* in the final section of the paper.

**2. The Positive/Negative Distinction and the Argument from Border-Sensitivity**

Chalmers’ formulates his that’s-all sentence as follows.

 *T*C: All positive truths are a priori entailed by the *PQI* truths.[[12]](#footnote-12)

On the relevant sense of entailment, *p* is entailed by the *PQI* truths just in case there is no metaphysically possible world where all the truths in the union of the classes *P*, *Q*, and *I* obtain, but *p* is false. To say that an entailment is a priori means that it is knowable a priori, at least by a Laplacean intellect. The restriction to positive truths in *T*C reflects the problem posed by negative truths, discussed last section. Chalmers’ thought is that the *PQI* truths by themselves a priori entail all positive truths, while the remaining negative truths are a priori entailed by the *PQI* truths in conjunction with *T*C.

In connection with *T*C, Chalmers proposes the following analysis of the distinction between positive and negative sentences: *S* is a positive sentence iff for all worlds, *w*, if *S* holds in *w*, *S* also holds in all worlds that *outstrip* *w*, where a world *w*\* outstrips *w* just in case *w*\* includes a duplicate of *w* as a proper part.[[13]](#footnote-13) In the present section I focus on this analysis of the positive/negative truth distinction, arguing that it is inadequate. In the following section I will extend my argument to show that *T*C is false.

 Chalmers’ analysis of the positive/negative distinction handles some cases well. Reconsider (No Ectoplasm). Let *w* be the actual world and let *w*\* be a world that contains a duplicate of the actual world as a proper part and that contains nonphysical ectoplasm in addition. Then (No Ectoplasm) is true in *w* but false in *w*\*, which outstrips *w*. The analysis then entails that (No Ectoplasm) is a negative truth—the correct result.

There are many other cases that the analysis mishandles, however. Consider the following paradigmatic positive sentence.

 (Sphere): There exists a gold sphere.

(Sphere) says what is the case, not what is not. It asserts the existence of something, and not a shadowy negative something like an absence or omission, but an ordinary positive something, a gold sphere. Intuitively, (Sphere) is positive if any sentence is.

 But now, let *w* be a world containing nothing but a lonely gold sphere one meter in diameter. (Sphere) is thus true at *w*. Let *w*\* be a world containing nothing but a lonely gold cube with sides two meters long, and suppose that a proper part of this cube is a duplicate of the gold sphere from *w*. In other words, seamlessly embedded within the gold cube in *w*\* is a spherical region of gold that is a duplicate of the gold sphere from *w*. Then, (Sphere) is false at *w*\*: there is no gold sphere in *w*\*, there is only a gold cube with sides two meters long that could be (but is not) carved into a sphere one meter in diameter. Since (Sphere) is true in *w* but false in *w*\*, which outstrips *w*, Chalmers’ analysis entails that (Sphere) is a negative truth. But this is the wrong result, (Sphere) is positive if any sentence is.

 To resist this conclusion, you could try arguing that *w*\* contains a gold sphere after all, it is just that the sphere it contains is an undetached part of the cube. I have two connected points in response to this suggestion. First, taking this line saddles you with pretty deeply counterintuitive consequences. Almost any object could be carved into spheres: the desk, the family dog, my left arm, and so on. We don’t generally think of the undetached spherical regions of these objects as spheres however; we don’t regard ourselves as constantly surrounded by endless spheres. The family dog is not presently filled top to bottom with spheres, and by parity of reasoning there is no gold sphere in *w*\*. Second, even if you are unpersuaded by this first reply, even if you are open to living with such counterintuitive consequences—after all, what we are dealing with, in effect, is a version of the problem of the many, and you might reasonably maintain that every proposed solution to the problem has some counterintuitive consequences[[14]](#footnote-14)—you can still grant that Chalmers would not want his case for A Priori Scrutability to *require* adopting this controversial view, so that *only* those philosophers who take themselves to be constantly surrounded by endless spheres can potentially accept the thesis. And so I assume that Chalmers would not want to rely on such a view in order to rebut the argument I am presently developing against A Priori Scrutability.[[15]](#footnote-15)

 Being a sphere is an example of what Sider calls border-sensitive properties, where a property is border-sensitive just in case its instantiation by an object depends on how things go outside the object’s borders.[[16]](#footnote-16) As Sider observes, border-sensitivity is pervasive. Seamlessly embedded within Mount Rushmore are regions of rock that are chair-shaped, table-shaped, and bathtub-shaped without being chairs, tables, or bathtubs respectively, because being these things is border-sensitive. The preceding line of argument can be extended in obvious ways to show that Chalmers’ analysis wrongly entails that sentences asserting the existence of tables, chairs, and bathtubs are negative. But again, this is mistaken. Such sentences are positive if any sentences are.[[17]](#footnote-17)

 Here is a somewhat different case. The following is another paradigmatic positive sentence.

 (Pink House): The house is pink.

Again, (Pink House) says what is the case, not what is not. A house is not a shadowy negative something, like an absence or an omission. Being pink is not a shadowy negative property, like that of being invisible. (Pink House) is positive if any sentence is.

 But now, let *w* be a world containing exactly one house, which is pink.[[18]](#footnote-18) (Pink House) is thus true at *w*. Let *w*\* be a world that contains a duplicate of *w* as a proper part, and that in addition contains a thin veneer of green paint attached to the surface of the counterpart of the house from *w*. In other words, the house in *w*\* is what you would get by starting with a pink house and then painting over the pink with green paint, leaving you with a green house in the end. Then (Pink House) is false at *w*\*: in *w*\* there is no pink house but rather a green house that would be pink if its top layer of paint were scraped off. Since (Pink House) is true in *w* but false in *w*\*, which outstrips *w*, Chalmers’ analysis entails that (Pink House) is negative. But again this is the wrong result. (Pink House) is positive if any sentence is.

 The argument exploits the border-sensitivity of being a house. Call my house, which is in fact green, ‘House.’ Call the proper part of House that includes all of my house except its outer layer of green paint, ‘House-Minus.’ House-Minus is not itself a house, although it would be if it were not embedded within a larger object that is a house, namely House. After all, I own but one house, whereas if House-Minus counted as a house in its own right, I would own (at least) two: House and House-Minus. I do not own two houses, and by parity of reasoning there is no pink house in *w*\*.[[19]](#footnote-19)

 It is easy to construct similar cases. Consider Felix the cat, who has a mass of precisely 4.53 kilograms. The following sentence is thus true at the actual world.

 (Felix): Felix has a mass of 4.53 kilograms.

Now consider a world just like our own except that the Felix-counterpart has a few additional hairs on his tail, making him just a little more massive. (Felix) is false at this world, which outstrips the actual world, and so Chalmers’ analysis entails that (Felix) is a negative truth. Again, this is the wrong result. If a true sentence describing the precise mass of a cat is negative rather than positive, I have no grip on what the distinction between positive and negative truths is supposed to be.

 A philosophical analysis can get some cases wrong while still being on the right track; it just needs further chisholming. I deny that Chalmers’ analysis is at all on the right track, however. The underlying problem lies with the attempt to analyze positive truths in terms of what is common across duplicates. Duplicates in general must share intrinsic properties, yes. But border-sensitive properties are extrinsic, and there is no requirement that duplicates must share extrinsic properties.[[20]](#footnote-20) Thus, we cannot generally expect that a positive sentence that is true at a world *w* and that describes the instantiation of a border-sensitive property will be true at all worlds containing a duplicate of *w*, as the analysis requires.

 In the next section we will consider the prospects of sticking with Chalmers’ *T*C-formulation of the that’s-all sentence while dropping his analysis of the distinction between positive and negative truths. To conclude the present section, however, I want to consider the opposite maneuver. That is, consider the possibility of dropping *T*C and instead formulating the that’s-all sentence as follows.

*T*D: All *duplication-preserving* truths are a priori entailed by *PQI* truths.

And then, by stipulation, defining duplication-preserving sentences in the terms Chalmers uses in his (failed) analysis of positive sentences: *S* is a duplication-preserving sentence iff for all worlds *w*, if *S* holds in *w*, *S* also holds in all worlds that outstrip *w*.[[21]](#footnote-21) The idea is that this is one way to concede the present section’s objection while still retaining much of Chalmers’ view.

 The most serious problem for this suggestion is that it seems to lose sight of the original motivation for introducing a that’s-all truth: the need to render negative truths scrutable. To illustrate, suppose (Pink House) is false. In that case, (Pink House) will not be a priori entailed by the *PQI* truths, since no falsehood is ever entailed by truths. Now consider the (true) negation of (Pink House).

 (No Pink House): It is not the case that the house is pink.

 (No Pink House) is a negative truth. It tells us what is not the case, not what is. In accordance with Chalmers’ own view of negative truths, then, suppose that (No Pink House) is not a priori entailed by the *PQI* truths. The question then is how a Laplacean intellect is to go about a priori scruting the negative truth (No Pink House).

 If Chalmers’ *T*C were included within the scrutability base, a Laplacean intellect could reason as follows: (Pink House) is a positive sentence that is not a priori entailed by the *PQI* truths, but *T*C says that all positive truths are so entailed, therefore (Pink House) is not a truth, therefore (No Pink House) is a truth. More generally, there is a recipe for recovering negative truths using *T*C: if some positive sentence is not a priori entailed by the *PQI* truths, then given *T*C, the negation of that positive sentence must be true. Looking ahead, I ultimately deny that *T*C is true, and so I deny that it can be included within the scrutability base. However, the present point is just that I concede that *if T*C were true, the problem of negative truths would be solved.

But now, suppose that it is *T*D rather than *T*C that is included within the scrutability base. In that case, a Laplacean intellect could not reason in the way just outlined, for while (Pink House) is a positive sentence and thus falls within the scope of *T*C, it is not a duplication-preserving sentence and so it does not fall within the scope of *T*D.[[22]](#footnote-22) Consequently, while *T*C entails that (Pink House) is false unless it is a priori entailed by the *PQI* truths, *T*D entails no such thing. *T*D says only that duplication-preserving sentences are false unless they are a priori entailed by the *PQI* truths, and (Pink House) is not duplication-preserving. The upshot is that there is no obvious recipe for recovering negative truths like (No Pink House) using the *T*D-formulation of the that’s-all sentence rather than the *T*C-formulation. An opponent of A Priori Scrutability can thus grant the truth of *T*D, at least for the sake of argument, while denying that negative truths generally are a priori scrutable from *PQT*D*I* truths.

 To be clear, this is no objection to Chalmers, who after all formulates his that’s-all sentence as *T*C rather than *T*D. My claim is only that there are compelling reasons to follow Chalmers on this point and formulate the that’s-all sentence in terms of the distinction between positive and negative truths, given that the problem in need of a solution is that posed by negative truths. And so, if it is granted that my argument in this section establishes that Chalmers’ analysis of the positive/negative truth distinction is inadequate, the proper response to this inadequacy by proponents of A Priori Scrutability is not to try to reformulate the that’s-all sentence in terms of some other distinction, as *T*D does. Rather, the proper response is to stick with Chalmers’ *T*C-formulation while dropping his analysis of the distinction between positive and negative truths. So let us now consider this option.

**3. Extending the Argument**

 A proponent of A Priori Scrutability could respond to last section’s argument by keeping Chalmers’ *T*C-formulation of the that’s-all sentence while advancing some alternative analysis of the distinction between positive and negative truths, or by treating this distinction as primitive and so unanalyzable.[[23]](#footnote-23) In the present section I attempt to head off such a maneuver by extending last section’s argument. My aim is to show that *T*C is false on *any* potential understanding of the distinction between positive and negative truths. If *T*C is false, as I claim, it cannot be included within the scrutability base, and so cannot be used to support A Priori Scrutability.

 To make my case against *T*C, consider a variant on a scenario discussed by Ned Block and Robert Stalnaker.[[24]](#footnote-24) Following Block and Stalnaker—who in turn are following Frank Jackson[[25]](#footnote-25)—suppose that ‘water’ can be defined using a rigidified definite description: roughly, it is the actual stuff that falls from the sky, fills lakes and rivers, quenches thirst, is odorless and colorless, and so on. In the actual world the substance that fills this water-role is H2O, so the following identity-statement is true.

 (Water): Water = H2O.

(Water) is a positive truth, describing what is the case rather than what is not. If we are assuming a primitive understanding of the positive/negative distinction, then I cite (Water) as a clear case of a positive truth. If instead we are entertaining some alternative analysis of the positive/negative distinction, then I reject any analysis that counts (Water) as negative.

 But now, consider a world indiscernible from the actual world with respect to *PQI* truths but differing in that it contains nonphysical ectoplasm. Call this world *Ectoplasm World*. At Ectoplasm World, every portion of H2O in attached to a bit of ectoplasm. You will never find H2O alone there; it is always H2OEc—using ‘Ec’ as a mock chemical symbol for ectoplasm. At Ectoplasm World, the (complex) substance that fills the water-role is not H2O, but rather H2OEc. H2O is a *proper* *part* of the occupant of the water-role there, but is not itself the occupant, just as H and O are proper parts of the occupant of the water-role in the actual world but are not themselves the occupants.

Given that Ectoplasm World is indiscernible from the actual world with respect to *PQI* truths, a Laplacean intellect given just the *PQI* truths of the actual world would not thereby be positioned to know whether it is H2O or H2OEc that is the actual occupant of the water-role, and so would not thereby be positioned to know which substance water is to be identified with. Thus, (Water) is not a priori entailed by the *PQI* truths. But (Water) is a positive truth, and *T*C says that all positive truths are a priori entailed by the *PQI* truths. Therefore, *T*C is false.

To be clear, given that H2O is in fact the actual occupant of the water-role, (Water) is true in all possible worlds, including Ectoplasm World. Thus, the correct way to describe Ectoplasm World is as a place where water (i.e., H2O) does not play the water-role, it is a place where water is a mere proper part of the substance that plays the water-role (i.e., H2OEc). My argument does not claim otherwise. What my argument does claim is that a Laplacean intellect given just the *PQI* truths of the actual world would not thereby know whether or not the actual world contains ectoplasm, or in other words would not thereby know whether or not Ectoplasm World is the actual world. Thus, such a Laplacean intellect could not scrute a priori from the *PQI* truths that the actual occupant of the water-role is H2O rather than H2OEc, and so could not scrute a priori (Water) from the *PQI* truths. But then *T*C is false.

Block and Stalnaker use their version of this scenario to argue that the physical truths do not a priori entail truths like (Water); instead, the inference is abductive and knowable only a posteriori, they claim.[[26]](#footnote-26) In response, Chalmers and Jackson contend that this is beside the point. The question is not whether the physical truths or more generally the *PQI* truths by themselves a priori entail (Water), but whether they do so when combined with a that’s-all truth, where the that’s-all truth is taken to rule out the possibility that the actual world contains ectoplasm.[[27]](#footnote-27)

I regard this as an effective reply to Block and Stalnaker. But it is not one that can be used in response to my argument here. For, my claim is not merely that (Water) is not a priori entailed by the *PQI* truths. Rather, my claim is that since (Water) is not so entailed, the that’s-all sentence formulated by Chalmers, *T*C, is false, and so cannot be included within the scrutability base or used to support the A Priori Scrutability thesis. This line of argument is not touched by the Chalmers and Jackson response.

The suggestion that water has a nonphysical component might seem farfetched, but it cannot be ruled out a priori. Bear in mind that within Chalmers’ project, ‘physical’ is to be understood narrowly, in terms of what is describable using the language of the science of physics.[[28]](#footnote-28) Thus, supposing that water has a nonphysical component is equivalent to supposing that it has a component that cannot be fully described using terms like ‘spin,’ ‘mass,’ ‘charge,’ and so on. Some *emergentist* philosophers have held that chemical phenomena are nonphysical in this sense—they regard chemical phenomena as neither physically reducible nor physically realized.[[29]](#footnote-29) I assume that such emergentist views of chemistry are in fact mistaken. But they are not incoherent; we cannot rule out a priori that water has a part that is nonphysical in just the way that such emergentists hold that chemical phenomena generally are nonphysical. This is all we need to be imagining when we consider a world where H2OEc fills the water-role.

Given that Ectoplasm World is by assumption physically indiscernible from the actual world, does it follow that ectoplasm must be either epiphenomenal or causally redundant there?[[30]](#footnote-30) If so, this would potentially undermine my claim that it is H2OEc rather than simply H2O that occupies the water-role there. We can respond to this worry by introducing *double prevention* into Ectoplasm World.[[31]](#footnote-31)

Consider a stock example of double prevention. Bomber is on a mission to destroy an opposing target. Enemy hopes to prevent Bomber from doing this, and would do so if left on her own. But Fighter, the escort of Bomber, prevents Enemy from doing this—a double prevention—by shooting Enemy down before she can interfere with Bomber. Fighter thus makes a non-redundant causal contribution to the destruction of the target: had she not shot down Enemy, Enemy would have shot down Bomber, and so the target would not have been destroyed. And Fighter makes this causal contribution even though she does not shoot the target herself, even though she transfers no energy or momentum to the target or is otherwise physically connected to it, and even though we can suppose that the actions Bomber would have taken if neither Enemy nor Fighter had been present are physically and in all other respects indiscernible from the actions Bomber in fact took in their presence.

Using this example as our model, consider first a case from the actual world in which Drinker consumes a glass of H2O, causing her thirst to be quenched. This will involve various underlying physical processes, as the H2O molecules interact with Drinker’s body. Next, consider a world containing *prevectoplasm*, a nonphysical substance that prevents H2O from quenching thirsts. When Drinker’s counterpart at this Prevectoplasm World consumes her glass of H2O, the prevectoplasm intervenes and prevents the H2O from quenching the counterpart’s thirst. You can think of the prevectoplasm as pushing and pulling at the physical particles that make up both the H2O and the body of the Drinker’s counterpart, preventing those particles from participating in the same sort of physical processes that occur in the actual world when Drinker’s thirst is quenched.[[32]](#footnote-32) Prevectoplasm World is thus physically discernible from the actual world.

But now reconsider Ectoplasm World, and suppose that in addition to containing ectoplasm, it also contains the nonphysical substance just described, prevectoplasm. The prevectoplasm at Ectoplasm World *would* prevent H2O from quenching thirsts there, but the ectoplasm prevents this from happening—a double prevention. The ectoplasm shoots down the prevectoplasm, as it were, before the prevectoplasm has the opportunity to push and pull at any physical particles. Thus, what happens at Ectoplasm World is that the counterpart to Drinker consumes a glass of H2OEc that is physically indiscernible from the glass of H2O consumed in the actual world. At this point, the prevectoplasm would intervene, but it is prevented from doing so by the ectoplasm. The ectoplasm does not itself push or pull at any physical particles; the only thing it pushes or pulls at is prevectoplasm. As a result of this double prevention, the physical processes that take place in the body of the Drinker counterpart at Ectoplasm World are indiscernible from the physical processes that take place in Drinker’s body at the actual world, and the counterpart’s thirst is quenched. And yet, despite this physical indiscernibility, ectoplasm makes a non-redundant causal contribution to quenching the thirst of the Drinker counterpart, since if the ectoplasm had not been acted, the prevectoplasm would have intervened, and the thirst would not have been quenched.[[33]](#footnote-33)

 Much of what is involved in occupying the water-role consists in causing various effects—quenching thirsts, washing hands, putting out fires, and so on. Generalizing on the preceding argument, we can suppose that at Ectoplasm World, ectoplasm makes a non-redundant causal contribution to bringing about all of these characteristic effects: it prevents prevectoplasm from preventing the quenching of thirsts, the washing of hands, the putting out of fires, and so on.[[34]](#footnote-34) What this shows is that we can consistently suppose that here in the actual world H2O causes these effects and thus occupies the water-role, while at another world, physically indiscernible from our own, H2O, taken by itself, is causally insufficient for those effects and thus fails to occupy the role. At Ectoplasm World it is H2OEc, rather than H2O by itself, that is causally sufficient for quenching thirsts, and washing hands, and putting out fires, and so on—and the ectoplasm component of H2OEc makes an essential causal contribution to these effects. Thus it is H2OEc, rather than H2O, that occupies the water-role there.

 Perhaps the Ectoplasm World scenario we are imagining is farfetched in some sense. But it is not incoherent; it is not something that can be ruled out a priori. Thus, a Laplacean intellect given just the *PQI* truths of the actual world cannot know whether or not the actual world contains such double-preventing ectoplasm, and so cannot know whether the actual occupant of the water-role is H2O or H2OEc.[[35]](#footnote-35)

Now, if prevention is understood as the causation of a negative event—Fighter causes Enemy *not* to shoot down Bomber—and if truths describing negative events thereby qualify as negative truths, then we should expect causal truths describing preventions and double preventions generally not to be entailed by *PQI* truths, since such causal truths will qualify as negative truths. However, the preceding argument does not require that preventions or the sentences describing them be understood in these negative terms.[[36]](#footnote-36) All the argument needs is that the *PQI* truths fail to rule out the existence of nonphysical substances like ectoplasm and prevectoplasm—a point Chalmers of course concedes—and so fail to rule out that such substances are causally interacting in the way we have imagined, with ectoplasm preventing prevectoplasm from interfering with the physical world.

 In effect, my claim in this section is that the property of being the occupant of the water-role is border-sensitive, and so in order to know whether a given substance like H2O instantiates this property, you must know not only how things are with H2O, but also that certain things are *not* the case outside the borders of H2O. That is, you must know certain negative truths, like the truth that there is no ectoplasm of the sort we have been imagining. Since such negative truths are not a priori entailed by *PQI* truths, the positive truth (Water) is not a priori entailed by *PQI* truths. Therefore, *T*C is false.

 The argument generalizes in two directions. First, if (Water) is not a priori entailed by *PQI* truths, then hardly any positive truths about water will be so entailed. Take the positive truth that there is water on Mars. To scrute this a priori, a Laplacean intellect would need to be given not just the *PQI* truths, but also the negative truth that it is *not* the case that all H2O on Earth is attached to ectoplasm (in which case, the actual occupant of the water-role would be H2OEc), while all H2O on Mars is unattached to ectoplasm (in which case, the actual occupant of the water-role would not be present on Mars). Thus, the positive truth that there is water on Mars is inscrutable from *PQI* truths alone, and we have another counterexample to *T*C. Second, the argument can be extended to various other terms that are functionally defined using rigidified definite descriptions in the way we are supposing ‘water’ is defined. Plausibly, this includes a great many of the terms used in natural languages and the special sciences. If so, hardly any positive truths will be a priori entailed by *PQI* truths, contrary to what *T*C says.[[37]](#footnote-37)

**4. That’s All**

 In this closing section, reconsider *N*, the class of all negative truths. Upon reflection, *N* has a number of the attractive properties that Chalmers is looking for in a that’s-all truth. For instance, including *N* within the scrutability base really does solve the problem of rendering negative truths a priori scrutable; this is an advantage of *N* over *T*D (section 2). In addition, *N* includes no falsehoods; this is an advantage of *N* over *T*C (section 3). Finally, for the sake of the arguments advanced in this paper, we can suppose that all truths are a priori scrutable from *PQNI* truths, including even those positive truths that describe the instantiation of border-sensitive properties, like (Water). Last section’s argument was that (Water) is not a priori entailed by the *PQI* truths because the *PQI* truths fail to rule out the hypothesis that the actual occupant of the water-role is H2OEc rather than H2O. This alternative hypothesis *is* ruled out, however, by adding to the *PQI* truths the negative truth, (No Ectoplasm). More generally, the arguments I have advanced in this paper are all consistent with supposing that all truths are a priori scrutable from *PQNI* truths.

 The problem, of course, is that *N* is incompact (section 1), and so even if all truths are a priori scrutable from *PQNI* truths, as I concede, this fails to establish the A Priori Scrutability thesis, which requires a compact scrutability base. For any family of expressions there is, *N* figures to include truths using expressions from that family: (negative) geological truths, (negative) chemical truths, (negative) astronomical truths, and so on. Indeed, given how we conceived of ectoplasm in the preceding section, (No Ectoplasm) can be understood as a chemical truth—it is the negative chemical truth that there are no nonphysical, emergent chemical entities attached to H2O molecules. If such chemical truths need to be built into the scrutability base, then the claim that all chemical truths are a priori scrutable from that base is less philosophically interesting than we might have hoped. Generalizing, the claim that various other families of truths are a priori scrutable from a base that includes *N*, and so includes truths from the very families in question, is less interesting than we might have hoped.

 Thus, the crucial question is whether proponents of A Priori Scrutability can find some suitable substitute for *N*; that is, a truth or class of truths that has all the attractive properties that *N* has, but that avoids *N*’s incompactness. When the issue is framed in this way, I believe our default assumption should be that no such substitute is likely available. After all, the track record of broadly similar philosophical projects is largely one of failure. I have in mind, for instance, accounts of truthmaking that eschew negative facts and try to find substitute entities to play the role that negative facts would otherwise play, or accounts of causation that similarly attempt to do without negative events—such views face serious challenges, to say the least. At any rate, if the arguments presented in this paper are successful, they establish that if there is some such suitable substitute for *N* that can be used to support A Priori Scrutability, Chalmers has not provided it.

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1. Chalmers (2012: xvi). [↑](#footnote-ref-1)
2. Chalmers (2012: xvi). [↑](#footnote-ref-2)
3. Chalmers (2012: xvi, 58). Following Chalmers, I take truths to be true sentences. [↑](#footnote-ref-3)
4. Sider (2001), (2003). [↑](#footnote-ref-4)
5. Chalmers (2012: 20-21). [↑](#footnote-ref-5)
6. Chalmers (2012: 22). [↑](#footnote-ref-6)
7. In Chapters 6 and 7 of Chalmers (2012), various ways in which the *PQTI* base might be expanded or contracted are considered. These potential alternatives to the *PQTI* base are irrelevant to the argument that follows and so we will ignore them here, although see the discussion below of the class of ontological truths, *O*. [↑](#footnote-ref-7)
8. The physical truths in question would describe the distribution of particles in Detroit, but without using the term ‘Detroit,’ since this is not a term taken from physics. [↑](#footnote-ref-8)
9. Chalmers (2012: 111-112). [↑](#footnote-ref-9)
10. Plausibly, some negative truths will be a priori scrutable from *PQI* truths. For instance, a Laplacean intellect given the physical truth that an electron has a mass of 9.1 x 10-31 kg could presumably scrute a priori the negative truth that an electron does *not* have a mass of 3 kg, since an entity’s having a mass of 3 kg is incompatible with its having a mass of 9.1 x 10-31 kg, and this incompatibility is knowable a priori. I follow Chalmers, however, in supposing that not all negative truths can be handled in this way; at least some are a priori inscrutable from *PQI* truths. Within metaphysics, compare the proposed *incompatibility solution* to finding truthmakers for negative truths, initially defended by Demos (1917), and the objections to this approach developed by Molnar (2000: 75) and Armstrong (2004: 62-63) among others. [↑](#footnote-ref-10)
11. Chalmers (2012: 269). Chalmers is skeptical that there are such inscrutable ontological truths, but contends that if there are, they can be handled in this way. [↑](#footnote-ref-11)
12. Chalmers (2012: 111). [↑](#footnote-ref-12)
13. Chalmers (2012: 151-152). Compare Chalmers (1996: 40-41) on positive properties. [↑](#footnote-ref-13)
14. The problem of the many was introduced by Unger (1980). [↑](#footnote-ref-14)
15. Thanks to an anonymous referee for comments on this issue. [↑](#footnote-ref-15)
16. Sider (2001: 357). The sphere example is Sider’s. [↑](#footnote-ref-16)
17. You might hold that an object’s being a chair, a table, or a bathtub depends on its being created by a minded being with the appropriate intentions. If so, the Mount Rushmore argument fails to establish that these properties are border-sensitive, since the regions of rock within the mountain were not so created. But in that case, alternative arguments for this conclusion are available. For instance, I claim that a chair that is created by a minded being with the appropriate intentions ceases to be a chair if it comes to be seamlessly embedded within a mountain. If this is correct, the border-sensitivity of being a chair follows. For discussion of these issues, see Sider (2001: 361). [↑](#footnote-ref-17)
18. In connection with the preceding footnote, we can suppose that the pink house in *w* is created by a being with the appropriate house-creating intentions. [↑](#footnote-ref-18)
19. See Sider (2001: 357). Again, the house example is Sider’s. [↑](#footnote-ref-19)
20. Sider (2001) uses border-sensitivity to argue against Langton and Lewis’s (1998) analysis of intrinsicness. [↑](#footnote-ref-20)
21. Duplication-preserving truths, so defined, cannot be identified with intrinsic truths, understood following Chalmers (2012: 153, n. 2) as truths attributing the instantiation of only intrinsic properties. Some duplication-preserving sentences are not intrinsic. For instance, “Either Joe is an uncle or 1+1=2.” satisfies the definition of being duplication-preserving, but is not intrinsic since being an uncle is an extrinsic property. Also, some intrinsic truths are not duplication-preserving. For instance, (Felix) is plausibly intrinsic, in Chalmers’ sense, since mass is plausibly an intrinsic property while the property of being a cat, although border-sensitive and thus extrinsic, is not mentioned in (Felix). But (Felix) is not duplication-preserving, as just argued in the text. [↑](#footnote-ref-21)
22. (No Pink House) is not a duplication-preserving sentence either, and so it too falls outside the scope of *T*D. [↑](#footnote-ref-22)
23. Chalmers (2012: 152-153) describes the primitivist option as a viable alternative to his analysis. [↑](#footnote-ref-23)
24. Block and Stalnaker (1999). [↑](#footnote-ref-24)
25. Jackson (1993). [↑](#footnote-ref-25)
26. Block and Stalnaker (1999: 18-19). Their scenario differs from the one envisioned here in that the world we have been considering contains a single occupant of the water-role, H2OEc, while the world they consider contains two distinct occupants of the role: H2O, and also an unattached nonphysical substance, like ectoplasm. There are two reasons to prefer my version. First, there are different views regarding what follows when a functional role has more than one occupant. On Lewis’s (1970, 1972, 1994) seminal view, such multiple realization is compatible with the truth of identity statements like (Water); for instance, Lewis holds that pain can be identified with firing C-fibers even if firing C-fibers is but one of multiple actual occupants of the pain-role. On Lewis’s view of functional definitions, then, the Block and Stalnaker world with multiple occupants of the water-role cannot be used to argue against the a priori entailment of (Water) by *PQI* truths. However, the world we have been considering, where H2O is not an occupant of the water-role, can be used to argue this. Second, it is unclear how the causal story is meant to go in the world Block and Stalnaker consider. Causal considerations are discussed at length just below. [↑](#footnote-ref-26)
27. See Chalmers and Jackson (2001), Jackson (2003), and Chalmers (2012: 124). [↑](#footnote-ref-27)
28. There are other philosophical projects within which ‘physical’ is understood more broadly. For instance, sometimes ‘physical’ is understood to mean anything that is non-mental—see for instance Montero and Papineau (2005), who adopts this *via negativa* conception for the purpose of formulating and defending the thesis of physicalism. If Chalmers were working with such a broad conception of the physical, the A Priori Scrutability thesis would be rendered much less interesting. In that case, geological truths, astronomical truths, chemical truths such as (Water), and so on, would all be trivially a priori scrutable from *PQI* truths, for they themselves would qualify as physical (i.e., non-mental) truths. [↑](#footnote-ref-28)
29. On emergentism, see for instance McLaughlin (1992). [↑](#footnote-ref-29)
30. Ectoplasm would be causally redundant if every effect it causes is causally overdetermined—for instance, if such effects also have sufficient purely physical causes. Such causal redundancy is sometimes entertained in connection with non-physicalist accounts of mental causation. [↑](#footnote-ref-30)
31. On double prevention, see for instance Hall (2000) and (2004), and Lewis (2000). [↑](#footnote-ref-31)
32. We can suppose that this is in violation of various physical laws that obtain in the actual world, including for instance the conservation of energy law. [↑](#footnote-ref-32)
33. If we suppose that the ectoplasm at Ectoplasm World always, as a matter of law, prevents the prevectoplasm from preventing the quenching of thirst, we can suppose that the physical laws that obtain in the actual world also hold in Ectoplasm World. [↑](#footnote-ref-33)
34. We can also suppose that ectoplasm causes various additional nonphysical and nonqualitative effects—for instance, we can suppose it causes vibrations in shmectoplasm, a third nonphysical substance present at the world—since the existence of such effects would not undermine the key point of the example: that Ectoplasm World is indiscernible from the actual world with respect to all *PQI* truths. [↑](#footnote-ref-34)
35. Some views of causation deny that absences can enter into causal relations, and so deny that prevention and double prevention are genuine forms of causation; see for instance the physical theory of causation defended by Dowe (2000) and (2004). Two points in reply. First, such theories are controversial, and not anything Chalmers would want to have to assume in order to defend A Priori Scrutability. Second, even Dowe concedes that prevention and double prevention are like causation in certain ways, in particular with respect to counterfactual dependence. He calls prevention and double prevention forms of *quasi-causation*, where in the case of double prevention, event *c* (for instance, the action of ectoplasm) quasi-causes event *e* (for instance, thirst to be quenched) just in case the following counterfactual is true: if *c* had not occurred, *e* would not have occurred. If we assume Dowe’s theory of causation for the sake of argument, it becomes extremely plausible that what matters to occupying the water-role is not just causation but also quasi-causation: H2OEc qualifies as the water-role occupant at Ectoplasm World because it enters into the right causal *and* quasi-causal relations. For discussion of related issues, see for instance Hall (2004: 268), who argues that given a theory of causation like Dowe’s, we will need to appeal to quasi-causation, and not just causation, within “causal decision theory.“ [↑](#footnote-ref-35)
36. Thanks here to anonymous referees, who resisted the suggestion that prevention should be understood as the causation of a negative event. [↑](#footnote-ref-36)
37. Obvious exceptions are positive truths that are themselves *PQI* truths, and positive truths that are by themselves knowable a priori. Such truths are trivially a priori entailed by *PQI* truths. [↑](#footnote-ref-37)