

SIXTEENTH EXCURSUS

Scrutability, Supervenience, and Grounding

Our central scrutability theses have been epistemological theses, not metaphysical theses. But it is natural to ask about the metaphysical upshot of these scrutability theses. For example: does a minimal scrutability base serve as a guide to the fundamental metaphysical structure of the world?

To ask this is to ask about the reach of conceptual metaphysics. In the introduction I said that conceptual metaphysics investigates the structure of our conception of reality, with one eye on how well this structure corresponds to reality itself. At a finer grain, conceptual metaphysics divides into four parts. The first focuses on the *structure of concepts*: relations among the concepts involved in our conception of the world, unconstrained by external reality. The second focuses on the *structure of belief*: roughly, the structure of our model of reality, constrained by our beliefs (and perhaps also by other states such as perceptual experiences) but not directly constrained by external reality. The third focuses on the *conceptual structure of reality*: conceptual relations among truths about reality. The fourth focuses on the *metaphysical structure of reality*: using conceptual relations as a guide to metaphysical relations among truths about reality. The third and fourth projects are constrained by external reality, while the first and second projects are largely constrained by psychological reality.

I have occasionally engaged in the first project in this book. For example, discussions of generalized scrutability and the class of primitive concepts are largely unconstrained by external reality. Some of our primitive concepts may have no application to the actual world: it may be that our basic conception is of an Edenic world that is very different from reality. Still, the structure of concepts at least serves as a constraint on the conceptual structure of reality.¹

¹ The first two projects are closely related to P. F. Strawson's descriptive metaphysics, characterized in *Individuals* (1959) as describing 'the actual structure of our thought about the world', whereas revisionary metaphysics is characterized as 'concerned to produce a better structure'. The structure of concepts and the structure of beliefs might both be seen as aspects of the structure of thought. It is not out of the question for parts of the first project to be revisionary, however, in that some primitive concepts may be unfamiliar concepts that are not manifest in our ordinary thought about the world.

I have not really engaged in the second project in this book. Insofar as I have focused on our representations of the world, the focus has been on the concepts involved rather than on our beliefs and other representations of how the world is.

I have mainly engaged in the third project in this book. Ordinary scrutability theses reflect conceptual and epistemological relations among truths about the world. The focus on truths means that the project is constrained by empirical reality. For example, the base truths include truths from physics, and an important constraint is that all truths about reality be scrutable. In effect, we isolate conceptually and epistemologically fundamental truths about the world, helping to understand the structure of reality as reflected in our concepts.

I have only rarely engaged in the fourth project in this book. That is, I have largely been unconcerned with how well the conceptual and epistemological relations reflect metaphysical relations. The main exception has been the discussion of whether all truths are scrutable from metaphysically fundamental truths (especially in 8.6). I think that there is a great deal of promise in the fourth project, however. Metaphysical relations among truths about reality do not float free of conceptual relations, but are heavily constrained by them. So we should expect conclusions about the conceptual structure of reality to have at least some consequences for the metaphysical structure of reality.

We might think of the fourth project as *conceptually guided global metaphysics*: using concepts as a guide to the global metaphysical structure of reality.² This project, like the third, involves a heavy interplay of the conceptual and the empirical. Empirical methods such as those of physics play an enormous role in delivering fundamental truths and in delivering nonfundamental truths. But the relation between the fundamental and the nonfundamental requires careful philosophical analysis. The analysis of this relation can play a significant role in constraining which truths are fundamental in turn. In this excursus, I concentrate on the role that scrutability and related notions can play in this project.

We can approach the question by comparing scrutability to two related notions often thought to do metaphysical work in connecting the fundamental and the nonfundamental. One notion is *supervenience* (Kim 1993): B-properties supervene on A-properties when any two possible worlds that are indiscernible with respect to their A-properties are indiscernible with respect to their B-properties. Another notion is *grounding* (Fine 2010; Schaffer 2009): B-properties are

² For closely related projects in conceptually guided global metaphysics, see Frank Jackson's *From Metaphysics to Ethics* (1998) and Amie Thomasson's *Ordinary Objects* (2007). For recent projects in global metaphysics that are not especially conceptually guided, see Jonathan Schaffer's 'On What Grounds What' (2009) and Ted Sider's *Writing the Book of the World* (2011).

grounded in A-properties when B-properties are instantiated in virtue of A-properties being instantiated.³

I will start with supervenience. Where Scrutability is the thesis that B-truths are scrutable from A-truths, Supervenience is the thesis that B-properties supervene on A-properties. How are these two theses related? The most obvious difference here is that Scrutability concerns truths (sentences or perhaps propositions) while Supervenience concerns properties. A second difference is structural: roughly, Supervenience concerns the whole space of possible worlds, while Scrutability concerns entailment within a world. The third and most important difference is that Scrutability is cast in terms of the a priori (an epistemological notion) whereas Supervenience is cast in terms of possibility (a modal notion). I will take these differences one at a time.

Truths vs. properties. On the first difference, we can line up truths and properties by saying that some sentences (e.g., the A-sentences) *characterize* some properties (e.g., the A-properties) when the sentences fully specify the instantiation of the properties. More precisely, A-sentences characterize A-properties when two worlds are indiscernible with respect to the A-properties iff the same A-sentences hold in them. The following discussion will focus on pairs of scrutability theses and supervenience theses satisfying a characterization assumption: the scrutability thesis holds that B-truths are scrutable from A-truths and the supervenience thesis holds that B-properties supervene on A-properties, where the A-truths are just the true A-sentences, A-sentences characterize A-properties, and B-sentences characterize B-properties.

The characterization assumption serves largely as a formal rather than a substantive constraint on the scrutability theses at issue: roughly, they have to concern truths about the instantiation of properties. Most of the scrutability theses we are concerned with can be put into this form straightforwardly. But the assumption also builds in a substantive claim about the expressibility of the properties involved in the supervenience thesis. If there are A-properties that cannot be referred to by any expression, then there may be two A-discernible worlds in which the same sentences are true. If so, there will be no A-sentences that characterize the A-properties. This sort of inexpressibility provides one way in which Supervenience (a thesis about properties) and Scrutability (a thesis

³ A third notion is that of *metaphysical definition* (Fine 1994; Sider 2011): B-properties are metaphysically definable in terms of A-properties when for each B-property, there is a metaphysical definition of it that appeals only to A-properties. Unlike the definitions on which I have focused in this book, metaphysical definitions are usually not constrained to be conceptual or a priori truths. Still, I think the counterexample problems outlined in chapter 1 also pose problems for metaphysical programs grounded in metaphysical definition. In any case, the three metaphysical projects (metaphysical definition, supervenience, metaphysical grounding) can be seen as analogous to the three epistemological/conceptual projects (definitional scrutability, a priori scrutability, analytic scrutability or conceptual grounding).

about sentences) can come apart. I will set worries about inexpressibility aside for now and return to them later.

Possible worlds vs. entailment. To address this structural difference between scrutability and supervenience, it is useful to first abstract away from the third difference involving apriority and necessity. We can do this by comparing Supervenience not to A Priori Scrutability but to its modal counterpart, Necessitation: the thesis that all B-truths are necessitated by A-truths. In chapter 1 I called this thesis Necessary Scrutability, as it shares a common structure with scrutability theses. It is not cast in epistemological terms, however, so it is really a scrutability thesis only in a weak sense.

Supervenience and Necessitation are closely related. Where Supervenience says that all A-indiscernible worlds are B-indiscernible, Necessitation says in effect that in every possible world where all the (actual) A-truths are true, all the (actual) B-truths are true. Given the assumptions above, Necessitation is very nearly a consequence of Supervenience. One might reason: a world w where all the actual A-truths are true will be A-indiscernible from our world, so (by Supervenience) w will be B-indiscernible from our world, so all the actual B-truths will be true at w .

The only questionable step here is the first: perhaps all actual A-truths are true at w but some other A-sentences are true there as well. This cannot happen if we assume that the A-sentences are closed under negation (setting aside indeterminacy), so that A-truths include both positive and negative A-truths, that is, truths about both the instantiation and non-instantiation of A-properties. If they include only the former, it will also suffice to assume that the A-sentences include a ‘that’s-all’ truth saying that these are the only instantiations of A-properties. Call the assumption that the A-sentences are either closed under negation or include a that’s-all truth the completeness assumption. Given the completeness assumption (along with the characterization assumption), Supervenience entails Necessitation. Without the completeness assumption, the entailment will not quite go through. The number of apples plausibly supervenes on applehood: two worlds with the same distribution of apples have the same number of apples. But the number of apples is not necessitated by positive truths about applehood: the positive truths about seven apples are consistent with there being eight apples.

In the reverse direction, Supervenience is not a consequence of Necessitation, even given the characterization and completeness assumptions. Necessitation says that actual A-truths necessitate actual B-truths, but it makes no such claim about A-sentences and B-sentences in other worlds. While the connections between the actual A-truths and the actual B-truths must be necessary, the thesis itself may be contingent. For example, a version of Necessitation holding that all truths are necessitated by physical truths may be true in some physicalist worlds

and false in other nonphysicalist worlds. By contrast, supervenience theses as defined so far are not tied to the actual world, and (at least given S_5) will be necessary if true at all.

Necessitation is more closely analogous to a weaker sort of supervenience thesis (Lewis 1983, Chalmers 1996) tied to a specific world. These are sometimes called contingent supervenience theses, although they might more accurately be called worldwise supervenience theses, as the relation may or may not hold contingently. We can say that B-properties *c*-supervene on A-properties in world *w* if any world that is A-indiscernible from *w* is B-indiscernible from *w*. Given the characterization and the completeness assumptions, Necessitation is equivalent to C-Supervenience in the actual world. Without the completeness assumption, Necessitation will be slightly stronger than C-Supervenience.

Another way to draw the notions more closely into alignment is to move from Necessitation to the stronger Generalized Necessitation (that is, Generalized Necessary Scrutability): the thesis that in every world, the A-truths in that world necessitate the B-truths in that world. Supervenience is certainly a consequence of Generalized Necessitation. Under the characterization and completeness assumption, supervenience will be equivalent to Generalized Necessitation. Without the completeness assumption, Generalized Necessitation will be slightly stronger than supervenience.

What goes for Necessitation goes also for A Priori Scrutability, once the modalities are changed. The moral of the discussion above is that as long as the modalities of scrutability and supervenience theses are aligned, ordinary scrutability theses have approximately the same strength as contingent supervenience theses (at least given the relevant assumptions), and ordinary supervenience theses have approximately the same strength as generalized scrutability theses. So we can compare a priori scrutability to epistemic supervenience, where B-properties epistemically supervene on A-properties when all epistemically possible scenarios that are A-indiscernible are B-indiscernible. (To avoid worries about reidentifying properties across scenarios, one might also cast such a thesis in terms of concepts or expressions.) These epistemic supervenience theses have roughly the same force as generalized a priori scrutability theses, while ordinary a priori scrutability theses have roughly the same strength as (epistemically) contingent supervenience theses.

Why not cast scrutability theses as epistemic supervenience theses from the start? One reason is that I have been most concerned with ordinary rather than generalized scrutability theses, and these align less well with the most familiar supervenience theses. Another is that I have not wanted to presuppose the relatively unfamiliar apparatus of epistemically possible scenarios. Casting supervenience theses in terms of possible worlds rather than in terms of necessity is

useful because worlds are so familiar and vivid, but it is more straightforward to cast scrutability theses in terms of the a priori.

In any case, c-supervenience is arguably the most important sort of supervenience for discerning the metaphysical character of the actual world. For example, it is plausible that the metaphysical thesis of physicalism does not require that mental properties supervene on physical properties, but it requires (at least) that mental properties c-supervene on physical properties. Physicalism is a thesis about the actual world, and is consistent with various supervenience-falsifying claims: for example, it is consistent with the claim that there are two non-actual worlds that are physically indiscernible and differ in that one world has additional nonphysical minds. So in what follows I will compare A Priori Scrutability to C-Supervenience, or equivalently (given the characterization and completeness conditions) to Necessitation.

Apriority vs. necessity: We can now abstract away from the structural differences, comparing the epistemological thesis that B-truths are a priori scrutable from A-truths to the modal thesis that B-truths are necessitated by A-truths. If apriority and necessity were equivalent, then these two theses would be equivalent. But given that there are truths that are necessary but not a priori, or vice versa, the theses come apart. For example, ‘There is water’ is necessitated by but not scrutable from ‘There is H₂O’.

Still, a weaker link between scrutability and necessitation remains tenable. It is arguable that the gap between apriority and necessity in ‘water’ cases and the like arise because ‘water’ is not super-rigid. The Apriority/Necessity thesis discussed earlier (in 8.5) says that sentences composed of super-rigid expressions are necessary if and only if they are a priori. If one accepts this thesis, it follows that if A- and B-truths involve only super-rigid expressions, B-truths will be necessitated by A-truths iff they are scrutable from A-truths.

A complication arises because the scrutability bases we have considered have not been restricted to super-rigid expressions: they also involve primitive indexicals such as ‘I’ and ‘now’. These indexicals can generate a gap between necessitation and scrutability. Still, one might suggest a weaker link:

Linking Thesis: For any class of super-rigid A-truths, all truths are necessitated by the A-truths iff all truths are a priori scrutable from the A-truths plus indexical truths.

The Linking Thesis articulates a strong link between supervenience and scrutability theses. Roughly, any (contingent metaphysical) supervenience base yields an (a priori) scrutability base and vice versa, as long as the relevant base expressions are super-rigid, and the scrutability base is augmented by indexical truths. So I will spend some time assessing the prospects for this thesis, and for theses in the vicinity.

I have already in effect given an argument for the left-to-right direction of the Linking Thesis in the argument for Fundamental Scrutability in chapter 8. The key premises there were the Apriority/Necessity thesis (super-rigid truths are necessary iff they are a priori) and the Acquaintance Scrutability thesis (all truths are a priori scrutable from super-rigid truths plus indexical truths). Suppose all truths are necessitated by the A-truths, which are super-rigid. Then by Apriority/Necessity, all super-rigid truths are scrutable from the A-truths. By Acquaintance Scrutability, all truths are scrutable from these super-rigid truths plus indexical truths, so all truths are scrutable from A-truths plus indexical truths.

As in Chapter 8, one can deny this link from Necessitation to Scrutability by denying one of the key premises. Some theists, some ontologists, and some type-B materialists may deny the Apriority/Necessity thesis, while other type-B materialists may deny the Acquaintance Scrutability thesis. Still, these two theses have significant support. I have argued for relatives of these theses in ‘The Two-Dimensional Argument against Materialism’ and elsewhere.

What about the right-to-left direction of the Linking Thesis? If all truths are scrutable from super-rigid A-truths plus indexical truths, then are all truths necessitated by the A-truths? We could derive this claim by assuming the Apriority/Necessity thesis along with the auxiliary claims that (i) if a super-rigid truth is scrutable from the super-rigid A-truths plus indexical truths, it is scrutable from the A-truths alone, and (ii) all truths are necessitated by super-rigid truths.

The first auxiliary claim is a consequence of the rules for indexical truths in scrutability bases (in the fifth excursus). If a super-rigid truth S is scrutable from ‘I am ϕ ’ and super-rigid A-truths, it will be scrutable from ‘Something is ϕ ’ and A-truths. The rules require that ‘Something is ϕ ’ is scrutable from the non-indexical truths in the base in any case, so it will be scrutable from A-truths. So S will be scrutable from A-truths.

The second auxiliary claim, Super-Rigid Necessitation (discussed briefly in E9) is not obvious, however. Potential counterexamples will arise on haecceitistic views (Adams 1979), on which certain truths about concrete objects are not necessitated by underlying ‘qualitative’ truths. On such a view, there can be a world that is qualitatively identical (microphysically and phenomenally identical, for example) to our world but in which different objects exist: where our world contains Obama, the other world contains Twin Obama. Given the plausible claim that there are no super-rigid expressions that refer to concrete objects, so that super-rigid truths are all qualitative, the actual truths about Obama will not be necessitated by super-rigid truths.

One could reply by simply denying the relevant haecceitistic view. The view is controversial and to deny it is not to pay a large cost. But if one accepts haecceitism, one can weaken the Linking Thesis by retreating to the claim that if all

truths are scrutable from super-rigid A-truths plus indexical truths, then all *qualitative* truths are necessitated by A-truths. Here qualitative truths are understood to exclude object-dependent truths (this might involve a ban on singular terms, along with certain restrictions on predicates and the like). This weaker claim can then be defended by replacing auxiliary thesis (ii) with a weaker thesis (iii), which we might call Super-Rigid/Qualitative Necessitation: all qualitative truths are necessitated by super-rigid truths. Haecceitistic views will not pose an objection to these weaker theses.

Another potential counterexample arises if truths about quiddities are not necessitated by truths about non-quiddities and if there are no super-rigid expressions for quiddities. If one accepts a no-quiddity or a graspable-thick-quiddity view (as discussed in 7.9), one will reject these claims. If one accepts a thin-quiddity view or an ungraspable-thick-quiddity view, on the other hand, one may well accept these claims. If so, one could always retreat to the thesis that if all truths are scrutable from super-rigid A-truths plus indexical truths, then all *super-rigid* truths are necessitated by A-truths. Alternatively, we can expand the class of qualitative truths above to exclude quiddity-involving truths. In what follows, I will assume the Super-Rigid/Qualitative Necessitation thesis, and readers can adjust the notion of qualitiveness, perhaps to exclude object-involving and/or quiddity-involving truths, according to their own views of whether this is needed.

Where does this adjustment leave the connection between scrutability bases and supervenience bases? In chapter 8, we saw that there is plausibly a scrutability base involving just super-rigid expressions and indexicals. If we assume Apriority/Necessity along with Super-Rigid/Qualitative Necessitation, it follows that these super-rigid truths form a necessitation base for qualitative truths: all qualitative truths will be necessitated by the super-rigid truths in such a base.⁴ Furthermore, given that the super-rigid truths and indexicals form a minimal scrutability base, the super-rigid truths in question will form a minimal qualitative necessitation base: a minimal class of truths such that all qualitative truths are necessitated by those truths. So the scrutability base yields a sort of supervenience base: the properties involved in the super-rigid truths will in effect be a supervenience base at least for qualitative properties.

Scrutability and metaphysical fundamentality. Given this connection between scrutability and supervenience, we can then ask about the place of metaphysical fundamentality. For example, can we conclude that the super-rigid truths in such a scrutability base are the metaphysically fundamental truths: that is, the

⁴ This claim requires only the less controversial direction of the Apriority/Necessity thesis: if a super-rigid sentence is a priori, it is necessary. The claim about minimality in the next sentence requires both directions, however.

metaphysical grounds for all truths? There are a few obvious obstacles to this thesis: one involving nonqualitative truths, one involving inexpressible properties, and one involving metaphysical priority. Addressing these obstacles can help us to better understand the connection between scrutability and metaphysical fundamentality.

The first obstacle is posed by nonqualitative truths. We know that the super-rigid truths in question necessitate all *qualitative* truths, but one might think that the metaphysically fundamental truths should necessitate *all* truths. Matters are not entirely clear here, however. In practice, many philosophers at least implicitly take it that necessitation of object-involving truths is not required. For example, physicalists often allow that microphysical truths do not necessitate object-involving truths (that is, they allow that there are microphysically identical possible worlds involving different objects) without taking this to threaten physicalism. The issue is subtle. If the stronger thesis is required, then the move from necessitation to fundamentality will require either ruling out haecceitism or else fleshing out the necessitation base with certain object-involving truths (object-involving truths about certain microphysical objects, for example) so that the base becomes a full necessitation base. For present purposes, however, I will take it that at least one interesting sort of metaphysical fundamentality is compatible with failure to necessitate object-involving truths.⁵

An analogous worry arises if there are no super-rigid expressions for quiddities, as on views with ungraspable thick quiddities and with thin quiddities. On these views, quiddistic truths will not be necessitated by the super-rigid truths in a scrutability base. Most believers in quiddities take at least some of them to be metaphysically fundamental, so this problem cannot be dismissed as with haecceities above. Rather, the super-rigid truths involved in a scrutability base will have to be augmented by non-super-rigid truths concerning quiddities in order

⁵ See Hofweber 2005 and Almotahari and Rochford 2011 for differing perspectives on this matter. My view is that even if object-involving truths are not necessitated by underlying qualitative truths, they may nevertheless be grounded in underlying qualitative truths. For example, suppose there are just two particles. Then the fundamental truth about the world (that's-all truth aside) might take the form $\exists x \exists y (x \neq y \ \& \ Fx \ \& \ Gy)$. There may also be object-involving truths about this world of the form Fa and Gb , but I do not think it is compulsory to see Fa and Gb as the fundamental truths here. Instead, they may themselves be grounded in the existential truths. This 'qualitativist' view of grounding (Dasgupta forthcoming) requires rejecting the standard view that existential truths are always grounded in object-involving truths. This view is consistent with a haecceitistic view of modality on which there is a distinct world in which $Fb \ \& \ Ga$. In effect, once there are objects in our world, we can use them to characterize various counterfactual possibilities involving them, but the original objects are nevertheless grounded in qualitative matters. More deeply, I think one can distinguish notions of prior and posterior metaphysical possibility here, depending on whether possibility is prior or posterior to actuality. There are multiple posterior metaphysical possibilities consistent with the existential truths, but only one prior metaphysical possibility. While haecceitism may be true of posterior metaphysical possibility, it is prior metaphysical possibility that is relevant to questions of grounding.

to yield a necessitation base for all truths. Then the truths involved in this necessitation base (or perhaps a minimal subset of it) may well be metaphysically fundamental, at least as far as quiddities are concerned.

The second obstacle is posed by the possibility that certain metaphysically fundamental truths are inexpressible. If the problem is just that they are not expressible super-rigidly, as for quiddities and haecceities, then as in the previous paragraph we will need some non-super-rigid fundamental truths. But now the worry is that they are not expressible by sentences at all. Perhaps there are fundamental properties in other realms that we cannot even refer to, for example. If there are such properties, then there will also be inexpressible propositions concerning them. Then our necessitation base for sentences will not yield a necessitation base for propositions and will not yield a base of metaphysically fundamental properties. Still, if we make the fairly weak assumption that we can refer to all fundamental properties, then (given Super-Rigid/Qualitative Necessitation) truths about these properties will either be in our necessitation base or will be necessitated by our base, and this obstacle will be removed. If we make the stronger assumption that we can refer super-rigidly to all fundamental properties, then we do not need Super-Rigid/Qualitative Necessitation. Given the Apriority/Necessity thesis and (i), scrutability of all truths from super-rigid A-truths plus indexical truths yields scrutability of all super-rigid truths by A-truths (by (i)), which yields necessitation of all super-rigid truths by A-truths. Given the assumption, there will be super-rigid truths corresponding to every instantiation of a fundamental property. We can call these the fundamental super-rigid truths. Given that these fundamental truths necessitate all truths (perhaps setting aside object-involving truths) and are necessitated by the A-truths, the A-truths necessitate all truths.

The third and most important obstacle arises from metaphysical priority. Being a member of a minimal necessitation base (or even a super-rigid member) does not suffice for fundamentality. To see this, we can note that given a nonfundamental truth such as ‘There are philosophers’ (which is plausibly super-rigid), there will be a large class of bases including that truth. Some of these bases will be minimal among this class, in that they do not include any other bases in that class. Some of these bases will have the further property that if one subtracts ‘There are philosophers’, one would no longer have a necessitation base. These necessitation bases will be minimal in that no subset of them is a necessitation base, and they will include ‘There are philosophers’. But ‘There are philosophers’ is not plausibly fundamental. The moral where matters of fundamentality are concerned, we need to appeal to a relation more fine-grained than necessitation.

Necessitation and grounding. The fine-grained relation that is most directly connected to fundamentality is the relation of grounding. Here the thought is

that B-truths are grounded in A-truths when B-truths hold *in virtue of* A-truths holding. A metaphysically fundamental truth will then be a truth that is not grounded in any other truths. Under certain assumptions, the metaphysically fundamental truths will form a minimal grounding base: a minimal set of truths that ground all truths. Likewise, any minimal grounding base will be the set of metaphysically fundamental truths.

Grounding can be understood as a relation among propositions, facts, properties, or objects. I will use grounding relations among sentences as a stand-in for all of these. If grounding is understood as a relation among true propositions (perhaps Russellian propositions), we can translate by saying that sentence S_1 grounds sentence S_2 iff the proposition expressed by S_1 grounds the proposition expressed by S_2 . One can do the same if grounding is construed as a relation among facts. Grounding relations among properties will correspond to grounding relations among sentences that characterize those properties. Something similar applies to grounding relations among objects, depending on how those relations are understood. So my talk of grounding relations among sentences can be translated to apply to these other sorts of grounding, though as before we need to keep worries about inexpressibility in mind.

It is tempting to hold that if A-truths ground B-truths, A-truths necessitate B-truths, but this is not entirely obvious. For example, some hold that the collection of fundamental positive truths grounds all truths, both positive and negative, even though it does not necessitate all negative truths. On the view in question, a that's-all truth needs to be added for necessitation, but this truth is itself grounded in the collection of positive truths. On some haecceitistic views, as discussed above, one might also hold that object-involving truths are grounded in qualitative truths even though they are not necessitated by those truths. I will not take a stand on these matters here. I am more sympathetic with the second point than the first (I am inclined to think that a that's-all truth is itself metaphysically fundamental), but these points will make only a minor difference for present purposes.

More importantly, it is not the case that if A-truths necessitate B-truths, A-truths ground B-truths. For example, if A , B , and C are microphysical truths, then A is necessitated by $A \& (B \vee C)$, but it is not plausible that A is grounded by $A \& (B \vee C)$. More plausibly, the latter truth is grounded in some combination of A , B , and C . Likewise, the minimal necessitation base including 'There are philosophers' necessitates all truths but does not ground all truths. It may even be that some necessary truths, such as mathematical truths, are not grounded by any other propositions, even though they are necessitated by all other propositions. If so, they will be in a minimal grounding base, although they are not in any minimal necessitation base. These phenomena arise because grounding requires a much stronger connection between truths than necessitation.

Because of this, even if one can argue from super-rigid A-truths plus indexicals forming a minimal scrutability base to their forming a minimal qualitative necessitation base, one cannot argue directly from here to their forming a minimal grounding base. There will certainly be nonfundamental super-rigid truths. Some of these will be in minimal scrutability and necessitation bases without being in minimal grounding bases. At best, we might be able to move in reverse and hold that a minimal grounding base (perhaps with the addition of a that's-all truth) will itself be a minimal qualitative necessitation base and will therefore, if it involves only super-rigid truths, be a minimal scrutability base (with the addition of some indexical truths). That is in effect a version of the argument for Fundamental Scrutability offered earlier.

We have seen how to move from premises about scrutability to conclusions about supervenience and vice versa, at least given certain assumptions. We have also seen how to move from premises about fundamentality to conclusions about supervenience and scrutability. But this leaves open the question raised above: can we move from premises about scrutability to conclusions about fundamentality?

Conceptual and metaphysical grounding. To properly connect scrutability and fundamentality, I think we have to appeal to a more fine-grained relation that stands to scrutability roughly as grounding stands to necessitation. We might call the more fine-grained relation *conceptual grounding*. We have investigated relations in this vicinity when discussing the thesis that all truths are analytically scrutable from truths involving primitive concepts. One might hold that one truth is conceptually grounded in other truths when it is analytically entailed by those truths and those truths are conceptually prior to it. Or perhaps better, one might understand it in terms of the notion of 'translucent settling' discussed in 'Verbal Disputes'. The discussion there and in chapter 8 gives at least some plausibility to the claim that there is a notion of conceptual grounding in this vicinity.

In what follows, I will assume that we have pinned down a conceptual grounding relation, although the matter requires a more sustained analysis than I have given. To get a rough grip on it, we can work with the approximate definition picture, so that when E is approximately definable as D (under criteria of adequacy that include conceptual priority), truths involving E are conceptually grounded in truths without E involving the terms in D . So truths about bachelors will be conceptually grounded in truths about gender and about marriage, while truths about electrons will be conceptually grounded in truths about playing the electron role. I will also take it that standard logical grounding relations yield conceptual grounding: so A and B jointly ground $A \& B$, A or B separately ground $A \vee B$, and so on.

The discussion in chapter 8 (and also in 'Verbal Disputes') makes a case that there is a minimal conceptual grounding base such that all truths are conceptually

grounded in those truths. These truths will involve primitive concepts: perhaps some or all of nomic, phenomenal, spatiotemporal, and quiddistic concepts, as well as normative and mathematical concepts, perhaps among others. The inclusion of normative and mathematical truths in a minimal conceptual grounding base makes clear that such a base can go well beyond a minimal scrutability base.

Can one make inferences from claims about conceptual grounding to claims about metaphysical grounding? Certainly, the claim that *A* conceptually grounds *B* does not seem to be equivalent to the claim that *A* metaphysically grounds *B*. For example, a claim about a table might be metaphysically grounded by micro-physical truths about charge, spin, and the like, but it is not plausibly conceptually grounded in those truths. The truth that an entity has a certain charge may be conceptually grounded in the claim that it has a property that plays a certain role, but (at least on some views) it will not be metaphysically grounded in that truth.

Correspondingly, charge and spin may be metaphysically fundamental, but the concepts *charge* and *spin* are certainly not conceptually fundamental. In the reverse direction, some may hold that *conscious* and *I* are conceptually fundamental, while denying that consciousness and I are metaphysically fundamental. So fundamentality of a concept need not go along with fundamentality of its referent.

Still, all these problems also arose when considering the relation between apriority and necessity, and there is a familiar diagnosis: ‘charge’, ‘spin’, and ‘I’ are not epistemically rigid. For a more plausible thesis, we can restrict the thesis to super-rigid truths as follows. The case of consciousness is still a potential exception, to be sure, but this case is controversial, and as before one might use the restricted thesis to argue for the metaphysical fundamentality of consciousness.

Conceptual/Metaphysical (C/M) Thesis: When *A* and *B* are super-rigid truths, *A* conceptually grounds *B* iff *A* metaphysically grounds *B*.

On the left-to-right direction: it is very plausible that when *A* conceptually grounds *B* for super-rigid *A* and *B*, *A* metaphysically grounds *B*. The obvious candidates for conceptual grounding without metaphysical grounding all involve non-super-rigid expressions: for example, truths involving natural kind terms (‘charge’, ‘electron’) or names (‘Jack the Ripper’). If we take a conceptually grounded super-rigid expression, such as ‘friendly’ perhaps, it is highly plausible that those expressions involved in its conceptual grounds (for example, expressions involving certain mental states and dispositions to behave) are equally involved in its metaphysical grounds. Certainly, when *A* is definable super-rigidly as *D* (where super-rigidity excludes devices of a posteriori rigidification and the like within *D*), we can expect *D*-truths to metaphysically ground *A*-truths: truths

about unmarried males plausibly ground truths about bachelors, for example. Something similar goes for approximate definitions and for logical grounding. So there is a strong *prima facie* case for the left-to-right direction here.

The right-to-left direction is clearly more controversial, as the case of consciousness illustrates. But setting aside that case and related controversial cases for now, are there any clear exceptions? One might worry that super-rigid microphysical truths will metaphysically ground super-rigid high-level truths without conceptually grounding them. After all, microphysical truths seem far from being conceptually primitive.

To assess this matter, we should first consider what super-rigid microphysical truths will involve. This class will include broadly structural truths, cast in terms of logical, mathematical, nomic, and perhaps spatiotemporal vocabulary. An example is the truth that there exists an entity with a property that plays a certain specified nomic role with respect to other properties. On some views there will also be a distinct class of super-rigid quiddistic truths, characterizing intrinsic quiddities of microphysical entities. The broadly structural truths are cast in conceptually primitive vocabulary, and they are plausible candidates to be conceptually primitive truths, not grounded in any further truths. The main exception is that on a quiddistic view, certain existential claims within them (there exists a property that plays a role) may be grounded in a corresponding quiddistic truth (quiddity *Q* plays that role). As for quiddistic truths, quiddistic concepts are certainly unfamiliar, but it is natural to hold that basic quiddities can serve as conceptual grounds for higher-level quiddities.

Next, we should consider what super-rigid high-level truths will involve. Most high-level expressions are not super-rigid, and the super-rigid expressions derive from a limited number of categories: causal, spatiotemporal, mathematical, quiddistic, phenomenal, normative, and a few others. In the case of causal and spatiotemporal high-level truths (truths involving 'computer' or 'square' perhaps), it is plausible that these truths will be both conceptually and metaphysically grounded in structural microphysical truths. In effect, fine-grained nomic and spatiotemporal microphysical structure will serve as conceptual and metaphysical grounds for coarse-grained macrophysical nomic and spatiotemporal structure. In the case of high-level quiddistic truths (if any), these are again unfamiliar, but there is no obvious reason to doubt that if they exist, they are both conceptually and metaphysically grounded in microphysical quiddistic truths.

In the case of pure mathematical truths, it is arguable that these are neither conceptually nor metaphysically grounded by microphysical truths. On the face of it, the microphysical truths are simply irrelevant to pure mathematical truths, and play no role in grounding them. One could hold that mathematical truths are conceptual truths and that conceptual truths need no grounds: they are not fundamental, but they are conceptually grounded in an empty base. If they are

not conceptual truths, however, then one could hold either that they are metaphysically grounded in an empty base, or that they are not metaphysically grounded in microphysical truths at all. I think that the last view is perhaps the most plausible of these options.

As for phenomenal truths: some type-B materialist views will reject the Conceptual/Metaphysical Grounding thesis, just as they reject the Apriority/Necessity thesis, but we can set those views aside for now. On type-A materialist views such as analytic functionalism, phenomenal truths (if super-rigid at all) will be both conceptually and metaphysically grounded in structural microphysical truths. On dualist views, phenomenal truths will be grounded in neither way in microphysical truths. On a Russellian monist view, phenomenal truths are metaphysically grounded in certain quiddistic truths: either phenomenal or proto-phenomenal truths. It might seem odd to suggest that familiar phenomenal truths are conceptually grounded in much less familiar protophenomenal truths; but this is not much odder than the plausible claim that truths about phenomenal color are conceptually grounded in truths about phenomenal hue, saturation, and brightness. It is certainly possible for unfamiliar primitive concepts that play a role in conceptually grounding truths involving familiar concepts. Here it is worth keeping in mind that primitive concepts may be quite different from the concepts that we first acquire.

An especially tricky case is that of normative truths. Basic normative expressions are arguably super-rigid. If one is a naturalist normative realist, one will hold that normative truths are metaphysically grounded in non-normative truths. But we have seen that (setting aside normative descriptivism and the like) it is arguable that normative truths are not conceptually grounded in non-normative truths. One could respond by embracing normative irrealism, normative non-naturalism, or normative descriptivism. I am inclined to think that the moral is that one should be either a normative irrealist or a weak sort of normative non-naturalist who holds that normative truths are partly grounded (conceptually grounded and metaphysically grounded) in fundamental normative moral principles, which are not themselves conceptually grounded or metaphysically grounded in non-normative truths (although they are necessary and therefore necessitated by those truths). In this way, fundamental normative truths are akin to fundamental mathematical truths. But if one rejects non-naturalism, irrealism, and descriptivism, one may need to allow that there are cases of super-rigid metaphysical grounding without conceptual grounding.

Something very similar goes for the case of ontological truths. We saw earlier (chapter 6) that some ontologists hold that the existence of a mereological sum (say) is necessitated but not a priori entailed by the existence of its parts. Likewise, some will hold that the existence of the sum is metaphysically grounded but not conceptually grounded in the existence of its parts. I am inclined to

reject these views, holding that one should be either an ontological irrealist (so there is no truth to ground) or an ontological deflationist (so the truth is conceptually grounded in truths about the parts). An ontological realist could also preserve the *C/M* thesis by endorsing ontological nonreductionism and holding that the existence of the sum is not entirely metaphysically grounded in truths about its parts. But if one rejects these three views, one might allow that there are cases of super-rigid metaphysical grounding without conceptual grounding.

Overall, the moral of this discussion is that there are no clear exceptions to the *C/M* thesis. Certain philosophical views entail the existence of exceptions: type-B materialism, some strong forms of naturalist normative realism, and some strong forms of ontological realism. But these views are all controversial and far from obviously correct (although to be fair, their negations are also controversial, and the views are far from obviously wrong). Good reasons to accept the *C/M* thesis will also be good reasons to reject these views.

I will not try to argue for the *C/M* thesis at any length here. I think that one can argue for it in ways parallel to arguments for the Apriority/Necessity thesis. In the latter case, one can argue that any a posteriori necessities involving super-rigid expressions (such as putative necessities connecting consciousness and physical properties) will be brute necessities (Chalmers 1996, 2010). One can likewise argue that any a posteriori, and perhaps any nonconceptual, grounding claims involving super-rigid expressions (such as grounding claims connecting consciousness and physical properties) will be brute grounding claims. And one can argue that there can be no brute necessities and no brute grounding claims. More strongly, one can argue that our modal concepts are grounded in epistemic concepts, so that we do not have a grip on a notion of metaphysical necessity that is not tied to epistemic necessity in the way that the Apriority/Necessity thesis suggests. In the same way, one can argue that we do not have a grip on a notion of metaphysical grounding that is not tied to conceptual grounding in the way that the *C/M* thesis suggests. For now, however, I simply note that the *C/M* thesis remains on the table as a highly attractive view about grounding.⁶

If the *C/M* thesis is true, then a minimal conceptual grounding base for super-rigid truths is also a minimal metaphysical grounding base for super-rigid truths, and vice versa. If the right-to-left half of the *C/M* thesis is false but the left-to-

⁶ Even if the *C/M* thesis is false, some sorts of conceptually guided global metaphysics will be possible. For example, we can still do *feature metaphysics*, where features are understood as at the end of E14. Conceptual grounding relations between concepts will then reflect metaphysical grounding relations between features if not between properties. On a type-B materialist view, for example, the primitiveness of the concept of consciousness will reflect the metaphysical primitiveness of the feature of consciousness. Here features are tied to concepts, so we can see this feature structure of reality as an aspect of the conceptual structure of reality. If one accepts the *C/M* thesis, one can read the property structure of reality off the feature structure of reality. If not, there will be a gap between the two.

right half is true, then a conceptual grounding base for super-rigid truths is also a metaphysical grounding base for super-rigid truths (although a minimal conceptual grounding base need not be a minimal metaphysical grounding base).

What about the stronger claim that any conceptual grounding base for *all* truths is also a metaphysical grounding base for all truths and vice versa? This does not follow immediately from the C/M thesis, as we now have worries about non-super-rigid expressions to contend with. For the left-to-right direction, the biggest worry concerns object-involving truths. (Related issues arise for other non-super-rigid truths such as kind-involving truths, but the issues are largely parallel.) For example, perhaps existential truths such as ‘ $\exists xFx$ ’ collectively serve as conceptual grounds for singular truths such as ‘ Fa ’ (as discussed in 7.10), while the latter collectively serve as metaphysical grounds for the former. If so, conceptual and metaphysical grounding bases will look quite different. To respond, one could take the line discussed earlier (footnote 5) according to which even a metaphysical grounding base involves the existential truths here. Alternatively one could weaken the thesis to the claim that any conceptual grounding base *corresponds* to a metaphysical grounding base, where correspondence requires replacing existential truths by singular truths of an otherwise similar form.

As for the right-to-left direction, there is an obvious worry about indexical truths. Given the C/M thesis, a super-rigid metaphysical grounding base for all super-rigid truths will also conceptually ground all super-rigid truths, but it will not conceptually ground indexical truths. One needs to add indexical truths to obtain a full conceptual grounding base. If the right-to-left direction of the C/M thesis is false, one may need to add further truths (perhaps phenomenal truths, normative truths, and so on) to obtain a full conceptual grounding base.

So if the C/M thesis is correct, a minimal conceptual grounding base will not be a minimal metaphysical grounding base: one will have to subtract indexical truths for that purpose. One may also have to convert existential truths to singular truths, depending on one’s view of the role of these truths in grounding. In the reverse direction, to go from a minimal metaphysical grounding base to a minimal conceptual grounding base, one will need to add indexical truths, and perhaps convert singular truths to existential truths. If the C/M thesis is false, one will need to add or subtract further truths (such as phenomenal truths and normative truths) along with the indexical truths. On my own view, the only difference between the two bases will be the inclusion or exclusion of indexical truths. These aside, metaphysically fundamental truths will be conceptually fundamental truths and vice versa.

It might seem surprising to say that metaphysically fundamental truths, such as those in physics, are conceptually primitive truths. But once one reflects on the fact that metaphysically fundamental truths in physics will themselves either

involve quiddities (perhaps with nomic and spatiotemporal links) or else nomic profiles, powers, and the like, this no longer seems so surprising. If there are concepts of these quiddities at all, they will be novel concepts and we should not be surprised that they are primitive. Concepts of nomic profiles and powers, expressed in an appropriately structural way, themselves appear to be good candidates to be conceptually primitive truths. Finally, if phenomenal truths are metaphysically fundamental, it is no surprise that they should also be conceptually fundamental.

Grounding grounding. Given this close a connection between metaphysical and conceptual grounding it is natural to ask about the relation between the two: are the two identical, is one grounded in the other, or are they more independent than that? An unrestricted identity thesis seems unlikely, because of the way the two relations come apart for non-super-rigid truths. Furthermore, conceptual grounding seems to apply most directly to concepts (or perhaps Fregean propositions) where metaphysical grounding applies to objects and properties (or perhaps Russellian propositions). But links are still on the table.

One linking strategy stems from the idea (common among deflationary metaphysicians) that the most basic principles of metaphysical grounding are themselves conceptual truths. For example, one could hold that it is a conceptual truth that all true propositions p metaphysically ground propositions $p \vee q$, thereby explaining the metaphysical grounding claim above via a conceptual truth. Perhaps it is also a conceptual truth that true Russellian propositions about mereological sums are metaphysically grounded in true propositions about their parts. One could then say that it is a conceptual truth that one sentence (super-rigid or not) metaphysically grounds another when the Russellian proposition expressed by the former metaphysically grounds the Russellian proposition expressed by the latter. Then one could argue that less basic truths about metaphysical grounding themselves follow from conceptual truths and fundamental truths.

This line of thinking suggests the intriguing idea that conceptual truths along with fundamental truths conceptually ground all truths about metaphysical grounding, and thereby metaphysically ground those truths. If we see conceptual truths as corresponding to conceptual grounding claims, we might put this pithily as: conceptual grounding grounds metaphysical grounding. One could then suggest that conceptual truths do not themselves require explanation or grounding (perhaps they are grounded in the empty set). If so, this provides perhaps as good an explanation of metaphysical grounding as we will get.

On another intriguing view, metaphysical grounding grounds conceptual grounding. For example, one could hold that at least for non-indexical acquaintance concepts, to grasp the concept depends on being acquainted with its

referent. Then one could suggest that grounding relations about the concepts reflect metaphysical relations among the referents. For example, a hue concept may ground a color concept in virtue of a hue property grounding a color property. If so, then conceptual grounding relations among the concepts are grounded in metaphysical grounding relations among the properties. This strategy works best for super-rigid concepts, but it might be extended to non-super-rigid concepts at least given a view where primary intensions and the like are constructed from properties and relations: then conceptual relations among these concepts might be grounded in metaphysical grounding relations among the corresponding properties and relations.

Both of these views are attractive, and I do not know which is correct. It would not surprise me if elements of both of them are correct. Either way, there will be a close and even constitutive connection between conceptual grounding and metaphysical grounding.

An opponent might say that metaphysical grounding is mind-independent while conceptual grounding is mind-dependent, so the two cannot be as closely connected as this. One response here would be to adopt the broadly Kantian idea that metaphysical grounding is itself mind-dependent and depends on our contingent cognitive scheme. I am inclined to the opposite response, however: conceptual grounding is mind-independent. That is, conceptual grounding relations among truths do not depend on our cognitive apparatus at all. On this view, the primitiveness of a concept is not a fact about humans. Of course our grasping of these concepts is mind-dependent, as are the beliefs we form with them. To the extent that we are well-functioning, the relations among concepts may be reflected in various contingent cognitive relations in us. But there are mind-independent truths about conceptual relations, just as there are mind-independent truths about numerical relations.⁷ If this is right, conceptually guided metaphysics can lead us to mind-independent metaphysical truths.

Conclusion. Overall, we have seen that the relationships between scrutability, supervenience, and grounding are complex, but they can be drawn. The most important principles in drawing these connections are epistemological/modal bridging principles for super-rigid truths. The Apriority/Necessity thesis connects supervenience and scrutability, while the C/M thesis connects conceptual and metaphysical grounding. Smaller obstacles along the way include structural differences, worries about non-super-rigidly expressible propositions, and the status of indexical and that's-all truths. Given the major principles, the smaller obstacles can be handled in reasonably straightforward ways, leaving a fairly strong connection between the theses in place. If all this is right, we may truly

⁷ This not to endorse Platonism about concepts, any more than to hold that it is a mind-independent truth that $2 < 3$ is to endorse Platonism about numbers.

say that scrutability and conceptual grounding are guides to the structure of the world.

I have not argued at any length for the Apriority/Necessity thesis or the *C/M* thesis. I have just tried to make the case that they have some plausibility, and that standard worries about the connection between apriority and necessity (and so on) are not worries for these theses. I have argued for the former thesis elsewhere, and I am more confident of it than of the latter thesis. I think that both deserve further investigation, which I leave to future work.