Chapter 8: The Structure of the World

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1 Principled Scrutability Bases

So far, I have argued that all truths are scrutable from a base involving a highly constrained class of expressions. We started with the base $PQT\overline{I}$ of microphysical, phenomenal, and indexical truths along with a “that’s-all” truth. In chapters 3, 4, and 6 I argued that all truths may well be a priori scrutable from such a base (perhaps with mild expansions, depending on one’s views). In chapter 7, I attempted to minimize this base, for example Ramsifying microphysical truths in order to replace them with more conceptually more fundamental truths. Various candidates for a minimal base have emerged.

All of our candidates for such a base include certain background expressions: logical, mathematical, indexical, and that’s-all expressions. The other leading candidates are nomic expressions (concerning lawhood), phenomenal expressions (concerning consciousness), quiddistic expressions (characterizing the unknown categorical properties underlying microphysical dispositions), and spatiotemporal expressions (concerning the distribution of entities in space and time). Various combined packages with some or all of these candidates are possible, as are expanded versions including expressions for secondary qualities, and perhaps normative and intentional expressions.

The scrutability bases that result are compact, but they are not yet principled. In their constructions of the world, Carnap and Russell did not allow their basic vocabularies to include arbitrary expressions. They had principled constraints on what sort of expressions might enter their basic vocabulary. Carnap held that truths in the basic vocabulary must be objective and communicable, and so required that the basic vocabulary be a structural vocabulary. Russell held that all propositions are composed of elements with which we are directly acquainted, and so required that the basic vocabulary be an acquaintance-based vocabulary. These principled constraints were important for Carnap’s and Russell’s epistemological purposes.

One might likewise impose principled constraints on what sort of expression can enter a scrutability base. Doing so can yield various principled scrutability theses that are useful for
many purposes. We have encountered at least one such thesis already: Fundamental Scrutability, according to which all truths are scrutable from metaphysically fundamental truths. Other principled theses, analogous to Russell’s and Carnap’s theses above, include Structural Scrutability (only structural expressions in the base), and Acquaintance Scrutability (only expressions for entities with which we are acquainted). Still others include Primitive Scrutability (only expressions for primitive concepts), and Narrow Scrutability (only narrow, non-environment-dependent expressions).

These principled scrutability theses are highly relevant to applications of the framework. Fundamental Scrutability has important consequences in metaphysics. Structural Scrutability can be used to support a sort of structural realism in the philosophy of science. Acquaintance Scrutability can be used to argue for Russelian theses in epistemology. Primitive and Narrow Scrutability have consequences for debates about primitive concepts and internalism in the philosophy of mind and language.

In what follows, I will step back and consider the prospects for these principled scrutability theses. I will also assess the prospects for various theses about the strength of the scrutability relation, relations differing from the a priori scrutability relation that has been the main focus so far. These include Definitional Scrutability (scrutability via definitions), Analytic Scrutability (scrutability via analytic truths), and Generalized Scrutability (scrutability in all epistemically possible scenarios).

Doing this will give us a better sense of the landscape that results from the discussion so far. It offers the promise of characterizing scrutability bases in independent terms, and helps us to assess various potential applications of the scrutability base. It also helps us to see how close the current framework might get to delivering on Carnap’s aims in the Aufbau and to delivering on related projects by Russell and others. As we will see, it is arguable that versions of the current framework can come surprisingly close to delivering on some of these claims.

2 Definitional Scrutability

Carnap’s project in the Aufbau centrally involved the thesis of Definability, according to which all expressions are definable in terms of a limited class of expressions. This thesis leads naturally to the thesis of Definitional Scrutability, according to which all truths are logically entailed by a compact class of base truths along with definitions. We saw in chapter 1 that these two theses are questionable, because finite definitions seem to be unavailable for many natural-language expres-
sions. We have also seen that A Priori Scrutability does not require Definitional Scrutability. Still, it is interesting to ask: given that A Priori Scrutability obtains, how close can we get to a version of Definitional Scrutability and to a version of Definability?

I will assume initially that the criteria of adequacy for definitions require that they be a priori, and will consider other criteria shortly. I will also assume that we have established Generalized A Priori Scrutability, which connects more easily to Definitional Scrutability than does A Priori Scrutability alone. I will initially set aside issues about context-dependence, assuming that all relevant sentences are context-independent. We can then suppose that a compact class $C$ of sentences, involving a limited class of base expressions, makes up a generalized scrutability base for all sentences. Can we recover a claim about the definability of all expressions in terms of base expressions?

There are few ways one might proceed.

(i) **Infinitary definitions.** If definitions can be infinite, adequate definitions may be possible. An extreme definition will go scenario by scenario: for example, ‘For all $x$, $x$ is a cat iff $(D_1 \& \phi_1(x))$ or $(D_2 \& \phi_2(x))$ or ...’. Here $D_1$, $D_2$, and so on are full canonical specifications of scenarios (conjunctions of base truths), and for each specification $D_i$, $\phi_i$ is a predicate made up of base expressions such that ‘$x$ is a cat iff $\phi_i(x)$’ is implied by $D_i$. It is reasonable to expect that there will be such predicates $\phi_i$ for every $D_i$, at least if we set aside vagueness and we allow $\phi_i$ itself to be infinitary if necessary. The resulting definition will involve an infinite disjunction of infinite conjunctions, but it will plausibly be a priori (at least if the disjunction of the specifications $D_i$ is a priori, as it should be), and its right-hand side will involve only expressions in the scrutability base (and logic). For typical expressions there will also be shorter infinitary definitions, for example by taking the limit of an appropriate sequence of long finite approximate definitions.

(ii) **Long finite definitions.** We have seen that short finite definitions for natural-language expressions are usually unavailable, and that attempts at refining the definitions usually meet with counterexamples. Still, these attempts usually give up at a short finite length, often within a few lines of text, and almost always within a page or so. So the possibility is left open that some much longer finite definition (pages long? book length?) might be a priori equivalent to the original expression. Given that there is a large amount of vagueness in most of our concepts, one might reasonably expect to at least be able to eventually find a definition that correctly classifies the determinate cases. With enough further work one might extend this to a definition that classifies indeterminate cases correctly as well, perhaps eventually getting higher-order determinacy right. The existence of such a definition might even be thought to follow from the fact that the brain is a
finite computational system and has the capacity to classify cases correctly.\(^1\)

As with infinitary definitions, the long finite definitions that results from a specification of this sort may violate various traditional criteria of adequacy for definitions. They may be too long, they may not give any sort of perspicuous analysis, they may not be the sort of thing that we know when we know what a word means, and so on. But they might be at least be definitions to which there are no counterexamples, and that idealized a priori reflection might reveal to be correct.

(iii) *Approximate definitions.* We have already seen that one can often find a sequence of ever-longer putative definitions of the same expression (such as ‘knows’), such that each definition has exceptions (both actual exceptions and epistemically possible exceptions), but also such that each has fewer exception than the last. It is not unreasonable to hold that for any natural-language expression, there is a sequence of approximate definitions that at least converges on correctness.\(^2\)

Such a claim can be motivated by considerations about the finiteness of language users, for example. While there are possible expressions in hypothetical possible languages for which there is no such sequence (certain uncomputable predicates of real numbers, for example), there is little reason to think that these expressions are available to finite language users.

The claim can also be motivated by our experience with attempting to define expressions such as ‘know’ or ‘lie’, where counterexamples to successive definitions tend to become more and more abstruse and isolated. A definition of knowledge in terms of justified true belief already get things right most of the time: Gettier cases are fairly rare. (If we measure beliefs by measuring utterances, for example, it seems unlikely that more than 1% of our utterances express Gettiered beliefs.) By some intuitive measure, one might suggest that for most expressions there are very

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1 If the brain is a finite computational system, there will be some finite algorithmic specification that mirrors any one subject’s judgments about an expression’s extension in various scenarios. The same goes for a community’s collective judgment. Of course there are limits on the size of the inputs that subjects and communities can consider, and they can make mistakes that would be corrected on ideal reflection, so these specifications need not be a priori equivalent to the original expression. Still, if our own classificatory capacities can be finitely captured, this undermines any objection to definitions based on our own responses, and leaves the claim that finite definitions are unavailable in need of further motivation.

2 Here we can say that a sequence of purported definitions of *E weakly converges on correctness* iff for every counterexample to a definition in the sequence, there is a later definition in the sequence such that that definition and all subsequent definitions classify the example correctly. If we have some reasonable measure over the set of possible cases (where the full set has measure 1), we say that a sequence *strongly converges on correctness* iff the sequence weakly converges and for every $\phi < 1$ there is some definition in the sequence such that that definition and all subsequent definitions classify at least a measure-$\phi$ subset of cases correctly. I think the considerations below tend to motivate both weak and strong convergence.
short definitions that get 90% of cases right, reasonably short definitions that get 99% of cases right, longer definitions that get 99.9% of cases right, and so on. We should not put too much stock in the figures, but the pattern is at least suggestive. Furthermore, these sequences of definitions tend to at least be somewhat perspicuous rather than wholly opaque. So there is some hope for converging approximate definitions that at least approximate some traditional criteria of adequacy. All this might motivate an Approximate Definability thesis, where this requires that for any given level of accuracy, any term of natural language has a finite approximate definition that meets that level of accuracy.

Approximate definitions can be seen to play a crucial role in a reconstrued model of conceptual analysis as a quasi-scientific process of conjecture, refutation, and refinement of approximate analyses. I discuss this model further in the fourteenth excursus.

(iv) Revisionary definitions. In his later work, Carnap put heavy weight on explications, or revisionary definitions. These explications did not need to capture the exact contours of an existing concept, as long as they could do the central work of the old concept. Approximate definitions can often serve as revisionary definitions. An approximate definition of ‘table’ is not a perfect definition of table, but it is a perfect definition of a nearby possible expression ‘quasi-table’. And while the concept of a quasi-table differs from that of a table, the differences are fairly insignificant: a community that talked about quasi-tables rather than tables would be for most practical purposes indistinguishable from our own.

For certain philosophical purposes, revisionary definitions are suboptimal. If we want to use definitions to give a semantics for natural language as it now exists, then an approximate definition will always be imperfect. Likewise, if we want to use definitions for epistemological purposes, to help analyze justification of our existing beliefs, an approximate definition may miss a few subtleties in our existing concepts. For many other purposes, though, a revisionary definition may be all we need. For the purposes of constructing the world out of a fundamental base, for example, it does not matter much whether we construct quasi-tables or tables. If we show how truths about quasi-tables can be grounded in certain primitive truths, and if the great majority of quasi-tables are tables and vice versa, then there may not be much further reason to worry about tables. For the purposes of unifying science, if we can show how the study of quasi-genes is unified in a certain way with physics, then the same moral will plausibly generalize to genes. Even for coarse-grained epistemological purposes (defeating the skeptic, for example), if definitions can be used to show that we can have knowledge of quasi-tables, we have shown most of what we need to show.

(v) Context-dependent definitions. Context-dependence (especially epistemic variance) com-
plicates all four of the projects above, in that when an expression-type is context-dependent, no
definition in terms of invariant base expressions can be adequate. Still, given Generalized A Priori
Scrutability for tokens, we can at least apply the methods above to tokens of context-dependent
expressions, yielding the sorts of definition above for any given token. So for a name such as
‘Gödel’, we may not find a single description $D$ such that all uses of ‘Gödel’ are approximately a
priori equivalent to ‘the $D$’, but for any given use, there will be such a description. It may be that
more systematicity than this is possible. For example, it may be that if there is a relatively small
class of context-dependent base expressions such that all or most context-dependent expressions in
natural language can be defined (context-independently) in terms of the original base expressions
plus these context-dependent base expressions. But just how much systematicity is possible here
remains an open question.

Overall, it seems to me that while Carnap’s definitional project in the Aufbau was a failure,
the truth of A Priori Scrutability suggests that many closely related definitional projects have a
chance of success. Furthermore, these definitional projects can play at least some of the key roles
that Carnap wanted definitions to play. I think that many of those roles can be played by a priori
scrutability even without definitions, so I have not attempted to set out even approximate definitions
in this work. Still, the reasoning here suggests that a version of the Aufbau that starts with a
base vocabulary (perhaps a nomic and a phenomenal vocabulary) and that constructs successive
expressions (such as spatiotemporal expressions, mental expressions, social expressions, or at least
approximations to them) via approximate definitions should be viable.

3 Analytic and Primitive Scrutability

Definitions are commonly required to be more than a priori. It is common to hold that defini-
tions should be analytic, and that the expressions used in the definition are conceptually prior
to the defined expression. Correspondingly, while A Priori Scrutability supports the thesis that
all expressions are (approximately) definable when definitions are required to be a priori, it does
not support this thesis on stronger conceptions of a definition. The stronger definability claims
requires claims akin to Analytic Scrutability (all truths are analytically scrutable from a com-
pact class of base truths), Primitive Scrutability (all truths are a priori scrutable from base truths
involving primitive concepts), and perhaps Analytic Primitive Scrutability (all truths are analyti-
cally scrutable from base truths involving primitive concepts). In what follows I will investigate
the prospects for theses like these, starting with Analytic Scrutability.
Of course if all a priori truths are analytic truths, then A Priori Scrutability entails Analytic Scrutability. Logical empiricists such as Carnap were inclined to identify the two categories. Carnap talks more about analyticity and necessity than apriority, but he emphatically rejects the synthetic a priori, and gives no evidence of believing in analytic truths that are not a priori. But many contemporary philosophers believe that there are synthetic a priori truths. If they are correct, the two theses come apart.

It is common to hold that synthetic a priori truths include mathematical, normative, and metaphysical truths. On such a view, ‘5=13-8’ will be a priori but not analytic. On a common normative view, ‘An act is right iff it maximizes utility’ is a priori but not analytic. On a common metaphysical view, ‘Any two objects have a mereological sum’ is a priori but not analytic. Correspondingly, a priori truths in these domains will not yield analytic definitions. This comes out when we look at cases.

Let us suppose that there are moral truths and that the truth of moral sentences is a priori scrutable from base sentences in all epistemically possible scenarios. Then we can use the method of successive approximation in the last section to articulate a sequence of converging definitions of a moral term such as ‘right’. These will be definitions that get the extension of the term right in successively more cases. They might reflect the sort of theorizing one finds in normative ethics, for example with successively refined versions of the principle that an act is right if it produces the greatest amount of happiness or if it is the product of an appropriate sort of will. Or it might proceed by compiling an ever greater list of causes and cases. The definition that results may be a priori, but many will deny that it is analytic. On the face of it, the definition will encapsulate moral principles and judgments that are substantive in a way that analytic truths are not supposed to be.

I have largely eschewed the notion of analyticity so far in this book, and I do not think it is obvious how to make sense of the notion. Still, I think I have a reasonable grasp in extension and perhaps even in intension of the sort of truths that people typically label analytic. To a first approximation: while both concepts and reason play a role in knowledge of any a priori truth, concepts play the more significant role in knowledge of putative analytic truths, while reason plays the more significant role in knowledge of putative synthetic a priori truths. I suggest later (E15) that an analytic truth might be characterized as one that subjects have a conceptual warrant to believe, where a conceptual warrant is one that derives from the concepts involved. For now, I will not rely on a definition of analyticity, but I will proceed on the assumption that there are analytic truths and that while all analytic truths are a priori, some a priori truths (mathematical and normative truths, for example) are not analytic.
Given this much, it follows that any analytic scrutability base will also be an a priori scrutability base, but an a priori scrutability base need not be an analytic scrutability base. In particular, the minimal a priori scrutability bases that we have considered will almost certainly not be analytic scrutability bases. Given a mathematical truth \( M \) that is a priori but not analytic, then \( M \) will be a priori scrutable from nonmathematical base truths, but there is little reason to think that it will be analytically scrutable from them. Something similar applies to normative truths that are a priori but not analytic. Even for normative truths that are a posteriori but a priori scrutable from base truths (‘Hitler was bad’, for example), there is little reason to think that they are analytically scrutable from base truths.

The key question then is: what must we add to a minimal a priori scrutability base to yield a minimal analytic scrutability base? It is natural to add some mathematical truths to the base in order to render mathematical truths analytically scrutable. How many? One will presumably add at least fundamental axioms to the base: for example, Peano axioms or the axioms of ZFC or both, if one does not think that the connection between numbers and sets is analytic. One will also need a raft of further mathematical truths, such as Gödel sentences, in order that various truths that are unprovable from these axioms are rendered analytically scrutable from the base. Whether this is enough to bring in all mathematical truths depends on whether logical consequence suffices for analytic scrutability: if \( Q \) is provable from \( P \) via some series of steps, is \( Q \) analytically scrutable from \( P \)? If the answer is yes in general, a provability base will be an analytic scrutability base. If the answer is no, then more will need to be added. Clearly the answer here depends on just how analyticity is understood. In the extreme case, one could simply add all mathematical truths to the base, though this may be overkill: perhaps it is at least analytic that \( 100 + 1 = 101 \), for example? If so, then something intermediate may be required.

If there are normative truths, it is also natural to add some of them to the base. How many? If there is a true and complete moral theory, one should presumably add the fundamental principles of such a theory to the base. Something similar goes for normative claims in other domains such as epistemology. If we have such a theory, then any normative truth will presumably follow logically from certain non-normative truths and normative principles. If logical consequence suffices for analytic scrutability, and if all non-normative truths are analytically scrutable from the base, it follow that all normative truths will be too. Of course if normative theories are not codifiable in this way, or if logical consequence does not suffice for analytic scrutability, then more must be added to the base.

Is more needed in the base? Of course it is possible that what goes for mathematical and
normative truths goes for truths in other domains: perhaps aesthetic truths, metaphysical truths, modal truths, and so on. In these cases it is perhaps less clear that there are synthetic a priori truths, but if there are, we can handle them in much the same way as in the previous cases.

What about ordinary truths such as ‘Water is H\textsubscript{2}O’ and ‘The cat sat on the mat’? Suppose that arguments in chapters 3 and 4 succeed in making the case that these are a priori scrutable from the base. Once again, whether they are analytically scrutable depends on just what analyticity comes to. But there is at least a case for regarding them as analytically scrutable. One could suggest in using a Cosmoscope to determine the truth of these sentences, it is our conceptual capacities rather than reason that are playing the central role. Once the whole world is revealed to us with the Cosmoscope, certain verdicts regarding these truths seem to flow naturally from our concepts of ‘water’ and ‘cat’. If we adopt the casewise model of conceptual analysis discussed earlier, a view like this is natural: possessing a concept conveys a conditional ability to classify cases, one that plays the central role in using the Cosmoscope. Certainly highly complex capacities are need to keep track of information and so on, but it is arguable that these are playing essentially a storage and control role, rather than a substantive rational role. All this is far from clear, but there is at least a case for analyticity here.

The case of names such as ‘Gödel’ is even less clear. Certainly, analyticity will have to be relativized to tokens rather than types, but this is not unreasonable if analyticity is understood in the epistemological terms I have suggested. But there is at least a reasonable case that our judgments regarding who counts as Gödel in a given scenario rest on the same sort of capacities as our judgments regarding what counts as water in a given scenario, and that these judgments flow naturally from an individual speaker’s concept of Gödel.

If something like this is right, there is at least a chance of keeping the expansion of the base limited. We will have to add some mathematical truths, but mathematical expressions were already being used in the base. We will have to add some normative truths and a limited number of normative expressions, such as certain basic ‘ought’s. If there are other synthetic a priori truths, we might have to add further expressions: other evaluative expressions (such as aesthetic expressions), perhaps, or more widespread use of existential quantifiers and modal operators. But the expansion does not obviously need to go far beyond that.

All this connects to the thesis of Primitive Scrutability: all truths are scrutable from truths involving primitive concepts. Once again, the issues here are fairly obscure due to the obscurity of the key notion, that of a primitive concept. Here a primitive concept can be understood as one such that no other concepts are conceptually prior to it, but this just raises the issue (discussed in the
last chapter) of how to understand conceptual priority. On various understandings of that notion, a primitive concept might be one whose grasp does not require a grasp of any other concepts, or that does not have a constituent concept, or that does not have a constitutive inferential role that essentially involves other concepts, or whose understanding is not best articulated in terms of other concepts.

If there is a distinction between primitive and nonprimitive concepts, there is at least a reasonable case that the concepts in our a priori scrutability base fall on the primitive side. Certainly indexical concepts such *I*, *now*, and a basic *this* seem to qualify. It is not unreasonable to suggest that basic logical concepts such as those of conjunction and existence are primitive, or at least that they belong to primitive families of connective and quantificational concepts. The same goes for key mathematical concepts such as basic set-theoretical concepts. For phenomenal realists, the same is plausible for phenomenal concepts, or for something in the near vicinity such as phenomenal relations and secondary quality concepts. For non-Humeans, the same goes for key nomistic concepts such as the concept of lawhood. For spatiotemporal primitivists, unsurprisingly, spatiotemporal notions are primitive. On a view with nonphenomenal quiddistic concepts, it is natural to take these concepts or something in the vicinity as primitive.

Furthermore, something similar applies to the expressions that we have added to yield an analytic scrutability base. Normative concepts are plausible candidates to be primitive concepts, as are certain evaluative concepts, and perhaps modal and existential concepts (especially on views on which there are synthetic a priori modal and metaphysical truths). So where the initial base suggests that all truths are a priori scrutable from truths involving primitive concepts, the expanded base suggests that all truths are analytically scrutable from truths involving primitive concepts.

It is natural to suggest that when a concept is not primitive, truths involving it are scrutable from truths involving more basic concepts. This principle follows very naturally on certain models of primitiveness, such as those on which primitiveness is understood in terms of definability or constituency. Even without those models, it is not implausible that nonprimitiveness goes along with at least approximate definability in terms of more basic concepts. If that is right, and if approximate definability goes with scrutability, then the principle follows. All this applies whether we are invoking a priori scrutability or analytic scrutability.

From this principle, it follows that any nonprimitive concept is dispensable from a scrutability base in favor of more basic concepts. If we assume that descending chains of more basic concepts ultimately terminate in primitive concepts, it follows that there will be a scrutability base that involves primitive concepts alone. This seems to reflect what we find.
Of course a minimal a priori scrutability base need not include all primitive concepts: normative concepts may be dispensable, for example. This reflects the fact that there may be a priori connections among primitive concepts, and that a primitive normative concept may be approximately “definable” if definitions are required only to be a priori. But if definitions are required to be analytic, or if terms in the definition are required to be conceptually prior to defined terms, then the definitions here will not qualify.

It is arguable that a minimal analytic scrutability base will include all primitive concepts. I have already argued that the class of all primitive concepts constitutes an analytic scrutability base. The question of whether it is a minimal base comes down to the question of whether there are relevant analytic connections among primitive concepts. It is at least arguable that there are not (although there are hard cases, such as ‘Nothing is both red and green all over’). If there are not, then the primitive concepts will make up a minimal scrutability base.

If something like this is right, it fits nicely with the definitional program in the previous section. Arbitrary expressions can be (approximately) defined in terms of the primitive expressions in an analytic scrutability base. While the definitions in the last section need not meet the requirements of analyticity and conceptual priority, these definitions will meet these requirements (perhaps modified to allow approximate analyticity). This fits with the commonsense idea that one needs normative notions to define normative notions, while holding out the hope that a small number of basic notions (basic oughts, for example) might be used to approximately define all the others. The same goes for mathematical expressions, which are plausibly best defined in mathematical terms.

Of course the issues here are murky, because of the murky notions of analyticity and conceptual priority. In the following chapter I will approach issues related to analyticity and primitive concepts from a quite different direction. We will see that the conclusions there tend in the same direction as the conclusions here.

4 Narrow Scrutability

We saw in the last chapter that many expressions have “wide content”, in that their extension depends on the environment. As I put it there, these expressions are “Twin-Earthable”, in that there are nondeferential tokens of these expressions such that there is a possible twin token (a corresponding token produced by functional and phenomenal twin of the speaker) with a different extension. Here prime cases include natural-kind terms such as ‘water’ and names such as ‘Gödel’.
By contrast, non-Twin-Earthable expressions include those such as ‘zero’, ‘plus’, and perhaps ‘bachelor’ and ‘action’: their referents depend only on the speaker’s functional and phenomenal states. Under plausible assumptions (discussed at the end of 7.2), non-Twin-Earthable expressions along with ‘I’ and ‘now’ will be narrow expressions: roughly, expressions whose referent does not depend on the speaker’s environment.

In the last chapter I canvased the attractive thesis that truths involving Twin-Earthable expressions are always scrutable from truths involving non-Twin-Earthable expressions and primitive indexicals. Given that these expressions are narrow, this thesis yields a Narrow Scrutability thesis: all truths are scrutable from truths involving only narrow expressions.

How does this thesis hold up in light of the scrutability bases considered here? Logical and mathematical expressions are very plausibly narrow. Indexicality expressions also count, and it seems hard to generate Twin Earth cases for that’s-all expressions such as ‘fundamental’. It is common to hold that phenomenal expressions are narrow, although there are some views on which they are wide.

Nomic expressions such as ‘it is a law that’ are plausibly narrow. At least, it is not easy to generate Twin Earth cases involving them. Someone might suppose that there are Hume worlds and nonHumean worlds and that ‘law’ might pick out something Humean in the former and something nonHumean in the latter. But then we need only stipulate a more demanding term ‘law’ that always demands a nonHumean referent. Some Humeans may not accept that there is any such nonHumean concept, but on their view nomic concepts are dispensable from the scrutability base. On the nonHumean view, it is natural to hold that the core nomic expressions are narrow.

What about quiddistic concepts? If we follow the phenomenal or protophenomenal model for quiddistic concepts, they will be plausibly narrow. The same goes for a model on which they are seen as something like Edenic secondary qualities. And on any model, it is natural to hold that insofar as we can form these concepts at all, it will be in virtue of some sort of direct understanding of the properties in question, with causal connections to instances being largely irrelevant. It is natural to expect them to be narrow.

My own view is that spatiotemporal expressions are wide, or least Twin-Earthable, in that there can be Spatial Twin Earth cases of the sort discussed in the last section. But I think this width reflects the fact that spatiotemporal truths are scrutable from nomic and phenomenal truths and so are dispensable from a scrutability base. A spatiotemporal primitivist, by contrast, will hold that spatiotemporal expressions are not dispensable on this way. But it is natural for a spatiotemporal primitivist to hold that spatiotemporal expressions are not Twin-Earthable: two functional
and phenomenal duplicates will have a primitive grasp of the same properties. This view is not compulsory for a spatiotemporal primitivist, who might hold that we primitively grasp a causally connected property, on a way that is not analyzable in causal terms or scrutable from causal truths. Or they may hold that spatial experience itself depends on the environment, so that that spatiotemporal expressions are not Twin-Earthable but are nevertheless wide. But we saw in the last chapter that it is not at all clear how to develop these views in a reasonable way. So I think that the narrow version of spatiotemporal primitivism is the most natural.

As for other candidates for a scrutability base: it seems hard to construct a Twin Earth case for basic intentional and normative notions, so there is a good case that these are narrow. As for secondary quality concepts, these parallel the spatiotemporal case. On many views that will be wide and correspondingly not needed in a scrutability base. There will be views on which they are wide and nevertheless primitive. But the most natural view on which they are primitive is one on which they are narrow.

At the same time, I do not think it is a priori that these concepts are narrow. For example, in an Edenic scenario, phenomenal states are constituted by direct acquaintance with instances of Edenic color in the environment, so that two dispositional twins might have be acquainted with different Edenic colors and thereby have different phenomenal states, leading to their having different phenomenal and color concepts as well. But I do not think that this is a plausible model of our relation to colors and phenomenal states in our world. In our world, unlike an Edenic world, our possession of phenomenal and primitive color concepts is constituted by factors independent of the environment.

This means that we have to be careful in defining narrowness. If the narrowness of $E$ merely came to the claim that there is two possible twin nondeferential tokens of $E$ with different extensions (where twin tokens are corresponding tokens produced by dispositional twins), then two Edenic worlds might yield the conclusion that phenomenal and qualitative terms are wide. But as I defined it, narrowness is a thesis about tokens of $E$ in our world: there is a nondeferential token of $E$ and a possible twin token with different extensions. Or perhaps better, we can define it as the thesis that there is a nomologically possible token of $E$ with this property. This captures that idea that in our world and in those like it, nondeferential tokens of $E$ have their content independently of the environment.

All this suggests that Narrow Scrutability is not a truly fundamental thesis. Indeed, I think it is best understood as a consequence of a more fundamental thesis, such as the Acquaintance Scrutability thesis in the next section, combined with a contingent claim about our world (such
as the thesis that acquaintance in the relevant sense is always narrow). Correspondingly, the conclusion that there is a narrow scrutability base is not irresistible. There are views on which phenomenal, spatiotemporal, quiddistic, and secondary-quality concepts are conceptually primitive, and even involve acquaintance, but in which they get their content from causal connections to instances and so are Twin-Earthable all the same. Still, I think that there are good reasons to deny these theses as theses about our world. So I think there is good reason to accept Narrow Scrutability in our world.

The Narrow Scrutability thesis has important consequences for the theory of content. In particular, it is natural to use it to support the claim that arbitrary expressions and thoughts have narrow content, a sort of content that is independent of the environment. This conclusion applies to both deferential and nondeferential tokens of arbitrary expressions, including names and natural kind terms. It also applies to thoughts of all kinds. It is restricted to nomologically possible expression tokens and thoughts, though, for the reason in the previous paragraph.

One can argue for this conclusion as follows. Suppose we have established Generalized Narrow Scrutability: there is a generalized scrutability base consisting of narrow expressions (that is, expressions that are narrow in our world). And suppose we have established the Narrowness of Scrutability: scrutability relations are themselves narrow, roughly in that if A-truths are scrutable from B-truths for one nomologically possible speaker, then A′-truths are scrutable from B′-truths for a duplicate speaker, where A′-truths correspond to A-truths and B′-truths to B-truths. Then it is not hard to make the case that for any nomologically possible sentence token $E$, the intension of $E$ defined over epistemically possible scenarios is narrow. By Generalized Narrow Scrutability, every scenario has a complete narrow specification. By the Narrowness of Scrutability, if $E$ is scrutable from a narrow scenario specification $D$, then $E′$ is also scrutable from $D$. So $E$ and $E′$ have the same intension. So this intension serves as a sort of narrow content. This theme is developed in much more depth in ¡i¿The Multiplicity of Meaning¡i¿.
I think that these Narrowness of Apriority theses are prima facie attractive and that nothing in the strongest arguments for externalism gives reason to doubt them. In Putnam’s cases, an utterance such as ‘Water is a liquid’ will plausibly be a priori for both twins or for neither. In the Burge’s cases, sentences such as ‘Arthritis is a disease of the joints’ may be a priori or analytic in one community but not the other. But the twins’ utterances of the sentence and the corresponding thoughts will not be a priori as understood here: as with all deferential thoughts, conclusive justification of them will require empirical evidence about usage in the community. So if there are reasons to reject the Narrowness of Apriority theses, the sources of these reasons will at least differ from these sources. So Narrow Scrutability can be used to motivate a notion of narrow content that is not undermined by the most common arguments for externalism.

5 Acquaintance Scrutability

Russell famously advocated a Principle of Acquaintance: every proposition which we can understand must be composed wholly of constituents with which we are acquainted. He took this thesis to be central to his semantic, epistemological, and metaphysical projects. All expression were ultimately to be analyzed in terms of expressions standing for entities with which we are acquainted. All knowledge was ultimately grounded in knowledge of entities with which we are acquainted. And in his metaphysical projects, Russell sought to construct the world out of entities with which we are acquainted.

To put his views in the cognitive and linguistic mode, one might suggest that there is a special class of acquaintance concepts, concepts of entities with which we are acquainted, presented under the acquaintance mode of presentation. Likewise, there is a special class of acquaintance expressions (either types or tokens) that express acquaintance concepts. Then Russell’s linguistic view might be put as the claim that all expressions are definable in terms of acquaintance expressions. His epistemological view might be put as the claim that all truths are knowable given knowledge of acquaintance truths (truths involving acquaintance expressions). His constructive

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4See also “The Components of Content” and “The Nature of Epistemic Space”.

5Likewise, as discussed earlier, in the externalist arguments of Fisher (2007) the intrinsic twins will not be dispositional twins. The same arguably goes for the arguments of Clark and Chalmers (1998); one can also accommodate these by taking the relevant systems to be extended systems, which will not be intrinsic twins. One might also worry about cases in which a priori justification of a thought depends on its history (inference from a priori justified premises, for example). This sort of case does not seem to yield a difference in idealized a priori justifiability, however.
view might be put as the claim that we can wholly specify the world in terms of acquaintance expressions.

The notion of acquaintance itself is vexed. But one central idea is that “we have acquaintance with anything of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths”. Another central idea is that an acquaintance relation is such that anyone who stands in that relation to an entity knows (or is in a position to know) what that entity is. Correspondingly, an acquaintance concept is one such that anyone who possesses the concept knows (or is in a position to know) its referent.

Russell held that we are acquainted at least with sense-data and certain universals, and perhaps with the self. On Russell’s view, acquaintance expressions may include ‘I’, ‘this’ (primitive demonstratives for sense-data), and perhaps expressions standing for certain universal properties and relations, such as ‘red’, ‘before’, and ‘aware’.

Russell’s views about acquaintance are widely rejected today. But the present framework has the potential to vindicate some of them. The obvious analog of Russell’s views in the current framework is the thesis of Acquaintance Scrutability: all truths are scrutable from acquaintance truths. The sort of expressions that we have entertained for a scrutability base are strikingly reminiscent of Russell’s class of acquaintance expressions: ‘I’, ‘now’, phenomenal demonstratives, and expressions for various universals such as phenomenal properties, nomic and spatiotemporal relations, and fundamentality. These are all at least candidates for being acquaintance expressions on a Russellian view.

As it stands, the Acquaintance Scrutability thesis suffers from the unclarity of the notion of acquaintance. But we can approach the matter indirectly, by invoking the notions of epistemic rigidity and super-rigidity. These notions were introduced earlier (E9) but I will recap here in order that that discussion is not presupposed.

To a first approximation, an epistemically rigid expression is one that has the same extension in every epistemically possible scenario. This notion is analogous to the familiar notion of a (metaphysically) rigid designator as one that has the same extension in every metaphysically possible world. On the standard view, ‘water’ is metaphysically rigid: it picks out H\textsubscript{2}O in every possible world. But ‘water’ is not epistemically rigid: it picks out H\textsubscript{2}O in an Earth scenario and XYZ in a Twin Earth scenario. Likewise, names such as ‘Gödel’ are metaphysically but not epistemically rigid. By contrast, an expression such as ‘zero’ is epistemically rigid: it picks out 0 in every scenario.

Something similar applies to predicates, at least if we construe the extensions of predicates as
properties and take rigidity to require constant extension across worlds or scenarios. Construed this way, a predicate such as ‘hot’ is arguably metaphysically rigid, as it picks out the motion of molecules in all worlds. It is not epistemically rigid, however: for example, it picks out X-motion in scenarios where X-motion causes the heat sensations. By contrast, a predicate such as ‘conscious’ or ‘friendly’ is arguably epistemically rigid: it picks out the same extension in all scenarios.

Now, the definition of epistemic rigidity in terms of scenarios requires a prior grip on the evaluation of expressions in scenarios. On some approaches (as in E9), the notion of epistemic rigidity is used to help characterize evaluation in scenarios, with an ensuing danger of circularity. To avoid circularity we can instead characterize an epistemically rigid concept (as in the ninth excurses) as one whose referent we can know a priori. That is, knowledge of the referent of such a concept does not require empirical evidence. The notion of knowledge of reference is ambiguous, of course, but we can use the examples above to get some grip. For example, there is a clear sense in which we cannot know what water is a priori, and in which we cannot know who Gödel is a priori, but in which we might be able to know what zero is a priori. Likewise, there is a reasonable sense in which we cannot know what heat is a priori, but in which we might be able to know friendliness is a priori. That is the sense relevant to epistemic rigidity.

Most epistemically rigid expressions are also metaphysically rigid. When an expression is epistemically rigid and it is also metaphysically rigid de jure, we can say that it is super-rigid. A super-rigid expression has the same extension in all scenarios and in all possible worlds, and we can know this extension a priori. In practice, most epistemically rigid expressions in natural language are also super-rigid. Even for those that are not, an epistemically rigid expression $E$ can easily be turned into a super-rigid expression $E'$ by rigidifying it (perhaps taking $E'$ to be ‘the actual $E$’ or ‘$dthat(E)$’). Then $E = E'$ will be a priori (if not necessary), so that they will function in much the same way in scrutability bases. So where epistemic (although not modal) matters are concerned, one can move easily between epistemic rigidity and super-rigidity.

In all of Kripke’s examples of the necessary a posteriori: ‘Hesperus is Phosphorus’, ‘heat is the motion of molecules’, and so on, ‘water is H$_2$O’, a key term is metaphysically rigid but not epistemically rigid. Elsewhere, I have argued that this is no accident: when a sentence involves only super-rigid expressions, it is a priori if and only if it is necessary.$^6$ This Apriority/Necessity thesis, if correct, provides a link between epistemic and metaphysical necessity. I will not need the thesis for the purposes of this section, but it will play a role when considering metaphysical
claims, as in the following section and in the sixteenth excursus.

Epistemic rigidity is reminiscent of non-Twin-Earthability, but it is not quite the same. A non-Twin-Earthable expression is roughly one whose extension depends metaphysically on the environment (a duplicate might use a corresponding expression with different extension). An epistemically rigid expression is roughly one whose extension does not depend epistemologically on empirical evidence. The application of these two notions coincides in many cases, but they can come apart.

Consider the expression, ‘Fred’, stipulated to pick out 1 if there are any thinkers and 0 if not. Then ‘Fred’ is non-Twin-Earthable: any token of ‘Fred’ picks out 1. The same applies at the level of thought: any user of a Fred concept picks out 1. Still, ‘Fred’ is not epistemically rigid: it picks out 1 in scenarios containing thinkers, and 0 in scenarios not containing thinkers. Likewise, subjects are not in a position to know its referent a priori. ‘Fred = 1’ is true but not a priori: to know it, subjects need either introspective evidence that they are thinking or non-introspective knowledge that others are thinking. So non-Twin-Earthability and epistemic rigidity come apart here.

Something similar goes for concepts of almost any intrinsic property. Consider ‘Sue’, stipulated to pick one one’s height in metres. On the assumption that height is intrinsic and is among the intrinsic properties relevant to Twin-Earthability, ‘Sue’ is not Twin-Earthable, but it is also not epistemically rigid. One can reasonably suggest that the intrinsic properties relevant to Twin-Earthability should be construed more narrowly, perhaps to involve just brain properties, or just functional and phenomenal properties, but similar issues will arise. For example, if ‘Bill’ is stipulated to pick out the phenomenal color in the centre of my visual field, then ‘Bill’ will not be Twin-Earthable (in every duplicate the corresponding token will pick out phenomenal blueness), but ‘Bill=phenomenal blueness’ is still not a priori.

In the other direction: it is plausible that in our world, any epistemically rigid expression is non-Twin-Earthable. But in some possible worlds, this might not be so. For example, if there are Edenic worlds in which subjects are directly acquainted with instances of primitive redness in their environments, then their expression ‘redness’ or ‘primitive redness’ will be Twin-Earthable (for reasons discussed in the last section). But our expression ‘Edenic redness’ is plausibly epis-
temically rigid, and the same goes for the corresponding expressions in the Edenic world: Edenic subjects are in a position to know just what property they are talking about, simply by possessing the concept of Edenic redness. So this is at least a potential case of epistemic rigidity without non-Twin-Earthability.

I think that epistemic rigidity is clearly the more fundamental of the two concepts here. It is also strikingly reminiscent of the concept of acquaintance. Recall the characterization of an acquaintance concept as one such that, merely by possessing the concept, one is in a position to know what it refers to. An epistemically rigid concept is one such that, merely by possessing the concept, one is in a position to know (on idealized a priori reflection) what it refers to. Perhaps the standard of idealization is higher for epistemic rigidity, but otherwise the notions are parallel.\(^7\)

On the other hand, the notion of epistemic rigidity does not fit all of Russell’s paradigm examples of acquaintance. It fits well for certain universals, such as consciousness or causation or friendliness. It also fits well for certain properties of sense-data, such as redness and roundness. Against the background of a Russellian ontology, it is natural to hold that expressions for these are epistemically rigid. But it does not fit so well with reference to the self, or to particular sense-data. On the current framework, an expression such as ‘I’ is not epistemically rigid: it picks out different individuals in different scenarios. And it is not especially plausible that I can know who I am a priori. Likewise, phenomenal demonstratives (the nearest equivalent to sense-datum demonstratives in the current framework) are not epistemically rigid: they pick out different experiences in different scenarios.\(^8\)

Still, there is something special about reference to the self and to one’s current experiences, in the current framework. ‘I’ and phenomenal demonstratives (along with ‘now’) are built into a scrutability base. They are primitive indexicals that appear to be unanalyzable. It is natural to hold that they operate by a sort of direct acquaintance with certain concrete parts of reality: oneself, the current moment, and one’s experiences. This sort of acquaintance differs from the sort involved

\(^7\)So, for example, an expression stipulated to refer to the truth-value of Fermat’s last theorem is epistemically rigid, but it is not plausible that merely by possessing the concept one is in a position to know (in an ordinary sense) what it refers to. So the notion epistemic rigidity is somewhat weaker in this respect than Russell’s notion of acquaintance. On the other hand, the epistemically rigid expressions that I consider as candidates for a scrutability base do not appear to require an appeal to this sort of idealization, and so will qualify as acquaintance expressions in a less idealized sense closer to Russell’s. One might try to develop a stronger Acquaintance Scrutability thesis along these lines, but I will not pursue this matter here.

\(^8\)Although see “The Nature of Epistemic Space” for some discussion of a version of the current framework on which ‘I’ and related indexicals are treated as epistemically rigid.
in the cases above (it does not confer a priori knowledge of the referent), but it can plausibly be regarded as a sort of acquaintance all the same.

Here one can suggest that there are two sorts of acquaintance. There is acquaintance with concrete entities (oneself, one’s experiences, the current time), which involves a sort of immediate indexical ostension of them. And there is acquaintance with abstract entities (properties, relations, and other abstract objects), which involves a sort of full understanding of them. In the current framework, acquaintance of the first sort can be cashed out in terms of primitive indexicality, and acquaintance of the second sort can be understood in terms of epistemic rigidity.

One can then suggest that an *acquaintance expression* is either a primitive indexical expression or an epistemically rigid expression. Acquaintance Scrutability thesis then comes to the thesis that all truths are scrutable from truths involving only primitive indexicals and epistemically rigid expressions. Given that every epistemically rigid expression is a priori equivalent to a super-rigid expression, one can equivalently formulate Acquaintance Scrutability as the thesis that all truths are scrutable from truths involving only primitive indexicals and epistemically rigid expressions. I will go back and forth between these formulations in what follows.

How plausible is this Acquaintance Scrutability thesis? In the scrutability bases we have been considering, ‘I’, ‘now’, and phenomenal demonstratives are plausibly primitive indexicals. Logical and mathematical terms are plausibly epistemically rigid: at least insofar as they have extension at all, their extension is constant across scenarios. Phenomenal expressions and primitive secondary quality expressions are plausibly epistemically rigid, as we have seen. Nomic expressions are also plausibly epistemically rigid: at least given the relevant nonHumean concept, there is not much reason to think that the extension of ‘law’ will vary across scenarios. Spatiotemporal expressions are epistemically nonrigid on my own view, but on a spatiotemporal primitivist view it is natural to regard them as rigid. The same goes for quiddistic expressions and expressions for fundamentality. So there is a very good case for Acquaintance Scrutability.

Some type-B materialists may deny that phenomenal concepts are acquaintance concepts, on the grounds that phenomenal properties are identical to certain physical properties, but that this physical nature is not revealed though possession of the concept alone. They may also hold that phenomenal concepts pick out physical properties in some epistemically possible scenarios and other properties in other scenarios. But on this view phenomenal expressions are still needed in a scrutability base, so Acquaintance Scrutability is false. Likewise, some theorists hold that spatiotemporal concepts or secondary-quality concepts are primitive and that truths involving them are not scrutable from more basic truths, while still holding that the reference of these concepts is determined externally and a posteriori, and that these concepts pick out difference properties in different scenarios. I reject all these views, as I think that the externalism in question arises only for nonprimitive concepts. But the question arises about how these views should be classified.
Russellian acquaintance plays no explicit role in the definition of acquaintance expressions. One can consistently hold that epistemically rigid and primitive indexical concepts do not get their content through Russellian acquaintance with their referents. Even if one is friendly to Russellian acquaintance, it is by no means obvious that all of these concepts involve it. A role for acquaintance seems most plausible for primitive indexicals, for phenomenal concepts, and perhaps for primitive perceptual concepts. It is not at all obvious that logical concepts turn on acquaintance with referents, and something similar goes for nomic and fundamentality concepts. One might well hold that these concepts get their content in some quite different way, such as through their inferential role. For now, I will call epistemically rigid and primitive indexical expressions acquaintance expressions, but I will be agnostic about whether Russellian acquaintance is involved.

Acquaintance Scrutability follows from the following thesis: if an expression \( E \) is epistemically nonrigid, then \( E \) is scrutable from epistemically rigid expressions and primitive indexicals, in that any set of truths involving only \( E \) and certain other expressions \( E' \) is scrutable from a set of truths involving \( E' \) along with epistemically rigid expressions and primitive indexicals. I will not attempt a rigorous argument for that thesis here, but it certainly fits the behavior of paradigm epistemically nonrigid expressions that we have examined.

Acquaintance Scrutability provides a natural explanation of Narrow Scrutability. Given (i) the thesis that every epistemically rigid expression in our world is non-Twin-Earthable, (ii) the definitional claim that narrow expressions are non-Twin-Earthable expressions or primitive indexicals, and (iii) the definitional thesis that acquaintance expressions are epistemically rigid expressions or primitive indexicals, it follows that every acquaintance expression in our world is a narrow expression. So if Acquaintance Scrutability is true in our world, so is Narrow Scrutability. Insofar as there are worlds (such as Edenic worlds) where some epistemically rigid expressions are Twin-Earthable, then Acquaintance Scrutability may be true in those worlds even though Narrow Scrutability is not. I am inclined to think that Acquaintance Scrutability is necessary and a priori, while Narrow Scrutability is contingent and a posteriori. But the connection between acquaintance

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I would like to understand acquaintance concepts in such a way that these views are compatible with the relevant concepts being acquaintance concepts. The views may even be compatible with a sort of super-rigidity. On these views, there is a sense in which subjects know a priori what these concepts refer to. They refer to phenomenal properties, spatiotemporal properties, colors, and so on, where subjects have a substantial a priori grasp of these properties that they do not have in the case of water, Gödel, and so on. It is just that a thesis of revelation fails: although we have an a priori grasp of these properties, that grasp does not reveal the entire nature of these properties. If we can understand acquaintance in this way, then the views in question will be compatible with Acquaintance Scrutability (although not with the Apriority/Necessity thesis). But fleshing out this understanding is a nontrivial matter.
and narrowness gives us a good explanation of when the latter thesis does and does not hold.

6 Fundamental Scrutability

The Fundamental Scrutability thesis says that all truths are scrutable from metaphysically fundamental truths. This thesis, and other theses like it, have played a central role in various metaphysical debates, including the debate over the mind–body problem. In light of where we have gotten to, is this thesis plausible?

One obvious issue at the start is that a scrutability base requires indexical truths, and indexical truths are not plausibly metaphysically fundamental. To finesse this issue for now, I will understand Fundamental Scrutability as the thesis that all truths are scrutable from metaphysically fundamental truths plus indexicals. I will revisit the underlying issue later.

Another issue: presumably metaphysically fundamental truths will involve expressions for fundamental properties and the like. But fundamental properties, such as mass and charge, can in principle be picked out under many different modes of presentation, not all of which seem relevant to the thesis, and indeed some of which might trivialize the thesis.\(^\text{10}\) The natural response is to constrain the modes of presentation here, perhaps requiring that the expressions used in these truths are super-rigid. But now a worry is that one some views (versions of quidditism without quiddistic concepts, for example) there may be no super-rigid expressions that pick out fundamental properties such as mass and charge. To handle this, we can stipulate that if this view is correct, we can instead characterize fundamental truths by using a Ramsey sentence using existentially quantified properties in place of expressions for these fundamental properties. Such a Ramsey sentence may then involve only super-rigid expressions. The Ramsey sentence may not consist in truly fundamental truths, but intuitively it is an immediate consequence of fundamental truths and is good enough for our purposes.\(^\text{11}\)

Somewhat more rigorously: we might say that a set of truths is a \textit{necessitation base} if it necessitates all truths. A super-rigid necessitation base is a minimal set of super-rigid truths that necessitates all super-rigid truths. Then if there are super-rigid expressions for all fundamental properties (as on some no-quiddity and quiddistic-concept views), then fundamental truths involving these expressions will comprise a super-rigid necessitation base. And if there are not super-rigid expressions for all fundamental properties (as on the views above), then the Ramsey sentence

\(^{10}\)For example: for any truth \(Q\), there is an expression \(E\) that picks out electrons iff \(Q\) is true and else picks out nothing. Then \(E\) is an expression that picks out electrons such that \(Q\) is scrutable from ‘There are \(Es\)’.
above will qualify as an super-rigid necessitation base. We could then replace the Fundamental Scrutability thesis by the thesis that all truths are scrutable from some super-rigid necessitation base plus indexical truths.

One can argue for Fundamental Scrutability in two ways. One can argue from prior principles, or one can argue from data about cases: that is, from the conclusions we have established about scrutability bases. I will briefly discuss arguments of both sorts in what follows.

One argument from prior principles proceeds as follows. Here $F$ is a any super-rigid necessitation base, and $F$-truths are the truths in $F$.

1. All super-rigid truths are necessitated by $F$-truths, which are super-rigid.

2. When $S$ is super-rigid, $S$ is necessary iff $S$ is a priori.

3. All super-rigid truths are a priori scrutable from $F$-truths.

4. All truths are a priori scrutable from super-rigid truths and indexical truths.

5. All truths are a priori scrutable from $F$-truths and indexical truths.

Here, premise 1 is a definitional consequence of the stipulation that $F$ is a super-rigid necessitation base. Premise 2 is the Apriority/Necessity thesis introduced in the last section. The intermediate conclusion 3 follows by applying premise 2 to the necessary conditionals involved in premise 1. Premise 4 is the Acquaintance Scrutability argued for in the last section. The conclusion 5 follows from 3 and 4 by the transitivity of a priori scrutability.

Of course the Apriority/Necessity thesis and the Acquaintance Scrutability thesis are substantive principles and can be denied. The Apriority/Necessity thesis will be denied by those who hold that there are strong necessities (Chalmers 2009): for present purposes, a posteriori necessities that involve only super-rigid expressions. These will differ from familiar a posteriori necessities, which always involve epistemically nonrigid expressions. For example, some theists hold in effect that ‘There is an omniscient being’ is a strong necessity. Some ontologists hold in effect that ‘Any two objects have a mereological sum’ is a strong necessity. Some type-B materialists hold that psychophysical identities such as ‘Consciousness is such-and-such’ are strong necessities. Other type-B materialists may deny that ‘consciousness’ is super-rigid and hold that phenomenal truths are counterexamples to the Acquaintance Scrutability thesis. I have argued elsewhere that these views should all be rejected, but the issue is substantive.
We can also argue from cases, using the scrutability bases established to date. An obvious problem here is that most type-B materialists will reject Fundamental Scrutability out of hand, because they hold that phenomenal truths (which they take to be nonfundamental) are not scrutable from microphysical truths (which they take to be the fundamental truths) plus indexical truths. Now, I think that if Fundamental Scrutability is plausible when considerations about consciousness are set aside, this gives us good reason to reject type-B materialism. So at the outset I would like to set aside issues about consciousness, and see whether Fundamental Scrutability is plausible. The easiest way to do that is to build phenomenal truths into the scrutability base. To do this, we can say that Fundamental+ Scrutability is the thesis that all truths are scrutable from a class of fundamental truths plus phenomenal truths and indexical truths.

Now, if all truths are scrutable from $PQT_I$, as I argued earlier, then Fundamental+ Scrutability is very plausible. On a physicalist view, there will be a necessitation base involving a conjunction of microphysical truths plus a that’s-all truth, perhaps to the effect that those truths are all the fundamental truths. Prima facie, this base plus phenomenal and indexical truths yields $PQT_I$, which is a scrutability base, so Fundamental+ Scrutability is true. On a dualist view, on which phenomenal truths are fundamental, the thesis that all truths are scrutable from $PQT_I$ also lead directly to Fundamental+ Scrutability. On nonphysicalist ontologies with further fundamental elements, then there will perhaps be truths not scrutable from $PQT_I$, but the resources for a scrutability base will correspondingly go beyond $PQT_I$, in what will prima facie be a parallel way. So there is a strong prima facie case for Fundamental+ Scrutability.

There are some subtleties here. One pertains to that’s-all truths. Prima facie, physicalism requires a metaphysical that’s-all truth, while scrutability requires an epistemological that’s-all truth. We have seen that it is not unreasonable to suppose that one truth might play both roles—say, the truth that such-and-such truths are all the fundamental truths—but this claim does require that a thesis roughly of the strength of Fundamental Scrutability is a priori. If Fundamental Scrutability is not a priori, different that’s-all theses may be needed. Still, this suggests that the that’s-all truth is unlikely to be the only obstacle to Fundamental Scrutability, so if the thesis is acceptable in other respects, we should accept it. And in the worst case we can simply allow an epistemic that’s-all truth in the statement of Fundamental Scrutability, as we allow indexicals.

Other issue pertain to quiddities. Depending on whether we embrace quiddistic concepts, quiddities without quiddistic concepts, or a no-quiddity view, the fundamental truths will be specified either using quiddistic concepts, using a Ramsey sentence, or using a specification of dispositions and powers. On any of these specifications, $P$ (a characterization in the vocabulary of theoreti-
The issue regarding nomic truths are largely straightforward. On paradigmatic Humean views, minimal necessitation bases and minimal scrutability bases need not include nomic truths. On paradigmatic non-Humean views, minimal bases of both sorts must include nomic truths. Either way, $P$ will be scrutable from the base and there will be no problem. The only potential problem comes from a view that embraces Humean supervenience without Humean scrutability: the analog of type-B materialism in the domain of the nomic. A view like this will probably deny Fundamental Scrutability. But I think that there is little reason to accept this sort of view in any case. Much the same analysis applies to spatiotemporal truths: there will be problems only if spatiotemporal truths supervene on nonspatiotemporal truths without being scrutable from them. Again, there is little reason to find this sort of view attractive.

Of course some views deny scrutability from $PQT_1^-$, not because they think that there are further fundamental truths, but because they think that some nonfundamental truths are inscrutable from $PQT_1^-$. These include versions of views discussed in chapter 5 maintaining the inscrutability of mathematical truths, normative, ontological, intentional, vague, or macrophysical truths. On some versions of such views, the further truths may be fundamental, but on many they will not be. I have given reasons for rejecting all these views in Chapter 5, but it is useful to have them on the table as views that will deny Fundamental Scrutability.

Overall, I think the case for Fundamental+ Scrutability is strong. And given Fundamental+ Scrutability, the case for Fundamental Scrutability is strong. To maintain the former but not the latter, a proponent needs to maintain that phenomenal truths are the only exception to Fundamental Scrutability, or at least that all exceptions to Fundamental Scrutability are so closely associated with phenomenal truths that adding phenomenal truths to the base removes the exceptions. This sort of exceptionalism is unattractive and requires a great deal of explanation and motivation.

An opponent might reasonably respond that we have already in effect allowed one exception to the thesis that all truths are scrutable from fundamental truths: the case of indexicals. Once we have allowed one exception, why not allow one more? I think the case of indexical truths is special, though, in that one can straightforwardly explain why even in a world that is fundamentally objective, one would expect there to be inscrutable indexical truths. In fact, the thesis that there are inscrutable indexical truths is plausibly scrutable from fundamental objective truths. So a basic
thesis of scrutability from fundamentals can itself explain the existence of this exception.

It then remains open to an opponent to do the same for phenomenal truths: that is to explain why, even in a world that is fundamentally physical, one would expect there to be inscrutable phenomenal truths. This is precisely the strategy taken by proponents of the so-called phenomenal concept strategy for responding to anti-materialist arguments. I think that this is a powerful strategy, but I have argued elsewhere that it cannot work. In particular, the thesis that there are inscrutable phenomenal truths (or even that there are inscrutable quasi-phenomenal truths, where this notion does not build in the notion of phenomenology) is not scrutable from fundamental physical truths. If this is right, the analogy with indexical truths cannot be maintained, and the opponent must once again postulate a sui generis and unexplained exception.

Accepting Fundamental Scrutability does not settle the issue between materialism and dualism. But it does effectively rule out type-B materialism, leaving a choice between type-A materialism (eliminativism, analytic functionalism), Russellian monism, and various varieties of dualism. And if one is convinced that there are phenomenal truths that are not scrutable from physical truths (that is, from truths in the language of microphysics) and indexical truths, then one is left with a choice between Russellian monism and dualism.

Of course there is much more to say about this issue. I think that a proper defense of Fundamental Scrutability requires going through issues about the connection between epistemic and metaphysical possibility that I cannot get into here. As usual in this book my primary concern is with epistemological and conceptual theses, rather than metaphysical theses. But the connection between the epistemology and the metaphysics here remains an interesting and important issue in its own right.

7 Structural Scrutability

In the *Aufbau*, Carnap insisted that his basic truths be *structural* truths, characterizable in terms of certain sorts of relational structure. This requirement arose because Carnap held that only structural truths are truly objective, only these are intersubjectively communicable, and only these are fit to be the subject matter of science. This objective structural picture of the basic truths is very different from Russell’s picture, on which all basic expressions are grounded in a sort of direct subjective acquaintance.

Carnap’s ideal is *pure structuralism*, on which the basic vocabulary is limited to logical expressions alone. We saw in Chapter 1 that this thesis is undermined by Newman’s problem. But
this leaves open the possibility of \textit{weak structuralism}, on which the basic vocabulary may include a limited number of expressions for relations (such as phenomenal similarity) plus logical expressions.

Both theses have analogs in the domain of scrutability. The analog of pure structuralism is Logical Scrutability: the thesis that all truths are scrutable from truths using logical vocabulary alone. The analog of weak structuralism is Structural Scrutability: roughly, the thesis that all truths are scrutable from truths using logical vocabulary plus structural expressions, where (to a first approximation) a structural expression is one that expresses a basic relation. Logical Scrutability is undermined by Newman’s problem, but Structural Scrutability remains on the table.\textsuperscript{12}

The content of the Structural Scrutability thesis is somewhat unclear, because it is somewhat unclear just what counts as a structural expression. If we use the definition in terms of relations, we run up against the problem that any expression for a property (e.g. ‘red’) can trivially be turned into an expression for a relation (e.g., ‘$R$’, where $R(a, b)$ holds iff $a$ is red). And even for a true relational expression such as ‘redder’, it is not clear why this is any more “objective” than ‘red’. So we need some way to restrict the relevant class of relations. Furthermore, we may wish to count some nonrelational expressions as structural: the notion of lawhood, for example. In

\textsuperscript{12}Structural scrutability is reminiscent in some respects of structural realism, discussed in the philosophy of science, but the relation is complex. It is standard to distinguish ontological structural realism, according to which reality is wholly structural, from epistemological structural realism, according to which we can know only structural aspects of reality. We might see structural scrutability as a form of \textit{conceptual} structural realism, holding that the only true hypotheses that we can entertain about reality are structural (at least given the background assumptions that a hypothesis can be entertained iff it can be expressed, and that any truth scrutable from a structural truth is itself a structural truth). This variety of structural realism is intermediate in strength between the ontological and epistemological varieties. It is plausibly entailed by ontological structural realism but not vice versa: the two will come apart if there is a nonstructural character to reality that we cannot entertain hypotheses about. And it plausibly entails epistemological structural realism but not vice versa: the two will come apart if there are true nonstructural hypotheses that we can entertain without knowing them to be true.

A further complication is the issue of whether the notion of structure at play here and in the debate over structural realism coincide. This issue is made difficult by the fact that there are an enormous number of different characterizations of structure in the latter debate, and that the notion at play here is imprecise as well. The strongest form of structural realism requires a characterization using logical expressions alone (leading to Newman’s problem); other versions allow observational truths in addition, or observational expressions deployed to express non-observational truths, or mathematical expressions, or relational expressions. Each of these characterizations might be used in a corresponding structural scrutability thesis. I think that at the end of the day the best options for a structural realist largely parallel the best options for structural scrutability (i.e. nomic, fundamentality, and perhaps spatiotemporal structuralism), although some differences may arise due to the special status that structural realists often give to observational truths.
practice, what counts as a structural expression will be determined by the purposes for which we are interested in the structural scrutability thesis: for example, purposes tied to objectivity and communicability. In what follows, I will not try to define a structural expression, but I will keep the criteria of objectivity and communicability in mind. I will return to the question of what counts at the end of this section.

I will stipulate that mathematical, that’s-all, and indexical expressions are structural expressions. Mathematical and that’s-all expressions are intuitively used to characterize the structure of the world, and they do not pose obvious obstacles to objectivity and communicability. There is a sense in which indexical truths are nonobjective, so one might suggest that indexical expressions such as ‘I’ and ‘now’ are nonstructural. Still, indexical expressions function in an objectively definable and highly constrained way in communication, and we know that we need them in a scrutability base, so it makes sense to count them as structural for present purposes.

Given the varieties of scrutability that we have seriously entertained, there are a number of natural ways that one might try to vindicate Structural Scrutability. Most obviously, one might appeal to nomic, spatiotemporal, or phenomenal structure, or to some combination of these.

(i) Spatiotemporal structuralism. The Spatiotemporal Scrutability thesis already discussed yields one obvious route. Here, the base truths specify that there exist entities with certain spatiotemporal properties, bearing certain existentially quantified further properties. On the face of it, there is no need to specific monadic spatiotemporal properties, such as absolute spatiotemporal position, in a scrutability base: it is arguable that there are no such truths, or at least that any such truths that we can entertain are all scrutable from truths about spatiotemporal relations. So it is natural for the base truths here to simply specify spatiotemporal relations among the fundamental entities, and perhaps between those entities and ourselves. The resulting view is spatiotemporal structuralism: it holds that all truths are scrutable from truths involving expressions for spatiotemporal relations and background expressions.13

Which spatiotemporal relations will be included in the base, and how do we specify them? On a Newtonian picture, these might include relations of spatial and temporal distance, or better, relative spatial and temporal distance, as there is not obviously a need for notions of absolute distance in a scrutability base. More straightforwardly, though, one can specify the relevant structure using something like a co-ordinate representation of space and time (there is an entity with properties $P$.

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13An awkwardness here is that “spatiotemporal structuralism” might in principle be used either for the claim that the primitive structure is spatiotemporal or for the diametrically opposed claim that spatiotemporal notions can be analyzed in more fundamental structural terms. Here I am using it the first way.
and \( Q \) at point \((x, y, z, t)\). Of course a co-ordinate system is not absolute, but one can choose an arbitrary system and simultaneously specify the allowable transformations into other systems (e.g. rotating or rescaling the spatial co-ordinates, rescaling the temporal co-ordinate). If one holds that truths about velocity are not scrutable from truths about spatiotemporal location, one can straightforwardly build them in within the same framework. It will be part of the basic specification that the first three co-ordinates are *spatial* co-ordinates and that the final co-ordinate is a *temporal* co-ordinate. This sort of explicit specification saves the construction from Newman’s problem.

This sort of mathematical approach has the advantage of generalizing to nonclassical pictures of spacetime. For the framework of special relativity, for example, one can use a co-ordinate system with more allowable transformations, reflecting the fact that there is no absolute reference frame. For general relativity, one can use a mathematical specification of a four-dimensional differential manifold. For a quantum-mechanical framework, one can specify a mathematical structure corresponding to that of a wavefunction in the relevant mathematical space. All of these can be seen as broadly structural specifications.

It is important that these specifications not be *purely* mathematical. If they were, we would run into the threat of vacuity posed by Newman’s problem. In effect, the specification would say simply that reality can be described by that structure under an appropriate mapping: roughly, that there is a mapping from various parameters in reality to parameters of the model such that reality corresponds to the given structure. With no constraints on the choice of parameters, then as long as the world has the right cardinality, we can always find such a mapping. According to spatiotemporal structuralism, the relevant constraints come from our (primitive) concepts of space and time. So in the classical specification, it is will be specified that the first three parameters are *spatial* parameters and that the last parameter is a *temporal* parameter. Something similar applies on the nonclassical specifications: certain dimensions within these models will be specified as spatial and temporal dimensions.

These nonmathematical constraints, here appealing to notions of space and time, allow us to avoid the threat of vacuity. As usual, these constraints force us to give up on pure structuralism, but we are still left with a sort of weak structuralism, in effect specifying the structure of the world with the help of appeal to spatiotemporal structure. Of course this picture involves spatiotemporal primitivism, a view I argued against in the last chapter. It is not easy to see how this picture will work for physical theories that do not give a fundamental role to spacetime, for example. But it at least gives an example of one sort of weak structuralism in the current framework.

(ii) *Nomic structuralism.* Another route to weak structuralism is provided by Nomic Scrutabil-
ity. According to this thesis, the base truths specify a world of entities and properties connected by certain nomic relations. On one version, fundamental properties are specified as powers to affect other properties (as when mass is specified as a power to resist acceleration and to attract other masses), and the states of fundamental entities (in initial conditions, perhaps) are specified in terms of a distribution of these powers over those entities. On another version, it is specified that there exist distinct properties related by certain laws, and it is specified that there are certain entities (in initial conditions, perhaps) with a certain distribution of these properties. On this version, the extra nonlogical vocabulary is strictly speaking an operator (‘It is a law that’) rather than a relation, but the operator in effect serves to relate the relevant properties. One might think of these views as versions of nomic structuralism.

Nomic structuralism can be combined with the sort of mathematical specification of microphysics discussed above. The difference will be that instead of labeling certain parameters or dimensions as spatiotemporal, we will instead require that certain connections among these parameters are laws of nature. This specification will avoid the threat of vacuity. One might think that this specification will still be open to multiple realization, and that it will leave certain truths about the nature of these parameters unsettled (as spatiotemporal properties, phenomenal properties, or certain quiddities, for example). The nomic structuralist will reply that this claim requires false doctrines such as quidditism, or spatiotemporal primitivism, or phenomenal realism. There are no such unsettled truths: there are simply properties related in the relevant nomic pattern, and that is all we can say.

(iii) Phenomenal structuralism. A third route to weak structuralism is provided by Phenomenal Scrutability. We saw in the last chapter that there are both phenomenalist and panpsychist versions of Phenomenal Scrutability, with base truths specifying phenomenal properties either of observers or of microphysical entities. As I have put things so far, base truths about phenomenology may involve the specification of properties such as phenomenal redness. This sort of characterization is hard to square with weak structuralism. But it is also possible to characterize phenomenal properties in structural terms, and there are views on which all phenomenal truths are scrutable from such a characterization. We might call such a view *phenomenal structuralism*.

Carnap’s view for much of the *Aufbau* is a sort of phenomenal structuralism. He characterizes experiences wholly in terms of the relation of phenomenal similarity among them, and he argues in effect that all phenomenal truths are scrutable from there, and that all truths are scrutable from these phenomenal truths in turn. Of course both of these claims can be argued with. Quine in effect questions the second claim. His worry is in effect a worry for phenomenalism, and I will set
it aside for now. Goodman in effect questions the first claim, posing a worry for Carnap’s account of phenomenal structure. The basic worry is that a single phenomenal similarity relation is not rich enough to recover the full character of phenomenology. Here, I think that the phenomenal structuralist has various options. Even if Carnap’s account of phenomenal structure is deficient, other characterizations may be available.

At this point, a natural move for the phenomenal structuralist is to move from a single phenomenal similarity relation to multiple such relations, each corresponding to different respects or dimensions of phenomenal similarity. For example, distinct color experiences might be similar in red-green respects (having the same amount of redness), yellow-blue respects, or brightness respects. Visual experiences can also be similar in various spatial respects. Still, residual problems in the spirit of Goodman’s may remain. For example, mere similarity information among a set of experiences may not suffice to recover structure when the number of total experiences is limited. If we are told that there are two experiences that are different in all relevant respects, this seems to leave their character underdetermined. A move to graded similarity relations may help to some extent, but problems will remains. The picture also gets very complicated when we move to more complex experiences, such as that of a full visual field.14

I think that a better move for the phenomenal structuralist is to move from respects of phenomenal similarity to parametric information about locations along phenomenal dimensions. All this is most straightforwardly done by using quasi-mathematical specifications of phenomenal states analogous to the mathematical specifications of physical states discussed above.

For concreteness, let us adopt the fiction that phenomenal states are entirely visual and that (as on Carnap’s own model) visual phenomenal states involve only the distribution of phenomenal colors in a two-dimensional visual field. On this model, locations in the visual field can be represented by \((x, y)\) co-ordinates, where \(x\) is intuitively a left-right co-ordinate and \(y\) is an up-down

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14To handle a visual field in this framework (where visual fields have the structure characterized below), one might appeal to an entire manifold of graded similarity relations, three for each location in the visual field, corresponding to similarity in the redness, blueness, and brightness respects at that location. One could then have three higher-order similarity relations that hold along these relations: an on-off relation that holds if the lower-order relations involve sameness in the same color respect, and two graded relations that measure similarity of the two points corresponding to the two lower-order relations in left-right respects and up-down respects respectively. From here, then given a sufficiently rich set of total experiences one could recover much of the geometric structure of the parametric model below. The similarity-based model is arguably somewhat closer to the spirit of Carnap’s method of “quasi-analysis”, but the parametric model is much more straightforward, and is also somewhat more powerful (it allows one to more easily capture the distinct status of unique hues, for example).
co-ordinate. Phenomenal colors can be represented as \((a, b, c)\) co-ordinates, corresponding to locations on a red-green axis, a yellow-blue axis, and a brightness axis. We can assume that each of these five co-ordinates is constrained to lie between -1 and 1 inclusively. Then if \(A = [-1, 1]\), the set of real numbers between -1 and 1 inclusively, locations in the visual field can be represented as members of \(A^2\) and phenomenal colors can be represented as members of \(A^3\). The total phenomenal state of a subject can then be represented as a function from \(A^2\) to \(A^3\), in effect assigning a phenomenal color to each location in the visual field.\(^{15}\)

The question then arises as to what sort of additional constraints must be specified about the nature of the dimensions. The strongest constraints will explicitly specify that the three dimensions of \(A^3\) represent degrees of phenomenal redness, phenomenal blueness, and brightness respectively, and that the two dimensions of \(A^2\) represent location on a left-right axis and an up-down axis in the visual field. This treatment makes it reasonably plausible that the full character of the total phenomenal state will be scrutable, but its credentials as a variety of structuralism are dubious.

The notions of phenomenal redness and phenomenal blueness are intuitively far from structural notions, and they seem to pose the sort of problems for objectivity and communicability that structuralist views are supposed to avoid. It is arguable that something similar applies to primitive concepts of (phenomenal) left and right, and up and down.

The weakest constraints here will simply specify that the dimensions are phenomenal dimensions, and will say nothing beyond that. This sort of specification requires an unanalyzed notion of phenomenology, or of a phenomenal dimension, just as nomic and spatiotemporal specifications require unanalyzed notions of lawhood and spacetime, but it plausibly counts as (weakly) structural to roughly the extent that these do. It likewise counts as structural to the extent that Carnap’s own specification in terms of phenomenal similarity does. The most obvious problem for the weak

\(^{15}\)Of course visual experiences have a much more complex structure than this, but the phenomenal structuralist can reasonably hold that this structure can be characterized in more complex mathematical terms. The same goes for other perceptual experiences. Some putative experiences, such as the experience of thinking, or the experience of perceptually recognizing a given person, seem harder to characterize in mathematical terms, but the phenomenal structuralist might adopt a “thin” view of experience on which it is exhausted by the experience of low-level features such as color, shape, and location. The temporal aspects of consciousness raise further issues: here the phenomenal structuralists might appeal to phenomenal temporal qualities analogous to phenomenal spatial qualities (alternatively, a phenomenal/temporal structuralist could appeal to the temporal properties of experience). Phenomenal structuralism can also be adapted to a representationalist framework, characterizing experiences in terms of phenomenal awareness of certain properties (color and spatiotemporal properties, for example), where these properties are characterized in the structural terms above. Such a framework might invoke a primitive concept of awareness as well as concepts for relations among for various primary and secondary qualities, so we might think of it as phenomenal/quality structuralism.
model is one of underdetermination. It is natural to suggest that merely specifying that a phenomen-
ental state is characterized by a certain function from $A^2$ to $A^3$ leaves open whether it involves
phenomenal color (for example) at all. For example, one might hold that there will be isomorphic
total phenomenal states involving the distribution of auditory qualities in a two-dimensional field,
and that the specification here will not distinguish between these two states. Still, a certain sort
of structuralist about phenomenal properties might well deny that this is possible, holding that
the difference between visual and auditory phenomenal properties is ultimately a matter of their
structure.

An intermediate model specifies that the dimensions of $A^3$ are color dimensions and that the
dimensions of $A^2$ are spatial dimensions, but does not specify their nature beyond this. As one
might expect, the intermediate option is subject to watered-down versions of the objections to the
weak and strong models. First, one might argue that the notions of phenomenal color and phe-
nomenal space are not structural notions, but they might at least be somewhat less objectionable
to a structuralist than phenomenal redness or phenomenal blueness. Second, one might argue that
underdetermination problems still arise: specifying a phenomenal color in terms of its locations
along three dimensions leaves open whether it is phenomenal redness or phenomenal blueness.
For example, unique phenomenal redness and unique phenomenal blueness might both be rep-
resented as $(1, 0, 1)$ in the different co-ordinate systems: the [red, blue,brightness] and the [blue,
red, brightness] systems respectively. So the mere claim that a given phenomenal state can be
represented as $(1, 0, 1)$ along phenomenal color axes does not enable one to determine whether it
is phenomenal redness or phenomenal blueness.

The second underdetermination problem is a version of the problem of the inverted spectrum,
which plagues all structuralist accounts of phenomenology. A structuralist might reply by appeal-
ing to further structural constraints that distinguish the various dimensions. But it is arguable that
related problems will always arise. One way to see this is to note that Mary in her black-and-white
room could in principle be told any set of mathematical and structural facts about the phenomenal
state someone is in when they see roses, but she still would not be in a position to know what it is
like to see roses. So she will not be in a position to know that a certain mathematically specified
state is a certain sort of phenomenal redness (specified under a pure phenomenal concept). Even
if she is told that certain parameters represent locations along phenomenal dimensions, or along
phenomenal color and space dimensions, this will not help. Of course if she is told that these
represent locations along phenomenal redness and blueness dimensions, where she somehow has
mastered the pure phenomenal concepts of phenomenal blueness and redness, then she will be in
a position to know what the state is like. But assuming that this sort of characterization in terms of specific phenomenal dimensions does not count as structural, then the considerations here suggest that certain phenomenal truths are simply not scrutable from truths about phenomenal structure, and that any form of phenomenal structuralism is false.

Still, a phenomenal structuralist is likely to be deflationary about phenomenal knowledge. Carnap himself would probably not have been too worried about inverted spectrum hypotheses, and about Mary’s knowledge that she can only have after seeing red: these are precisely the sorts of putative hypotheses and knowledge that he wants to reject as meaningless. I think that the most consistent line for the phenomenal structuralist is to adopt only the weak constraints on which it is simply specified that the relevant parameters are phenomenal dimensions, and to deny the claim that this phenomenal structure leaves some phenomenal truths underdetermined.16

This model shares much of the spirit of Carnap’s model in the Aufbau. In effect, Carnap’s single relation of phenomenal similarity has been expanded into many such relations (corresponding to unspecified respects of similarity), and these have then been reconstrued as parametric phenomenal dimensions.

Of course phenomenal structuralism is also subject to worries about whether truths about the external world are scrutable from truths about phenomenology. As we saw in the last chapter, the latter thesis seems to require either a version of phenomenalism or a version of panpsychism. Carnap in the Aufbau in effect took the phenomenalist approach, defining all external-world notions purely in terms of phenomenology. This phenomenalist program here is subject to familiar criticisms by Quine and others, and the appeal to fine-grained phenomenal structure above does little to help. This leaves open a panpsychist version of phenomenal structuralism, on which one in effect specifies the properties of microphysical entities by specifying the total experiences of those entities in terms of their phenomenal structure. Of course this panpsychism is unlikely to have much appeal for a logical empiricist such as Carnap, and the sorts of consideration that might lead one to accept panpsychism are not easily reconciled with the considerations that might lead one to accept structuralism. But I leave it on the table as a point in logical space.

16One might worry that if phenomenal dimensions are cheap, then a version of Newman’s problem will arise. For example, if any function from total phenomenal states to [-1, 1] counts as a phenomenal dimension, then given any set of phenomenal states of cardinality no greater than the continuum, there will be phenomenal dimensions under which these states can be mapped to $A^3$. Something similar applies to mappings from phenomenal states to functions from $A^2$ to $A^3$. If so, then the structural specification will be satisfied by any set of phenomenal states of small enough cardinality. To avoid this problem, the notion of a phenomenal dimension must be understood in a more constrained way: for example, as corresponding to a natural or fundamental aspect of phenomenology.
Alternatively, the problems about the external world can be handled by supplementing phenomenal structure with some other sort of structure, such as nomic or spatiotemporal structure. The result will be nomic/phenomenal structuralism or phenomenal/spatiotemporal structuralism. Either of these would be reasonably close to the spirit of the Aufbau, and would straightforwardly avoid Quine’s problem and other problems associated with phenomenalism. Views like this would also avoid some of the problems of nomic and spatiotemporal structuralism in accommodating for phenomenal truths, although they would still face the problems of phenomenal structuralism in underdetermining phenomenal truths.

(iv) Quiddistic structuralism. As with panpsychist structuralism, quiddistic structuralism is a combination that is unlikely to be held, as the motivations for the two halves of the views stand in strong tension with each other. On many standard treatments, quiddities are invoked precisely to go beyond structure, and it is not easy to see how quiddistic concepts would qualify as structural concepts. One might suggest a view (involving thin quiddities or ungraspable thick quiddities, in the terms of chapter 7) on which quiddities are specified merely as certain numerically distinct properties that play certain roles. But this view will not need quiddistic concepts in the base, so it counts for present purposes as nonquiddistic. (Indeed, this template fits certain versions of the nomic, spatiotemporal, and fundamentality structuralism discussed elsewhere in this section.) Perhaps one could have a single broad quiddistic concept (analogous to the concept of phenomenology), such that we then specify quiddistic states in terms of mathematical structures along dimensions of $Q$ (analogous to phenomenal structuralism), but this is not an especially attractive view for structuralists or for nonstructuralists. So I will set quiddistic structuralism aside.

(v) Fundamentality structuralism. According to fundamentality structuralism, we dispense with nomic, spatiotemporal, phenomenal, and quiddistic expressions, and appeal only to the notion of fundamentality (along with logical, mathematical, and indexical expressions). This view might appeal to the same sort of base truths as on logical structuralism, except that it will be stipulated that all properties and relations quantified over are fundamental properties and relations. For example, base truths might say that there are certain entities and certain fundamental properties and relations such that the properties and relations are distributed in such-and-such a way over the entities. Or on a mathematical version of the view, base truths might give a mathematical specification of reality (perhaps along the lines of the mathematical specifications of microphysics discussed above), and it will be stipulated in addition that certain dimensions of the model (those corresponding to fundamental physical properties, for example), are fundamental dimensions.

This view is closely akin to Carnap’s final view in the Aufbau, substituting the notion of fun-
damentality for his notions of naturalness and foundedness, and dropping his dubious claim that these notions are logical notions. Of course, as in the *Aufbau*, this leaves open the question of how fundamentality is to be understood. It might be understood as various varieties of metaphysical or conceptual fundamentality, for example. We might also choose to define fundamentality in terms of a more basic in-virtue-of or grounding relation: if we take this route, we might strictly speaking obtain *grounding structuralism* rather than fundamentality structuralism. But it is arguable that we have a reasonable grasp of some notions in this vicinity, and we have also seen that notions along these lines may already be needed in stating a that’s-all truth.

As in the *Aufbau*, the appeal to fundamentality is intended to evade Newman’s problem for logical structuralism. Of course it is far from clear that it evades all problems in the vicinity. There are the usual worries about whether we can recover nomic, phenomenal, or spatiotemporal truths from here. But one might at least motivate fundamentality structuralism by starting from spatiotemporal structuralism.

Spatiotemporal structuralism holds that all truths are scrutable from a mathematical specification of reality along with the claims that certain dimensions in this model are spatial or temporal. Fundamentality structuralism holds that all truths are scrutable from the same mathematical specification along with the claim that certain dimensions are fundamental. Spatiotemporal structuralism will support fundamentality structuralism as long as the truths that certain dimensions are spatial and temporal are themselves scrutable from the fundamentality specification. For this purpose, it suffices if one can define the spatiality and temporality of a fundamental dimension in relevant structural terms.

Here we could invoke certain mathematical properties of being spacelike and timelike. These might be characterized in terms of the similarity to spatial and temporal parameters in familiar physical theories, or perhaps in our folk conception of the physical world. For example, a timelike parameter might be one with certain sorts of determination of world-slices in one direction ("future") by those in the other direction ("past"), with certain sorts of dynamics. A spacelike parameter might just be a nontimelike parameter (the parameters that in effect specify the character of the slices), or it might invoke a substantive characterization, such as the characterization of spacelikeness in relativity theory. One could then argue that it is a priori that any spacelike dimension is a spatial dimension, or perhaps that it is a priori that any spacelike dimension that stands in the relevant indexical relation to us is a spatial dimension. One could argue for a similar a priori relation between being a timelike dimension and being a temporal dimension.

If this sort of structural analysis of space and time is possible, then spatiotemporal structural-
ism will yield fundamental structuralism. At least, given that there are fundamental spatial and temporal dimensions in our world, what is scrutable from the a spatiotemporal description will be scrutable from the corresponding fundamentality descriptions. If spatial and temporal dimensions are nonfundamental, then perhaps a similar analysis applied to spacelike and timelike nonfundamental dimensions could succeed.

Defining spatiality and temporality in purely structural terms raises difficult philosophical and technical issues that I will not try to adjudicate here. Philosophically, one might reasonably worry that these analyses will not fully capture our concepts of space and time, and that there will always be counterexamples involving unusual spacetimes. Still, it appears the project is at least a promising one for the structuralist. The resulting view will still suffer from the problems of spatiotemporal structuralism in accounting for truths about laws of nature and about consciousness. But if the view is combined with Humeanism about laws and phenomenal deflationism, there is at least a chance that it could account for these truths and ultimately for all truths.

One might also try to develop a version of fundamentality structuralism that takes off from nomic structuralism instead of from spatiotemporal structuralism, for example by analyzing laws of nature in terms of regularities over fundamental properties. It is arguable that this would end up at much the same place as the previous version. One could also attempt a version that takes off from phenomenal structuralism, via a structural analysis of what it is to be a phenomenal dimension, although it is less clear how this might go.

Of all the structuralist views I have discussed, fundamentality structuralism is clearly the view that is most in the spirit of Carnap’s final view in the Aufbau. By my own lights it cannot succeed, because of problems with recovering laws of nature and phenomenology from a fundamentality specification. But if one is antecedently a Humean and a phenomenal deflationist (as Carnap plausibly was), then it is a promising approach. If one is a nonHumean and phenomenal deflationist, one might also consider nomic/fundamentality structuralism, which adds specifications of nomic relations among fundamental properties to a fundamentality specification. It is arguable that something like this yields the most powerful version of nomic structuralism. One could also combine either of both of these elements with elements of phenomenal or spatiotemporal structuralism, yielding combined versions of structuralism.

Overall: the issue of what it takes to be a version of structuralism remains imprecise. Some criteria that we might invoke for a structural expression include: (i) that the expression intuitively characterizes structural aspects of reality, (ii) that it is not specific to any domain, (iii) that it can be grasped in principle by any intelligent human subject, (iv) that it can be used unproblematically
to communicate truths between intelligent human subjects, and (v) that sentences involving only these expressions have an objective-truth value.

Here, logical expressions such as ‘and’ seem to satisfy all of (i)-(v). Expressions for fundamentality and lawhood satisfy (i) and (ii) and at least arguably (iii)-(v). Indexical expressions satisfy (iii) and (iv) although not obviously the others. Spatiotemporal expressions satisfy (i), (iii), (iv), and a version of (v) (setting aside worries tied to nonclassical physics), although perhaps not (ii). Something similar applies to general phenomenal expressions of the sort invoked by phenomenal structuralism. Specific phenomenal expressions such as that of phenomenal redness arguably violate (i)-(iv). So overall, the purest forms of structuralism are arguably logical structuralism followed by fundamentality and nomic structuralism. Spatiotemporal and phenomenal structuralism are intermediate cases, while a version involving specific phenomenal concepts is a very weak case. The inclusion of indexicals arguably weakens structuralism a little, but not too much.

My own view is that no robust version of structuralism along these lines is correct, because of problems associated with consciousness. If a structural specification is something that Mary can grasp from inside her black and white room, as criterion (iii) above suggests, then it is likely that many phenomenal truths (for example, that what it is like to see roses is such-and-such) will be inscrutable from this specification. And if a specification cannot be grasped by Mary inside her black and white room (for example, because it uses the notion of phenomenal redness), then it will be structural in at best a highly attenuated sense.17

Still, to say this much is compatible with holding with Carnap that structural expressions play a special role in science and in communication. One might hold that nonstructural concepts, such as that of phenomenal redness, pose special problems for science and communication, in that grasp of these expressions depends on one’s prior history, and in that one cannot be certain that others are using their corresponding expressions to express the same concept. Claims like these need to be formulated carefully, as I think it is plausible that science can say a good deal about phenomenal redness, as when phenomenal colors are decomposed along three basic dimensions.

17Structural realism in the philosophy of science is not obviously undermined by considerations about consciousness, because this view typically makes structuralist claims only about non-observable aspects of reality, which in the current framework comes to much the same as allowing structural truths and observable truths in the base. And here, at least some phenomenal truths might reasonably be classed as observable (although whether phenomenal truths about the experience of a bat, say, count as observable will depends on the variety of structural realism). Because of Newman-style issues I think that a tenable structural realism (whether epistemological or ontological) requires something like nomic, spatiotemporal, or fundamentality expressions in the base in addition. Again, whether these count as structural or observable will depend on just how structural realism is formulated.
Still, it is plausible there is a core part of the science of color experience that can be understood by Mary inside her black-and-white room. The same goes for human scientists studying nonhuman sensory modalities. This core part can be cast largely in terms of phenomenal structure. Grasp of specific phenomenal dimensions such as phenomenal redness certainly enriches our grasp of the science, but it is not obviously necessary in order for the science to proceed. For that purpose, structural notions are enough.

8 Generalized Scrutability

What about Generalized Scrutability: roughly, the thesis that there is a compact class of base sentences such that it is a priori that all truths are scrutable from sentences in that class, or the thesis that scrutability hold across all epistemically possible scenarios. Of course there is a Generalized Scrutability thesis for all scrutability theses: so one can ask about Generalized A Priori Scrutability, Generalized Definitional Scrutability, Generalized Analytic Scrutability, as well as generalized versions of Primitive Scrutability, Narrow Scrutability, Acquaintance Scrutability, Fundamental Scrutability, and Structural Scrutability.

Focusing mainly on Generalized A Priori Scrutability: what needs to be in a generalized scrutability base? Here one clearly needs to expand the package of sentences required for an ordinary a priori scrutability base, at least to include many other sentences of the same type, but one plausibly needs to add sentences of different types as well, bringing in expressions that are not needed for an ordinary scrutability base.

For example, one may hold (as I do) that there are primitive color concepts and primitive spatiotemporal concepts that pick out properties that are not instantiated in our world, but that are instantiated in other worlds (e.g. an Edenic world) and whose instantiation we cannot rule out a priori. If so, these primitive concepts will need to be included in a generalized scrutability base. Likewise, one might hold that even if there are no quiddities in the actual world, there are quiddistic concepts, and one cannot rule out a priori that the corresponding quiddities are instantiated. Similarly, some Humeans about nomic concepts and some deflationists about phenomenal concepts may allow that we also have non-Humean and inflationary concepts in the vicinity, which may pick out nothing in the actual world, but which may pick out something in some epistemically possible scenarios. Given these views, relevant quiddistic, nomic, and phenomenal concepts may need to be added to yield a generalized scrutability base.

On my own view, it is likely that a generalized scrutability base will include nomic concepts,
primitive spatiotemporal and secondary quality concepts, and phenomenal concepts. Where phenomenal concepts are concerned, one may need only the relation of phenomenal awareness, which might then combine with the other primitive concepts to yield phenomenal properties. There may or may not be quiddistic concepts beyond these. One interesting possibility is that all quiddistic concepts pick out properties that can be objects of phenomenal awareness, and so are analogous to the primitive concepts above. But perhaps there can be quiddistic properties that we can grasp only in thought, in which case further concepts are needed.

Of course, there may well also be alien concepts that we have not yet dreamed of. I cannot rule out that there are an enormous infinity of primitive alien concepts, picking out properties, relations, and other entities that we cannot even conceive. I am inclined to suspect, though, that there will be some order in this space, and that even alien concepts might be regimented into some limited number of types. It is hard to assess this claim, though.

What about further claims, such as Generalized Primitive Scrutability? I am inclined to find such claims plausible. Suppose one defines a primitive concept as one such that no possible concept is more basic than it. Then no sentence involving only primitive concepts will be scrutable from more basic sentences in any scenarios. What about sentences involving nonprimitive concepts? For such concepts, there will be more basic concepts. It is then at least somewhat plausible that truths involving the former will be scrutable from truths involving the latter across all scenarios, but the matter is not cut and dried.

For example, ‘water’-truths are scrutable from more basic truths in the actual world, but are there scenarios in which they are not so scrutable? Is it a priori that they are so scrutable? Can we rule out the epistemic possibility that there is water but that there is nothing more basic from which it is scrutable? I am inclined to think that I cannot make sense of the hypothesis that there is water that does not appear in any way, does not behave in any way, does not affect us in any way, and so on. And it seems to me that in any epistemically possible scenario in which there is water, there would be truths about the corresponding appearance, behavior, and so on, from which the claim that there is water is scrutable. Something similar goes for ‘Gödel’, ‘philosopher’, and other terms. So I am inclined to think that in any scenario, truths involving these nonprimitive terms are scrutable from more basic sentences. I do not have a knockdown argument for this claim, however.

I suspect that the most fundamental scrutability theses hold a priori. The most fundamental scrutability thesis may well be Acquaintance Scrutability, whose apriority yields the thesis of Generalized Acquaintance Scrutability. If this thesis holds, it would explain the truth of Generalized Primitive Scrutability (given the thesis that every acquaintance concept is a primitive concept) and
it would entail the truth in our world of Generalized Narrow Scrutability (given the thesis that every acquaintance concept in our world is a narrow concept). I do not have a knockdown argument for Generalized Acquaintance Scrutability at this point, however.

As for Generalized Fundamental Scrutability: my own view is that there is an a priori connection between epistemic and metaphysical possibility. In particular I think that the Apriori/Necessity Thesis, holding that any sentence composed of super-rigid expressions is a priori iff it is necessary, is itself a priori. If this is right, then it is a priori that any minimal super-rigid necessitation base is also a minimal super-rigid scrutability base. So it is a priori that the class of fundamental truths (in the sense earlier in this chapter) is a super-rigid rigid scrutability base. If we combine this with the Generalized Acquaintance Scrutability thesis, holding that it is a priori that there is a scrutability base consisting of super-rigid expressions and indexicals, it follows that it is a priori that fundamental truths and indexicals form a scrutability base. So Generalized Fundamental Scrutability follows from Generalized Acquaintance Scrutability and the apriority of the Apriori/Necessity thesis.

9 Summation: Whither the Aufbau?

What, then, of the Aufbau? Given where we have come, is Carnap vindicated? Even if the actual Aufbau was a failure, is there a nearby possible Aufbau that was a success?

It is clear that there are many possible Aufbaus. They vary with their basic class of expressions, and their mode of construction. Some are closer to Carnap than others. Some are more successful than others. In what follows I will outline two. The first is one that stays close to the spirit of Carnap. The second is one that fits my own philosophical beliefs.

The first Aufbau starts with just logical and mathematical expressions, the indexicals ‘I’ and ‘now’, and an expression for fundamentality. Its base truths mainly purport to limn the structure of physics. The rest of the world is built up from there, through analytic definitions.

Assuming classical physics, the base truths might say: There are some fundamental properties (two of them?), and some fundamental relations (four of them?), and some objects over which these properties and relations are distributed in such-and-such way. Those are all the fundamental truths. I now have such-and-such among these properties.

Here the idea is that the fundamental properties correspond to mass, charge, and the like, while the fundamental relations correspond to fundamental spatial and temporal relations. The first Aufbau is grounded in the fundamentality structuralism of section 7, where this picture is laid out in somewhat more detail.
Assuming nonclassical physics, the base truths might say: the world has such-and-such mathematical structure, perhaps involving a function from such-and-such mathematical space into such-and-such space, with such-and-such course of values. Such-and-such dimensions of this space are fundamental. These are all the fundamental truths. I now am located at such-and-such point in this space.

From there, a spatial relation (on the classical model) might be defined as a relation whose distribution (with respect to the other properties and relations) has such-and-such structural properties. A temporal relation might be defined in the same sort of way. Likewise, spatial and temporal dimensions on the second model might be defined as dimensions with such-and-such mathematical properties with respect to other dimensions and the function.

From there, laws of nature might be defined in terms of certain sorts of regularities among objects, properties, relations, or values in these spaces, perhaps analyzed via a best system principle. Causal, dispositional, and counterfactual expressions might be defined in terms of laws of nature. Macroscopic objects might be introduced as sums of the entities specified in the original space, or as certain abstractions from the function. Spatial and temporal predicates of macroscopic objects might be defined in terms of corresponding predicates of the basic entities. Crude behavioral predicates might be defined in spatiotemporal terms. Mental predicates might be defined functionally, in terms of their causal relations to behavior and to each other. Secondary qualities might be defined in terms of their causal relations to certain mental states. Social and linguistic expressions might be defined in terms of mental and behavioral properties, along with primary and secondary quality properties. Normative expressions might be defined in terms of mental states. Natural kind terms might be defined in terms of spatiotemporal properties, secondary qualities, causal relations to mental and linguistic properties, and fundamentality. Names might be defined similarly, with a special emphasis on causal relations to linguistic items. Cultural notions might be defined in terms of everything that came before.

Carnap could have written a version of this *Aufbau*. He says many times that he could have chosen a physical rather than a phenomenal basis. Presumably his final base expressions would have involved logic and “foundedness”, just as in the real *Aufbau*, perhaps along with mathematical expressions. He had some but not all of the other materials: there is no analysis of nomic or dispositional notions in the *Aufbau*, for example; his behavioral analysis of mental expression was crude; and he had nothing to say about a number of the topics above. But the basic shape of the package seems available to him.

The shape of this package is very familiar. It is closely akin to a package of views presented
in the work of David Lewis. There are some differences: Lewis usually took spatiotemporal notions as basic, rather than attempting to analyze them in terms of structure and fundamentality; and the package above omits Lewis’s distinctive metaphysics of modality and of mathematics. Still, Lewis’s life’s work can be seen as an attempt to construct the world, and to carry off Carnap’s project where Carnap failed. Viewed through this lens, Lewis came remarkably close to succeeding.

This Carnap/Lewis Aufbau would avoid many criticisms of the original Aufbau. Three would be no analog of Goodman’s or Quine’s problems. As in the original Aufbau, Newman’s problem would be avoided by the appeal to fundamentality, and this Aufbau might eschew the unnecessary claim that fundamentality is a logical notion. Of course criticisms tied to definitions and the analytic-synthetic distinction would still arise, but it is not clear how deep these criticisms go.

For my part, I think that while the Carnap/Lewis Aufbau draws a beautiful picture of the world, it is not a correct picture of the world. The two largest reasons are that first, no structuralist account can adequately account for phenomenal truths, and second, no Humean account can adequately account for nomic truths. I also have doubts about the appeal to definitions, at least if these are supposed to be finite and precise. And questions can be raised about various steps along the way. Still, these are largely matters of substantive philosophy over which serious philosophers disagree. They are not clear internal fatal flaws of the sort often ascribed to the Aufbau.

The second Aufbau starts with logical and mathematical expressions, indexical expressions ‘I’, ‘now’, and ‘this’, an expression for fundamentality, an expression for lawhood, and phenomenal expressions, where the latter are characterized in terms of phenomenal awareness and expressions for primitive primary and secondary qualities. Its base truths purport mainly to characterize physical and psychophysical laws, along with physical boundary conditions. The rest of the world is built up from there, through a priori scrutability, and perhaps through approximate a priori definitions.

The base truths will say: the [physical] world has such-and-such mathematical structure, perhaps involving a function from such-and-such mathematical space into such-and-such space. This function is governed by such-and-such laws, and it has such-and-such boundary conditions. Such-and-such dimensions are fundamental. There are such-and-such laws connecting this space to entities that are phenomenally aware of such-and-such qualities distributed by such-and-such function over such-and-such space. These are all the fundamental truths. I am now phenomenally aware of such-and-such.

There are variations on this project. Instead of specifying that certain (physical) dimensions
are fundamental, we could specify that they are certain quidditistic or phenomenal dimensions. We could represent phenomenological structure in various different ways, and on some versions we might have laws connecting a physical space to a protophenomenal rather than a phenomenal space.

From here, causal, counterfactual, and dispositional truths are scrutable from truths about laws and non-nomic truths. The spatiality and temporality of certain dimensions is scrutable from their causal and counterfactual relations to certain sorts of spatiotemporal phenomenal properties. Microphysical and then macrophysical spatiotemporal properties are scrutable from there. The existence and spatiotemporal properties of microscopic objects are scrutable the fundamental physical truths, and the existence and spatiotemporal properties of macroscopic objects are scrutable from these truths. Truths about secondary qualities are scrutable from causal and counterfactual connections to certain phenomenal states. Truths about intentional and other mental states are scrutable from phenomenal and causal truths. Truths about behavior are scrutable from truths about mental states and spatiotemporal truths. Linguistic and social truths are scrutable from mental, behavioral, and spatiotemporal truths. Normative truths are scrutable from mental truths, behavioral truths, and other truths. And so on.

Carnap could in principle have written this version of the *Aufbau*, but he would have been unlikely to. The unreduced appeal to specific phenomenal qualities run against the structuralist program of the *Aufbau*. The unreduced appeal to lawhood runs against the generally reductionist spirit of the *Aufbau*. Still, in certain respects, this version can be seen as a sort of extension of the phenomenological program in the *Aufbau*, starting from a much richer characterization of phenomenal states, and building in explicitly nomic connections to other aspects of the world.

The shape of this package is at least somewhat familiar. It has something in common with the constructive projects of Bertrand Russell, especially in the periods when he leaned more heavily on acquaintance and less heavily on structure. There are a number of differences: awareness of (represented) qualities stands in for Russell’s awareness of sense-data, and where Russell gives a basic role to spatiotemporal relations, this project gives a basic role to nomic relations. It is less phenomenalist in character than many of Russell’s constructions, building in a key role for the structure of physics from the start. All the same, both are ways of building up the world’s structure from acquaintables, and especially from features of experience, the self, and certain key universals.

This quasi-Russellian project avoids Goodman’s and Quine’s objections to the *Aufbau*. It also avoids Newman’s objections to Russell’s structuralism, and the many objections associated with
his phenomenalism. Of course the view can be subjected to objections of its own, especially from philosophers with different substantive views. But again, this is largely a matter of substantive philosophy.

We might call the first Aufbau here a structuralist Aufbau, in the spirit of Carnap, and the second Aufbau an acquaintance Aufbau, in the spirit of Russell. But I prefer to think of the second Aufbau as a structural/acquaintance Aufbau, with both structural elements (logic, mathematics, law, fundamentality) and acquaintance-based elements (consciousness, perhaps perceptual qualities) in the base.

I have not written either of these Aufbaus here. That is, I have not tried to carefully and explicitly lay out the basic vocabulary and the form of the basic truths, and I have not tried to construct other truths from these step by step. But I have argued that such an Aufbau is possible. Many of the elements of the first Aufbau are already present in the work of Carnap and Lewis. Some elements of the second Aufbau are sketched at various places in this book.

In any case, given the a priori scrutability thesis, some Aufbau along these lines will be possible. There will be some basic vocabulary in which base truths can be stated. Other truths will be derivable from these, either by a priori entailment, or through approximate definition. The overall structure will depend on one’s philosophical views about phenomenology, spacetime, laws of nature, quiddities, normativity, intentionality, ontology, and so on. The details will depend on empirical matters about physics, phenomenology, and other domains. But we have reason to believe that a successful Aufbau exists, somewhere in philosophical space.

A project of this sort has many uses. Semantically: it can be used to construct Fregean semantic values and notions of mental content, and a reconstrued project of conceptual analysis. Epistemologically: it can vindicate an attenuated knowability thesis, and help in responding to the skeptic. Metaphysically: the bases in the projects above can be construed as metaphysical bases, and if we accept a fundamental scrutability thesis, many metaphysical conclusions will follow. Scientifically: these Aufbaus might help us to discern the unity within science, and elements of them might be used to vindicate Carnap’s structuralist approach to science. Metaphilosophically: an Aufbau project might help us to dissolve many questions and clarify many others.

I conclude that constructing the world is possible, and that it has philosophical value.
Thirteenth Excursus: The Structuralist Response to Skepticism

One aim of the logical empiricists was to defeat epistemological skepticism. Traditional skepticism holds that we cannot know that external-world truths (‘I have hands’, ‘That is a table’, ‘We live on a planet’) are true, because we cannot exclude certain skeptical scenarios: scenarios in which we are having the same experiences that we are currently having, but in which these hypotheses do not obtain. One skeptical scenario includes Descartes’ evil genius scenario: one in which we are entirely disembodied and in which our experiences are produced by an evil genius. Another includes the Matrix scenario: we are brains in vats, and our experiences are produced by a computer simulation to which our brains are hooked up.

Carnap does not discuss skepticism at length in the *Aufbau*, but in its latter sections (part E, especially section 180), he argues for an anti-skeptical conclusion: that there is no question whose answer is in principle unattainable by science. (The “in principle” here sets aside practical obstacles due to separation in space and time.) He reaches this conclusion by arguing that any question can be reformulated in terms of the primitive elements of elements, so that it comes down to a question about the distribution of basic relations among experiences. And he argues that all questions about the distribution of basic relations can be settled. If so, all questions can be settled.

This can be seen as an attempt to defeat skepticism through structuralism. Carnap held that all our hypotheses about the external world are in effect *structural* hypotheses, concerning the existence of objects satisfying a certain structure. And he held that we can know in principle whether any structural hypothesis obtains. If so, then we can know that the external-world truths obtain. Even if we are in the evil-genius scenario, or the Matrix scenario, the relevant structure among our experiences obtains. So even if we inhabit these scenarios, we should allow that we have hands, that there are tables, and that we live on a planet.

One way of putting Carnap’s structuralist response to skepticism is as follows:

1. Ordinary beliefs have (only) structural content.

2. The structural content of most ordinary beliefs is justified.

3. Most of our ordinary beliefs are justified.

An anti-skeptical argument of this sort can be made whether we construct the world from structure through definitions or through scrutability. For example, if all truths were scrutable from...
truths about phenomenal structure, and if we could know all relevant truths about phenomenal structure, then we would be in a position to know all truths.

Importantly, the anti-skeptical force of structuralism does not require Carnap’s very austere logical or phenomenal structuralism. In particular, I think key elements of the anti-skeptical force apply to nomic structuralism, as well as to fundamentality or grounding structuralism, and to combined views. In fact, one can gain anti-skeptical purchase even if one gives a role to some nonstructural elements such as phenomenal and indexical truths. In effect, a structural scrutability base or a limited extension thereof gives us the materials to make large inroads against the external-world skeptic, although perhaps not enough to defeat skepticism entirely.

The argument here is a version of an anti-skeptical argument I have made elsewhere, in “The Matrix as Metaphysics”. That argument did not appeal explicitly to structuralism as a premise, but instead made arguments that in effect supported a sort of structuralism along the way, and used it to argue against skepticism. Because of this, I think the Matrix argument is somewhat stronger dialectically than the present argument. Nevertheless, the argument from structuralism helps to bring out some of the underlying issues that are at play in the original Matrix argument, so I will here try to develop the argument from structuralism explicitly.

We can start with nomic structuralism. The central thought here is that our conception of the external world is grounded in a conception of a network of entities and properties connected by relations of causation and laws. On this view, a full microphysical description of the universe can be analyzed as saying that there exist certain properties that stand in certain nomic relations to each other, and that there exists a network of entities that instantiate these properties and that thereby stand in certain causal and nomic relations. The properties in question will correspond to mass, charge, spatiotemporal properties, or whatever are the fundamental properties in physics, while the entities will correspond to fundamental particles or fields, or whatever are the fundamental entities in physics. But these labels (mass, charge, quarks) will not enter the fundamental description. The base truths just say that there are properties and entities satisfying a certain nomic structure. Something similar applies to our conception of the macroscopic world: again, this comes down to a conception of entities related by certain nomic and causal relations to each other (and to experience, on the attenuated view). From a description of the world in these nomic (and phenomenal)

\[^{19}\text{In part for this reason, the scrutability version of the response does not require a premise as strong as premise 1 above. Another reason is that what matters for the purposes of this response is that primary intensions are (largely) structural. One can allow that beliefs have other sorts of content (such as secondary intensions and Russellian content) that are nonstructural. But the initial form captures something of the spirit of the response, at least.}\]
terms, all ordinary truths about the world are scrutable.

The central thought behind the structuralist response to skepticism is that even if the allegedly skeptical scenarios obtain, much or all of the relevant nomic structure obtains too. In the Matrix scenario, for example, there is a computer running a complete simulation of the physical universe. This computer will have a causal complexity of the same order as the universe that it simulates, with concretely implemented data structures for each fundamental particles, and computational properties of these structures for each fundamental property. When we take it that one particle affects another in our world, the data structure corresponding to the first particle really does affect the data structure corresponding to the second. A macroscopic object in our world, such as a table, corresponds to a complex of data structures, or perhaps to a macroscopic data structure or an entity supervening on data structures (just as one might say a table is related to particles on a more standard metaphysics). When we take it that we see a table, this computational entity really is affecting our experience, just as a table does on a more common picture. Likewise, causal connections among planets or billiard balls will be reflected in causal connections among data structures in the computer. All in all: the computer instantiates all of the nomic and causal structure of the world that it is simulating.

We can put the basic structure of the structuralist response here as follows. We are presented with a putatively skeptical scenario, such as a Matrix scenario. A standard skeptical argument says something along the following lines:

(1) Most of my ordinary beliefs are false if this scenario is actual.
(2) I do not know that this scenario is not actual.

(3) Most of my ordinary beliefs do not constitute knowledge.

For example, one familiar version of this argument says:

(1) If I am in a Matrix, then I do not have hands.
(2) I do not know that I am not in a Matrix.

(3) I do not know that I have hands.

The most common responses to skepticism attempt to reject the second premises of these arguments. A structuralist response in the spirit of Carnap’s rejects the first premises, as follows.
1. The content of ordinary beliefs is structural.

2. The structural content of most ordinary beliefs is true if this scenario is actual.

3. Most of my ordinary beliefs are true if this scenario is actual.

In this anti-skeptical argument, premise (1) is grounded in structuralist theses such as structural scrutability, while premise (2) is grounded by reasoning about the structure of putative skeptical scenario. If this argument is sound, then the belief that I have hands will have structural content (by (1)) that is true with respect to the Matrix scenario (by (2)). If this is right, then even if I am in a Matrix, I still have hands. So skeptical arguments like those above will fail.

Focusing on the special case of nomic structuralism and Matrix scenarios, we can flesh out the argument more explicitly. Let us say that a Matrix scenario and a non-Matrix scenario correspond when the former involves a perfect computational simulation of the latter, bringing about a stream of experiences in the core subject that duplicate those of the core subject in the latter.\(^{20}\) And let us say that a skeptical scenario is a scenario in which most of our ordinary beliefs are false (or perhaps: sufficiently many are false, for some relevant threshold). Then given the reasoning above, and given pure nomic structuralism, it follows that if I am in a Matrix scenario (as the subject with the experiences in question), my ordinary beliefs are just as true as they would be if I was in the corresponding non-Matrix scenario. After all, the truth of these beliefs can be determined from nomic structure alone, and Matrix scenario instantiates the nomic structure of the non-Matrix scenario. So if the non-Matrix scenario is not a skeptical scenario, neither is the corresponding Matrix scenario.

We may put this in the form of an argument.

1. All ordinary truths are scrutable from truths about nomic structure.

2. All truths about nomic structure in a non-Matrix scenario are also truths in a corresponding Matrix scenario.

\(^{20}\)Here, scenarios should be understood as epistemically possible scenarios (not as metaphysically possible worlds), along the lines discussed in the ninth excursus. A scenario corresponds to an extremely detailed hypothesis about how the world might turn out to be, for all we know a priori. The core subject is the referent of ‘I’ in a scenario. A sentence is true in a scenario when it is scrutable from a canonical specification of the scenario. Note that this differs from truth of a sentence in a world, which requires necessitation by a canonical specification of that world. I do not say that all ordinary truths would be true in a Matrix world: that would depend on the claim that all truths are necessitated by nomic truths, which is a quite different claim.
(3) All ordinary truths in a non-Matrix scenario are also truths in a corresponding Matrix scenario.

Corollary: If a non-Matrix scenario is not a skeptical scenario, neither is a corresponding Matrix scenario.

If this is right, the Matrix scenario has no special force to support skepticism. If we start from a non-Matrix scenario that is much as we take our ordinary world to be, our ordinary beliefs and sentences will be mostly true in that scenario. If we now consider a Matrix scenario in which that world is simulated, it follows from the above that our ordinary beliefs and sentences will be true in the Matrix scenario too.

Premise (1) is a statement of nomic structuralism. One could try to deny (2), perhaps holding that the structure in the computer is not real nomic structure (because it was programmed?), or perhaps holding that the computer has some extra nomic structure (in its implementing machinery?), undermining the parity between the two. But even if (2) is false for this sort of reason, a nearby argument will go through. After all, it could turn out that our world is a physical and spatial non-Matrix world whose nomic structure is “programmed” by and at the mercy of a creator, and it could turn out that it has additional nomic structure beyond the sort of structure we think it has. If these non-Matrix scenarios turned out to be actual, most ordinary beliefs would not be undermined. At most, we would undermine a few theoretical beliefs, such as ‘The laws of physics are not programmed’ or ‘Microphysical laws are the fundamental laws’. It follows that most ordinary truths in an ordinary non-Matrix scenario will also be true in the “programmed” non-Matrix scenario. The programmed scenario will share its nomic structure with a Matrix scenario corresponding to the original scenario, so truths in the former will also be true in the latter. So most truths in the original scenario will be true in the the Matrix scenario, and the Matrix scenario will not be a skeptical scenario.

One can resist by denying (1) and denying nomic structuralism. My view is that nomic structuralism is false: a scrutability base needs indexical truths, that’s-all truths, phenomenal truths, and maybe even quiddistic truths, as well as nomic truths. Nevertheless, the structuralist response to skepticism is robust enough that these additions do not undermine it.

For a start, the addition of indexical truths to the scrutability base will not change much here. When skeptical scenarios are set up, they are set up so that crucial indexical truths such as ‘I am having such-and-such experiences’ are true in the relevant non-Matrix and Matrix scenarios.
The addition of a that’s-all truth, and of fundamentality truths in general, is a small complication, as it is arguable that these may differ between the two scenarios. Compared to the non-Matrix scenario, the Matrix scenario may have a further layer of more fundamental truths realizing the computation, and perhaps truths about the world outside the computation. Still, this matter can be handled straightforwardly by introducing an extended non-Matrix scenario, as above, that mirrors these features of the Matrix scenario: the extended scenario will have a more fundamental layer underlying truths that were fundamental in the original non-Matrix scenario, and will extend much further than the original scenario. Despite these changes, most of our ordinary beliefs will be true in this non-Matrix scenario. Furthermore, the nomic and fundamentality truths that hold in this scenario will also hold in the Matrix scenario. So if all truths are scrutable from nomic and fundamentality truths, our ordinary beliefs will also be true in the Matrix scenario.

What about the addition of phenomenal truths to the base? One might object that there is no guarantee that these will be reproduced in a Matrix. A modified version of the argument will still go through, however. Corresponding Matrix and non-Matrix scenarios are already stipulated to share first-person phenomenal truths (truths such as ‘I am having such-and-such experiences’), and these are the most crucial phenomenal truths required for the scrutability of ordinary truths. As for phenomenal truths about others, one might modify the notion of correspondence to build these in too: corresponding scenarios must have corresponding phenomenal truths. The skeptic might then reply by noting that the conclusion (3) that results from this modification is more limited than before. For example, there may be Matrix scenarios in which others lack experiences: these will correspond not to ordinary non-Matrix scenarios, but to non-Matrix scenarios in which other people lack experiences. And these latter non-Matrix scenarios are indeed skeptical scenarios, at least with regard to beliefs about other minds. But even so, one can note that at best this scenario gives rise to skepticism about other minds (and to phenomena deriving from other minds), and not about the external world in general.

What if the scrutability base includes quiddities: the intrinsic properties that serve as the basis for all this nomic structure? Of course quiddities are not at all in the spirit of structuralism. But adding them to the base does not undermine the argument. Even if there are quiddistic truths, these are largely inessential to the scrutability of most ordinary truths, such as ‘I have hands’ or ‘That is a table’. There will be multiple scenarios in which the same nomic and phenomenal structure is associated with a different distribution of quiddities, but these ordinary truths will have the same truth-value in all of them. At most, what will vary is the truth-value of theoretical claims, such as
“Quiddities have such-and-such protophenomenal nature”.  

Perhaps the best way to resist the argument is to focus on the spatiotemporal, arguing that spatiotemporal truths are not scrutable from the scrutability bases above. If this is right, then a Matrix scenario will not preserve the spatiotemporal structure of a corresponding non-Matrix scenario, and many ordinary truths in the latter may be false in the former. On the current framework, the best way to do this is to endorse spatiotemporal primitivism, on which we have a primitive grip on certain spatiotemporal properties and/or relations, and our fundamental conception of the world requires that a certain spatiotemporal structure involving these properties and relations obtains.

Still, I argued in chapter 7 that spatiotemporal primitivism is false: ordinary spatiotemporal truths do not involve primitive spatiotemporal concepts. Instead, I think that ordinary spatiotemporal notions function to pick out whatever properties and relations play a certain role within physics and with respect to our spatiotemporal experience. One way to bring this out is to note that physicists seriously entertain the hypothesis that fundamental physics may be computational, and that spatiotemporal notions may play no role at the fundamental level. It is implausible that these physicists are entertaining a skeptical hypothesis on which ordinary spatiotemporal claims (that a certain person is over six feet tall, for example) are false. It is also implausible that given the truth of such a hypothesis, there are spatiotemporal constraints on how the computational structure must be realized in order to avoid a skeptical scenario. This is prima facie evidence that if we have the right nomic/computational structure, we have sufficient structure for the scrutability of ordinary truths, even without further primitive spatiotemporal constraints.

What goes for the Matrix also goes for other skeptical scenarios. If the evil genius simulates every particle in the universe, she is in effect acting as a Matrix, and the same analysis applies to her. If I am dreaming and simulating the whole universe, then my unconscious mind is acting as a Matrix, and the same applies to it. Of course there are versions of all these hypotheses on which the simulator does not simulate the whole universe but only some local part of it, or only the macroscopic level. But even then, the point still applies: these scenarios will have the same

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21 It should be noted that the Matrix hypothesis can itself be regarded as a hypothesis about quiddities. Russell and others observe that science does not reveal the intrinsic properties that underlie microphysical structure. If the Matrix hypothesis is right, these intrinsic properties are themselves computational properties, deriving from a computational system in the “next universe up”. Viewed though this lens, the Matrix hypothesis changes from being an illustration of Descartes to an illustration of Kant: it is not a skeptical hypothesis to a hypothesis about the unobservable noumenal properties of reality. In the movie, taking the red pill allows us to outsmart Kant: we can look at the computer and thereby see the “things in themselves” for the first time. But of course Kant will outsmart us in turn: even underlying this next level of reality, there may be quiddities that we cannot observe.
nomistic structure as a non-simulated world in which only the local part of our world exists, or only the macroscopic level is as it seems and in which physics is different or nonexistent. In these nonsimulated scenarios, we would certainly have false beliefs about the far away and about the very small. But many of our ordinary beliefs would be correct, so these are not fully skeptical scenarios. The same goes for the simulated scenarios. Likewise, a scenario in which we have recently entered a Matrix will produce false beliefs about the present, but will still allow many true beliefs about the past, so this is not a fully skeptical scenario.

To get a fully skeptical scenario, one may need to move to one on which experiences are produced at random, and by huge coincidence produce the regular stream of experiences that I am having now. This scenario cannot be excluded with certainty, but it is reasonable to hold that it is extremely unlikely.

The anti-skeptical conclusion is limited. Many local skeptical scenarios cannot be excluded. For this reason, any individual belief about the external world can still be cast into doubt. For example, beliefs about the present and the recent past can be cast into doubt by a recent Matrix scenario, while beliefs about the distant past can be cast into doubt by a local Matrix scenario. But at least it is hard to cast all our external-world beliefs, or even all our positive external-world beliefs, into doubt all at once via a single global skeptical scenario. On the current picture, it is reasonable to assign an extremely low probability to such a global skeptical scenario.

Furthermore, one can make a case on the current picture that many of our ordinary beliefs are justified. Take the case of perceptual beliefs, which take perceptual experience at face value. The picture that results here is in some respects reminiscent of the externalist response to skepticism given by Putnam (19xx). On the current picture, it is natural to hold as Putnam does that many concepts deployed by a brain in a vat refer to entities in its environment (the entities that play the relevant nomistic roles): computational structures if in a Matrix scenario, structures within the evil genius if in Descartes’ scenario. But it is important to note that my argument has not needed to assume anything about externalism or about the causal theory of reference. This is a good thing, as it is far from clear that these premises alone warrant the anti-skeptical conclusion. For example, no-one thinks that a mere causal connection between word and object suffices for reference; many further constraints are required. And it is entirely unclear whether the relevant entities in a brain in vat’s environment satisfy the further constraints. So one cannot argue straightforwardly from a causal theory of reference to the anti-skeptical conclusion.

Instead, my structuralist response to skepticism has proceeded from independently motivated structuralist premises. By contrast with generic externalist premises, these premises that make a
direct case that the relevant entities in the environment satisfy the relevant constraints. So these premises do a much stronger job of supporting the anti-skeptical conclusion.

I have laid out a simple version of the structuralist response here, but my view of matters is a little more complicated. As I suggested in chapter 7, I think that we have primitive representation of space and time as well as of secondary qualities such as color. At some level, perception and belief represent our world as an Edenic world, with primitive colors distributed over objects in primitive space, passing through primitive time. If we are in a Matrix, then these Edenic contents are certainly false. In effect, the Matrix serves as a sort of fall from Eden. Does this mean that the Matrix is a skeptical scenario after all?

Even in ordinary world revealed by science, however, there has been a fall from Eden. Since Galileo, science has suggested ours is not a world with Edenic colors. Since Einstein, science has suggested that ours is not a world with Edenic space. I argued in chapter 7 that even if physics is mathematically Newtonian, it is not at all clear that it involves primitive space. And in the complex physics of quantum mechanics and string theory, there is even less reason to think that there is primitive space in our world. So while it is true that our perception and belief has nonstructural content that is false in a Matrix scenario, this content is equally false in the world revealed by modern science.

One could take the view that modern science has revealed us to be living in a skeptical scenario in which there are not colored objects laid out in space and time. I think it is much better to hold that even after Galileo, ordinary claims such as ‘The apple is red’ are true. The apple is not Edenically red, but it is structurally red: that is, it has the property that plays roughly the structural role associated with redness, in causing experiences and the like. Likewise, ordinary claims such as ‘The apple is round’ are true. The apple is not Edenically round, but it is structurally round: that is, it has the property that plays roughly the structural role associated with roundness, in causing experiences and the like.\textsuperscript{22} Our ordinary terms such as ‘red’ and ‘round’ are best taken to pick out the structural properties, not the Edenic properties.

The Matrix scenario is on a par with the post-fall scenarios here. If we are in a Matrix, apples are not Edenically red and round, but they are nevertheless structurally red and round. If claims such as ‘The apple is red’ and ‘The apple is round’ are true in a post-fall non-Matrix scenario, they are also true in a Matrix scenario. So there is not a distinctive skeptical problem raised by the Matrix scenario.

\textsuperscript{22}For much more on the Edenic picture, see Chalmers 2006.
The upshot here is to concede a little to the skeptic: the Edenic contents of our beliefs are unjustified, and indeed they are probably false. Nevertheless, we retain a significant bulwark against the skeptic: the structural content of our beliefs is justified and is probably true.\textsuperscript{23} We can put this by saying that while our model of the world is not perfectly veridical, it is at least imperfectly veridical, both in a post-fall world and in a Matrix world. Given that our most important beliefs and utterances are true in a post-fall world, the most important content of beliefs and utterances is their structural content rather their Edenic content.

Where the contents of perception are concerned, structural contents are in effect response-dependent contents: to a first approximation, experiences as of red pick out whatever normally causes experiences as of red, experiences as of a location pick out whatever normally causes experiences as of that location, and so on. Assuming such experiences have causes in normal circumstances, these contents will be true in normal circumstances. If one is justified in believing that experiences have these contents, that experiences normally have causes, and that one is in normal circumstances, justified beliefs about the external world will result. Understood this way, the structuralist response yields a response to skepticism grounded in introspection plus inference.

How does this response to skepticism relate to the dogmatist view of perception discussed in chapters 2 and 3, according to which experiences as of $p$ directly justify beliefs that $p$? If accepted, dogmatism yields a reply to skepticism. Dogmatism arguably captures intuitions in “folk epistemology”—our natural judgments about justification, at least when in a nonskeptical mode. But it is far from obvious that these judgments are clearly correct. In particular, it is far from obvious that an experience that $p$ can justify a belief that $p$ without being justified itself. On a standard view, beliefs cannot convey justification without being justified themselves. If experiences can do this where beliefs cannot, this fact stands in need of explanation.

We might approach things by saying that an experience is proto-justified when taking that experience at face value yields a prima facie justified belief. According to dogmatism, all experiences (or perhaps all core experiences) are proto-justified. I suggested earlier (chapter 3, section 8) that some noncore experiences are proto-justified, in virtue of being grounded in prior evidence.

\textsuperscript{23}Even in recent Matrix, local Matrix, and other skeptical scenarios, it is arguable that the structural content of our beliefs is largely true. On these hypotheses, most of the causal structure that we attribute to the world is present. It is just divided into components, so that the structure is realized one way in the distant past and another way in the present, for example. This still leads to significant falsity in our beliefs, due to the structural fact that the realizers are different in both cases, but it enables us to see how a core of these beliefs—both about the present and about the past—remains true.
but I think it is far from obvious that typical core experiences are proto-justified.

The structuralist view outlined above may offer some help in explaining their proto-justification, however. The structuralist picture naturally suggests a view on which core experiences have response-dependent contents: experiences as of red pick out whatever normally causes experiences as of red, experiences as of a location pick out whatever normally causes experiences as of that location, and so on. Assuming such experiences have causes in normal circumstances, they will be veridical in normal circumstances. If one is justified in believing that experiences have these contents, that experiences normally have causes, and that one is in normal circumstances, justified beliefs about the external world will result. Understood this way, the structuralist response yields a response to skepticism grounded in introspection plus inference.

One might extend the response in the direction of dogmatism by holding that this structure suffices for experience themselves to be proto-justified, so that taking them at face value can yield justified beliefs even in a subject who does not go through the process of introspection and inference. This sort of structuralism yields a limited sort of dogmatism. On this view, the experience provides doxastic justification for a perceptual belief that does not derive from doxastic justification for a belief that the experience is veridical. But it is arguable that the propositional justification for the former will derive from propositional justification for the latter. If so, the view will be dogmatist about doxastic but not propositional justification.

If one rejects the claim that experiences have response-dependent contents, then dogmatism needs independent grounding. On my own view (Chalmers 2006), experiences have both response-dependent (ordinary) contents and non-response-dependent (Edenic) contents. I am inclined to say that the former contents are proto-justified and that the latter are not. In effect, Edenic contents appeal to non-structural qualities, and require the world to be akin to Eden, in which primitive color and spatial qualities are instantiated. Where beliefs with Edenic contents are concerned, I think such beliefs are unjustified and probably false. Ordinary contents appeal only to nomic and phenomenal structure, and require the world to be merely akin to the Matrix. Where beliefs with ordinary contents are concerned, I think the structuralist picture may yield an account on which these beliefs are justified and probably true.