

The Origins of Modal Error

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ABSTRACT

Modal intuitions are the primary source of modal knowledge but also of modal error. According to the theory of modal error in this paper, modal intuitions retain their evidential force in spite of their fallibility, and erroneous modal intuitions are in principle identifiable and eliminable by subjecting our intuitions to a priori dialectic. After an inventory of standard sources of modal error, two further sources are examined in detail. The first source – namely, the failure to distinguish between metaphysical possibility and various kinds of epistemic possibility – turns out to be comparatively easy to untangle and poses little threat to intuition-driven philosophical investigation. The second source is the local (i.e., temporary) misunderstanding of one's concepts (as opposed to outright Burgean misunderstanding). This pathology may be understood on analogy with a patient who is given a clean bill of health at his annual check-up, despite his having a cold at the time of the check-up: although the patient's health is locally (temporarily) disrupted, his overall health is sufficiently good to enable him to overcome the cold without external intervention. Even when our understanding of certain pivotal concepts has lapsed locally, our larger body of intuitions is sufficiently reliable to allow us, without intervention, to ferret out the modal errors resulting from this lapse in understanding by means of dialectic and/or a process of a priori reflection. This source of modal error, and our capacity to overcome it, has wide-ranging implications for philosophical method – including, in particular, its promise for disarming skepticism about the classical method of intuition-driven philosophical investigation itself. Indeed, it is shown that skeptical accounts of modal error (e.g., the accounts given by Hill, Levin, and several others) are ultimately self-defeating.

0. Introduction

Modal intuitions are not only the primary source of modal knowledge but also the primary source of modal error. An explanation of how modal error arises – and, in particular, how erroneous modal intuitions arise – is an essential part of a comprehensive theory of knowledge. But, more than that, such an explanation is essential to identifying and eliminating modal errors in our day-to-day philosophical practice. According to the theory of modal error given here, modal intuitions retain their evidential force in spite of their fallibility, and erroneous modal intuitions turn out to be in principle identifiable and eliminable by subjecting intuitions to a priori dialectic. And, thus, the classical method of

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intuition-driven philosophical investigation is exonerated. I begin with a summary of certain preliminaries: the phenomenology of intuitions, their fallibility, the nature of concept-understanding and its relationship to the reliability of intuitions, and so forth. This is followed by an inventory of standard sources of modal error. I then go on to discuss two further sources. The first, though much discussed of late, is I believe widely misunderstood; it turns out, however, to be comparatively easy to untangle and poses little threat to intuition-driven philosophical investigation. The second source, by contrast, has been absent from the philosophical literature. This source of modal error, and our capacity to overcome it, has wide-ranging implications for philosophical method. The failure to recognize this source of modal error has recently led to skeptical accounts of modal error, which are (I will show) ultimately self-defeating.

1. Intuition as a Guide to Possibility

Intuition is the source of all noninferential a priori knowledge – except, of course, for that which is merely stipulative. Suppose we accept that all a priori knowledge is either inferential or noninferential (where the inferential includes inference to the best explanation). Then a positive (rather than the usual negative) account of a priori knowledge is feasible along roughly the following lines: x knows p a priori iff x knows p and either (a) x 's knowledge of p is noninferential (intuitive or stipulative) or (b) x 's knowledge of p is inferential and is based on (i) such noninferential knowledge and/or (ii) intuition in its role as evidence.

By intuitions we mean *seemings*: for you to have an intuition that p is just for it to *seem* to you that p .¹ Here 'seems' is understood, not in its use as a cautionary or "hedging" term, but in its use as a term for a genuine kind of conscious episode. For example, when you first consider one of de Morgan's laws, often it neither seems true nor seems false; after a moment's reflection, however, something happens: it now just seems true. This kind of seeming is *intellectual*, not experiential – sensory, introspective, imaginative. Intuition is different from belief: you can believe things that you do not intuit (e.g., that Fribourg is in Switzerland), and you can intuit things that you do not believe (e.g., the axioms of naive set theory). The experiential parallel is that you can believe things that do not appear (seem sensorily) to be so, and things can seem sensorily in ways you do not believe them to be (as with the Müller-Lyer arrows). Finally, intuition is typically prior to belief in the order of discovery and

¹ I will take the liberty here and certain other places to use propositional variables ' p ' where sentential variables ' ϕ ' are strictly speaking called for. Confusion should not result.

evidence: until Putnam we did not even have beliefs about twin earth, but directly upon encountering the example most of us had the intuition that there would be no water on twin earth and only thereafter formed the associated belief. Now, since intuition is analogously different from other psychological attitudes (judging, guessing, imagining, etc.) and from common sense, I believe there is no choice but to accept that intuition is a *sui generis* propositional attitude.

The sort of intuitions relevant to the a priori disciplines are *rational* intuitions, not *physical* intuitions. According to traditional usage, “thought experiments” appeal, not to rational intuition, but to physical intuitions (and the like). Here one constructs hypothetical cases about which one tries to elicit, say, intuitions deriving from one’s implicit mastery of relevant physical laws – as, for example, in Newton’s bucket thought experiment: is it physically possible for the fluid to remain perfectly flat? Not according to physical intuition. Is it metaphysically possible? Of course. Unlike physical intuition, rational intuition derives from one’s understanding of one’s concepts, not of empirical laws. Does this imply that a priori knowledge is always the result of *conceptual analysis*? No, not unless the latter includes various necessities that traditionally were thought to be synthetic, not analytic.

The set-theoretic paradoxes establish an important moral, namely, that intuition can be fallible and a priori belief, revisable – contrary to early modern epistemological dogma. We must therefore embrace the alternative tradition – reaching from Plato to Gödel – that recognizes that a priori justification is fallible and holistic, relying respectively on dialectic and theory construction.

It is our standard epistemic practice to use intuitions as evidence (or reasons) absent special reason not to do so – much as we take our ostensible sense perceptions to be evidence if we lack special reason not to do so. Moreover, if we denied without any special reason that intuitions are evidence, we would land in an epistemically self-defeating situation. Finally, since modal intuitions are not relevantly different from nonmodal intuitions, they are a (fallible) guide to modal truth, so in particular possibility intuitions are a guide to possibility. (I have argued for these points elsewhere and will just assume them here.² I will, however, provide a discussion in §8 of the self-defeating nature of denying the evidential status of intuition as it arises in the context of modal error and scientific essentialism.)

These conclusions raise two questions. First, *why* are intuitions evidence (reasons)? The explanation is provided by *modal reliabilism* – the doctrine that

² See Bealer 1992.

there is a certain kind of qualified modal tie between intuitions and the truth. Second, why should there be a qualified modal tie between intuitions and the truth? The explanation is provided by an analysis of what it is to understand one's concepts. According to this explanation, the tie does not have a supernatural source (as perhaps it does in Gödel's theory of mathematical intuition); rather, it is simply a consequence of what, according to the analysis, it is to understand the concepts involved in our intuitions. (I have defended these two answers elsewhere.³)

The indicated account of understanding concepts will play a critical role in my account of modal error. I will return to it after dealing with three more preliminaries.

2. Concrete-Case Intuition, Conceivability, and Metaphysical vs. Epistemic Possibility

(a) *Concrete-Case Intuition.* Theoretical intuitions are typically far more fallible than concrete-case intuitions much as observations that are heavily theory-laden are much more fallible than those that are not. (This why in controversies over physical measurement, disputes are typically adjudicated by comparatively non-theory-laden observations such as where the arrow is pointing on the dial or where the endpoints of the rod are on the ruler.) In contemporary philosophy, it seems that some people are content to found their philosophical theories on a few central theoretical intuitions rather than concrete-case intuitions. This practice lacks historical perspective. The history of philosophy is littered with examples of philosophers no less brilliant than our contemporaries who founded their philosophy on small families of theoretical intuitions which they found especially compelling. The list is embarrassingly long – ranging from Parmenides to Berkeley and Hume, Spinoza and Leibniz, Hegel and Bradley, and on to Schlick and Ayer. To one group of philosophers, certain theoretical principles can seem self-evident whereas to an opposing group the opposites can seem just as compelling. Left at this level, a “battlefield of endless controversies”, as Kant puts it, is inevitable. The only solution is to defer to concrete-case intuitions. This is not to say that these intuitions will themselves be in harmony; the point is that significant overlapping collections of them are in sufficient harmony to adjudicate the dispute. We witness success at this in an impressive list of cases that we now all take for granted. For example, the perceptual-relativity refutation of phenomenalism; the Spartan-pretender refutation of logical behaviorism; the defective-instru-

³ Bealer 1996 and 1999.

ment refutation of instrumentalism; the unrepeatable-events refutation of the inductivist theory of justification; and on and on. It is only hubris to think that at just this point in history our theoretical intuitions are at last reliable.

(b) *Conceivability*.⁴ Many philosophers take conceivability and inconceivability to be the primary guide to possibility. I think this is a mistake – well, unless when I say ‘It is conceivable that p’, all I am saying (at least conversationally) is that I have an intuition that p is possible; and when I say ‘It is inconceivable that p’, all I am saying is that I have an intuition that it is impossible that p. If so, a lot of confusion would be avoided if we simply talked about possibility and impossibility intuitions. The same goes for ‘imaginable’ and ‘unimaginable’.

Suppose, however, that this easy idiomatic gloss on ‘conceivable’ and ‘inconceivable’ is not correct and that these terms are instead taken at face value as literal expressions of certain modal facts: it is conceivable that p iff it is possible for someone to conceive that p; it is inconceivable that p iff it is not possible for someone to conceive that p. Then we have a pair of problems. First, unlike intuitions of possibility and impossibility, conceivability and inconceivability would not be suited to play their reputed evidential role in modal epistemology. That it is possible, or impossible, to conceive that p is itself a modal fact. But in order for someone to acquire evidence (reasons), something must *actually happen*: a datable psychological episode must *occur* (the occurrence of a sensation, an introspective or imaginative experience, a seeming memory, an intuition). Modal facts do *not* occur. Nothing *happens* when something is conceivable or inconceivable. So something’s merely being conceivable or inconceivable cannot provide anyone with evidence (reasons) for anything.

Second, our beliefs about what is conceivable, or inconceivable, can be highly inferential and are often theoretical. True, one way you can come to believe that it is possible for someone to conceive that p is for *you actually* to conceive that p. But why should your conceiving that p provide you with evidence that p is possible? I can see no reason why it should unless conceiving that p involves intuiting that p is possible: as Stephen Yablo tells us: “In slogan form: *conceiving involves the appearance of possibility*” (Yablo 1993, 5).⁵ But then we are right back to relying on modal intuitions. The moral is simple: talk of conceivability and inconceivability only breeds confusion. And the same goes for imaginability and unimaginability.

⁴ For a more detailed discussion of conceivability, see §1.2 of Bealer 2002.

⁵ In support of the centrality of modal intuition, Yablo tells us that “modal intuition must be accounted reliable if we are to credit ourselves with modal knowledge ...” (Yablo 1990, 179).

(c) *Metaphysical Possibility and Epistemic Possibility*. The modal expressions ‘could’, ‘can’, ‘might’, and ‘possible’ are used in diverse ways which fall into two broad classes: epistemic and nonepistemic. (An analogous division holds for ‘must’ and ‘necessary’.) In modal logic, metaphysics, and philosophy of language and mind, the primary focus is on a certain form of nonepistemic necessity – in Kripke’s words, necessity *tout court*. Kripke christened this necessity ‘metaphysical necessity’.

To illustrate some of the epistemic uses of ‘could’, consider any thinkable necessary truth *p*. (These uses of ‘could’ need not correspond to distinct *literal meanings*; it is enough that they are standard uses of the term in the sort of ordinary contexts relevant to modal epistemology.) The first use is the ‘could’-of-ignorance: absent what we deem to be adequate evidence (or adequate justification) one way or the other about *p*, we can truly say, “It could be that *p*, and it could be that not *p*. We just do not know yet.” (For example, this can be truly said of Goldbach’s Conjecture.) But once we have adequate evidence (justification) one way or the other, what was meant in speaking *that way* can no longer be truly said. Second, there is the ‘could’-of-less-than-complete-certainty: if we have less than complete certainty about *p* (even if we have adequate evidence, or justification, for *p*), we can still truly say, “We still could be mistaken; we know we can be wrong about almost anything.” (For example, even though we now have a proof of Fermat’s Last Theorem, this can still be truly said of it.) Third, there is the ‘could’-of-imaginative-projection: even if we have adequate evidence, or justification, for *p*, we can often truly say, “We could still be mistaken about *p*; after all, I can imagine what it would be like to uncover evidence that *p* is false.”⁶ (For example, even though we now have a proof of Fermat’s Last Theorem, this too can be truly said of it.) Fourth, there is the ‘could’-of-qualitative-evidential-neutrality: for a posteriori necessities, we can often truly say, “It could have turned out that *p*, and it could have turned out that not *p*.” And this is so, even though, meant this way, this cannot be said of any traditional a priori necessities. For example, meant this way, ‘Whether Hesperus was Phosphorus could have turned out either way’ would be true, even though when meant the same way ‘Fermat’s Last Theorem could have turned out either way’ would be false. (See Bealer 2002 for a more detailed discussion of this taxonomy and of other alleged uses of ‘could’, e.g., the alleged ‘could’-of-“logical”-possibility.⁷)

A few semi-formal remarks about these epistemic uses of ‘could’ might be helpful. Suppose someone intends the ‘could’-of-ignorance when uttering the

⁶ Cf. Wright 2002, 437f.

⁷ Pp. 77-9.

sentence ‘It could be that p’ in some relevant conversational context.⁸ Then, the asserted proposition would be the proposition that results when an associated propositional operation $\diamond_{\text{ignorance}}$ is applied to the proposition p. (In symbols: $\diamond_{\text{ignorance}} p$.) The truth conditions of the resulting proposition are as follows: the proposition that $\diamond_{\text{ignorance}} p$ is true iff it is unknown whether p. Likewise, the ‘could’-of-less-than-complete-certainty may be represented with the operator ‘ $\diamond_{\text{uncertainty}}$ ’. The truth conditions are: the proposition that $\diamond_{\text{uncertainty}} p$ is true iff it is not completely certain that p. Likewise, the ‘could’-of-imaginative-projection may be represented with the operator ‘ $\diamond_{\text{imag-proj}}$ ’. The truth conditions are: the proposition that $\diamond_{\text{imag-proj}} p$ is true iff it can be imagined what it would be like to uncover evidence that falsifies p.⁹ Finally, the ‘could’-of-qualitative-evidential-neutrality may be represented with ‘ $\diamond_{\text{qual-evid-neut}}$ ’. The truth conditions are: the proposition that $\diamond_{\text{qual-evid-neut}} p$ is true iff it is possible for there to be a population c with attitudes toward p and it is possible for there to be a population c' whose epistemic situation is qualitatively identical to that of c such that the proposition p', which in c' is the epistemic counterpart of p in c, is true.¹⁰

Note that in each of these four biconditionals the whole proposition mentioned on the left-hand side need not be *identical* to that expressed by the associated right-hand side; indeed, they are intuitively different. This feature allows the above account to avoid various difficulties that undermine other accounts of epistemic uses of ‘could’. A case in point is Kripke’s account of the ‘could’-of-qualitative-evidential-neutrality. As we shall see in §6, the above account avoids problems confronting Kripke’s account while, at the same time, preserving a thesis latent in Kripke’s discussion – namely, that it could have turned out epistemically that p iff, for some p' that is an epistemic counterpart of p (in the above sense), p' is metaphysically possible. In other words, this sort of epistemic possibility that p entails the metaphysical possibility that some counterpart of p is true.

3. Understanding Concepts

Let us return to the prospect (mentioned in §1) of an analysis of what it is to understand a concept. A person can be said to understand a concept at least nominally iff the subject has natural propositional attitudes toward proposi-

⁸ Here and certain other places I use single quotation marks where, strictly, corner quotation marks are required.

⁹ This is an addition to the taxonomy given in §1.3 of Bealer 2002.

¹⁰ In symbols: $\diamond(\exists c)\diamond(\exists c')[\text{Qualitatively Identical}(c', c) \ \& \ \text{Counterparts}(\langle p', c' \rangle, \langle p, c \rangle) \ \& \ \text{True}(p')]$.

tions which have that concept as a constituent content. Possessing a concept in this sense is compatible with what Tyler Burge (1979) calls *misunderstanding and incomplete understanding* of a concept (misunderstanding, for cases where there are errors in the subject's understanding of the concept; incomplete understanding, for cases where there are gaps). Thus, among the various natural modes in which a person might understand a concept (merely nominally, incompletely, erroneously, and so forth), the goal is to analyze what it is for a person to *fully understand* a concept.¹¹

Now in formulating our analysis, we will be guided, and justified, by our intuitions about various examples. These examples establish that, for certain target concepts *c* and hypothetical test cases *p* involving *c*,¹² if a subject is in good cognitive conditions (intelligence, attentiveness, memory, etc.) and the subject fully understands *c* and the auxiliary concepts involved in *p*, then the subject's intuitions regarding the applicability of *c* to *p* are *truth-tracking*: the subject would have the intuition that *c* applies to *p* if and only if *c* really does apply to *p*. If the subject did not have such truth-tracking intuitions, the right thing to say would be that either the subject does not fully understand one or more of the concepts involved, or the subject's cognitive conditions are not really those indicated, or some other such (perhaps presently unforeseeable) defeater is present.

On this picture, when a subject's mode of understanding shifts to full understanding from, say, an incomplete and incorrect understanding, there is an associated shift in the subject's intuitions – in both *quantity* and *quality*. The quantity grows because incomplete understanding is replaced with complete understanding, eliminating “don't knows.” The quality improves because incorrect understanding is replaced with correct understanding, eliminating mistaken intuitions. This suggests, as a first try, something like the following:

x fully understands concept *c* iff, necessarily, for arbitrary hypothetical test case *p* involving *c*, if x's cognitive conditions are very good and x considers whether *p* is true, x has the intuition that *p* is true iff *p* is true.

This sort of analysis faces serious problems. (1) *Circularity*. If *x* misunderstands some concept(s) involved in *p* other than *c*, then this misunderstanding might mask the fact that *x* actually understands the target concept *c*; the analy-

¹¹ Christopher Peacocke (1992) offers a series of piecemeal strategies for analyzing what it is to understand (or possess) particular concepts or families of concepts, but he offers no *unified* analysis of what it is to understand (possess) a concept.

¹² A hypothetical case *p* involving *c* is a proposition of the form: it is possible that, for some *x*, *x* is in such and such concrete hypothetical situation and *x* falls under the concept *c* in that situation.

sis, however, would wrongly imply that x does not understand c . Of course, the problem would be avoided if (on the right-hand side) we required that x understand the indicated auxiliary concept(s). But this would render the analysis circular. (2) Parochiality. The reliability of one's intuitions often requires a command of as yet unknown distinctions; similarly, misunderstanding or incomplete understanding is often masked by the present unavailability of the sort of test propositions crucial for revealing such shortcomings. The present analysis, however, does nothing to exclude the effects of such parochiality. (3) Localism. Even when a subject's cognitive conditions are good and relevant distinctions and test propositions are available, individual intuitions might well be subject to error if they are not subjected to the corrective effect of theory and/or dialectic. (4) Inconsistency with scientific essentialism or anti-individualism. As it stands, the analysis requires any subject x who fully understands his concepts to have so many intuitions that he would be able to have a priori knowledge of various a posteriori necessary propositions p . If, however, the analysis were modified to avoid this problem, the risk is that the resulting analysis would require x to have so few intuitions that, even if x is unable to distinguish, say, beeches from elms, x would nevertheless qualify as fully understanding those concepts.

The first three problems can be avoided as follows. (1) The circularity problem resembles the sort of circularity in philosophy of mind confronting definitions of belief in terms of desire (and desire in terms of belief). Such circularity may be overcome by the strategy of functional definitions, in which one quantifies over relations generally and then characterizes the relations of belief and desire in terms of their distinctive interaction. A similar strategy is used to overcome the present circularity problem, namely, by quantifying generally over natural modes m of possessing one's concepts (with full understanding, incomplete understanding, misunderstanding, etc.) The goal is then to say what general properties distinguish full understanding from other natural modes of possessing concepts. (2) Parochiality is avoided by allowing the test-subject's cognitive conditions to improve and auxiliary conceptual repertory to grow. (3) Localism is avoided by requiring, not individual intuitions, but rather whole a priori theories to be truth-tracking.

These three ideas suggest the following revised analysis:

Full understanding = the natural mode m of understanding such that, necessarily, for arbitrary noncontingent p and arbitrary subject x who understands p m -ly, p is true iff it is possible for x to settle with a priori stability that p is true.

x settles p with *a priori stability* iff (i) after suitable improvement in x 's cognitive conditions (intelligence, etc.) and growth in x 's conceptual repertory, x 's

best a priori theory deems p to be true (or not true); (ii) necessarily, no further improvement in cognitive conditions or growth in x 's conceptual repertory leads to an a priori theory rendering a different verdict on p , and (iii) throughout the entire process x continues to possess m -ly the concepts involved in p . Notice that the right-to-left direction is a *correctness* condition: if it is possible for x to settle with a priori stability that p is true, then p is in fact true. And the left-to-right direction is a *completeness* condition: if p is true, then it is possible for x to settle with a priori stability that p is true.

This analysis of full understanding, however, still collides with problem (4), inconsistency with scientific essentialism, for the completeness condition is too strong. For example, if p is the proposition that the property of being water = the property of being composed of H_2O and x fully understands p , then the analysis would imply that x is able to settle with a priori stability that p is true.¹³ That is, it would imply that p is an a priori necessity whereas it is an a posteriori necessity according to scientific essentialism. An economical solution to this problem is to weaken the completeness condition thus: if p is true, it is possible for x to settle with a priori stability that epistemically it could have turned out that p is true (i.e., $\diamond_{\text{qual-evid-neut}} p$).¹⁴ That is, it is possible for x to settle with a priori stability that p has a twin-earth counterpart p' that is true.¹⁵ For example, it should be possible for x to settle with a priori stability that there could be a twin earth relative to which there is a true proposition that is the counterpart of the proposition that being water = being H_2O . The ability of x to do this for this proposition, and for all other relevant propositions p which x understands, shows that x has all the a priori information that would be common to our concept of being water and its twin-earth counterpart concept and, therefore, that x understands our concept in all a priori respects required for full understanding. I will call the weakened completeness condition a *a priori completeness*.¹⁶

¹³ Throughout the paper, I take the identity of water and H_2O as my working example of an a posteriori necessity. If this example in particular should be mistaken (perhaps for the reasons given in LaPorte 1996), replace it with some a posteriori necessity that is correct. There definitely are some, for instance, that diamonds contain carbon.

¹⁴ I thank Davor Bodrožić for suggesting this phrasing.

¹⁵ That is, it is possible for x to settle with a priori stability that, possibly, for some community c , p plays a certain role in the cognitive life of c and, possibly, for some community c' whose epistemic situation is qualitatively identical to that of c , there is a proposition p' which in c' plays the same cognitive role as p plays in c and p' is true. In symbols, $\diamond(\exists c)$ (CognitiveRole(p , c) & $\diamond(\exists c')$ ($\exists p'$) [QualitativelyIdentical(c' , c) & SameCognitiveRole($\langle p', c' \rangle$, $\langle p, c \rangle$) & True(p')]).

¹⁶ Incidentally, some people might hold that even this weakened completeness clause commits one to the possibility of too much a priori knowledge (e.g., a priori knowledge of the
(to be continued on p. 21)

(I should note that there is an important family of test propositions which are entirely immune to scientific essentialism, namely, those that are *semantically stable*: for thinkable p , p is semantically stable iff, necessarily, if p plays some cognitive role in the mental life of a community c , then it is necessary that, for any other community c' in qualitatively the same epistemic situation as c , no proposition can play that role other than p itself. For such p , the weakened completeness clause entails the strong completeness clause of the earlier analysis. Since most of the central propositions in the a priori disciplines – logic, mathematics, philosophy – are semantically stable, they are immune to scientific essentialism. Relatedly, if p is semantically stable, its epistemic possibility entails its metaphysical possibility. That is, $\Diamond_{\text{qual-evid-neut}} p \rightarrow \Diamond p$.)

By weakening the completeness clause, however, we might be forced onto the other horn of the dilemma – inconsistency with anti-individualism. The worry is that, if x understands a certain pair of concepts only in their purely a priori respects, say, the concept of being a beech and the concept of being an elm, x might be entirely unable to distinguish beeches and elms (and so would be wrongly counted by the revised analysis as fully understanding those concepts). If so, the problem is that x 's “web of belief” is too sparse. What x would need, roughly, is enough information to “begin doing the science” of beeches and elms on his own. We can resolve this difficulty by making use of the idea of *truth-absorption*.

In typical situations of the envisaged sort, by absorbing ever more true beliefs, x would inevitably come to full understanding, thereby switching out of his original mode of understanding m . By contrast, if x already fully understands these concepts, it typically would be possible for x to absorb ever more true beliefs without switching out of his original mode m of understanding; more briefly, mode m is consistent with the possibility of truth absorption.¹⁷ (It might be worried that there are nonstandard situations in which, even if x did not fully understand the concepts, true beliefs about the situation could be ordered in such a way that x would nevertheless never switch out of his origi-

(continued from p. 20)

existence, or nonexistence, of God). These people might wish to weaken this clause even further by restricting p to property-identities, that is, propositions of the following sort. Suppose a primitive predicate ‘ F ’ expresses a given concept. Then the associated test property-identities p are propositions expressible with sentences of the form ‘The property of being F = the property of being A ’, or the denials of such sentences (where A is some possible formula).

Does this revised completeness clause ensure that x will be in a position to have enough intuitions to underwrite full understanding? Yes, given that the relevant property identities include, not just the water/ H_2O sort, but also those spelling out pertinent categorial information about water. See §3.2 in Bealer 2002.

¹⁷ Perhaps (both here and in the ensuing parenthetical remark) ‘belief’ should be strengthened to ‘rational belief’ and p restricted to propositions which x can rationally believe.

nal mode *m* of understanding. To guard against this possibility, we could reformulate the truth absorption property thus: if *x* fully understands these concepts, there is always some body of auxiliary truths *B* such that if *x* came to believe them without shifting his original mode *m* of understanding, then there's not another body *B'* of true beliefs that would yield a shift in *x*'s mode *m* of understanding. By contrast, if *x* does not fully understand these concepts, there is no such body of auxiliary truths.)

Thus, we arrive at the following analysis:

full understanding = the natural mode of understanding that is:

- (a) correct
- (b) a priori complete
- (c) truth absorbent.

A common criticism of using the analysis of concept understanding to explain intuition's tie to the truth is that it amounts to invoking a "dormative virtue," which is either unacceptably mysterious or viciously circular (see, e.g., Boghossian 2000). The analogy fails, however, for in the present context the explanandum is a modal fact – i.e., intuition's qualified *necessary* tie to the truth. And necessities call for a very different sort of explanation from that called for by contingencies. In the explanation of necessities, it is wholly appropriate to articulate essences, and it is of the essence of the understanding of concepts that intuitions involving those concepts be correct (modulo suitably good cognitive conditions, notably intelligence). This is compatible with its being of the essence of intelligence to have the complementary property. In fact, this complementarity is paradigmatic of functionally definable families of basic properties. Thus, if the contemplated criticism should work against the proposed explanation of intuition's tie to the truth, it should by parity work against these other functional definitions (and implicit-turned-direct definitions and perhaps impredicative definitions generally). But plainly this is not so.¹⁸

¹⁸ Besides explaining the evidential status of intuition, the foregoing story also provides an explanation of "the first dogma of empiricism," namely, that experience (sensory and reflective) is likewise a source of basic evidence. Intuitions are those things that seem intellectually to be so concerning the applicability of concepts to cases presented to pure thought. If intellectual seemings have the indicated modal tie to truth, then we could hardly be mistaken regarding what seem reflectively (in Locke's sense) to be the contents of our phenomenal experiences (sensory and reflective). For example, each of the following seems to me reflectively to be so: that I am sensing red, that I am sensing pain, that it appears to me that there is a cat on the mat, that I am consciously thinking *P*, doubting *Q*, and intuiting *R*. In this way, the analysis of understanding concepts promises to complete the picture begun by our two main epistemological traditions – rationalism and empiricism. If this is so, the fact that one and the same analysis can play this dual role provides additional reason to accept it.

There are some surface similarities between this analysis and the characterization of judgment-dependent (or response-dependent) concepts, but there are some important differences as well. For example, the notion of “fully understanding a concept” is explanatorily prior in that it plays an essential role in the characterization of judgment-dependence. So, if an analysis like the foregoing is required, it would seem that the judgment-dependence picture inherits the commitments of that analysis.

4. *Modal Error*

I have emphasized that intuition is fallible – but not so fallible as to undermine it as a source of evidence. To assure ourselves that this is so, it is appropriate to inventory the sorts of error to which modal intuition succumbs and to explain what is going wrong. This, in turn, would help us to identify what conditions need to be optimized in order to eliminate, or least confine, modal intuitional errors.

Many modal intuitional errors have the same etiology as nonmodal intuitional errors. For example, some have their origin in cognitive deficiencies (intelligence, attentiveness, etc.); such deficiencies explain why many people initially have the erroneous modal intuition regarding the Barber Paradox (i.e., that it is possible for someone to shave all and only those people who do not shave themselves). Some have to do with a failure to take note of ordinary distinctions; we see this, for example, in Galileo’s paradox of infinity (that there cannot be as many odd numbers as there are natural numbers). Others have to do with misunderstanding one’s concepts (e.g., Burge’s arthritis man’s intuition that it is possible to have arthritis in the thigh). Still others arise from underdescription of the case at hand or from inattention to relevant contextual factors (including Gricean pragmatic factors and context-dependent norms involved in the specification of the case). And, of course, as discussed in §2, theoretical intuitions (as opposed to concrete-case intuitions) are typically more vulnerable to error, much as theory-laden observations are.

In what follows, I want to focus on two further possible sources of modal intuitional error: the first has to do with the failure to distinguish between metaphysical possibility and various kinds of epistemic possibility; the second, with the *local* misunderstanding of one’s concepts (as opposed to out-and-out misunderstanding, as in Burge’s original arthritis case). Untangling these two types of modal error plays a pivotal role in the defense of scientific essentialism (hereafter SE), for example, the thesis that water, gold, and so forth are natural kinds having microscopic (or otherwise hidden) a posteriori essences. Our discussion of the first source of modal error (§§5-6) is wholly

concerned with people, like Kripke himself, who have pro-SE modal intuitions but who also report having anti-SE modal intuitions. Our discussion of the second source of modal error (§7) is instead concerned with people who have anti-SE intuitions but who lack pro-SE intuitions altogether.

5. *Modal Error and Rephrasal Strategies*

The arguments supporting SE rely on intuitions, for example, concerning Aristotle and the teacher of Alexander, twin earth, and so forth. Without the evidential support of intuitions SE would be unjustified. (To be sure, certain contemporary advocates of SE might wish to abandon the intuitional defense of SE altogether. This, however, results in an essentially unstable position: absent intuition, radical empiricist Quineanism about modality, not scientific essentialism, is the only viable position. This difficulty will play a role in §8.) But there is a *prima facie* problem with the reliance on intuition, for Kripke and those who share his pro-SE intuitions also have a host of apparently anti-SE intuitions, for example, the intuition that it could have turned out that some samples of water contained no H₂O. Kripke, of course, must deal with this problem in order for his defense of SE to succeed. He does so by developing an account of such apparent errors. Our discussion of such modal errors will proceed by presenting and then assessing Kripke's account.

So what are Kripke and those who share his pro-SE intuitions to make of the apparent conflict? Bear in mind that this group includes not just proponents of SE but also critics of SE. (Reminder: in the present context we will only be concerned with philosophers who do not wish to abandon intuition-driven philosophical method.) Proponents of SE have two responses. First, they could simply declare that anti-SE intuitions are mistaken whereas pro-SE intuitions are correct. But critics of SE could simply meet this response by claiming that things are the other way around. The result would be a stalemate. The second response is, of course, to try to resolve the apparent conflict. The leading general strategy for doing this follows Kripke in deeming the widespread conflict among our intuitions to be only an appearance. All, or most, of our intuitions are correct. (Indeed, Kripke tells us, "I think [intuition] is very heavy evidence in favor of anything, myself. I really don't know, in a way, what more conclusive evidence one can have about anything, ultimately speaking" (1972, 42). Kripke also seems to believe that our intuitions must be on the whole correct if scientific essentialism is to be based on adequate evidence.) Despite their correctness, however, many are *misreported*. When we rephrase our (apparently) anti-SE intuitions to make them consistent with our pro-SE intuitions, we succeed. But, of course, this is not enough. Two further re-

quirements (not discussed by Kripke) must be met. First, when opponents of SE try to rephrase the pro-SE intuitions to make them consistent with the apparently anti-SE intuitions, they fail, thus provisionally breaking the impending stalemate in favor of SE (see below for an illustration). Second, it must be the case that there is not some further, equally plausible, rephrasal strategy that is asymmetric in this way, but this time favoring anti-SE rather than pro-SE. For, if there were such a rephrasal strategy, the impending stalemate would be restored.

Kripke and his followers have used two rather different rephrasal strategies. The first turns on an alleged equivocation involving a confusion about features of our epistemic situation. According to this strategy, when we report our pro-SE intuitions (e.g., twin-earth intuitions), what we say is strictly and literally true; but when we report our apparently anti-SE intuitions, we confuse ordinary possibility with the possibility of a certain kind of epistemic situation. For example, when we say ‘It could have turned out that some samples of water contained no H_2O ’, what we say is strictly and literally false. The intuition is true but incorrectly reported. Kripke develops this idea in connection with the standard Hesperus/Phosphorus example:

Now this seems very strange because in advance, we are inclined to say, the answer to the question whether Hesperus is Phosphorus might have turned out either way. And so it’s true that given the evidence that someone has antecedent to his empirical investigation, he can be placed in a sense in exactly the same situation, that is a qualitatively identical epistemic situation [to ours], and call two heavenly bodies ‘Hesperus’ and ‘Phosphorus’, without their being identical. So in that sense we can say that it might have turned out either way. (Kripke 1980, 103-4)

Generalizing from these examples, we arrive at the following schema. The true thing that is incorrectly reported by ‘It could have turned out that A’ is correctly reported with ‘It is possible that a population of speakers in an epistemic situation qualitatively identical to ours would make a true statement by asserting ‘A’ with normal literal intent’.¹⁹ Consider the true intuition that we incorrectly report with ‘It could have turned out that there were samples of water containing no H_2O ’. The rephrasal comes out true because in the envisaged population of speakers ‘water’ might not name water but rather XYZ (or ‘H’ might not name hydrogen but perhaps X instead). When rephrased thus, the original apparently anti-SE intuition is plainly consistent with the thesis that, necessarily, water = H_2O .

¹⁹ Recall that I am using ordinary quotation marks where corner quotation marks are strictly required.

Kripke's second rephrasal strategy is this. Suppose that ' R_1 ' and ' R_2 ' are co-designating rigid designators whose designatum might have been fixed by the nonrigid (i.e., contingent) designators ' D_1 ' and ' D_2 ', respectively. When we report an apparently anti-SE intuition with 'It could have turned out that $R_1 \neq R_2$ ', our intuition is correct but misreported. It is correctly reported with 'It is possible that $D_1 \neq D_2$ '. On its standard narrow-scope reading, the latter sentence is consistent with the SE thesis that, necessarily, $R_1 = R_2$. For ' D_1 ' and ' D_2 ' are only contingently co-designating. For example, on this proposal 'It could have turned out that water \neq H₂O' might be rephrased as: 'It is possible that the clear thirst-quenching stuff \neq the such-and-such chemical compound'. The latter is consistent with the thesis that, necessarily, water = H₂O, for there is a possible situation in which there is a unique clear thirst-quenching stuff that is not a such-and-such chemical compound.

Both rephrasal strategies are flawed. First, let us consider two problems with the second rephrasal strategy. (I will criticize the first strategy in the next section.) (1) It is based on the thesis that, when we report an intuition with 'It could have turned out that $R_1 \neq R_2$ ', often the true thing we have in mind is strictly and literally reported with 'Possibly, $D_1 \neq D_2$ ', where ' R_1 ' and ' R_2 ' are names and ' D_1 ' and ' D_2 ' are descriptions. But Kripke, of all people, should not be proposing that, when we make use of a proper-name sentence in ordinary conversation (even if the sentence happens to be of the form 'It could have turned out that $R_1 \neq R_2$ '), we have in mind something descriptive. After all, the situation is *phenomenologically and behaviorally indistinguishable* from situations in which we have in mind something *nondescriptive* (as, for example, when Kripke asserts his well-known thesis 'If Hesperus = Phosphorus, then it is not possible that Hesperus \neq Phosphorus'). For Kripke to deny this would be *ad hoc* and implausible. Hence, the rephrasal strategy itself is implausible.

(2) It can be shown that this rephrasal strategy does not even accomplish the goal of breaking the impending stalemate between our apparently conflicting pro- and anti-SE intuitions. Specifically, this rephrasal strategy lacks the requisite asymmetry property (described above). For one can wield it so as to sustain the original force of prima facie anti-SE intuitions and to deflate the original force of the pro-SE intuition reports, thereby rendering our prima facie pro-SE intuitions consistent with the rejection of SE. The following recipe provides one way of doing this. Adopt the traditional description theory of names. Hold that names occurring in reports of anti-SE intuitions are being used strictly and literally and that they express *nonrigid* descriptive content. Hold that names occurring in reports of pro-SE intuitions are *not* being used strictly and literally and that they are being used to express *rigid* de-

scriptive content.²⁰ (E.g., this rigidity could be the result of implicitly understood actuality-operators.) The rephrasal strategy can thus be used to affirm anti-SE just as effectively as it can be used to affirm pro-SE. Hence, the impending stalemate is not broken.

Does the first rephrasal fare any better? One advantage is that, unlike the second strategy, the first does have the requisite asymmetry. Because our anti-scientific-essentialists are Lockean internalists, they are committed to holding that the meaning of ‘water’ and other relevant expressions cannot differ across populations of speakers in qualitatively identical epistemic situations. Accordingly, they must hold that their rephrasal of the pro-SE intuition report *entails* the pro-SE report itself. (Consider the apparently pro-SE intuition reported with ‘Possibly, there is a twin earth such that ... the clear thirst-quenching samples are not samples of water’. When the first rephrasal strategy is applied, such anti-scientific-essentialists must hold that this intuition is true but incorrectly reported; it is correctly reported with ‘It is possible for there to be a population of speakers in an epistemic situation qualitatively identical to ours who would make a true statement by asserting “There is a twin earth such that ... the clear thirst-quenching samples are not samples of water” with normal literal intent’. But, given their Lockean internalism, these anti-scientific-essentialists must hold that such a population of speakers would mean what we mean with ‘The clear thirst-quenching samples are not samples of water’. If so, this rephrasal entails that it is metaphysically possible that there be a twin earth such that ... the clear thirst-quenching samples are not samples of water.²¹ Consequently, our anti-scientific-essentialists are committed to holding that the rephrasal has the same pro-SE force as the original report.) By contrast, scientific essentialists are not traditional internalists, so

²⁰ The following illustrates this three-step recipe in the case of modal intuitions concerning water. (i) Hold that ‘water’ is synonymous to (something like) ‘the clear thirst-quenching stuff’. (ii) Deem the anti-SE intuition expressed by ‘It could have turned out that water \neq H₂O’ to be true, correctly reported, and literally synonymous to the narrow-scope reading of ‘Possibly, the clear thirst-quenching stuff \neq H₂O’. (iii) Deem the pro-SE intuition uncritically reported with ‘Possibly, there is a twin earth such that ... the clear thirst-quenching samples on the twin earth are not samples of water and, accordingly, water \neq the clear thirst-quenching stuff’ to be true but incorrectly reported; it is correctly reported with (something like) ‘There is a possible but nonactual twin-earth world such that ... the stuff that in the actual world is clear and thirst-quenching \neq the stuff that in the possible but nonactual world is clear and thirst-quenching’. This rephrasal is entirely consistent with traditional anti-SE.

²¹ After all, the rephrasal is equivalent to ‘It is possible for there to be a population of speakers in an epistemic situation qualitatively identical to ours in whose language there is a true sentence synonymous to the English sentence “There is a twin earth such that ... the clear thirst-quenching samples are not samples of water”’, and this sentence plainly entails the original report ‘There is a twin earth such that ... the clear thirst-quenching samples are not samples of water’.

they are free to hold that the meaning of ‘water’ and other relevant expressions can differ across populations of speakers in qualitatively identical epistemic situations. So when the original intuition seems to have an anti-SE force, they are free to hold that that force is deflated upon rephrasal. The impending stalemate is thus broken in their favor.

Finally, no known competing rephrasal strategies have the requisite asymmetry. I have space to show why for just one of these strategies (the other cases are very similar), namely, the paraphrase strategy associated with the idea of imaginative projection (mentioned in §2).²² According to this strategy, when we assert ‘It could have turned out that water \neq H₂O’, the true thing we have in mind is: it is possible to imagine what it would be like to uncover evidence that would show that water \neq H₂O. But this rephrasal strategy fails because it lacks the requisite asymmetry. Specifically, opponents of SE can use it to deflate their prima facie pro-SE intuitions just as effectively as advocates of SE can use it to deflate their prima facie anti-SE intuitions. Consider, for example, the pro-SE twin-earth intuition reported by ‘It could have turned out that there is a twin earth macroscopically like earth but where the water-like samples would not be water’. By applying the present rephrasal strategy, opponents of SE would arrive at the following: it is possible to imagine what it would be like to acquire evidence showing that a certain macroscopic duplicate of water (e.g., XYZ) is not water. (For example, I can imagine what it would be like for such evidence to emerge in the course of a partly scientific and partly philosophical investigation.) Since the imaginability of such a scenario does not entail that it is metaphysically possible for there to be a macroscopic duplicate of water that is not water, this rephrasal deflates the original pro-SE intuition. And stalemate would ensue (if this is the best we can do). Ironically, this rephrasal strategy turns out to be as much a threat to SE as it is an aid.²³ (The resulting dialectical situation thus resembles that which confronts advocates of skeptical accounts of modal error, to be discussed in §8.)

²² This sort of rephrasal strategy, in terms of imaginative projection, is also found in Nagel 1974, Levin 1995, Hill 1997, 65-72, and Wright 2002, 437f.

²³ Incidentally, Wright does not introduce this strategy in an effort to defend SE; in the context in which he proposes the strategy, he assumes the truth of SE and aims to use the strategy to disarm Cartesian-style modal arguments against the a posteriori identity thesis in philosophy of mind. But given that SE does not apply to a variety of philosophically important topics (e.g., logic, mathematics), the applicability of SE to any particular topic is not settled in advance. Rather, it must be settled on a case-by-case basis. To see why, simply note all of the correlations to which SE does not apply, for instance, that all food is carbon-based (but not necessarily) or that all physical objects are made up of quarks (but need not be). Therefore, Wright may not base his defense of the a posteriori identity thesis on SE without eliciting intuitions showing that SE applies to mental properties.

6. *Modal Error and Epistemic Possibility*

I used to think that the upshot of the discussion in §5 was that Kripke's first rephrasal strategy (and no other) successfully deflates our prima facie anti-SE intuitions and thus reconciles the apparent conflict (cf. Bealer 1994). But I have come to think that this assessment of the situation is mistaken.

To repeat, Kripke holds that there is a genuine conflict between his thesis that, say, it is necessary that Hesperus = Phosphorus and the ordinary assertion that it could have turned out that Hesperus was not Phosphorus (1972, 103-5 and 140-4). Kripke takes there to be a conflict because he believes that '[I]t could have turned out that *p* entails that *p* could have been the case' (141-2). And he believes that, if conflicts like this cannot be resolved, his argument for SE would be foiled. His resolution was to hold, first, that all, or most, of our intuitions are correct and that the apparent conflict among our intuitions is only an illusion resulting from the fact that the sort of prima facie anti-SE intuitions we have been discussing are *misreported*. The inaccurate statement 'It could have turned out that *p*' is accurately stated thus: 'It is possible that a population of speakers in an epistemic situation qualitatively identical to ours would make a true statement by uttering "*p*" with normal literal intent'.

But this sort of metalinguistic rephrasal is untenable because of familiar problems concerning fine-grained intensional content. For example, it runs afoul of the Langford-Church translation test. Church (1950, 98) describes this test thus: "[W]e may bring out more sharply the inadequacy of [an analysis] by translating into another language ... and observing that the two translated statements would obviously convey different meanings to [a speaker of the other language] (whom we may suppose to have no knowledge of English)."

Likewise, Kripke's rephrasal runs afoul of analogues of the sorts of considerations raised by Tyler Burge (1979) and Stephen Schiffer (1987) against metalinguistic rephrasals of propositional-attitude reports. For instance, Burge raises several objections (1979, 94-9) to metalinguistic rephrasals of the belief that his arthritis man forms when the doctor tells him, "You cannot have arthritis in the thigh." Here are three examples. First, like Church, Burge objects that the metalinguistic reformulations prevent the relevant beliefs from being shared across language communities (Burge 1979, 96). Second, upon hearing what the doctor told him, arthritis man forms a belief (naively, the belief that he cannot have arthritis in the thigh) that results in great relief – indeed, a dissipation of his fears (Burge 1979, 95). But this relief is plainly not produced by a belief about the semantics of English (concerning the reference of the English word 'arthritis'). Third, and relatedly, when *occurrent* mental events are at issue, arthritis man "may be brought up short by a metalinguistic formulation of his

just-completed ruminations, and may insist that he was not interested in labels” (Burge 1979, 97). Schiffer raises additional considerations. For example, he complains that the specialized semantical concepts required for satisfactory metalinguistic paraphrases are simply too sophisticated to enter into the contents of an ordinary person’s beliefs (Schiffer 1987, 68). These objections clearly generalize to Kripke’s metalinguistic rephrasal strategy.

There is, however, an extremely simple alternative assessment of the situation, which now seems to me to be correct. Kripke held that there is no conflict in the intuitions at issue, but there is a conflict in the reports of those intuitions. The alternative response is simply to deny that there is conflict even in the reports. When we say (in the relevant situation) that it could have turned out that Hesperus was not Phosphorus, we are simply not contradicting the SE thesis that it is necessary that Hesperus = Phosphorus. Why? Because we are just employing a straightforward epistemic use of ‘could’, namely, the ‘could’-of-qualitative-evidential-neutrality. As we saw in §2, this use of ‘could’ simply does not collide with the metaphysical use. End of story. Kripke took there to be a conflict in the reports of our prima facie pro- and anti-SE intuitions (insofar as he believed that “*it could have turned out that p* entails that *p* could have been the case”). True enough – there is a conflict when the uses of ‘could’ are the same. That is, ‘It could have turned out that Hesperus ≠ Phosphorus’ and ‘It could not be the case that Hesperus ≠ Phosphorus’ are outright contradictory when ‘could’ is used the same way in both sentences. But in the context of Kripke’s discussion his first and second uses of ‘could’ are simply not the same. So goes the alternative assessment. As soon as we see this, the appearance of conflict between the reports (as well as the intuitions expressed by them) vanishes.²⁴

Remember that at this stage of the dialectic we’re concerned with those who do in fact have the relevant pro-SE intuitions and who are concerned with what to do about the prima facie conflict between these intuitions and the apparently anti-SE intuitions. A philosopher in this position might hold that my alternative assessment of the apparent conflict is all well and good, but nevertheless wonder how we are to be sure whether we have an intuition of a metaphysical possibility or an epistemic possibility, say, qualitative epistemic neutrality. In Bealer 2002, I proposed a test for exactly this purpose.

Suppose you are considering the modal status of one of the classic hypothetical-case propositions *p* (e.g., that Aristotle was not the teacher of Alexan-

²⁴ Thus, just as in the case of Galileo’s Paradox, Kripke’s present puzzle arises from failing to notice a relevant distinction: as soon as we see it, we see that there was never a contradiction.

der, that Phosphorus is not visible in the morning, that there is water on twin earth). Typically, for the philosophical purpose at hand, you may bypass the question of whether p is metaphysically possible and consider instead whether p is a contingent proposition. Therefore, one may without loss recast our question in that idiom. And since a survey of cases shows that ‘contingent’ – unlike ‘possible’, ‘could’, and so forth – does not have an epistemic reading, one need no longer worry about the possibility of equivocation. Consequently, concerning the twin-earth case, philosophers who share Kripke’s apparently pro-SE intuitions may shift their attention to the intuition that the twin-earth proposition is a contingent proposition – that is, the intuition that it is contingent whether there is a twin earth macroscopically but not microscopically like earth where there is a water-like stuff which is not genuine water.²⁵ But they may not do this for the epistemic possibility that water could have turned out not to be H_2O . The sort of philosopher that we are presently concerned with simply lacks the intuition that the proposition that water is not H_2O is a contingent proposition. (Incidentally, we can test to distinguish the ‘could’-of-qualitative-epistemic-neutrality (i.e., $\diamond_{\text{qual-epid-neut}}$) from other epistemic uses of ‘could’ by means of zeugmatic effects.²⁶)

Thus we find that, in fact, our first supposed source of modal error – the alleged confusion of epistemic and metaphysical possibilities – is not a source of error after all. The only error, it turns out, was in thinking that one of the apparently anti-SE or pro-SE intuitions must have been erroneous in the first place.

We have now completed our investigation of the first potential source of modal error – which turned out not to be a genuine source of error at all. Additionally, we have completed the first stage of a full defense of SE, in seeing how to resolve the apparent conflict that arises for those who have apparently anti-SE as well as pro-SE intuitions. But not everyone shared Kripke’s reaction to the twin-earth cases, and such philosophers report simply lacking the pro-SE intuitions. This brings us to the second source of modal error mentioned at the close of §4.

7. Modal Error and the Local Misunderstanding of Concepts

Stephen Yablo (1993) presents an account of modal error – specifically, how anti-SE modal intuitions can be in error. (Yablo’s discussion is stated in the

²⁵ Or the intuition that it is contingent whether there is a twin earth macroscopically but not microscopically like earth where there is a water-like stuff and, if all actual samples of water are H_2O , then these twin-earth samples are not genuine water.

²⁶ See Zwicky and Sadock 1975.

idiom of ‘conceivability’ and ‘inconceivability’; I will be reformulating it in what follows in the idiom of possibility and impossibility intuitions, whose use we defended in §2). Yablo is not concerned with errors resulting from conceptual illusions, limitations on intelligence, inattentiveness, and so forth. Nor is he concerned with the above problem (on which Kripke spent so much time) – namely, the problem of reconciling our metaphysical and epistemic intuitions, which (I have argued) were correctly reported in the first place and were never in conflict. Yablo’s underlying concern is rather with full-fledged errors in intuitions about metaphysical possibility.

Yablo holds that these errors have two potential sources, in each case mistaken *beliefs*: (a) mistaken a posteriori beliefs (e.g., someone who mistakenly believes that Hesperus \neq Phosphorus might have the intuition that Hesperus could outlast Phosphorus) or (b) mistaken beliefs regarding the relationship between such a posteriori beliefs and associated modal truths (someone might deny that, if Hesperus = Phosphorus, then necessarily Hesperus cannot outlast Phosphorus). I am here less interested in class (a), for practiced dialecticians have the ability to proceed using exclusively “pure” a priori intuitions, namely, those that survive even under the hypothesis that such a posteriori beliefs (both pro- and con-) are unjustified or mistaken.²⁷

How do people come to have erroneous modal intuitions belonging to the second class? Yablo’s answer is that they are somehow produced by underlying class (b) beliefs, which by hypothesis are false. But it is plausible that the preponderance of such class (b) beliefs, albeit false, would at least be justified, and that the justification of such modal claims is ultimately a matter of intuitions – presumably, intuitions about relevant concrete cases (twin earth, etc.). But since a person’s class (b) beliefs, which are ultimately justified by such concrete-case intuitions, are by hypothesis false, presumably a number of these *justifying* intuitions must themselves be false. What explains why these justifying intuitions go wrong? If the explanation is that they too are produced by false class (b) beliefs, we go round in a circle. It seems, therefore, that we need something besides, or at least in addition to, Yablo’s belief-based explanation of class (b) intuition errors.

Consider a hypothetical example. Suppose two empirically well-informed, dialectically skilled philosophers have conflicting concrete-case SE intuitions.

²⁷ In fact, by exercising this ability in the context of pure a priori philosophizing, one’s natural-kind intuitions will actually diminish in number by virtue of this ability – for instance, against the background of the hypothesis that all and only water on earth is composed of H₂O, the intuition that necessarily water contains hydrogen; and against the hypothesis that water samples on earth have a highly disuniform composition, the intuition that water could have lacked hydrogen – thereby all but eliminating disagreements of the sort associated with class (a).

For example, suppose Putnam has the intuition that in his twin-earth example the samples of XYZ would not be water whereas Carnap has the contrary intuition.²⁸ One of them is in error. How are we to explain this error without going in a circle? Our analysis of what it is to understand a concept provides the missing pieces. One candidate explanation using these ideas is that either Putnam or Carnap outright *misunderstands* the concept of being water. In some cases, this is no doubt the right explanation, but surely not in the case of Hilary Putnam or Rudolph Carnap. Certainly, these eminent philosophers of science do not misunderstand the everyday concept of being water! For them, a subtler explanation is therefore needed.

What has happened is that, in spite of having a full underlying mastery of the concept, Carnap *locally misunderstands* it. That is, he has a local (i.e., in principle temporary) disruption of his otherwise full understanding of the concept. This is analogous to the sense in which a patient would be given a clean bill of health at his annual check-up, despite his having a cold at the time of the check-up – the patient’s health is locally (temporarily) disrupted, but his standing health is impeccable. Similarly, Carnap grasps the concept of being water just as determinately as anyone, but certain of his theoretical beliefs give rise to a local disruption in his manifestation of his mastery of the concept. An example might help to further illustrate this phenomenon of local misunderstanding.²⁹

A student, musing about prime numbers, reports having the intuition that -3 is a prime number, and from this he concludes that in the definition of prime number the domain is not restricted to natural numbers but includes all integers, negative as well as positive. Fortunately, he also has a firm intuition that primes are divisible only by themselves and one, and he has the intuition that every negative integer, -n, is the product of itself and the number one and is also the product of n and -1, from which he rightly infers that negative integers cannot be prime. Then, he has the intuition that 3 is prime but that $3 = (1 \times 3)$ and $3 = (-1 \times -3)$, from which he concluded that only natural numbers were permitted in the definition of prime. In view of this performance, the student plainly *understood* the concept of being prime all along. What went wrong early on was that he suffered a *local* lapse in his understanding of his concept of a prime number. Using intuitions, however, he was able to correct this lapse, therein manifesting his underlying mastery of the concept.

²⁸ We may in addition suppose that Carnap has the further intuition that it is contingent whether water contains hydrogen. In view of our “contingency test” from §6, this would serve to show that his initial intuition concerns metaphysical possibility not some kind of epistemic possibility.

²⁹ This example is based on something that happened in one of my classes.

Carnap is in a somewhat similar situation. Not only does he have the intuition that, on twin earth, samples of XYZ would be water, he also would (if asked) have the mistaken categorial intuition that water is a macroscopic stuff (individuated by its macroscopic properties) – as opposed to a compositional stuff (individuated by its composition). But this categorial misunderstanding is (we may suppose) only local: it is correctable by Carnap *on his own* (without the aid of any auxiliary empirical information) using the a priori (dialectical) process, specifically, by careful examination of further cases, say, *other* sorts of twin-earth cases (e.g., the diamond/cubic zirconium twin-earth case³⁰), and by systematization of the results. That is, left to his own a priori devices, Carnap would in the fullness of time become a scientific essentialist. (So too, given the patient's standing good health, his infection will in the fullness of time be cured by his own bodily resources, without any external intervention.)

We have now diagnosed the second source of modal error that we set out to explain. Additionally, we are now able to complete a previously missing step in our dialectic concerning SE. For, in addition to resolving (or dissolving) the apparent conflict among our own intuitions, a full defense of SE requires assuring ourselves that we are not subject to a local misunderstanding. The line of reasoning given above shows how we are to go about establishing that there is no such local misunderstanding underlying our pro-SE intuitions.

The general point is that, at least in a large family of cases, the quality of one's understanding of one's concepts holds the key, not only to the correctness of one's intuitions, but also to their incorrectness; furthermore, whether or not that understanding has only lapsed locally is the key to whether or not it is correctable a priori. And this also explains a related, historically important phenomenon. For, presumably, if Carnap has the intuition that in the twin-earth example the samples of XYZ would be water, he would likewise have the intuition that the proposition that puddles of water contain hydrogen is a contingent proposition. In fact, just about everyone prior to the advent of SE had this intuition. The source of this remarkably widespread modal error is the very same local misunderstanding as in the Carnap example.

This problem of local misunderstanding is, in a way, just Plato's problem of *doxa*. This phenomenon is ubiquitous in philosophy (especially, for example, in ethics), and for that reason has significant implications for philosophical method. Amongst other things, before one is entitled to declare a philosophical conclusion final, one must always first assure oneself that one has not

³⁰ The diamond-appearing samples on twin earth are samples of cubic zirconium (the comparatively cheap material from which fake diamonds are commonly made on earth). Would Carnap really have had the intuition that those samples are diamonds?!

been the victim of local misunderstanding. And it should be borne in mind that local misunderstanding can be deeply hidden so that the dialectical recovery is long and hard. But ultimately it is a great boon to philosophy, for it allows us to tolerate colliding intuitions without having to abandon our classical method of intuition-driven philosophical investigation.

The more immediate moral of this discussion is thus that, besides Yablo's class (a) and class (b) belief-based intuitional errors, there are two other classes: (c) those resulting from local misunderstanding and (d) those resulting from out-and-out misunderstanding (for example, the sort of modal error Burge's arthritis man would be guilty of, namely, intuiting that it is possible to arthritis in the thigh). Of course, analogous conclusions hold for the phenomenon of local lapses in the completeness (vs. correctness) of one's understanding of one's concepts.

8. Skeptical Accounts of Modal Error

We have thus far been considering a model of modal error according to which intuitions retain their evidential force, and according to which errors can in principle be identified and eliminated by subjecting our intuitions to the sort of a priori dialectic sketched above. I mentioned at the start of §5 that certain proponents of SE endorse radical accounts of modal error according to which large families of our modal intuitions are systematically unreliable. In the present section, I will assess a typical example of such an account, namely Christopher Hill's (1997) account. I will show that this account is inadequate: it attributes intuitions to a great many people that they simply do not have, and, moreover, it would undermine the evidential basis of SE, leaving proponents of SE in a self-defeating position. It is worth going into some detail on this matter since all radical accounts fall into similar self-defeat.³¹

Hill is interested in a family of intuitions of the form: it is possible for something to be A and not-B (where, for example, A is a commonsense kind and B is a theoretical kind).

His account characterizes the process by which such intuitions are generated as follows:

[T]here is a class H of psychological mechanisms whose members work as follows: where M is any member of H, M takes two concepts as inputs, and then, provided that it is possible to conjoin each of the concepts with the negation of the other without generating an inconsistency, and provided also that there is no available a posteriori reason to think that the two concepts are necessarily coextensive, M delivers an intuition of possibility as an output. (Hill 1997, 76)

³¹ For example, Levin 1995. On this general topic, see Bealer 1987 and 1992.

This is supposed to be a perfectly general account of the mechanism responsible for generating possibility intuitions of the indicated form and, as such, is an adequate account only if it correctly predicts (among other things) which metaphysical possibility intuitions one will have (or lack) concerning commonsense kinds and associated microstructural properties upon consideration of the relevant cases. Various proponents of SE reasonably believe that SE extends to certain commonsense kinds even though they have no specific knowledge of the relevant a posteriori facts (e.g., of their chemical composition). For example, suppose that Saul Kripke (or any other scientific essentialist, e.g., Hill himself) believes that SE extends to various kinds of gemstones – say, rubies – even though he has no specific knowledge of the chemical composition of rubies.³² In this case, surely Kripke would not have the intuition that it is metaphysically possible that there be rubies containing no aluminum oxide (silicon dioxide, aluminum silicate, or some such). Likewise, he would not have the intuition that it is metaphysically possible that there be rubies that *are* composed of aluminum oxide (etc.). He would simply not have such intuitions one way or the other. But Hill's account entails that, in the envisaged circumstance, Kripke *would* have the intuition that it is metaphysically possible that there be rubies that contain no aluminum oxide (etc.), for (i) there is no inconsistency (or analytic impossibility, as Hill requires in other passages) in the conjunction of the concept of being a ruby and the negation of the concept of containing aluminum oxide and (ii) given that (by hypothesis) Kripke lacks the relevant empirical knowledge concerning the chemical make-up of rubies, he lacks “a posteriori reason to think that the two concepts are necessarily coextensive.”³³ Thus, Hill's

³² LaPorte (1996, 122-3) reports that mineralogists do not consider *all* minerals that share the chemical composition of rubies to be rubies. This, however, does not appear to collide with the SE claim that a *necessary* condition of a mineral's being a ruby is that the mineral have the chemical composition that rubies in fact have. If I am wrong about this, just choose another relevant a posteriori necessity.

³³ There is another sort of problem with Hill's account. According to Hill's account, if (i) there is no analytic connection between the concept of being water and the concept of containing hydrogen and (ii) I have no a posteriori reason for thinking that these two concepts are necessarily coextensive, then I will have the intuition that it is possible that there be water without hydrogen. But this is plainly mistaken for quite a different reason. Let me explain. (i) There is no analytic connection between water and hydrogen. (ii) I have *no* a posteriori reason to think that the concept of being water and the concept of containing hydrogen are necessarily *coextensive*; indeed, I know full well that lots of substances besides water contain hydrogen. Thus, (i) and (ii) are met in my case. So Hill's account predicts that I will have the intuition that it is possible for there to be water that contains no hydrogen. But compatible with my having no a posteriori reason to think that water and hydrogen are coextensive, I can – and indeed do – have very good a posteriori reason for thinking the concept of being water and the concept of being H₂O are coextensive; and, in turn, I have very good reason for thinking that they are necessarily coextensive. In my present state, contrary to what Hill's account predicts, I certainly do not
(to be continued on p. 37)

account predicts the wrong result. (Of course, Kripke would no doubt have intuitions that it is *epistemically* possible, in one or more of the senses catalogued above, that there be rubies containing no aluminum oxide; but according to Hill's account he should be having the corresponding *metaphysical*-possibility intuitions as well.)

Not only does Hill's account wrongly predict what modal intuitions Kripke and others like him would have, it lands proponents of SE in a dialectically self-defeating position. Let me explain. After spelling out the mechanisms just discussed, Hill goes on to reject the outputs of a certain subcategory of these mechanisms as highly unreliable:

[W]e are committed to holding that if M is a mechanism that produces conceivability-based intuitions to the effect that a *physical* commonsense kind is separable from its correlated theoretical kind, then that mechanism is highly unreliable. (Hill 1997, 78)

But how does Hill know that this mechanism is highly unreliable? Because its outputs conflict with SE. For example, such mechanisms would (for people who lack the a posteriori knowledge of the chemical composition of water samples on earth) take as inputs the concept of being composed of water and the concept of containing H₂O and deliver as output the intuition that it is possible for there to be something composed of water but not containing H₂O. But how does he (or we) know that SE is correct (assuming that the mechanism is unreliable)? Herein lies the self-defeat, for the justification of SE relies on intuitions which, according to this account, are of the sort generated by this highly unreliable mechanism. Thus, the account renders SE unjustifiable – and so too Hill's thesis that the intuitions delivered by the mechanism are unreliable.

To see why, note that there are two ways one might come to know that it is metaphysically necessary that water contains H₂O. (1) One might follow Kripke and Putnam's method and try to establish it *indirectly* by means of concrete-case intuitions such as twin earth intuitions. (2) One might bypass such concrete-case intuitions and instead try to establish it *directly* by means of a (theoretical) intuition that it is impossible for there to be water that contains no H₂O (or that it is metaphysically necessary that water contains H₂O). The dilemma for Hill is that his mechanism stands in the way of our coming to know these modal facts by either route.

(continued from p. 36)

have the intuition that it is possible for there to be water containing no hydrogen. This problem can be avoided by revising the account so that 'the two concepts are necessarily coextensive' is replaced with 'necessarily, the second concept's extension includes the first concept's extension'. Let us suppose that at relevant points this repair is in place.

Consider the second route first. Of course, those who lack the empirical information that water and H_2O are coextensive will lack a posteriori reason to think that the associated concepts are necessarily coextensive. So, according to Hill, the mechanism H will lead such people to have the intuition that possibly there is water that contains no H_2O . Given Hill's mechanism, to avoid having this intuition one must come to possess an a posteriori reason to think that the associated concepts are *necessarily* coextensive. As a first step, one must acquire the empirical information that water and H_2O are coextensive. But, on its own, this does not provide our person with a reason to think that necessarily water and H_2O are coextensive. As Kant tells us, "Experience tells us, indeed, what is, but not that it must necessarily be so, and not otherwise." No amount of empirical evidence (i.e., phenomenal experience and sense perception) can ever reveal whether something that is so is *necessary*; on the contrary, if we limit ourselves to empirical evidence, we are in the position of Quinean radical empiricists and, therefore, should conclude that there simply are no modal truths.³⁴ So, after learning that water and H_2O are coextensive, how does one go on to know that they are necessarily coextensive?

Suppose that Hill answers that, upon learning that water and H_2O are coextensive, one would straight off have the intuition that it is impossible that water and H_2O not be coextensive and that this intuition would provide one with the requisite reason for thinking that they are necessarily coextensive. But this move is not available to Hill. To see why, recall that, according to Hill's mechanism, after acquiring the empirical information but prior to having the intuition that it is impossible that water and H_2O not be coextensive, one would (upon considering the question) have the intuition that it is possible that water and H_2O are not coextensive. Given this, consider what would happen if one considered the question whether it is *possible or impossible* for water and H_2O not to be coextensive. By the present hypothesis, one would have the intuition that this is *impossible*; and at the same time, according to Hill's mechanism, one would have the intuition that this is possible! That is, one would have simultaneous contradictory intuitions. But, in such an irrational state, one certainly would not have a reason to favor the impossibility intuition, and so one

³⁴ Admitting testimony as evidence does not help the Quinean out of this problem, for how did our informants move from phenomenal experience and sense perception to knowledge of what is necessary? As Kripke says, "*Philosophical analysis* tells us that they [i.e., propositions of the type in question] cannot be contingently true, so any empirical knowledge of their truth is automatically empirical knowledge that they are necessary. This characterization applies, in particular, to the cases of identity statements and of essence." (1980, 159, emphasis added.) And to know that identity statements and statements of essence cannot be contingently true, nonempirical resources are needed.

will not have acquired the missing reason for thinking that water and H₂O are necessarily coextensive. If there is no alternate justificatory route to SE, skepticism would be inevitable.

(Alternatively, suppose that Hill were to suggest that, once one has learned that water and H₂O are coextensive, then (upon considering the question) one would straight off have the intuition that they are necessarily coextensive and that this intuition would provide one with the requisite reason for thinking that they are necessarily coextensive. In this case, the same conclusion would result. For, on the assumption that Hill's mechanism M is operative, there would surely have to be a corresponding mechanism H' that generates associated contingency intuitions (vs. possibility intuitions): specifically, whenever one considers the question whether this proposition is *necessary or contingent*, H' would generate the intuition that the proposition that water and H₂O are coextensive is contingent. But given our supposition on behalf of Hill, one would also have the intuition that this proposition is *necessary*. That is, one would have simultaneous contradictory intuitions. So, once again, the missing justification of SE is unavailable, and skepticism would result.³⁵)

Two final points about this horn of the dilemma. We have been focusing on the issue of commonsense kinds. But analogous considerations would hold if instead we were to focus on the question of whether the associated common nouns are rigid designators. Likewise, analogous considerations would hold if we focused on particulars (and their associated proper names), rather than kinds. There simply is no place Hill can get a foothold from which to justify SE.

Thus, the effort to justify SE via the *direct* route (i.e., bypassing concrete-case intuitions) leads to skepticism. (This is no surprise, for when it comes to theoretical issues already rife with controversy, we have no choice but to turn to our concrete-case intuitions.) This brings us to the other horn of the dilemma, on which one attempts to justify SE using concrete-case intuitions. Most of us came to conclude that it is necessary that water is coextensive with H₂O by reflecting on concrete-case intuitions – for example, twin-earth intuitions. (This was Kripke's route although Kripke himself does not frame his cases in terms of "twin earth" but rather in terms of possible worlds.³⁶) In all

³⁵ The same conclusion holds if Hill were to focus on the conditional: if water and H₂O are in fact coextensive, then they are necessarily coextensive. To see why, suppose someone were to intuit the truth of this conditional. Suppose further that the person knows that water and H₂O are in fact coextensive and that the person considers the question whether this proposition is necessary or contingent. Then, the person surely would have the intuition that the proposition that they are coextensive is necessary. Given this, the remainder of the argument in the text goes through just as before.

³⁶ Kripke 1980, 131-3.

known cases, the relevant concrete-case intuitions either are twin-earth intuitions or can be reworked into twin-earth style intuitions. But, once again, given Hill's account of modal error, this justificatory route leads to failure. For, just as in the case of the direct route, Hill's account implies that these intuitions are highly unreliable.

For instance, Putnam elicited the intuition that it is possible for the world to be macroscopically like it is in actuality even though the watery stuff is not H_2O (but rather XYZ). Putnam then elicited the intuition that samples of this watery stuff would not be water. Let us focus on the first of these two intuitions, which is a possibility intuition conjunctive in form. Consider the second conjunct, namely, that the watery stuff is not H_2O . According to Hill, the intuition that it is possible that the watery stuff is not H_2O is generated by a "highly unreliable" mechanism. (After all, watery stuff is a commonsense kind; H_2O is a theoretical kind; there is no relevant analytic connection between watery stuff and H_2O ; and we are capable of lacking a posteriori evidence regarding the fact that the actual extension of the commonsense kind watery stuff coincides with the actual extension of the theoretical kind H_2O .) Since this intuition is generated by a highly unreliable mechanism, it is not to be trusted. Now, if someone lacking the relevant a posteriori information has the intuition that it is possible that watery stuff not be H_2O , in almost all instances that person would also have the twin-earth intuition (that it is possible for the world to be macroscopically like it is in actuality even though the watery stuff is not H_2O). Therefore, since the former intuition is not to be trusted, neither is the twin-earth intuition. And this of course generalizes to pretty much all concrete-case intuitions used to justify SE: on Hill's account, these intuitions would be highly unreliable, and so SE would lack the missing justification.

Hill might respond that the watery stuff is not the sort of commonsense kind on which his unreliable mechanism operates; on the contrary, it operates only on genuine "natural kinds" (in some preferred sense). But this only takes us in a circle, for how are we to distinguish natural kinds (in this preferred sense) from other kinds? Presumably, the answer resides in the fact that natural kinds, unlike the other commonsense kinds, are subject to SE. (In this connection, we should bear in mind that there is a very wide range of commonsense kinds to which SE does not apply: for example, food, drink, fuel, clothing, shelter, and so forth.) Again, however, the very intuitions required for distinguishing those kinds that are subject to SE from those that are not are generated by a "highly unreliable" mechanism on Hill's account.

Hence, Hill is in a dialectically self-defeating position. By condemning as unreliable such a wide range of our modal intuitions, he has left himself with

no evidential basis for the SE claims that he employs in his argument. This result generalizes to other skeptical accounts of modal error. (These points hold in spades for philosophers who would reject intuitions altogether, for how do they propose even to refute logical behaviorism, instrumentalism, phenomenism, inductivism, and all the other philosophical dinosaurs that they no longer believe in?)

Clearly what one needs in order to justify SE is an account of modal error according to which the sort of intuitions needed to establish SE are not condemned as erroneous. This is what I have tried to provide. I have catalogued various standard sources of intuitional error (cognitive deficiencies, failure to mark relevant distinctions, inattention to relevant contextual factors, and so forth). I then went on to isolate a previously overlooked source of modal error, namely, the local misunderstanding of one's concepts. Even when our understanding of certain pivotal concepts has lapsed locally, our larger body of intuitions is sufficiently reliable to allow us to ferret out the modal errors resulting from this lapse in understanding by means of dialectic and/or a process of a priori reflection. As we have seen, this source of modal error, and our capacity to overcome it, has wide-ranging implications for philosophical method – including, in particular, its promise for disarming skepticism about the classical method of intuition-driven philosophical investigation itself.³⁷

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³⁷ Many thanks to David Liebesman and Daniel Demetriou and, especially, to Davor Bodrožić and Danny Z. Korman.

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