

Andrew Chapman, Addison Ellis, Robert Hanna,  
Tyler Hildebrand and Henry W. Pickford

# In Defense of Intuitions

## A New Rationalist Manifesto



## In Defense of Intuitions

*Also by Robert Hanna*

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*Also by Henry W. Pickford*

THE SENSE OF SEMBLANCE: Philosophical Analyses of Holocaust Art

# In Defense of Intuitions

## A New Rationalist Manifesto

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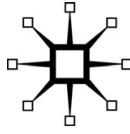
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# Contents

Introduction: The Old Rationalism and the New Rationalism	1
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## **Part 1 Rationalism Redux: Rational Intuitions and Contemporary Philosophy**

1.1 The Self-Imposition of Authoritative Rational Intuition <i>Andrew Chapman</i>	7
1.2 Beyond Experimentalism <i>Addison Ellis</i>	41
1.3 Rational Intuitions and Analytic Metaphysics <i>Tyler Hildebrand</i>	73
1.4 Towards a Defense of Rational Intuitions <i>Henry W. Pickford</i>	102

## **Part 2 Rationalism Regained: The Benacerraf Dilemmas and Rational Intuitions in Mathematics, Logic, and Philosophy**

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I Introduction	135
II Rationalism Lost: The Original Benacerraf Dilemma	151
III The Benacerraf Dilemma Extended and Generalized	164
IV What Is A Priori Knowledge?	178
V What Are Intuitions?	220
VI Rational Intuitions and the Irrelevance of Experimental Philosophy	233
VII Philosophical Intuitions, Scientific Naturalism, and the Mathematico-Centric Predicament	246
VIII Kantian Structuralism	255
IX Kantian Intuitionism	281

vi *Contents*

X	Parsons, Kantian Structuralism, and Kantian Intuitionism	299
XI	Why Logic Must Be Transcendental	316
XII	Conclusion	356
	<i>Notes</i>	360
	<i>Bibliography</i>	393
	<i>Index</i>	411

# Introduction: The Old Rationalism and the New Rationalism

The philosophical debate about the possibility of authentic a priori knowledge, that is, non-stipulative, non-trivial knowledge of the way the world necessarily is, obtained sufficiently independently of any and all sense-experiential episodes and/or contingent natural facts, is no less important today than it was when Plato posited in the *Meno* that we are able to have such knowledge owing to a pre-natal close encounter that our disembodied souls had with the Forms, and when Descartes posited in the *Meditations on First Philosophy* that such knowledge is infallible because guaranteed by a non-deceiving God. Of course, neither the platonic story nor the Cartesian story about our purported a priori abilities has many adherents today. Nevertheless, a large majority of philosophers (71.1 percent, according to a recent PhilPapers survey<sup>1</sup>) do indeed believe that a priori knowledge is really possible.

But *how* can such knowledge be really possible? The classical story, shared by Plato and Descartes, goes something like this: Rational human animals have special non-empirical cognitive capacities – perhaps minimally analogous to innate sense-perceptual capacities – that connect them, rational human cognizers, directly to certain abstract and necessary features of the world. These capacities yield what are called “rational intuitions,” and by consulting these rational intuitions, rational human cognizers are able to receive reliable information about the way the world necessarily is. These rational intuitions, in turn, act as sufficient justifiers of rational human cognizers’ beliefs about certain kinds of propositions, i.e., necessary truths, and because of these intuitional sufficient justifiers, authentic a priori knowledge is really possible. We will call the thesis that a priori knowledge of necessary truth is



really possible, via the human cognitive capacity for rational intuitions, *rationalism*. The *old* rationalism, in addition, says

- (i) that rational intuitions *always* deliver *absolutely infallible* information about the abstract truth-making objects of necessary propositions, and
- (ii) that the abstract truth-making objects of rational human intuitional a priori knowledge are *non-spatiotemporal*, *causally irrelevant*, and *causally inert* entities (e.g., Plato's Forms, or Descartes's "true and immutable natures").

The *new* rationalism, or *neo-rationalism*, by an important contrast, says

- (i\*) that rational intuitions do at least sometimes, but *not* always, deliver reliable, but *not* absolutely infallible, information about the abstract truth-making objects of necessary propositions.

And the *contemporary Kantian* neo-rationalism that we are proposing in this book, by another important contrast, *also* says

- (ii\*) that the truth-making objects of rational human intuitional a priori knowledge are indeed abstract, but *neither* non-spatiotemporal *nor* causally irrelevant, precisely because they are abstract in the *non-platonic, Kantian* sense *only*.<sup>2</sup>

Opposed to this rationalist story, whether old or new, and whether non-Kantian or Kantian, is an equally prestigious tradition that is skeptical about our purported capacity to achieve a priori knowledge of necessary truth via rational-intuitional means. Such intuition-skeptical attacks on rationalism come in many forms. Some attacks attempt to show that rationalists can tell no satisfactory story about the connection between the mind and the world such that rational intuitions could reliably deliver a priori knowledge of necessary features of the world. Other attacks attempt to show that rational intuitions are so inherently fallible that they can never satisfactorily justify purportedly a priori knowledge. Further attacks attempt to show that we can gain all the knowledge we think we have (both a posteriori and purportedly a priori) via purely sense-experiential means, and that parsimony requires that we not posit other (perhaps metaphysically and epistemically dubious) epistemic capacities. And still other attacks claim that, contrary to widely-held methodological and meta-philosophical beliefs,

philosophers do not *really* rely on rational intuitions as evidence either for philosophical theories or for any other significant claims.<sup>3</sup> Let us call the constellation of skeptical views just described, *intuition-skeptical empiricism*.

Whatever the plausibility of intuition-skeptical empiricist attacks on rationalism, at the same time many contemporary philosophers are reluctant to accept intuition-skeptical empiricist conclusions. The three main reasons for this reluctance are as follows.

- (i) Many contemporary philosophers take David Hume to have shown<sup>4</sup> that if intuition-skeptical empiricism is true, then two necessary preconditions of empirical science and metaphysics, i.e., the rational explicability of induction and the truth of at least some theory of object permanence over time, are unjustifiable (or worse, if Humeanism is coupled with logical empiricist semantic theories, they are semantically meaningless), and then empirical science and metaphysics would be useless. But since empirical science (especially) and metaphysics are obviously not useless (a catalog of the increasingly useful successes of empirical science is unnecessary, and many if not most contemporary philosophers accept the intelligibility or defensibility of some form of metaphysics), then intuition-skeptical empiricism must be false.
- (ii) Many contemporary philosophers take W.V.O. Quine to have shown<sup>5</sup> that the analytic-synthetic distinction, analytic necessity and apriority, synthetic necessity and apriority, conceptual analysis, and other forms of non-empirical rationality – e.g., a priori moral insight and reasoning – that philosophers and other reflective people have classically taken themselves to engage in, and achieve, are all impossible if intuition-skeptical empiricism is true. But since it seems fully obvious that we can at least *partially* analyze at least *some* concepts, and that at least *some* necessary truths exist, and that we are at least *sometimes* just as rational as we take ourselves to be, intuition-skeptical empiricism must be false.
- (iii) Many contemporary philosophers take recent work by neo-rationalists, e.g., George Bealer, Laurence Bonjour, and Michael Huemer, to show (1) that empiricist theories implicitly presuppose the very rationalist principles they purportedly refute; (2) that any attempt to argue against rationalism presupposes (neo-) rationalism; and even (3) that any version of empiricism, as a theory and a philosophical program, is incoherent without certain (neo-) rationalist presuppositions. If any of (1)–(3) are

true, then, barring a complete abandonment of a priori rationality, intuition-skeptical empiricism must be false.

Indeed, since the late 1980s there has been a renewed and steadily growing interest in rationalism and the a priori; and gradually what Bealer has very aptly and rightly dubbed a *rationalist renaissance* has emerged onto the contemporary philosophical scene.<sup>6</sup> At the same time, however, even despite this rationalist renaissance, the all-important neo-rationalist notion of *rational intuition* has not been either adequately defended or fully developed, especially as regards solving the two core problems about rational intuition: **first**, *how rational intuitions can sufficiently justify beliefs*, and **second**, *how to explain the real possibility of rational intuitions*.<sup>7</sup>

So here is where contemporary philosophers now find themselves, after these dialectical skirmishes: intuition-skeptical empiricism is arguably false; but intuition-skeptical attacks on rationalism are, as yet, not directly answered, or at least not decisively answered. Given this fact, many contemporary philosophers will, as it were, talk out of both sides of their mouths, by (on the one side) declaring themselves neo-rationalists, while (on the other side) also ruefully admitting, at least implicitly in their work, that they have no direct or decisive responses to the most important intuition-skeptical empiricist attacks on rationalism and, correspondingly, no direct or decisive solutions to one or both of the two core problems about rational intuition – (i) the *justification* problem, and (ii) the *explanation* problem.

Given that unstable dialectical situation, this book is an attempt, **first**, to respond critically, directly, and decisively to the most important intuition-skeptical empiricist attacks on rationalism, and **second**, to sketch and defend neo-rationalism, with a special emphasis on the theory of rational intuitions and its two core problems.

Our overall defense of rational intuitions is organized so that the four chapters in Part 1 *negatively* and critically set the stage for the *positive* and constructive contemporary Kantian neo-rationalist theory of rational intuitions and a priori knowledge that is developed and defended in Part 2. Four important neo-rationalist sub-themes emerge in Part 1. The **first** is the notion of an *authoritative* rational intuition, together with the normative reasons we have for believing in (i) its *intrinsic compellingness* or *self-evidence*, (ii) as evidentially delivered to belief by a *properly functioning cognitive mechanism*, and also in (iii) its *essential reliability* (Chapter 1.1). The **second** is a *contemporary Kantian critique* of the intuition-skeptical empiricist arguments developed by contemporary

defenders of *Experimental Philosophy*, a.k.a. X-Phi. (Chapter 1.2). The **third** is that neo-rationalism can, at least in part, be derived from synthetic a priori principles that are implicitly embedded in and also presupposed by *contemporary Analytic metaphysics* (Chapter 1.3). And the **fourth** sub-theme is that neo-rationalism can also, at least in part, be derived from principles that are implicitly embedded in and also presupposed by *our ordinary epistemic discursive practices and our fallible conceptual capacities* (Chapter 1.4). Correspondingly, then, the four sub-themes of (i) authoritative rational intuition, together with the normative reasons we have for believing in it, (ii) the contemporary Kantian critique of X-Phi, (iii) the route to neo-rationalism about synthetic a priori truth and knowledge from contemporary Analytic metaphysics, and (iv) the route to neo-rationalism about analytic a priori truth and knowledge from our ordinary epistemic discursive practices and our fallible conceptual capacities, all worked out in Part 1, are fully incorporated within the larger framework of the positive contemporary Kantian neo-rationalist theory worked out in Part 2. Taken together, then, this fivefold critical defense of rational intuitions and a priori knowledge, and the positive contemporary Kantian neo-rationalist theory of them, jointly constitute *a new rationalist manifesto*.

In this connection, a word or two should also be said about the origins of this book, its format, its cover image, its basic aim, and the motivating idea behind it. All five flowed naturally from the collective work of a philosophical research group at the University of Colorado at Boulder, *The Intuitions in Philosophy Research Group*, a.k.a. The IPRG (Andrew Chapman, Addison Ellis, Robert Hanna, Tyler Hildebrand, and Henry Pickford), that met weekly or biweekly for two years, from Fall 2010 to Fall 2012, to talk about foundational issues in classical and contemporary epistemology and metaphysics, and to work critically though recent and contemporary articles and books on these issues. We created and sustained The IPRG because of our sharp dissatisfaction with the *status quo* in contemporary philosophy and because of our equally keen intellectual excitement about being philosophical rebels in a good cause.

The five principal sections of the book – the four chapters in Part 1, and the single essay making up Part 2 – each one the philosophical responsibility of an individual member of The IPRG, were developed in tandem, mutually presented to and critically discussed by all of the members of the group, re-drafted and re-discussed, then combined into the format of a single book, and then, finally, collectively revised again. The Introduction was then co-written, and added to the five principal

sections. The book is therefore *neither* a monograph *nor* an edited collection of essays. It is instead a *co-authored* book, written by five people, and its contents are ineluctably the joint result of our philosophical collaboration.

As to the cover image – of Grand Central Terminal, NYC, circa 1935–1941: the cascading shafts of light vividly reminded us of what Descartes called the “natural light” (*lumen naturale*) of human reason, brightly illuminating various finely-structured parts of the manifestly real world via “clear, distinct, and indubitable” rational intuition.

Correspondingly, the basic aim of *In Defense of Intuitions* is to re-examine the case for intuitions in philosophy, with a special emphasis on reconsidering and reworking the classical idea of *rational intuition*, and defending it against classical and contemporary attacks on its justifiability and explicability. All five of us were, and are, passionately motivated by the idea that contemporary philosophy must now move decisively in the direction of neo-rationalism, or else continue its unhappy regress towards a self-stultifying and ultimately cognitively suicidal triumvirate of (i) *intuition-skeptical empiricism*, (ii) *scientism*, and (iii) a professionally self-defining technical expertise in *good reasoning* that, ironically or even tragically, cannot be either sufficiently justified or adequately explained according to its own lights. Or in other words, we believe that the fate of *neo-rationalism* and the future of *philosophy* are ultimately one and the same. This book is therefore also intended as *a call to intellectual action* on behalf of the former, for the sake of the latter.

## **Part 1**

# **Rationalism Redux: Rational Intuitions and Contemporary Philosophy**



# 1.1

## The Self-Imposition of Authoritative Rational Intuition

*Andrew Chapman*

### I Introduction

I think that all philosophers and scientists, and all *investigators* of any sort, already appeal to rational intuitions. Moreover, I think that these investigators, in fact, *require of themselves* that they appeal to rational intuitions. Furthermore, I think this self-imposition, this self-requiring of an appeal to rational intuitions, is a constitutive component of the self-created projects that investigators currently engage in and that if investigators were able to stop requiring of themselves that they appeal to rational intuitions, their projects would look radically different from how they currently look. Finally, I think that this self-imposition of a demand to appeal to rational intuitions also shows that all philosophers, all empirical scientists, and all rational investigators of any kind already believe in the existence and accessibility of *authoritative rational intuitions* – i.e., intrinsically compelling or self-evident and essentially reliable rational intuitions, whose evidence is delivered to belief by a properly-functioning cognitive mechanism – and that we therefore have sufficiently good reason to believe that there exist some authoritative rational intuitions. Or, at least, that is what I hope to prove in this chapter.

This chapter has two parts. **First**, I will present a taxonomy of apriorist arguments, that is, arguments for the claim that a priori knowledge is not only possible, but often actual. It is my hope in providing this taxonomy to extend high-quality work already in the literature. My reason for attempting this taxonomy is, itself, twofold. First, I hope to extend the conceptual resources available to those who discuss apriorist arguments, and second, I hope to identify an under-used, a minority, apriorist argument-style – the argument from self-imposition. **Second**,



building on my identification of a minority apriorist argument-style in the first part, I will show that there exists a self-imposed connection, self-imposed by investigators themselves, between central aspects of the projects of philosophy and the natural sciences and the existence of robust, non-trivial, non-stipulated a priori knowledge, accessible by rational intuitional means. That is, I will show that investigators already require of themselves that they appeal to authoritative rational intuitions, and therefore that their self-created projects already require authoritative rational intuitions. I will claim that since it is the case that investigators already require of themselves that they appeal to authoritative rational intuitions, we should trust investigators in believing that a priori knowledge and authoritative rational intuitions are not just possible, but actual.

## Part1 Definitions and taxonomy

### II Rational intuition and the a priori

While many things have been called “intuitions” in the literature,<sup>1</sup> I am concerned with a specific sort of mental act, state, or process that has been historically called *rational intuition*. My definition is at once broad enough to include many things that philosophers want to call “intuitions,” but, in all likelihood, not broad enough to include things that all philosophers, even those who study something they call “intuition,” would call “intuitions.”<sup>2</sup> In any case, I will use the term “rational intuition” in the following way.

*Rational intuition*: A self-conscious or reflective taking of a proposition to be necessarily true and a priori.

I want to leave this definition broad, because I think that even this definition excludes many things that people would call “intuitions.” For example, it should be obvious, from my inclusion of “a priori” that roughly *half* of the things that Kant specifically calls “intuitions” or *Anschauungen* are excluded by this definition – since he allows for empirical or a posteriori *Anschauungen* as well as for pure or a priori *Anschauungen* – as well as excluding *all* of what some contemporary neo-rationalists call “physical intuitions.” Further, it should be obvious, from my inclusion of “self-conscious or reflective,” that *nearly* all of the things that the proponents of contemporary Experimental Philosophy, a.k.a. X-Phi, call “intuitions”<sup>3</sup> are excluded by this definition.

It is my claim, then, that intuitions of the sort specifically relevant to this chapter and to this book, i.e., *rational* intuitions, and *apriority* of the sort specifically relevant to this chapter and this book, are intimately intertwined with one another. Kant, one of the (if not just *the*) first systematic and most careful commentators on apriority, says of it:

It is therefore at least a question requiring closer investigation, and one not to be dismissed at first glance, whether there is any such cognition independent of all experience and even of all impressions of the senses. One calls such **cognitions *a priori***, and distinguishes them from **empirical** ones, which have their sources *a posteriori*, namely in experience. The former expression [“*a priori*”] is nevertheless not yet sufficiently determinate to designate the whole sense of the question before us. For it is customary to say of many a cognition derived from experiential sources that we are capable of it or partake in it *a priori*, because we do not derive it immediately from experience, but rather from a general rule that we have nevertheless itself borrowed from experience. So one says of someone who undermined the foundation of his house that he could have known *a priori* that it would collapse, i.e., he need not have waited for the experience of it actually collapsing. Yet he could not have known this entirely *a priori*. For that bodies are heavy and hence fall if their support is taken away must first have become known to him through experience. In the sequel therefore we will understand by *a priori* cognitions not those that occur independently of this or that experience, but rather those that occur *absolutely* independently of all experience. Opposed to them are empirical cognitions, or those that are possible only *a posteriori*, i.e., through experience.<sup>4</sup>

According to Kant’s definition, then, a cognition is *a priori* depending on no less than five of its features: (i) its epistemic status – which is what I shall be primarily interested in and focusing on in this chapter – as well as (ii) its modal status, (iii) its semantic status, (iv) its psychological status, and (v) specific characters of its source.<sup>5</sup> Following Kant, then, I will use the term “*a priori*” in the following way.

*Apriority*: A property possessed by a judgment, or proposition, insofar as that judgment or proposition is underdetermined in warrant, and also in modal force, semantic content, and psychological constitution, by all actual and possible sensory episodes and/or contingent natural facts.<sup>6</sup>

Apriority is a status enjoyed by non-empirical justification (as well as by non-contingent modality, robustly normative meaning, and innate psychological constitution), and by correspondingly justified beliefs and knowledge, according to the source of the relevant justification (or modality, meaning, or psychological constitution) in the same way that aposteriority is a status enjoyed by justification (as well as by modality, meaning, and psychological constitution), and by correspondingly justified beliefs and knowledge, according to the source of the relevant justification. But just as there is<sup>7</sup> a properly-functioning cognitive mechanism that transmits internalistic a posteriori justification to the conscious cognitive agent (sight, hearing, etc.), so too is there a properly-functioning cognitive mechanism that transmits internalistic a priori justification to the conscious cognitive agent. As properly-functioning, this is the cognitive mechanism to which the agent can appeal in search of justification in appropriate instances. In the case of a priori justification, this properly-functioning cognitive mechanism is *rational intuition*.

Some views of rational intuition see it as an intermediary between a priori evidence and the conscious cognitive agent, while other views see rational intuition as the creator, partial or otherwise, of a priori evidence. On the former view, rational intuition really is analogous to, e.g., sight, in that it delivers to the conscious cognitive agent evidence that is separate from the delivering process. On the latter family of views, rational intuition is a creative process, or is a constituent of a creative process, usually within the mind of the conscious cognitive agent, which process creates, assembles, etc. a priori evidence that is not entirely metaphysically separate from the process of rational intuition itself. I will not, here, take a stand which of these view better suits philosophical and scientific evidence. What is important is that everything I have to say in this chapter is compatible with any of these views.

Rational intuitions can sometimes rise to the level of authoritative-ness. Authoritative rational intuitions are all and only those rational intuitions that are *intrinsically compelling* or *self-evident*, via special internalist/phenomenological, conviction-inducing features of the evidential process delivered to belief by a *properly-functioning cognitive mechanism*, and also *essentially reliable*, via special externalistic/worldly, luck-avoiding features that non-accidentally or necessarily connect belief with its necessary-truth-makers, in a way that is fully appropriate for yielding a priori knowledge. Another way to put this is that if a priori knowledge is possible, then authoritative rational intuitions must be as well; if a priori knowledge is actual, then authoritative rational

intuitions must be as well; and if a priori knowledge is necessary (simpliciter or for something else), then authoritative rational intuitions must be as well. When a priori knowledge<sup>8</sup> is actual, then it is a priori knowledge via authoritative rational intuition.

Despite the fact that *authoritative* rational intuitions are intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, and thereby are infallible as a matter of synthetic, strong metaphysical, or non-logical, necessity (although they are *not* infallible as a matter of analytic, weak metaphysical, or logical, necessity – it is *consistently conceivable* that they are false), however, rational intuitions *as such*, contrary to Descartes and other classical rationalists, need not be infallible in any way. Most contemporary philosophers interested in a priori knowledge believe that apparent a priori knowledge can be undermined or overridden in one of three ways: (i) a priori evidence, (ii) direct empirical evidence, (iii) indirect empirical evidence. A priori factors can override apparent a priori knowledge when, for example, it is discovered that apparent a priori knowledge that-P is incompatible with other apparent a priori knowledge that-Q, and that-Q is more justified than that-P. For example, undergraduate students of ethics might initially be tempted to think that moral nihilism is true, given the truth of evolution by natural selection coupled with the pro-attitude or dogma of scientism. However, when presented with arguments against scientism and in favor of moral realism (e.g., the argument from moral progress), it becomes evident to them that moral realism is true and that scientism is either an unwarranted pro-attitude or a false dogma. But these arguments, in favor of moral realism and against scientism, are a priori in nature. Hence, it is possible for these undergraduates to have their a priori nihilist beliefs undermined by a priori arguments.

Direct empirical evidence can also override apparent a priori knowledge when, for example, an instance of an A that is not a B is discovered when a subject is a priori justified in believing that all As are Bs. For example, apparently some Catholics do not consider the Pope a bachelor, even though they do believe he is an unmarried male. But this collective belief was discovered only after performing a posteriori investigations, including surveys and such. We believed, and were justified in believing, a priori, that all unmarried males are bachelors; and then later, that justified belief was overridden by a new justified belief that some unmarried males are not bachelors, even though most of them are. One branch of the constructive arm of the project of X-Phi is predicated on apriority's ability to be overridden by aposteriority. Some

experimental philosophers suggest that we should update our a priori concepts in light of a posteriori evidence.<sup>9</sup>

Indirect empirical evidence can undermine apparent a priori knowledge when empirical factors prove that our reliance on some a priori justificatory method is itself suspect, problematic, or unjustified in a way that infects our apparent justification. In cases like these, empirical evidence does not itself undermine a priori knowledge; empirical evidence points to a problem with some specific piece of knowledge, some range of knowledge, or some method for the attempted achievement of knowledge. The negative project of X-Phi is an example of indirect empirical evidence apparently undermining apparent a priori knowledge. In this negative project, experimental philosophers attempt to show that certain a priori methods are unreliable in some way, and that since they are unreliable in this way, they are unable to support a priori knowledge.

### III A taxonomy of arguments for the a priori

Arguments for apriority of knowledge are, on my construal of rational intuition, also arguments for possible or actual *authoritative* rational intuitions. If a priori knowledge is possible, then there must be some properly-functioning cognitive mechanism by which the cognitive agent acquires this a priori knowledge via intrinsically compelling or self-evident evidence, and that properly-functioning cognitive mechanism is rational intuition. There must also be some metaphysically robust relation that non-accidentally or necessarily connects rational-intuitional belief with the necessary-truth-makers of that belief, thereby ruling out the skeptical possibility of knowledge-undermining *cognitive-semantic luck*.<sup>10</sup> In this section, I will be primarily referring to arguments for apriority of knowledge. However, the reader should remember the deep connection between these arguments and authoritative rational intuition.

#### III.1 Direct arguments

There exist two broad genera of arguments for the existence of a priori knowledge, or what I will call *direct* and *indirect* apriorist arguments. Direct apriorist arguments attempt to prove that we do possess some knowledge or justification, and that this knowledge or justification is, in fact, genuinely a priori in nature. Such arguments are often broadly ostensive in nature, and conform to the following pattern: “We all agree that (or it is evident that, or it would be perverse to deny that) we

possess knowledge that  $2+2=4$  (or that all bachelors are unmarried, or that the sum of the interior angles of a regular Euclidian triangle is 180 degrees, or that the pointless suffering of the innocent is intrinsically bad), but such knowledge is underdetermined by (or could not have been derived from or outstrips) (possible or actual) contingent sensory experiences (or empirical evidence). Therefore, such knowledge is a priori and is actual.”

The benefit of a direct argument is that it is rationally persuasive if an interlocutor is willing to accept its premises. Interlocutors are, in effect, shown that they already believe that we possess a priori knowledge. If interlocutors are persuaded by such arguments, their serving of crow is small: they merely have to admit that they were always apriorists and just had not realized it. The drawback to a direct argument, however, is that probably no actual anti-apriorist will ever be tempted to accept its premises. As we all know, at least implicitly, (i) *rationally adequate, a.k.a. rationally persuasive* arguments (i.e., arguments that would fully convince a sincere, open-minded, optimally rational investigator) are one thing, and (ii) *dialectically adequate, a.k.a. dialectically persuasive* arguments (i.e., rationally persuasive arguments that would also fully convince an actual interlocutor) are altogether another thing, and very thin on the ground in the real world of investigators. More specifically, anti-apriorists are well-practiced in explaining away cases of apparent a priori knowledge as either not knowledge at all or, in some way, a posteriori knowledge. It may well be that the best we can ever hope for in real-world philosophy is rationally adequate/persuasive arguments, and that dialectically adequate/persuasive arguments are a humanly impossible goal. Still, it seems to me that *indirect* arguments for the existence of a priori knowledge do stand a better chance of being accepted by anti-apriorists than direct arguments.

### III.2 Indirect arguments

Indirect apriorist arguments usually come in one of three sorts, or what I will call (i) performative contradiction arguments, (ii) inconsistency arguments, and (iii) transcendental arguments. The dialectical benefit of indirect arguments is that they do not (usually) strike their intended targets as question-begging in the way direct arguments can. While the goal of direct apriorist arguments is to show (or convince) the non-apriorist that they already believe in apriorism, the goal of indirect arguments is to show (or convince) the non-apriorist that non-apriorism cannot possibly be rationally believed, cannot possibly be rationally argued for, or entails rationally very bad things.

### III.2.1 *Performative contradiction arguments*

Performative contradiction arguments attempt to show that an argument against apriorism commits a performative contradiction. The notion of a performative contradiction was, I believe, most fully explicated by Jürgen Habermas in his response to, and attack on, postmodernism and postmodernists, although few if any contemporary epistemologists in the Analytic mainstream refer to Habermas when making such apriorist arguments.<sup>11</sup> Habermas's idea is that any field, movement, position, or argument that attempts its critical work via self-reference, while simultaneously denying the possibility of self-reference or of something necessary for self-reference, has made an illegitimate move and has done something rationally wrong. A very simple example of a performative contradiction would be my claiming that there are no sentences that give examples of performative contradictions. If all the terms in the preceding sentence mean what they usually mean, then not only is there something rationally very wrong with the preceding sentence, but I have also done something rationally very wrong by sincerely typing it. There are obvious ways that central elements of the notion of performative contradiction could also be analyzed in Gricean terms, as violations of rational maxims of conversation, although I will not do so here.<sup>12</sup>

Both Laurence Bonjour<sup>13</sup> and Michael Huemer<sup>14</sup> give performative contradiction-style arguments against the non-apriorist, in effect claiming that the non-apriorist is not, by her own lights, allowed to claim the things she is claiming. Huemer's argument against the non-apriorist makes this performative contradiction feature especially evident. Here is what Huemer says:

Consider, in fact, the argument that you have just read [for apriorism]. No doubt some philosophers will accept it, while others will not. Which ones will accept it? The ones to whom it seems correct, of course. Even if you do not accept it, you still will be thinking in accordance with the [apriorist] rule of phenomenal conservatism [which says: if it seems to one as if P, then one is thereby at least prima facie justified in believing that P]. The difference will merely be that to you, it does not seem correct. There is no (rational) escape from the reliance on how things strike *you*... Because of this fact, any attempt to deny the principle of phenomenal conservatism will be self-defeating, for all thought and reasoning presupposes the principle in a certain sense.<sup>15</sup>

These arguments are all similar in structure: In order to argue against the apriorist, apriorist principles must be relied upon, either explicitly

or implicitly. But if arguing against X requires presupposing that X, then the arguer has employed a performative contradiction. One is not permitted, rationally (communicatively, etc.), to employ a performative contradiction. Therefore, one is not permitted, rationally, to argue against apriorism. The force of these performative arguments is immediately felt. One is not allowed, on pain of irrationality, to reject apriorism. And if one wants to be rational, or if one cannot help but be rational, then one must not reject apriorism.

The benefits of a performative contradiction-style argument are that it is easily demonstrated and understood, and if so, and if taken to heart, it immediately shuts down discussion. It is just not rationally permissible to rely on premises that one is concluding are false.<sup>16</sup> The drawbacks to a performative contradiction-style argument are threefold. **First**, and perhaps most importantly, a performative contradiction-style argument against anti-apriorism does not prove apriorism – in fact, it does not even come close. The fact that I am not allowed, by my presuppositions, my language, my rational commitments, or whatever, to claim that something is false does not imply that that thing is true. This is simple enough to understand, but is often left unarticulated or is passed over by proponents of performative contradiction-style arguments. Another way to put this is that there is nothing inconsistent about the success of a performative contradiction-style argument (and, accordingly, the truth of its conclusion(s)) and the truth of anti-apriorism.

**Second**, there is some reason to think that it is possible for the anti-apriorist to claim that her arguments are formulated either in a meta-language à la Tarski, or in a non-literal, expressive language à la Tractarian Wittgenstein, or à la the Logical Positivists during their brief attempts to save the viability of their criterion of meaningfulness.<sup>17</sup> For example, Tarski claims that in order to avoid semantic paradox, language that refers to other language is always related to the first language in a metalanguage-object language fashion, so the language talked about and the language in which the talking is done are two different languages. Paradoxes apparently averted, and, if this solution is applied to performative contradiction-style arguments against anti-apriorism, problem (at least perhaps) averted. For further example, says Wittgenstein:

My propositions are elucidatory in this way: he who understands me finally recognizes them as senseless, when he has climbed out through them, on them, over them. (He must so to speak throw away the ladder, after he has climbed up it.)

He must surmount these propositions; then he sees the world rightly.<sup>18</sup>



**Third** and finally, performative contradiction-style arguments serve not so much as to convince an anti-apriorist interlocutor as to shut down conversation. Notice that if an anti-apriorist buys a performative contradiction-style argument and stops talking, and stops advancing non-apriorist arguments, then she has not thereby come to a new conclusion of her own regarding apriorism. In fact, it would be rationally disingenuous of her, and philosophically irresolute, to change her mind regarding apriorism in light of a performative contradiction-style argument. Shutting down conversation is just, and merely, that: rationally powerful, but usually dialectically impotent.

### *III.2.2 Inconsistency arguments*

Inconsistency arguments fare far better, dialectically, than do performative contradiction arguments. These arguments attempt to show that positions that deny the existence of the a priori are internally inconsistent, or worse, actually incoherent (no incoherent position can be consistent, so at least an incoherent argument is non-consistent, if that is different from inconsistency). George Bealer's "The Incoherence of Empiricism" is the classical statement of an inconsistency argument in favor of apriorism. Bealer says:

The aim of the present paper is to try to refute [empiricism] by arguing that it is at bottom incoherent... [T]hese arguments are designed to lay bare difficulties *internal* to their view. Our purpose is to present arguments that are designed to have persuasive force even for people already under the spell of empiricism.<sup>19</sup>

There are two sorts of inconsistency arguments: (i) intrinsic inconsistency arguments, and (ii) extrinsic inconsistency arguments. Intrinsic inconsistency arguments attempt to show that there is something intrinsic to the statement of the non-apriorist theory-proper that contradicts something else intrinsic to the statement of the theory-proper. Extrinsic inconsistency arguments, by contrast, attempt to show that there is something intrinsic to the statement of the theory-proper that contradicts something extrinsic to the statement of the theory-proper, but usually something taken to be intrinsic to a wider theory that is either necessary for or suitable for the anti-apriorist theory-proper.

The benefit of inconsistency arguments is that if they are successful, they show that a specific non-apriorist theory is untenable or impossible. Further, if the anti-apriorist theory is formulated in a broad enough fashion (for example, if the anti-apriorist theory is simply empiricism,

whether classical Lockean-Humean Empiricism, Logical Empiricism, or radical Quinean Empiricism), then a successful inconsistency argument will show that any anti-apriorist argument is untenable or impossible. If anti-apriorist arguments are untenable or impossible and some epistemology is possible, then that epistemology must be apriorist in nature. The drawback of inconsistency arguments is that it is nearly dialectically impossible to convince an interlocutor that he is being inconsistent or holds an inconsistent theory. He will claim, for example, that a term in his theory was misunderstood or not fully articulated or that a part of his theory was not fully understood or not fully articulated. The impulse will nearly always be to protect the theory via the strategy of gerrymandering and will nearly never be to abandon the theory outright. So it goes, in the philosophical no-man's land between rationally adequate/persuasive arguments and dialectically adequate/persuasive arguments.

### *III.2.3 Transcendental arguments*

Transcendental arguments attempt to show that apriority is a necessary presupposition for, and is therefore cognitive-semantically required for, some other cognitive-semantic item, and that since that other cognitive-semantic item is actually true or otherwise actually obtains, then apriority is actually true or otherwise actually obtains too. These arguments divide into empirical and non-empirical sorts. Empirical transcendental arguments fundamentally rely, in at least one premise, on a claim that must be validated or checked by empirical methods, while non-empirical transcendental arguments rely on no premises that require such empirical validation. Two famous empirical transcendental arguments are Chomskyan "poverty-of-the-stimulus-style" arguments and Kant's argument(s) for transcendental idealism, i.e., for the thesis that the essential structures of manifestly real nature necessarily conform to the a priori structures of our innately-specified rational human cognitive capacities.<sup>20</sup> The Chomskyan arguments run roughly as follows:

- (1) Natural language use requires either apriorism with respect to natural language competence (i.e., possession of an innate grammar) or a posteriori natural language acquisition.
- (2) Natural language acquisition is strictly underdetermined by empirical stimulus inputs.
- (3) If natural language acquisition is strictly underdetermined by empirical stimulus inputs, then apriorism with respect to natural language competence actually obtains.

- (4) Natural language use actually obtains.
- (5) Therefore, apriorism with respect to natural language competence actually obtains.

Notice that premise (2) is fundamentally empirical in nature – it requires some empirical inquiry in order to be supported or not, in order for its truth-value to be determined.

The Kantian argument runs roughly as follows:

- (1) If humanly meaningful metaphysics, mathematics, and natural science are really possible, then synthetic a priori truth and knowledge are really possible.
- (2) If synthetic a priori truth and knowledge are really possible, then transcendental idealism must be actually true, since no other philosophically adequate explanation of synthetic a priori truth and knowledge exists.
- (3) Mathematics and natural science actually obtain, and humanly meaningful metaphysics also actually obtains as a necessary presupposition of mathematics and natural science, so humanly meaningful metaphysics, mathematics, and natural science are really possible
- (4) Therefore, transcendental idealism must be actually true.

Notice that premise (3), at least on one interpretation, is at least partially empirical in nature – it requires the (arguably) empirical fact of the dual existence of mathematics and natural science as genuine rational enterprises.

While the Chomskyan and Kantian arguments are both partly empirical in nature, they could both easily be modified in order to make them wholly non-empirical in nature. Were their empirical premises assumed, rather than asserted, then those premises would not need to be empirically checked, and the conclusion would be conditional in nature. In fact, this is sometimes the way both of these arguments are presented, as arguing for conditional truths. Not all non-empirical transcendental arguments contain conditional conclusions, but certainly many of them do.

An advantage of transcendental arguments of both sorts is that, if successful, they require a person engaged in some rational activity, or holding something to be true, to recognize that she is participating in some other rational activity, or is already committed to the truth of something else. This can be extremely argumentatively powerful, perhaps

even to the point of dialectical adequacy/persuasiveness. Instead of having to convince an interlocutor that she must accept something new or do something new or different, thereby having to admit an earlier state of error or ignorance, the interlocutor is told that she was “always already” (*immer schon*) committed to something, and that she can not only continue on as normal, but also in a state of enhanced enlightenment or self-knowledge, thus satisfying the classical Socratic demand.

Nevertheless, take the Kantian example as a real-world test-case. Most contemporary philosophers are decidedly and self-professedly *not* transcendental idealists, for what they consider sufficiently good reasons. If these contemporary philosophers were actually convinced that some project of theirs (e.g., metaphysics, or moral philosophy) required a commitment to transcendental idealism and that by practicing metaphysics or moral philosophy, they were “always already” committed to transcendental idealism, then most of them would almost certainly give up professional philosophy, rather than accept transcendental idealism. And this is a main drawback to transcendental-style arguments. It is often possible for a person simply to give up the project that an argument rationally shows her to be “always already” committed to, if this is something she believes false on independent grounds, or finds it professionally embarrassing to admit. She is not, in most cases, rationally compelled to continue the project and accept the transcendental consequences.<sup>21</sup>

Another related drawback of transcendental arguments is that it may be the case, and has been explicitly argued in a contemporary context (many think persuasively),<sup>22</sup> that transcendental arguments require the truth of some or another version of transcendental idealism. If true, that would mean that a reasoner could not correctly employ a transcendental argument without thereby committing herself to some or another version of transcendental idealism, and further, that an interlocutor is under no obligation to accept the conclusions of a transcendental argument unless she herself is committed to some or another version of transcendental idealism. For Kantians arguing with other Kantians, this is not a drawback; but since most contemporary philosophers decidedly and self-professedly do not accept the truth of transcendental idealism, then if it is true that transcendental arguments require transcendental idealism’s truth, that can and will seriously weaken the dialectical force of transcendental arguments.

#### *III.2.4 Self-imposition arguments*

As I have said, there are direct arguments for the a priori, and also the three sorts of indirect arguments canvassed above. But there is another

sort of argument for the a priori that I think has been generally unexplored and un(der)exploited in the philosophical literature. I call this *the argument from self-imposition*. Arguments from self-imposition have the following general form:

- (1) S rationally requires X of herself (in order to Y).
- (2) S's rational self-requirement of X (in order to Y) generates hypothetical rational normativity that she X (in order to Y).
- (3) S ought to X (unless S either rationally stops rationally requiring of herself that she X, or else gives up her desiderative adoption of Y as an end).

Recall the classical Kantian distinction between hypothetical rational normativity and categorical rational normativity. An action is hypothetically rationally normative if and only if a rational human agent must perform that action, conditional on some end or goal she has adopted via desire. Because of her desiderative adoption of that end, she must do something else, e.g., she must do, at the very least, whatever constitutes the means to that end. An action is categorically rationally normative if and only if a rational human agent must perform that action no matter what, unconditionally, for the sake of human rationality itself. In each case, the specific character and strength of the related rational normativity are the same – it is an actual, binding, agent-centered rational normativity. The difference, of course, is that in cases of hypothetical rational normativity, the rational normativity can be opted out of if (and only if) the rational human agent either rationally opts out of the relevant obligation in this context (e.g., by means of a legitimate excuse) or else gives up the end or goal the normativity is conditional upon. By contrast, in cases of categorical rational normativity, no such opting-out is possible. The claim of a self-imposition argument, then, is that a rational human agent has rationally required something of herself, that this rational self-requiring generates hypothetical rational normativity, and that the only way to opt out of this hypothetical rational normativity is either rationally to opt out of the relevant obligation in this context or else give up her end or goal. In this way, the rationally normative conclusion of a self-imposition argument, while actually, bindingly rationally normative, is truly self-imposed.

Right away, there are two features of self-imposition arguments that are philosophically interesting.

**First**, the conclusion of a self-imposition argument is rationally normative, commanding that the rational human agent ought to do the

action she has self-imposed. The only other argument type that we have looked at that has a rationally normative conclusion is a performative contradiction argument. However, with performative contradiction arguments, the conclusion is of the form “something has gone wrong here – stop doing something that you are doing” – it is rationally normative, but in a very indirect sense. That is, the conclusion of a performative contradiction argument for apriority or for the performance of authoritative rational intuition *does not* tell its target that apriority or authoritative rational intuition actually obtains or that she ought to perform an authoritative intuition. By contrast, the conclusion of a self-imposition argument *does* do this.

**Second**, arguments from self-imposition do not make claims about objective connections between propositions and propositions, or between propositions and rational human agents out there in the world. Self-imposition arguments make claims only about rational human agents and the acts of those agents *themselves*. It is a possible move (albeit ill-advised) for someone to claim that, say, it is not actually wrong to rely on authoritative rational-intuitional evidence in order to claim that there is no reliable rational-intuitional evidence. However, it is not possible for someone to claim that if a person has rationally required of herself that she rely on authoritative rational-intuitional evidence, that she has not rationally required of herself that she rely on authoritative rational-intuitional evidence. While the first sort of denial would be false and silly, the second sort of denial would be incoherent and rationally self-stultifying.

Arguments from self-imposition can seem like a hybrid, in some ways, of performative contradiction arguments and transcendental arguments, while also differing essentially from the methods and conclusions of both. Similar to a performative contradiction argument, a self-imposition argument moves from activities a rational human agent is already engaged in, or plans to engage in, to some rationally normative conclusion about that activity. Like transcendental arguments, self-imposition arguments move from some claim about necessary presuppositions for something to some conclusion about those presuppositions. However, self-imposition arguments seem to escape potential problems with performative contradiction and transcendental arguments alike. For example, unlike performative contradiction arguments, self-imposition arguments do not merely serve to shut down a rational conversation – by a sharp contrast, they prove that an interlocutor *ought* to do something, and *ought* to do it for sufficiently good reasons. Further, unlike transcendental arguments, it seems that

self-imposition arguments do not necessarily require transcendental idealism – a feather in the dialectical cap of self-imposition arguments, if true. Finally, self-imposition arguments derive their rational normativity directly from the rational human agent on whom the rational normativity is binding. She ought to do what the argument says she ought to do because she has rationally required of herself that she do it. It rarely gets more direct and persuasive than that.

As I have noted, however, self-imposition arguments are rarely recognized or deployed in the philosophical literature. In the next section, I will deploy one in service of the claim that authoritative rational intuitions are not only possible, but actual.

## **Part 2 An argument for self-imposed authoritative rational intuitions**

### **IV.1 Rationale for part 2**

Self-imposition arguments are not only *rationally* adequate/persuasive but also *dialectically* adequate/persuasive, where and when they can be self-consciously noted and deployed. In this part, I will use a self-imposition argument to show that investigators require that rational investigation of the sort that philosophers and scientists (whether formal or exact scientists like logicians and mathematicians, or natural scientists) take themselves to be engaged in (henceforth: simply “investigation” for short) requires adhering to certain self-imposed rationally normative demands, that these rationally normative demands are only accessible a priori, and further, that since apriority of knowledge requires authoritative rational intuition, and since philosophy and the formal/natural sciences require investigation, then philosophy and the formal/natural sciences require authoritative rational intuitions. Another way to say this is that investigators self-impose that without authoritative rational intuition, philosophy and formal/natural science, as currently conceived and legitimately practiced, are impossible.

### **IV.2 Argumentative methodology**

In broad strokes, my self-imposition argument will show that we, investigators, rationally require that investigation rationally requires that we hold ourselves rationally responsible in certain ways, that our holding ourselves rationally responsible in these ways generates genuine hypothetically rationally normative demands, and that our only access to these rationally normative demands is via authoritative rational intuition. Further, if we are ever to investigate successfully, then, precisely

insofar as we are investigating successfully, our rational intuitions must be authoritative. More specifically: Rationally requiring certain things of ourselves generates hypothetical rational normativity, i.e., a real, binding rational normativity that is only a priori accessible, via authoritative rational intuition, and hence, that we self-impose that investigation rationally requires authoritative rational intuition.

To expand on this crucial point a little more before I get properly started, it is my claim that investigators, when they participate in investigation of any sort but prototypically philosophical and formal/natural-scientific (which is why I will focus on those two), rationally require of themselves that they hold themselves rationally responsible for certain specific things in certain specific ways. And in laying out this argument, I will focus specifically on three ways that investigators rationally require of themselves that they hold themselves rationally responsible:

- (i) In order to investigate, investigators rationally require of themselves that they hold themselves rationally responsible for investigating, for willing the investigation, and for continuing to investigate.
- (ii) In order to investigate, investigators rationally require of themselves that they hold themselves rationally responsible for possessing the reflective capacity to differentiate between different (kinds of) propositions, since such a capacity undergirds all of investigation.
- (iii) In order to investigate, investigators rationally require of themselves that they hold themselves rationally responsible for possessing the cognitive capacity to take in and synthesize pieces of non-empirical or empirical evidence, since evidence evaluation is necessary for all investigative disciplines, whether formal-proof-driven or experiment-driven.

Rational normativity is generated by each of these acts of holding-rationally-responsible, and the only epistemic access investigators have to the rationally normative demands themselves, as well as to whether the rationally normative demands are being satisfied, access that is further necessary for investigation, is rational-intuitional in nature. Notice that the rational normativity generated in these cases is purely hypothetical in nature. Investigators hold *themselves* rationally responsible in certain ways. I am not claiming, here, that the world or investigation *itself* rationally requires anything of investigators. I am arguing in this way because the weaker claim, one about hypothetical rather than categorical rational normativity, is all that is needed to generate the conclusions I am looking for.<sup>23</sup>



The three specific things that I claim investigators hold themselves rationally responsible for in order to investigate are by no means the only three things that investigators hold themselves rationally responsible for. Investigators hold themselves rationally responsible for all sorts of things when they investigate, and I leave it to the reader to discover other things investigators hold themselves rationally responsible for. So here is my argument in schematic form; anything that could be appropriately substituted for X would work – as I said, I simply chose to focus on the three I chose to focus on:

- (1) Investigators require of themselves, in order to investigate, that they X.
- (2) This self-requirement to X generates hypothetical rational normativity.
- (3) The demands of hypothetical rational normativity, as well as whether those demands have been met, is accessible only a priori, via authoritative rational intuition.
- (4) Investigators rationally require of themselves that they be able to determine the demands of investigation, as well as whether they are meeting those demands, in order to investigate.
- (5) Therefore, in order to investigate, investigators rationally require of themselves that they perform authoritative rational intuitions.

Notice the self-imposition of the performance of authoritative rational intuition by investigators in the conclusion. In no place do I claim that there must be authoritative rational intuitions, period, or that investigation requires authoritative rational intuitions, period, because of the platonic nature of investigation, or anything hyper-abstract or hyper-objective like that. All I claim, and it is much weaker than I think I could claim, is that investigators rationally require of themselves something that entails that they perform some authoritative rational intuitions. And this is certainly true.

### **IV.3 Two things you rationally cannot do**

As a propaedeutic to my argument, I hope to remind the reader of two things he or she certainly rationally cannot do:

1. You cannot rationally opt out of the demands of genuine categorical rational normativity, once it has been recognized as such, no matter what your ends or goals are.

If X is categorically rationally required of you, then by dint of the rational requirement's categorical nature, you cannot rationally opt

out of its demands. Further, it might be thought, and often has been thought, that if something is categorically rationally required of you, then the reason for its rational requirement is contained within the content of the thing itself. For example, if it really is categorically rationally required of you to act in such a way that you bring about more pleasure than pain for all sentient creatures, then there is no further reason, apart from the truth of this rational requirement, that you do it. If it really is categorically rationally required, then that you ought not to produce pain and that you ought to produce pleasure is true, and that is why you to act in such a way that you bring about more pleasure than pain. This is why the question “Why ought I to be moral?” has struck some as a misunderstanding of the term “moral.” There is no one who denies that you cannot rationally opt out of the demands of categorical rational normativity. The hard part is convincing anyone there are any categorically rationally normative demands.

2. You cannot opt out of the demands of genuine end-driven or goal-driven hypothetical rational normativity without either rationally opting-out of the relevant obligation in this context (e.g., by means of a legitimate excuse) or else by giving up the relevant ends or goals.

If it is actually true that “If you want to achieve Y, then you rationally ought to X,” then *ceteris paribus*, without a sufficiently good reason to opt out of the relevant rational obligation in this context, and with the relevant ends or goals (Y) included, then you cannot rationally opt out of the demand that you X. You are rationally required to X, not only because of the way things are rationally-deontically, but because of the way things are rationally-deontically, in combination with certain ends or goals.

An extension of this is that you rationally cannot hold yourself responsible for something while simultaneously not holding yourself rationally responsible for it. If you hold yourself rationally responsible for achieving or accomplishing or adhering to X, then you cannot also not hold yourself rationally responsible for achieving or accomplishing or adhering to X. You can, however, hold yourself rationally responsible for achieving, etc., Z and not X, if you also do not realize, or have forgotten, that Z and X are the same action. Further, you can also hold yourself rationally responsible for Z and not X if you do not realize, or have forgotten, that Z requires or entails X.

Note that in this subsection, I am not claiming that in order to achieve some end or goal you would have a hard time doing, or that in order

to achieve some end or goal, it would be imprudent to do, the things I claim you rationally cannot do. You actually rationally cannot do these things. It is rationally impossible for you to do these things.

#### **IV.4 Investigation requires willing of investigation**

Rational human animals, as investigators, engage in investigative projects. By “investigative projects,” I mean projects that attempt to discover truths about the world, or about human beings or other minded animals, or about human beings’ or other minded animals’ interactions with the world. I do not here mean to presuppose a certain metaphysics, say realism, over some other; to presuppose some theory of truth, say, correspondence, over some other; or to presuppose some theory of perception, say, direct or naïve realism, over some other. I hope that what I am saying in this chapter is so general that anyone who agrees that rational human animals at least sometimes engage in investigations, or even, that rational human animals at least sometimes take themselves to be engaged in investigations, no matter how fruitful, will be onboard with.

Rational human animals investigate the world in all sorts of ways. Geologists investigate the nature of the solid Earth, rocks, and such. Astronomers investigate the nature of celestial objects, planets, stars, and such. Psychologists investigate the nature of minds (or minded organisms) and the behaviors that issue from them. Logicians investigate the nature of logical truth and consequence. Mathematicians investigate the nature of various kinds of non-logical formal structure directly involving or presupposing quantitative structure. Philosophers investigate the nature of reality in general or of the natural world in particular, truth, mind, knowledge, beauty/aesthetic value, intentional action, right action, responsibility, and moral goodness. And so on. What is unique to each of these disciplines are the subject-matter investigated and the methods used in these investigations. What is shared between these disciplines is the presupposition that certain methods (perhaps not the exact ones currently being employed) can deliver knowledge about the subject-matter in question, and can advance the investigation and *perhaps* lead to novel discovery. What is shared is that there are ways to investigate and ways not to investigate.

And since all of this is the case, then there are some normative standards that are taken to be fundamentally better, given certain ends or goals, than other normative standards, for achieving certain investigative purposes. Investigators in each field believe that there are some ways to investigate and some ways not to investigate. For example, collecting samples and testing them in laboratories in order to lend

credence or the opposite to a proposed geological hypothesis is believed to be a better way for geologists to go about achieving their investigative goals than is asking a clairvoyant what he thinks about rocks and such. Looking into telescopes and charting the motions of certain heavenly bodies in order to lend credence or the opposite to a proposed astronomical hypothesis is believed to be a better way for astronomers to go about achieving their investigative goals than is astrology. Starting out with basic authoritative rational intuitions, and then carefully considering the logical implications of a proposed philosophical thesis or theory in light of theoretical assumptions, and ensuring consistency and reflective equilibrium when objective certainty is not to be had, is a better way for philosophers to go about their investigative projects than is turning around in a circle until they fall down from dizziness, or than is consulting the Philosophical Gourmet Report to see what tenure-track philosophers at the top-ranked departments, as ranked by the Philosophical Gourmet Report, believe. And so on.

While I am tempted to say, and many or most probably believe, that certain methods are *objectively* better than others and that I ought, because of this betterness, when investigating, to choose the better methods, objective betterness need not here concern us. The point is that investigative ends or goals are approached by methods, and that these methods are chosen for some reason or another, or are just chosen, for no reasons at all (if this is possible), and that the chosen methods, the employed methods, are believed to be fundamentally appropriate, in any sense of the phrase, for the relevant investigation. These particular methods have been chosen in order to attempt to achieve that investigative goal, to make some discovery. Ignoring any special historical or philosophical baggage that comes along with this term, let us call an investigative goal plus the methods adopted to attempt to achieve that goal a “research project.” An investigator is engaged in a particular research project when she is using the specified methods in pursuit of the investigative end or goal.

Unless an investigator is lazy, or incompetent or deliberately attempting self-sabotage, then when she adopts and pursues a research project, she rationally requires of herself that she pursue that research project. We might, and probably should, even claim that lazy, incompetent, self-sabotaging investigators have not actually *adopted*, appearances to the contrary, the research project they appear to have adopted. This might all seem too obvious to say, but it is at the heart of my argument. Investigators who have adopted a specific research project rationally require of themselves, self-impose, the pursuit of that research project.

In order for an investigator to investigate, then she must attempt to investigate, and in order for an investigator to employ particular methods in that investigation, then she must attempt to employ those methods. Another, more philosophical way to put this is that investigation rationally requires willing. This willing is a willing to investigate, to employ certain methods, to attempt to reach a certain goal. Willing is a way of trying, and rationally trying is a way of holding ourselves rationally responsible for achieving some goal. Recall from above that it is impossible for a person to hold herself rationally responsible for something while simultaneously not holding herself rationally responsible for something.

Self-imposition, though, generates hypothetical rational normativity. If I rationally require of myself that I do something, then insofar I as I rationally require of myself that I do it, I ought to do it – because I have rationally required it of myself. I want here to forestall a potential objection based on a misunderstanding. I am not claiming that my self-imposed demands override all other demands, moral, rational, etc. I am claiming that my self-imposed demands generate a hypothetically rationally normative bindingness, but not (or at least not necessarily) one that trumps all other rational norms in that context. I will not go on about this, as I think it is obvious how this misunderstanding can be easily accommodated and de-fanged.

As long as investigators investigate, then they self-impose that they hold themselves rationally responsible for investigating. If they investigate, then they ought to investigate. And this rational normativity is real and binding, so long as investigators investigate.

#### **IV.5 Investigation requires proposition-differentiation**

Regardless of the correct theory of truth, regardless of whether there is a correct theory of truth, and regardless of whether truth is the sort of thing that rational human animals should care about or is the goal of investigation, some propositions matter more to investigation than do other propositions. I do not here want to take a stand on the nature of propositions. Propositions might be internally structured semantic items; or they might not be. Propositions might be inherently representational; or they might not be. Propositions might be abstract items; or they might not be. What I believe all contemporary philosophers can agree on is that the truth of certain propositions is presupposed (or certain propositions are held or believed, etc.) prior to investigation. Let us call these propositions, when considered together, *a background theory*, intended to be free of, or at least neutral as between, any special theo-

retical baggage traditionally associated with that term. Further, the acting on or employment of or belief in or holding of certain propositions during investigation allows investigators effectively (or efficiently, etc.) to employ certain investigative methods. Call these propositions, when considered together, *methodological propositions*. Finally, the attempt to discover evidence, whatever that means, for or against some theory or theories requires an attempt to support (or the opposite), some propositionally articulated theory or theories.

A different background theory expresses metaphysical realism than expresses metaphysical anti-realism. A different background theory expresses heliocentrism than expresses geocentrism. A different background theory expresses Aristotelian physics than expresses Einsteinian physics. Similarly, different methodological propositions express different investigative methods. And further similarly, different propositionally articulated items express different theories and different pieces of evidence in support (or the opposite) of these theories. Investigation requires working with propositions or proposition-like entities, at least implicitly. Making any differentiations at all in background theory, methodology, evidence, or theory requires making differentiations between different, and sometimes competing, propositions, and between different kinds of propositions (e.g., necessary ones and contingent ones). Note that investigators need not always, or even most of the time, be able to differentiate accurately or correctly between relevant propositions, or kinds of propositions. What is required is an ability to undertake this differentiation. Even the poorest investigators are able to attempt to differentiate between relevant propositions and kinds of propositions – they merely fail in their investigations much of the time.

Propositions, however, regardless of the truth or falsity of semantic holism or semantic atomism, are connected to one another via inferential relationships. For example, the proposition “X is a dog” entails the proposition “X is a mammal,” while it is inferentially neutral with respect to the proposition “X weighs greater than 40 pounds,” and inferentially excludes “X is a fish” – so-called “dogfish” notwithstanding. Perhaps these inferential relations come prepackaged with propositions and propositional kinds in a given semantics, or perhaps we create the inferential relations, or perhaps inferential relations are mere acts, à la some brand of Wittgensteinianism. Any of these views is fine for my purposes here. The point is that propositions are connected via inferential relationships.

If investigation requires attempted discovery of one thing rather than another using particular methods rather than others, etc., and it seems

that it does, then investigation requires not only an ability to attempt to differentiate between different propositions and kinds of propositions but also an ability at least to attempt not to hold conflicting background theories, not to accept pieces of contradictory evidence as in favor of the same hypothesis, and to be able to tell which hypothesis is the hypothesis under investigation.

Consider, e.g., the conceivable possibility that an investigator could not tell the difference, could not even attempt to tell the difference, between two sets of propositions,  $\Phi$  and  $\Psi$ , where  $\Phi$  is the expression of a broadly Einsteinian physics and  $\Psi$  is the expression of a broadly Aristotelian physics. Certainly not all of investigation would be doomed, since occasionally, accidentally, the background theories would align, but investigation would be made very difficult. Or further, consider the conceivable possibility that an investigator could not tell the difference or attempt to tell the difference between two sets of propositions,  $\Theta$  and  $I$ , where  $\Theta$  and  $I$  share no members. If an investigator discovers evidence,  $X$ , that she believes validates  $\Theta$ , due to her inability to differentiate  $\Theta$  and  $I$ , she will also believe  $X$  validates  $I$ . Again, occasionally investigation may be able to proceed with such a broken method, but only haltingly and accidentally.

But the point is not that investigation would be difficult if an investigator lacked the ability to differentiate between competing propositions, sets of propositions, or kinds of propositions. The point is that investigators *rationally require of themselves* that they be able to do such a thing, make such differentiations. It is at the heart of the investigative process that propositions differ individually, collectively, and specifically, and a goal of investigation is to discover which more closely describe the world or at least which are more instrumentally successful for our projects. Investigators rationally require of themselves that they investigate, and investigators rationally require of themselves that they be able to accomplish the necessary tasks for investigation.

An objection might be raised here that someone might rationally require something of herself without thereby rationally requiring all of the necessary conditions of that thing of herself. If a necessary condition of  $X$ ,  $Y$ , is so epistemically or conceptually hidden that it would not occur to a person that  $Y$  is rationally required for  $X$ , then we might hardly say that the person rationally requires  $Y$  of herself by so-rationally-requiring  $X$ . This is similar, though not identical, to very plausible claims that even though Lois Lane believes that Superman is Superman, she does not believe that he is Clark Kent, even though Superman is Clark Kent. If Lois does not realize that Superman is Clark Kent, because of some

hiddenness of that identity relation, then many find it silly to insist that she does, nonetheless, believe that Superman is Clark Kent. I concede that this is true, that one does not rationally require of oneself all of the necessary rational requirements of the thing(s) one rationally requires of oneself. What I do not concede is that any investigators do not realize, at least dispositionally or tacitly, that a capacity to tell the difference between competing hypotheses, background theories, pieces of evidence, or kinds of these, is required of investigation. It seems to me absurd that an investigator, philosophical or otherwise, would never have realized, at least dispositionally or tacitly, that her ability to tell the difference between, say, a Millian and a Fregean view of proper names is required in order to investigate the nature of proper names. Why else would we go to school, and train ourselves in the methods, doctrines, and arguments of classical and contemporary philosophy, if not, at least partly, to “get the conceptual lay-of-the-land,” so to speak? And this is all that is required for my claim.

If it is true that investigators rationally require of themselves that they be able to differentiate between competing propositions and kinds of propositions, then it is true that investigators rationally ought, due to the generation of relevant hypothetical rational normativity, to be able to differentiate between competing propositions, that they rationally ought to have the necessary skills to do this. And this rational normativity is real, agent-centered, and binding, so long as investigators investigate.

#### **IV.6 Investigation requires non-empirical and/or empirical evidence, analysis, and synthesis**

While many philosophers believe that their discipline is a wholly non-empirical one, a growing minority, led specifically by the experimental philosophers and their fellow travelers, believes that philosophy is impossible, or at least undesirable, without empirical, often sociological or psychological, work. Even many philosophers who believe that philosophy-proper is a wholly non-empirical discipline often believe that philosophy can be fruitful when paired with an empirical discipline, such as psychology, neuroscience, etc. For those who believe that philosophy is wholly non-empirical and that it should stay away from empirical disciplines, this subsection will serve only to prepare an explanation of why empirical scientific investigation requires apriority. For those who already believe that philosophers can sometimes be legitimately concerned with empirical evidence, this subsection will serve to reinforce further that philosophy rationally requires apriority.



Imagine the following: I look out into a field and see a thing that is taller and also thinner than a cow, with a longer head, pointier ears, and a longer tail. I immediately recognize that it is almost certainly a horse. As a result of this recognition, I believe that there is a horse in the field.

Or imagine this: I am running experiments in a laboratory in an attempt to date a particular specimen discovered by a team of archeologists in Egypt. Results from my tests come back, specifics unimportant, and I use those results to validate the hypothesis that the specimen is around 4500 years old. I immediately recognize that the specimen is almost certainly around 4500 years old, and as a result of this recognition, I believe that the specimen is around 4500 years old.

Or imagine this: I am polling two groups of undergraduate students to see whether their reactions to two particular hypothetical scenarios will change depending on the order in which I present the scenarios to the students. My hypothesis is that since order of presented scenarios is irrelevant to whether elicited responses are true, if students' responses change simply based on presented scenario order, then the sorts of responses students give are in some way defective. Results from my polls show that students' answers are susceptible to ordering effects. I immediately recognize that this validates my hypothesis, and as a result of this recognition, I believe that the relevant sorts of responses are unreliable.

Notice that in each of these cases, my evidence is largely a posteriori. Further notice that in order to make use of this evidence, I must analyze and synthesize the evidence with a set of current beliefs, theories, hypotheses, competing evidence, etc. By "synthesize" here, I mean *appropriately cognitively organize and relate*. I know that, say, my evidence that a thing is in a field and is not a cow and has equine features is evidence for the truth of the proposition that the thing in the field is a horse rather than for the truth of the proposition that the thing in the field is a mouse or that American astronauts first landed on the moon, because I have connected the evidence to the proper proposition adequately. I know that the differing survey results after modifying only the order of presented cases is evidence for the proposition it is evidence for, and not some similar one, or not some entirely unrelated one, because I have connected evidence and proposition appropriately.

Notice, as in each of the preceding sub-sections, that I need not actually connect evidence and proposition *correctly* in order for it to be rationally necessary for me to connect evidence and proposition correctly in order for genuine investigation to occur.

And notice again that this demand for a capacity to analyze and synthesize can be entirely self-imposed – it need not derive from the nature of investigation itself. Were it impossible for me adequately to analyze and synthesize a posteriori evidence, then a posteriori investigation would be impossible. Just as in the cases of willing investigation and differentiating between competing propositions, the investigator rationally requires of herself that she be able to synthesize a posteriori evidence appropriately. She may not make this rational requirement explicit, but when she tries to analyze a posteriori evidence in order to determine which hypothesis it supports, or which factors it makes relevant, she is rationally requiring of herself that she synthesize appropriately.

If it is true that investigators rationally require of themselves that they be able to analyze and synthesize a posteriori evidence appropriately, then it is true that investigators rationally ought to be able to synthesize a posteriori evidence, that they ought to have the necessary skills to do this. And this rational normativity is real and binding, so long as investigators investigate.

There is one important thing to note about my claims regarding all three of the features of investigation that I claim investigators self-impose: I am not claiming that these self-imposed requirements are necessary for anything whatsoever properly called “investigation.” That would be to claim that these self-imposed requirements are not truly self-imposed, but merely correctly self-imposed because of the way the world is, or because of the true essence of investigation. As far as anything I have said is concerned, there might be strikingly disparate things that count as “investigation,” and hence, strikingly disparate things that investigators self-require. All I claim to have done above is read off (perhaps) contingent features of current investigation and investigatory practice. If an investigator disagrees that she self-imposes one or any of the things I have identified above, I leave it to her to supply the things she actually self-imposes. But note: If she self-imposes anything at all, then the argument I am here pushing runs just the same.

#### IV.7 Epistemology and investigation

If a rational human agent is to act in some way *because* of some reason, then the possession of that reason must be at least partially epistemically accessible to that person. By “at least partially epistemically accessible,” I mean that a rational human agent can tell when she possesses the reason in question and can tell when she does not possess the reason in question. Another way to put this is that her *cognitive phenomenol-*

ogy differentially responds to the possession of the relevant reason. On this picture, the reason in question might be completely epistemically accessible to the agent in that the agent might be able from the internal perspective to identify and examine each component of the relevant reason. If, e.g., reasons are propositional in nature, or proposition-like in nature, then they might be internally structured semantic items, in which case, were a reason completely epistemically accessible to an agent, she would be able to examine the entire reason, structure and all, from the internal perspective. On this picture, reasons might, however, only be partially epistemically accessible from the internal perspective. What would be required, were the epistemic accessibility only partial, is that, from the internal perspective, the rational human agent could identify the reason in question – tell which one it is – and individuate it from other related reasons.

On this picture, a rational human agent acts *because* of a reason, if the agent's awareness of the reason, the agent's differential cognitive phenomenology in light of possessing the relevant reason, partially determines (or partially overdetermines – I see no reason why genuine overdetermination with respect to reasons would rule out that an agent acted *because* of any of the relevant reasons) the agent's resultant action. This basic picture that I have sketched can be expanded in many ways; here is one: It may further be the case that the rational human agent does not have direct epistemic access to the relevant reason and cannot hold the reason, at least partially, before her mind's eye, from the internal perspective, but that her cognitive phenomenology merely differentially responds to her possession of the relevant reason, and this phenomenological change is what is directly epistemically accessible to the agent, etc. The point of all of this is that if a rational human agent is to act because of a reason, then she must be able to tell when she possesses the relevant reason and then respond in turn.

This all, of course, is not to claim that the fulfillment of the satisfaction conditions of some ways we ought to act are always epistemically accessible to us, or that they must be epistemically accessible to us in order for us actually to be required to act in those ways. For example, many contemporary philosophers believe that knowledge is the norm of assertion, i.e., that we ought not to assert a proposition unless we know that proposition. However, given the fact that knowledge is almost certainly externalistic in at least certain respects, and given that at least the warrant condition is almost certainly externalistic in at least certain respects, then we can never infallibly tell, from the internalistic perspective alone, when we have satisfied the norm and when we have not. But this need

not mean that knowledge is *not* the norm of assertion, as long as proponents of the knowledge norm theory are willing to admit that sometimes we disobey rational norms, with respect to assertion, and things would seem exactly the same to us, from the internal perspective, were we correctly following those rational norms. Certainly easy examples from normative and practical ethics are easy to generate as well.

The upshot is that there is a distinction to be made between (i) doing the right thing with respect to some norm and (ii) doing the right thing with respect to some norm because of some reason. It may be possible, I am admitting, that one can do the right thing with respect to some norm while having no idea, from the internal perspective, whether she is actually doing the right thing, while it is *impossible* for one to do the right thing with respect to some norm *because of some reason* while having no idea, from the internal perspective, that she is acting *because of that reason*. This distinction is not far from, and can be seen as importantly analogous to, Kant's famous distinction between acting *merely in accordance with a rule* and acting *for the sake of, and as inherently governed by, a rule*.<sup>24</sup> The former is possible to achieve without knowing it; the latter is not.

As I showed in the last three sub-sections, investigators generate hypothetical rational normativity by rationally requiring of themselves that they act in certain ways when they investigate. There are certain self-imposed, self-generated ways one must act if one is to count as investigating. But acting in these ways without realizing that one is acting in these ways, or acting in these ways without acting because one realizes one must act in these ways, will not suffice for investigation. One must act *because of* the relevant requirement and not merely *in accordance with* it. Here is why, for each case:

Investigating requires willing that one investigate, consciously attempting to achieve the goals of investigation by employing particular methods, while holding a particular background theory as true. Investigation requires *trying* to participate in a specific research project. Again, this is merely a self-imposition, but one that is actually required. But *trying* is an intentional notion. One cannot try to do something by accident. Trying, then, i.e., willing, requires acting because one recognizes that one ought to will, because one recognizes that one self-requires that one do something. Adhering to the self-imposed norm of willing investigation cannot be accomplished by accident.

Further, the capacity to attempt to differentiate between competing propositions or kinds of propositions, the self-imposed demand that an

investigator possess the capacity to undertake to differentiate between competing propositions and kinds of propositions, similarly cannot be possessed or accomplished accidentally. If an investigator is to recognize that she has required of herself that she be able to, or at least attempt to be able to, act in a certain way, and if she is to act because she recognizes this self-imposed demand, then she cannot merely act in accordance with this demand – she must act *because of* this self-imposed demand.

Finally, the ability to analyze and synthesize different pieces of either non-empirical or empirical/a posteriori evidence, the ability to recognize and act correctly with respect to the self-imposed demand that one be able to attempt to analyze and synthesize different pieces of either non-empirical or empirical/a posteriori evidence, is something that must be accomplished because of a recognition of this hypothetically normative demand. Again, an agent cannot accidentally abide by this self-imposed demand – she must act *because of, out of respect for, due to her recognition of* this demand.

But this is not all an agent must be able to do in order to act out of respect for, because of, her self-imposed standards. In order to act correctly out of respect for her self-imposed rules for investigation, she must not only have some epistemic access to the rules themselves, but must also have epistemic access to the satisfaction conditions for the rules and whether those satisfaction conditions are actually met. It is probably correct to say that an understanding of a rule often (or always) entails an understanding of its satisfaction conditions. However, it could be possible to understand a rule and its satisfaction conditions but have no idea whether those conditions are met. Consider, for example, the entirely made-up rule that you not kill more than 10,000 individual bacteria in a 24-hour period. It seems as though you (or at least it seems as though *I*) understand this rule, as well as its satisfaction conditions. However, I would have no idea whether I met the satisfaction conditions for the rule.

I think it is obvious why agents must be able to evaluate their progress with respect to their self-imposed rules. Since investigators self-require that they follow certain rules, they also self-require that they check to make sure they are abiding by these rules, and that they are abiding by these rules out of respect for the rule itself. This is just one more self-imposed normative demand that accompanies investigation as it is currently practiced.

#### **IV.8 Self-imposed normative demands are only a priori accessible**

It has long been thought that knowledge of rational normativity, of rationally normative demands, and of whether those demands are

being fulfilled, is accessible only a priori.<sup>25</sup> One reason for thinking this is that rationally normative truths seem to be necessary in a way that empirical truths are not. However, another, more direct reason for thinking this is that rationally normative properties, in and of themselves, just seem to have no characteristic or special sensory qualities. Look at, say, an immoral act occurring. You see, hear, etc., all of the sensorily-accessible features of the act, but nowhere do your senses encounter, as such, the immorality of the act. This was enough to lead Hume to claim that there were no such features, that we project these features onto actions, but that the features themselves are not an objective part of the action. Even further, it seems as though our senses are very good at interacting with the world causally, in response to the way the world actually is. However, it does not seem as though our senses can, in and of themselves, causally interact with how the world should be, nor does it seem as though our senses can non-causally interact with anything at all.

If it is the case that our senses do not, in and of themselves, interact with the rationally normative, and do not, in and of themselves, give us knowledge of the rationally normative, but that we still do, nonetheless, have knowledge of the rationally normative, or at least have some evidence regarding it, then we must get this knowledge, at least in part, via non-empirical means, via a priori rational-intuitional means. This is a very quick-and-dirty proof that our rationally normative knowledge must be a priori in nature, but I take it to be sufficient for our current purposes. If rationally normative demands are accessible only a priori, then a proper subset of these demands, self-imposed rationally normative demands, is also accessible only a priori.

In order for investigators to know that they are holding themselves rationally responsible for investigating, that they are holding themselves rationally responsible for being able to distinguish between competing propositions and kinds of propositions, that they are holding themselves rationally responsible for being able to synthesize non-empirical and/or empirical/a posteriori evidence, then they must employ authoritative rational intuition. Further, in order to check whether they are meeting the standards that they have self-imposed, they must employ authoritative rational intuition. This employment of authoritative rational intuition is an employment of the vehicle by which agents gain a priori access to the hypothetically rationally normative facts they have generated and to which they hold themselves rationally responsible, as well as to the satisfaction conditions of those norms and whether those satisfaction conditions have been met.

It is important to remember that it is not just any rational intuition or performance of rational intuition that will deliver to agents the relevant knowledge of their self-imposed demands and whether these demands are being met. Since authoritative rational intuitions are those that are intrinsically compelling or self-evident via properly-functioning cognitive mechanisms for delivering evidence to their beliefs, and essentially reliable, hence they are those that are fully appropriate for absolutely skepticism-resistant and luck-avoiding, i.e., *authentic*, a priori knowledge, then when agents self-require knowledge of the satisfaction of self-imposed norms, they self-impose a demand for authoritative rational intuition.

## V Conclusion

Investigators self-impose a demand for authoritative rational intuition by investigating in the way they do, by holding themselves rationally responsible in the ways they do, by rationally demanding various things of themselves. This is what I think this chapter proves. What I think this chapter does not prove is that it is objectively certain that rational intuitions are always, or even sometimes, authoritative, or that a priori knowledge definitely exists. The argument of this chapter shows nothing more (and also nothing less) than that every rational human animal engaged in investigation requires authoritative rational intuitions of themselves. And this, I think, is enough. The title of this book says that it is *in defense* of intuitions, i.e., *in defense of authoritative rational intuitions*. One way to defend something is to take the wind out of the sails of its opponents. I take this chapter to be doing not only that, but also showing the skeptical empiricist opponents of rational intuition that they have actually been on the side of authoritative rational intuitions all along.

# 1.2

## Beyond Experimentalism

*Addison Ellis*

### I Introduction

In recent years, philosophers have become increasingly concerned with the question of whether philosophical intuitions are reliable sources of evidence. Experimental philosophers, in particular, have begun to make an impact on the way mainstream philosophers think about the role of intuitions in philosophy. They argue that it is possible for good empirical work to reveal the truth about the nature and reliability of the intuitions that philosophy has relied on so heavily.<sup>1</sup> For example, the positive experimentalist program has it that intuitions may be reliably used only insofar as they can be properly calibrated by empirical science. The negative program has it that intuitions are generally unreliable sources of evidence, and that empirical science will show us how and why. My project is to demonstrate, from a contemporary Kantian point of view, that neither of these programs is satisfactory. **First**, I hope to show that there is a categorical difference between the kind of intuitions experimental philosophers actually take seriously and the kind of intuitions that we *ought* to take seriously, namely, *authoritative rational intuitions*.<sup>2</sup> And **second**, I hope to show that a careful focus on authoritative rational intuitions can defeat some of the most worrisome problems that have been presented by intuition-skeptical empiricists.

In particular, I would like critically to examine what I take to be the most serious worry about the reliability of intuitions per se: The Calibration Dilemma, developed by Robert Cummins in his paper, "Reflections on Reflective Equilibrium." The Calibration Dilemma has rarely been properly appreciated by philosophers who do serious work on intuitions. Here I will suggest that there are at least two possible approaches to The Calibration Dilemma: one which, if



it is viable, *overrides* it and one which *undercuts* it. The first attempt at a solution assumes that the kind of intuition Cummins is specifically concerned with *is* actually worrisome and unreliable. Then this proposed solution will attempt to yield the result that, although these “intellectual seemings” or “armchair judgments” very well may be unreliable, it is in principle possible to calibrate them and still put them to some kind of philosophical use, even if that use is extremely limited and ultimately unsatisfactory. The second solution, which is the one I will ultimately endorse, claims that The Calibration Dilemma does not actually apply to the class of intuitions that are *self-calibrating*, namely *authoritative rational intuitions*, i.e., intrinsically compelling or self-evident, active, self-conscious takings of propositions to be necessarily true and a priori, that are essentially – i.e., non-accidentally or necessarily – reliable or truth-indicating, and whose evidence is delivered to belief by a properly-functioning cognitive mechanism.

I will begin by distinguishing three kinds of intuition. **First**, there are the intuitions that especially worry experimental philosophers, and which, in turn, have been championed by many contemporary neo-rationalists – namely, “intellectual seemings,” which are sui generis propositional attitudes. George Bealer and Michael Huemer give what I take to be the definitive account of these sui generis propositional attitudes, and they take these to be *all* that intuition amounts to. Their account is as follows. Something counts as an “intellectual seeming” just in case it is a *non-inferential*<sup>3</sup> *appearance, or perception-like presentation, that inherently expresses some proposition*. It just *seems* to me to be the case that something cannot be both red and green all over. I just *do* think that something cannot be both red and green all over. This sui generis propositional attitude, experimental philosophers think, does not have the sort of “modal tie to the truth”<sup>4</sup> that is required for it to be deemed fully reliable.<sup>5</sup> Therefore, the reliability of philosophical intuitions is questionable. There are a number of reasons why we might think this. For one, the way these intellectual seemings come about can be affected by a number of factors. Among them are:

- (1) *socialization*, i.e., the community of which I am a part tends to think this way,
- (2) *evolution*, i.e., it was evolutionarily beneficial to believe this, but it is not *true*, and
- (3) *psychological biases*, i.e., some bad processes of reasoning are instances of bias types.

More generally, the factors that might affect the way my unconscious brain-processes work are often totally irrelevant to the truth. For instance, it is not directly relevant to the truth of proposition P that all or most of the people I grew up with have a strong belief in P: strong belief, in and of itself, does not entail truth (except of the proposition Q that someone strongly believes P). Or even if some people have frightened me into believing P, it does not follow that my belief about P is true. This is obvious enough, and here we can see the basic worry that experimental philosophers have about intellectual seemings. It may very well *seem* to me that P is true, but I have no good reason to trust the seeming itself.

**Second**, there are also philosophers, including experimentalists, who do not think of intuitions specifically as intellectual seemings but do think of them as *unconsidered or unreflective, spontaneous* beliefs or judgments, a.k.a. “armchair judgments,” or dispositions to carry out such judgments.<sup>6</sup> As opposed to the *sui generis* or “intellectual seemings” approach to intuitions, the “armchair judgments” approach is also known as the *doxastic* approach. Armchair judgments are not only unreflective and unconsidered, but they can also fail to be either *intellectual* or *seemings*. Sometimes, when I am presented with a philosophical scenario, I respond with some claim that has a non-evidential phenomenology. What this means is that it has no phenomenological “rational pull” on, or intrinsic compellingness towards, my choosing the claim that I choose. This can be contrasted with intellectual seemings, which do have at least a *somewhat* evidential phenomenology – that is, they do in fact have *some* intrinsic compellingness or self-evidence and they do thereby rationally dispose me to believe one thing or another.

**Third**, while most contemporary philosophers take either the *sui generis* or *doxastic* approach to intuitions,<sup>7</sup> I will argue that there is another kind of intuition which does significantly more philosophical work for us. Following Hanna in Part 2 of this book, and others in the classical epistemological tradition, e.g., Plato, Descartes, Kant, and Russell, I will refer to these as *authoritative rational intuitions*. Just as intellectual seemings are essentially different from armchair judgments, so too authoritative rational intuitions are essentially different from intellectual seemings and armchair judgments alike. More precisely, authoritative rational intuitions have the following three fundamental features:

- (1) authoritative rational intuitions provide a non-accidental or necessary tie to the necessary truth-makers of belief, thereby satisfying an *anti-luck* or *externalist condition* on knowledge;

- (2) authoritative rational intuitions are not merely evidential, but are also *self-evident*, i.e., intrinsically compelling, thereby satisfying an *evidential-phenomenological* or *internalist condition* on knowledge; and
- (3) this evidence is delivered to belief by a *properly-functioning cognitive mechanism*, thereby satisfying a *cognitive virtues condition* on knowledge.

Moreover, it is arguable that any account of knowledge, whether a posteriori knowledge or a priori knowledge, that collectively satisfies an anti-luck or externalist condition, an evidential-phenomenological or internalist condition, and a cognitive virtues condition, is an adequate account of knowledge in the highest – or “High-Bar” – sense of rational normativity.<sup>8</sup>

My basic line of argument in this chapter will be as follows. Experimentalists who are skeptical of the reliability of intuitions are relying on some notion of intuition that is at once, paradoxically, both *procrustean* (i.e., a one-size bed is made to fit all sleepers, by chopping off their legs if necessary) and also *needlessly inclusive*. But, rather than stopping short with this reply, I will also go on to show that there is a perfectly philosophically acceptable notion of intuition, namely, authoritative rational intuition, that is not open to the standard worries associated with either the *sui generis* or doxastic approaches to intuitions. So, I will argue, it is possible to save the full-strength epistemic power of at least some philosophical intuitions by accepting the notion of an authoritative rational intuition. I hasten to add that this chapter is not intended to give a definitive answer to those philosophers who are willing to bite the ultimate skeptical bullet – that is, I am not trying to make a case against *global* or *radical* intuition-skeptical empiricism about intuitions. Rather, I will argue that since very few contemporary philosophers, apart from experimental philosophers, are satisfied with accepting global or radical intuition-skeptical empiricism about intuitions, there are a number of important philosophical theses that follow, that there are also clearly better and worse metaphysical accounts of the sufficient justification and explicability of authoritative rational intuitions, *and* that it is possible to offer up such an account. In the end, I will aim to show merely what such an account *would* require, metaphysically speaking.

In order to make this argument work, I will of course have to demonstrate that the standard *sui generis* and doxastic approaches to intuition are seriously flawed. Even more importantly, however, I will

demonstrate that there are a number of unwarranted assumptions at work behind the experimentalist methodology and that the experimentalist methodology does not rest on a sound theoretical footing. If this goes through, then it will show that, ironically, the experimentalist methodology *itself* will be incapable of providing reliable data about our intuitions.

## II A critical taxonomy of intuitions

Here is my critical taxonomy of “intuitions” in the sense that is relevant to contemporary philosophers:

1. **intuitions as intellectual seemings:** intuitions are non-inferential appearances, or perception-like presentations, that inherently express propositions (the *sui generis* approach).
2. **intuitions as armchair judgments:** intuitions are unconsidered or unreflective, spontaneous beliefs or judgments, or dispositions to carry out such judgments (the doxastic approach).
3. **intuitions as rational intuitions:** intuitions are active, self-conscious or reflective takings of propositions to be necessarily true and a priori.
4. **authoritative rational intuitions:** some rational intuitions are intrinsically compelling or self-evident, essentially – i.e., non-accidentally or necessarily – reliable or truth-indicating, and also such that their evidence is delivered to belief by a properly-functioning cognitive mechanism.

Now it is at least conceivable that there is a subset of intellectual seemings that requires the relevant mental states to represent the world in a *reflective* way. Bealer and Huemer already build this into their account of intellectual seemings, but the full implications of it are not worked out by them. The basic idea is that intuitions are epistemologically interesting only insofar as it is possible for us to reflect upon them and then modify or augment them according to other intuitions, and so on. This is a point that most contemporary neo-rationalists do seem to take seriously, and there appears to be a strong argument here against the standard experimentalist procedure.

One fundamental difference between rational intuitions, as active, self-conscious or reflective takings of propositions to be necessary and a priori, and either intellectual seemings or armchair judgments is that intellectual seemings and spontaneous judgments are by definition,

and respectively, *either passively or unreflectively* related to the world. Here is a way to cash out the active/passive distinction:

***passivity***: The mind reacts in a purely causally triggered way to some stimulus or topic of thought, and produces as output nothing over and above what is presented in the stimulus itself, e.g., a thought experiment causes some cognitive mechanism to generate a relevant intellectual seeming.

***activity***: Whether or not there is causal triggering, the mind intentionally and rationally represents the world, and produces something over and above what is present in any given stimulus, for which the rational agent must take cognitive responsibility.

And here is a way to cash out the reflective/unreflective distinction:

***unreflective***: Even though something happens in the mind or is brought before the mind, the mind is not disposed to engage in a process of self-conscious comparative or contrastive consideration of what is in it or brought before it.

***reflective***: Whenever something happens in the mind or is brought before the mind, the mind is then disposed to engage in a process of self-conscious comparative or contrastive consideration of what is in it or brought before it.

In view of these distinctions, I will say that by sharp contrast to either intellectual seemings per se or armchair judgments, rational intuitions are, at least dispositionally, reflected-upon or *considered* in some way, and also successfully intended or *performed* in some way.

As we can see, there is nothing mysterious at all about these terms. The active/passive and unreflective/reflective distinctions alike have a long provenance in the history of philosophy (e.g., as seen in Descartes<sup>9</sup>), and they are explicitly or implicitly used in contemporary debates about, e.g., the nature of sense perception. It is traditionally thought, as one can see in Bealer,<sup>10</sup> that perception is a passive rather than an active process. My distinctions here, then, are not supposed to be fundamentally different from the distinctions Descartes or Bealer has in mind when discussing the deliverances of perceptual and/or discursive cognition.

The distinctions between passive and active intuitions and between unreflective and reflective intuitions are deeply important, because only *active, reflective* intuitions should be relevant or interesting to

philosophers. If an intuition is the sort of cognitive item that either merely happens to me or does not yield at least the disposition to self-conscious comparative or contrastive consideration, or to cognitive responsibility, then there is very little reason to suspect that it has any justificatory force. In this way, by overlooking these distinctions, experimentalists are nicely setting themselves up to win the philosophical debate before the debate even happens. *Of course* purely passive or unreflective cognitive reactions are justificatorily questionable. These reactions can be influenced by all kinds of contingent factors which are completely out of our control.

Some would argue that we can take passive or unreflective intuitions just as seriously, since we also take other passive or unreflective faculties to carry some sort of justificatory force. For instance, these philosophers would argue, we think that sense perception is always passive and normally unreflective, and that nevertheless perception is generally afforded a high-level of justification. Nevertheless, I think that the assumption that sense perception is always passive and normally unreflective is generally unargued-for by philosophers (e.g., Bealer) concerned with intuitions as intellectual seemings, and also, on the contrary, that it is even more plausible to hold that perception is an *active* process.<sup>11</sup> For instance, if one believes that we can actively and reflectively perceptually represent *some* things to ourselves, e.g., by intentionally orienting my body in a certain way and perceptually attending to something in particular (a.k.a. “mindfulness”), then it is quite plausible that perception is one of those active, reflective faculties. Bealer thinks that sense perception is analogous to intuition as intellectual seeming,<sup>12</sup> but he seems to think this mainly because he already believes that intuitions are *passive* intellectual seemings, and not because he has an independent argument for the claim.

Now, one might ask why active, reflective intuitions are more truth-conducive than passive, unreflective ones. For instance, why is it that active, reflective intuitions are not actually *worse* since they are more likely to bring in personal biases, presuppositions, theoretical commitments, and so on? I think that an argument can easily be made that we normally think that our philosophical beliefs are rationally required of us only insofar as we have actively and reflectively examined the evidence, and as a consequence we are supposed to take cognitive responsibility for our actively-and-reflectively-formed beliefs or judgments. Thus, it never seems rationally acceptable for us to judge in a merely knee-jerk way that the cause of someone’s pulling the trigger of a gun is an intentional one. We have to think about, or at least be disposed to

think about, what counts or does not count as an intention, and what kinds of evidence we would expect to find when an intention is either actually present or lacking. Therefore, it seems equally plausible that specifically *rational* intuitions also work this way.

Philosophers who believe that these passive or unreflective intuitions are doing the real philosophical work must also believe that philosophy itself is done by cognitively *shooting from the hip*. That is, the methodology would involve simply “shooting” purely causally-triggered, unconsidered intuitions at one another until a rhetorical victory is won or a rhetorical stalemate is reached. This is, in fact, and at least implicitly, a deeply skeptical view about the nature of philosophy. It is only nominally better if the philosophical picture is that causally-triggered, unconsidered intuitions are first shot at each other, and *then* reflectively compared and contrasted with one another, then modified, then shot again, and then mutually reflectively compared and contrasted, modified, then shot again, etc.,...until some sort of stable equilibrium is reached.<sup>13</sup> But this is like a debate that ends only because all the debaters have ultimately mutually agreed to say the same thing, because everyone is conversationally exhausted. Nothing whatsoever has been done to secure a non-accidental connection to necessary a priori truth. If this is all that philosophy is, then obviously we have got drastically to alter the way we deploy our intuitions – which, according to some intuition-skeptical empiricists,<sup>14</sup> should ultimately involve not applying any of them at all.

However, if intuitions are allowed to be intentional, performed, and reflective, and also directed to propositions taken to be necessary and a priori; if the evidential character of intuitions is allowed to reach the level of intrinsic compellingness or self-evidence, via a properly-functioning cognitive mechanism; and if a plausible metaphysical theory of the non-accidental or necessary relation between rational-intuitional belief and its necessary truth-makers is also added to the basic account of rational intuitions, then, clearly, *not all intuitions are inherently epistemically suspect*. On the contrary, authoritative rational intuitions will *achieve the highest rational norms of knowledge*, i.e., they will constitute authentic a priori knowledge. Again, I think it is obvious that intuitions which are taken to be merely passive or unreflective will be inherently epistemically suspect. So it seems to me equally obvious that the most interesting notion of intuition will be one that builds intentional activity and reflectivity into its basic structure from the get-go. Thus if I am right, then there is a *categorical difference in kind* between either intellectual seemings or armchair judgments on the one hand, and rational intuitions – especially *authoritative* rational intuitions – on the other.

Granting all that, then what sorts of propositional declarative representations are *not* “intuitions” in any sense that is relevant to contemporary philosophers, whether intellectual seemings, armchair judgments, or (authoritative) rational intuitions? I take it that we can all agree that all of the following mental acts or states are *not* properly considered “intuitions” from a contemporary philosophical point of view:

conclusions from inferences,  
inferences themselves,  
dogmas,  
faith,  
fantasies,  
guesses,  
hallucinations,  
hunches (as Bealer notes),  
mere assertions,  
non-cognitive declarative affects and emotions,  
reflexes,  
seizures,  
stipulations,  
suppositions,  
wishes,  
and so-on.

These mental acts or states are either inherently passive (hallucinations, reflexes, seizures), inherently unreflective (dogmas, hunches, mere assertions), inferential (conclusions from inferences, inferences themselves), merely subjunctive and not assertoric (suppositions), lacking in conceptual and intellectual character (faith, non-cognitive declarative affects or emotions), or do not involve responsible acts of willing (fantasies, wishes). Therefore, none of them are intuitions in any sense relevant to contemporary philosophers, and most certainly, none of them are (authoritative) rational intuitions.

### III The Calibration Dilemma

The Calibration Dilemma, a.k.a. The CD, is the following worry, as raised by Robert Cummins:<sup>15</sup>

On the assumption that philosophical intuitions must be “calibrated,” i.e., tested for reliability, either (i) philosophical intuitions *cannot* be calibrated, in which case they are epistemically empty



because meaningless, or else (ii) they *can* be calibrated, in which case they are epistemically unnecessary because redundant. Hence in either case, they are “epistemologically useless.”

Philosophical intuitions are cognitively and rationally effective only insofar as they can lead us to necessary a priori truth.<sup>16</sup> Cummins gives some compelling reasons for believing that we must calibrate our philosophical intuitions in order to judge their reliability. If I am performing a properly rigorous scientific experiment, I cannot know that the data collected are reliable data unless the instruments I use are properly calibrated. That is, I must first check the reliability of the instrument before collecting the data.<sup>17</sup> Similarly, it would be unwise to use my best philosophical instruments (e.g., my rational intuitions) for forming beliefs about the world if I have not first confirmed that those instruments are indeed reliable. Thus, it seems, we need the most independently plausible method<sup>18</sup> for calibrating our philosophical intuitions. Cummins thinks that the best candidate for this method is empirical science, since empirical science appears to be the most effective and reliable tool for directly gaining knowledge about the world.

However, if in order to know that our intuitions lead us to necessary a priori philosophical truth we have to calibrate them using empirical science, then we are getting the truth *from empirical science* and not from the intuitions, and that truth is *contingent a posteriori*, and not necessary a priori. Whatever justification the intuitions might otherwise have had seems to drain into the empirical work. Therefore, the philosophical intuitions themselves are useless regardless of whether or not we can calibrate them.

This is a shocking conclusion because it threatens to level any area of philosophy that relies on the use of intuitions. Even *ethics*, Cummins thinks, may not be saved in the end since it relies so heavily on intuitive cases. Thus, it appears that The CD is one of the most worrisome threats to the reliability and usefulness of philosophical intuitions since the conclusion is that no philosophical intuitions are useful. That is why I will use The CD as the fulcrum of my discussion in this chapter.

Other worrisome threats to the reliability and usefulness of philosophical intuitions, such as (i) the empirical fact of widespread disagreement across intuiting subjects or cultures, and (ii) the further empirical fact of intuitional inconsistency and nonrational variability within the cognitive lives of many individual subjects, will also be considered along the way.

Later, in Section VIII, I will also spell out what I call *The Reverse Calibration Dilemma*, or The RCD – a similar dilemma that is, ironically, faced by the empiricist intuition-skeptic. The RCD is as follows:

- Either (i) we find that someone has the right intuitions by doing philosophy, or else
- (ii) we find out that someone does not have the right intuitions, and this also involves doing philosophy. Either way, experimental work is epistemologically useless for the specific task of evaluating intuitions.

Now I want to unpack the two possible solutions to The Calibration Dilemma. I will show that the first proposed solution will not work, and also that the second proposed solution *does* work, provided that it is given a proper epistemic and metaphysical foundation.

#### **IV Proposed solution 1: how an experimentalist or intuition-skeptical empiricist might look at the CD**

Here I will explain how either an experimentalist or someone who is also an intuition-skeptical empiricist in some other way might try to argue that there is a way of overcoming The CD. I will then argue that this proposed solution cannot work since the solution still involves, *at the very least*, giving up all the most important philosophical questions.

*If* it turns out that there are good experimental methods for determining the reliability or unreliability of either intellectual seemings or armchair judgments, *then* it is at least possible that we can find reliable intellectual seemings/armchair judgments. Nearly everyone in X-Phi accepts this thesis. However, the worry is that once we have determined the reliability of these intellectual seemings/armchair judgments, then they become epistemically useless because they are redundant in relation to the method of determining their reliability. There is, however, supposedly a way around this worry. That is, it may be possible for experimentalists to take advantage of a method overlooked by Cummins.

As Brian Talbot<sup>19</sup> has pointed out, if we are working with the correct model of unconscious mental processing<sup>20</sup> and assuming that there is a dedicated mechanism for the production of intuitions, then we can show that some categories of intellectual seemings or armchair judgments are more reliable than other categories of intellectual seemings/armchair judgments because the cognitive mechanism behind some

*kinds* of intellectual seemings/armchair judgments tend to produce reliable responses to the world. Still, one might think, these remain epistemically useless, because the empirical work is doing all the justification in our project. However, it may be argued that this is not the case for at least a handful of philosophical problems. In particular, if some philosophical hypotheses have empirically verifiable effects, we can use empirical data to support those philosophical hypotheses. Nevertheless, as I will now argue, this is not going to make the calibration of intellectual seemings/armchair judgments *sufficient* to count as evidentially sufficient justification for any serious philosophical conclusions.

Even though we have done the empirical work required to determine the reliability of intellectual seemings/armchair judgments, we can only ever empirically calibrate those intellectual seemings/armchair judgments that are about the empirical world. In other words, *empirical* intellectual seemings/armchair judgments and *philosophical* intellectual seemings/armchair judgments are fundamentally different because science and philosophy answer questions about the world in two fundamentally different ways. It may seem to me when I drop a bowling ball and a tennis ball at the same time from the top of a building that the bowling ball will fall at a faster rate. I can check this empirical seeming or judgment to see whether it is (1) correct, and (2) produced by some reliable unconscious process; but even if it *is* true and reliably produced, I still get all the relevant justification deriving from these intuitions from the empirical evidence itself. This is *not* the case, however, with distinctively *philosophical* intellectual seemings/armchair judgments<sup>21</sup> because we cannot calibrate philosophical intellectual seemings/armchair judgments *directly*.

One simple way to demonstrate this is to show that there is at least one philosophical problem (with its own set of associated intellectual seemings/armchair judgments) that cannot be solved only by collecting and interpreting empirical data. As long as we accept this, and we also accept that intellectual seemings/armchair judgments, across the board, are produced by similar unconscious processes, then we should conclude that *if* we find high reliability in some empirical intuitions, we might be able to use them as evidence in favor of the reliability of philosophical intuitions that fall into the same category. If, e.g., it turns out that my intellectual seemings/armchair judgments about causal relationships in the empirical world are generally reliable, then I should be able to use that as evidence that my philosophical intellectual seemings/armchair judgments about the nature of causation have some reliability.

The one glaring problem with this purported solution to The CD is that, if it is true that there really is a fundamental difference between philosophical questions and scientific questions, then it seems clear that empirical evidence will always strictly underdetermine philosophical knowledge. That is, philosophy is in the business of giving us mostly a priori knowledge about the world, and at least one necessary condition for a priori knowledge is that it is both necessarily true and also strictly underdetermined by all the merely sense-experiential and/or contingent natural facts. This is, of course, a highly contentious claim since there are many empiricists, pragmatists, and scientific naturalists who would argue that there is no authentic or “High-Bar”<sup>22</sup> a priori knowledge in this sense, and that philosophy only gives us a posteriori knowledge about the way the world is, if it provides any knowledge at all. Obviously, I do not have the space here to weigh in on whether there is a real distinction between the a priori and the a posteriori,<sup>23</sup> but it seems to me clear that philosophy must be sharply different from natural science at least in the sense that it gives us *some* kind of a priori knowledge. Moreover, even if that a priori knowledge were merely *stipulative*, it would still be the case that a set of empirical data in and of itself would never *give us* the answer to any philosophical problem.<sup>24</sup>

So, on the one hand, it may be possible to take advantage of this overlooked empirical method. But on the other hand, most philosophical questions cannot be seriously or fully addressed this way. So, in the end, one either has to give up most of philosophy (i.e., Cummins is right), or else one has to re-think the role of intuition in philosophy.

It seems to me that fundamental questions about truth, meaning, knowledge, necessity and possibility, the mind-body relation, personhood, free will, intentional action, morality, and so on are questions that simply could not be answered by appealing to any amount of empirical evidence. Clearly, some philosophers think that this is not the case. However, if we take a look at the relevant literature, it becomes clear that the conclusions drawn about, say, free will, are drawn ultimately using a priori methods and not purely a posteriori ones. For example, Mark Balaguer<sup>25</sup> thinks that free will is an entirely open empirical question, in the sense that the most pressing task we have is to look at the right empirical data about causal connections in the brain in order to determine whether we have libertarian free will. But even Balaguer first does some a priori philosophy that rules out compatibilism as a genuine possibility. Then, purportedly having established a priori the truth of incompatibilism, and also purportedly having established a priori that hard determinism and metaphysical libertarianism are the only relevant

versions of incompatibilism, Balaguer thinks that the only thing left to do is to look for an empirical match for one of the two theories.

Obviously, this does not mean that Balaguer's search for the truth with respect to free will is a *purely* empirical or a posteriori pursuit; it means only that natural scientific data should be taken into consideration when judging one way or the other. But my view does not oppose this. I am claiming only that ultimately our conclusion as to whether we have free will or not is a priori and strictly underdetermined by the merely empirical (i.e., sense-experiential and/or contingent natural) facts. I think that Balaguer is right that natural scientific data must also correspond to our best theory. So, it is not clear that this is a case of purely empirical or a posteriori philosophy. Even if it is true that our best natural science has to be applied to our best philosophical theories, it does not follow that the question of free will is a natural scientific question or that all we have to do is appeal to the natural scientific data to answer the philosophical question of free will. I take it that this also applies to every other philosophical question since philosophical questions generally seem to be about necessary features of the world.

So, it seems that empirical evidence alone always strictly underdetermines philosophical knowledge. Thus, we either give up the pursuit of philosophy or else give up the experimentalists' analysis of philosophical intuitions. Luckily, there is an analysis of philosophical intuition – as authoritative rational intuition – that experimentalists completely overlook, and this will explain why I think the second horn of the dilemma must be endorsed by the experimentalist. The Undercutting Solution below will give us convincing reasons to reject experimentalism and also to reject the standard analysis of intuition. It will also begin to provide the framework for an epistemically and metaphysically robust account of intrinsically compelling or self-evident, essentially reliable, and cognitively virtuous rational intuitions.

## V Proposed solution 2: undercutting

The second and most important solution to these dilemmas is what I will call *The Undercutting Solution*, or The US. The US says that philosophers engaged in these debates have overlooked an important alternative account of intuition, as authoritative rational intuition. If this account of intuition is correct, then worries like The CD are not even applicable any longer. That is, the real possibility of authoritative rational intuitions leads to the real possibility that we may not need to use empirical data as an independent check-point against

our intuitions. Rather, we may actually have access to *self-calibrating* or authoritative rational intuitions: intrinsically compelling or self-evident, essentially reliable a priori beliefs about necessary and a priori truths, whose evidence information is delivered to a priori belief by a properly-functioning cognitive mechanism. Hence there is an entire class of intuitions that experimentalists have completely overlooked, simply because they operate under the assumptions that (i) one or another version of empiricism is true, and (ii) that Scientific Naturalism is true. But if we do *not* operate under these assumptions, and instead adopt a sharply different, although still classical, account of intentionality and knowledge, the standard worries about calibration and disagreement would not even apply.

Here is what I mean by this. An account of intentionality tells us how the mind is connected to the external world. If an empiricist and/or scientific naturalist account of this mind-world connection is assumed, then intuitions will be restricted to what experimentalists are primarily concerned with. But, there are many ways of talking about what an intuition is, and I am looking for one that gives a fundamentally different account of the mind-world connection than the accounts provided by empiricism and/or Scientific Naturalism.

I will sketch a rough outline of an account of intentionality that is importantly different from the standard empiricist account, the standard scientific naturalist account, and also the *old* rationalism (for the distinction between the old rationalism and neo-rationalism, see Introduction above), and then show how self-calibration could work.

In a nutshell, The US is a proposal which says that the only way for intuitions to be self-calibrating is for them to be (i) *rational* intuitions, i.e., active takings of propositions to be necessarily true and a priori, (ii) *intrinsically compelling*, i.e., self-evident, (iii) *cognitively virtuous*, i.e., delivered by a properly-functioning cognitive mechanism, and above all (iv) *essentially reliable*, i.e., such that *there is a non-accidental or necessary connection between the way the mind is and the way the world is*. As my arguments in this chapter unfold, it will become clear that X-Phi in particular and intuition-skeptical empiricism more generally both fail to provide adequate accounts of the self-calibration of intuitions. Equally but oppositely, the *old* rationalism, owing to its commitment to infallibilism and platonism, is open to empiricist intuition-skepticism. The US fills the void by suggesting that the dual failure is the result of inadequate epistemology and metaphysics on both sides, and to that extent, The US supports the basic aims of a *neo-rationalism* that is also decisively *Kantian* in character.

To motivate this account of intuitions as authoritative rational intuitions from a contemporary Kantian neo-rationalist standpoint, I will give three arguments. **First**, I will present a worry about the very plausibility of an experimental method for testing intuitions. If I am right, then it will follow that either the current experimental methodology has to change radically, or that the experimentalist must re-think the nature and role of intuitions completely. **Second**, I will argue that intuitions, if they are to be philosophically effective at all, must be effective *on their own merits* and not useful in virtue of being calibrated by an external, non-intuitional calibration source. I will argue that one way of thinking about the role of calibration in a philosophical method that takes intuitions seriously is to ground the self-calibration of authoritative rational intuitions on the metaphysics of transcendental idealism. If this is all true, then there is yet another reason to think that we can (and should) alter the standard account of philosophical intuitions. **Third**, I will claim that X-Phi proceeds on a number of unwarranted explicit or implicit assumptions – e.g., on the assumption that some or another version of empiricism is true and/or that Scientific Naturalism is true. But these are *merely* assumptions. If we start from the assumption that either old rationalism or neo-rationalism is true, and that some or another version of anti-empiricism or anti-naturalism is true, we may get a radically different understanding of what a philosophical intuition is, and we would certainly be able to infer different conclusions about the role of intuitions in philosophy.

To begin arguing in favor of this shift from focusing on intellectual seemings/armchair judgments to focusing on authoritative rational intuitions, I will consider the experimental method employed by those doing contemporary work in X-Phi, and I will argue that it presents to us several important problems about the standard account of philosophical intuitions.

## **VI Intuition modelling and the failure of experimental philosophy**

One of the basic implicit assumptions made by those who purport to study philosophical intuitions empirically is that there is some interesting way of modelling the production of an intuition. Even if these philosophers are not explicitly using such a model in their work, it must be *possible* to provide a model. My main aim in this section is to show that the sort of model that can be provided by experimental philosophers is highly problematic for the kind of experimentation that is required

to draw their conclusions. In pursuit of that aim, I briefly discuss two possible models of intuition that could be endorsed by experimental philosophers. Then I argue that no model they can provide will be satisfactory, given the constraints that must be in place if we are to take rational intuitions seriously. I conclude that either some new methodology must be proposed or else experimental philosophers must accept my own account of philosophical intuition as authoritative rational intuition.

Before proceeding, I will briefly explain what X-Phi is up to. Then I will explain why it is important for experimentalists to provide a model for intuition production.

X-Phi, in its contemporary guise,<sup>26</sup> can be split into two distinct programs: (1) the positive program and (2) the negative program. The positive program is aimed at making philosophical progress with respect to our intuitions by investigating them empirically. The basic idea is that philosophers often make claims about our intuitions that need empirical support. For instance, if a philosopher claims that the burden of proof is on the person who rejects theory X when theory X is supported by widespread intuitions, the claim that these intuitions are widespread needs empirical support. One way to provide this empirical support is to conduct surveys designed to measure folk or expert intuitions on the matter. If the data show that theory X is widely intuitively plausible, then a burden of proof argument can go through. This is, of course, only one way in which the positive program of X-Phi works.

The negative X-Phi program is aimed at undermining the philosophical use of intuitions. The basic idea is that philosophers often appeal to philosophical intuitions in order to justify their claims, but that these intuitions are highly contentious. That is, these intuitions are either widely disagreed upon, produced by cultural factors that are not relevant to the truth of the intuition, or they are the result of some other biases or irrelevant factors. According to the negative program, many of our intuitions are produced by irrelevant factors in the sense that we would expect to have some intuitions that are false for simple cultural reasons. Sometimes we learn false things that become intuitive, and sometimes we have intuitions that are the result of some evolutionary process which is not aimed at the truth, but at spreading genes.<sup>27</sup> If this is true, then our use of philosophical intuitions is often unjustified.

Given this brief explanation of X-Phi, we are now in a position to see how modelling is important. In order to carry out the relevant experiments or quasi-experiments, experimentalists need to be able to say what precisely an intuition is. In order to do this, it seems that some



sort of causal cognitive model is required. This is true of cognitive science generally. In order to make predictions, the predictions have to be made in relation to some causal model.

I take all of this to be uncontroversially true. Since X-Phi makes empirical claims about intuitions, based on scientific evidence, then experimentalists must *in principle* have some idea about how those intuitions are formed and/or how they relate to other cognitive phenomena. This is standard fare in cognitive science. For instance, participating meaningfully in the debate about whether connectionist representations can account for the compositionality of the content of certain linguistic representations (e.g., my representation of “John loves Mary” entails that I can represent “Mary loves John”) or not, requires some working conception of (i) how connectionist representations are produced, and (ii) how they relate to other relevant things like propositions, content, language, etc. It therefore seems uncontroversially true that even if cognitive science in general can be done without the explicit use of models, in order to make good empirical claims about intuitions, then researchers must have a working conception of how they are produced and how they relate to other relevant structures, faculties, and so on. So in order to make good on certain X-Phi claims, experimentalists must provide a plausible, testable psychological story about how intuitions are generated.

The next step is to attempt to motivate some account of intuition modelling. I will begin by explicating and discarding one account of an intuition model, i.e., the modular account, and then I will consider the possibility that a different account, using a Bayesian model of intuition, could work.

### **VI.1 The modular account**

One way to model intuitions is to describe a causal system that is modular. The idea here is that there is some dedicated cognitive mechanism for the production of intuitions. This is an idea that seems not to be explicitly represented in the X-Phi literature, but it is one way to model intuition production, and it is an especially interesting move for those who think some brand of the massive modularity thesis is true. Here, briefly, is one possible way to justify a modular account of intuition production.

The intuitions that are interesting to X-Phi are either intellectual seemings or armchair judgments.<sup>28</sup> An idealized process for producing intuitions in either of these senses would be one that could be expected to produce the same intuitions in the same contexts and under the same circumstances. A good candidate for this sort of process – that is,

one that would easily play the appropriate role – is a cognitive module. A cognitive module would, it seems, reliably produce intuitions given the right inputs. Taking into consideration the standard example of what sort of intuitions we are supposed to be dealing with (according to X-Phi), let us think about the case of a philosophical thought experiment. The thought experiment presented to the subject is supposed to trigger a philosophical intuition which is both immediate and unreflective. Given the same circumstances, at a different time the same thought experiment (the relevant input) should trigger the same intuition (the relevant output). So, a cognitive module is at least a plausible candidate for a good model of intuition production.

There are at least three *prima facie* problems with a modular account, however. **First**, massive modularity<sup>29</sup> is not widely accepted in cognitive science. Therefore, most experimentalists will reject a modular model for the same reasons they would reject any modular account of cognition. **Second**, and more importantly, there is no good reason to suppose that we would possess such a module. We need a good way of modelling the production of intuitions, but it seems as though we would need some independent reasons for thinking that the model must be a modular one, and there are no good independent reasons for thinking this is true. There is no good reason, for instance, for us to suppose that evolution would provide us with an intuition module. Intuitions themselves may be evolutionarily useful for many reasons, but unless the mind is *massively* modular and unless there is no other possible model of intuition production, we have no reason to suppose that it is a modular model. As I will propose below, I think that the intellectual seemings/armchair judgments that experimental philosophers are concerned with can be modeled in a much more plausible way. **Third**, and most importantly, a modular account of intuition simply presupposes that intuitions come immediately fully formed. In other words, there is an assumption here that intuitions are not able to be revised or reconsidered in any serious way, and that the intuitions we should care about studying experimentally are the ones that some process in our brains generates unconsciously and immediately. This seems just to set up the game in favor of the experimentalist, though, and it is not a theory of intuition that *itself* comes from serious empirical work in cognitive science.

## VI.2 A more plausible model

A sufficiently general model of reasoning using intellectual seemings/armchair judgments can be given instead of a modular account. By this,

I mean that a broadly Bayesian account of intuitions can be outlined by sketching out the causal process by which one comes to an intuition. A Bayesian account of cognition is a statistical way of modelling inferences such that there is a high probability that a certain input will trigger a certain output.<sup>30</sup> I will assume here that this can be done by simply inferring the best causal explanations from our best psychological data. For example, it may seem to be the case that The Trolley Problem, framed in a particular way, tends to produce some specific intellectual seeming or spontaneous judgment in a normal cognitive subject. If so, our best model is one that causally links this formulation of The Trolley Problem with the specific output.

Some may be worried about whether this is actually a scientific model.<sup>31</sup> I have not said much at this point about what a scientific model is supposed to be. However, I would be proving too much if I were to attempt to show that experimentalists cannot provide a proper scientific model at all. I will concede to the experimentalist that it is actually possible to provide such a model and then go on to show that intuition modelling is doomed. The next step is to argue that, despite the possibility of a genuine model of intuition production, it is highly implausible that the model captures what we really want to capture as philosophers.

Before moving on, I should say something briefly about what this model *does* purport to capture about our intuitions. This broadly Bayesian account of intuition production (1) is supposed to give us an idea about the causal structure of intuition production, and (2) it is supposed to provide a basis for actually carrying out intuition experiments – that is, one virtue of a good scientific model is that it legitimates the thing being modeled. It is important that experimentalists have a decent understanding of the basic mechanisms underpinning intuitions in order to claim that any of their conclusions are *about* intuitions.

It is also important to remember that the Bayesian model discussed above is sufficiently *general*, so that it is likely to capture what empirical models would need to capture about intuitions. I do not mean to refer to highly technical computational models, or anything on that level of specificity – the basic thought is that an intuition is the likely response to certain stimuli, given some relevant background conditions. To be sure, the mathematics is important, but only in the sense that it must be *possible* actually to specify how the model works in mathematically rigorous terms. But this is not required in order for the Bayesian model I have in mind to be a guiding assumption among experimentalists.

Note also that I am not relying on the claim that a Bayesian model is the kind of model that *must* be accepted by X-Phi. A Bayesian model is simply one that would be a likely candidate, and through investigating such a candidate model, I can spell out some specific worries that clearly apply to X-Phi, regardless of whatever the truly appropriate model turns out to be.

### VI.3 Worries about a Bayesian model and experimental requirements

Right away, there seems to be at least one sort of worry about this model that needs to be addressed. This is the sort of model that proceeds from particular instances to general conclusions. As such, there is no guarantee that giving a strong Bayesian account of a collection of our particular intuitions will give us any idea about how our intuitions are produced in a *general* sense. Certainly, once a number of intuitions have been modeled in this way, a general picture may emerge. However, the general picture may not be one that gives us any idea about what to expect when given novel input. This may be a problem if experimentalists think they need to use such a model in order to calibrate intuitions – that is, if the model is somehow related to the ultimate justification of our intuitions. I will not address this further in this chapter, but it is worth pointing out that there are some issues to work out with respect to this general sort of model.<sup>32</sup>

As I have pointed out, a modular account of intuitions is not required for the sorts of explanation that experimentalists want to give. However, if experimentalists do give a roughly Bayesian account of intuition production, a problem still lurks. Here is what I take that problem to be.

It seems to be a requirement that intuition experiments (or quasi-experiments/surveys/questionnaires) assume that intuitions are in fact produced in the way described by the model. If it were not the case that intuitions were produced in exactly this way, then experimental data would not be clearly *about* anything interesting. The intuitions actually modeled are the interesting objects that experimentalists want to study. However, the most plausible sort of model that an experimentalist would use seems to give us intuitions that are highly unstable, unpredictable, and therefore not very interesting to philosophy.

All of us who have instructed undergraduate philosophy students know that it can be quite easy to manipulate their intuitions. For instance, present to them the (in)famous Trolley Problem, and they will most likely have consequentialist intuitions. However, present next the Transplant thought experiment, and they will most likely display

deontological intuitions. This presents an interesting problem for the experimentalist. Why would philosophers be interested in studying intuitions that are so unstable? Systematically unstable intuitions are not interesting because they are obviously unreliable. But the aim of intuition-skeptical empiricists is not to prove that obviously unreliable intuitions are unreliable. The aim is to show that the intuitions we take very seriously are unreliable. There is a good reason for suspecting that philosophers do not in fact take *these* intuitions very seriously. If all philosophy amounted to “shooting from the hip” with our intellectual seemings/armchair judgments, we would certainly have a good reason for suspecting that traditional philosophical methods are doomed.

Here is how the experimentalist might try to mend the problem. She might begin by saying that this is a good reason for suspecting that we should not be concerned with folk intuitions, but rather with the intuitions of experts. That is, the reason why undergraduates in philosophy have such unstable intuitions is that they have not given the issues much thought, and they probably do not have all the right skills. Experts, however, *do* have the skills and *have* taken the time to reflect on these very basic philosophical issues. I have two responses to this – I will outline the brief response directly, and then give the longer and more important response in sub-section VI.4 immediately following that.

As to the brief response, I think there is a reason for thinking that this appeal to expertise is far too optimistic. As some experimentalists have pointed out,<sup>33</sup> good psychological data point to the idea that experts are not actually any better than novices at handling thought experiments. Experts are still subject to framing and order effects, which are the main problems with using novices as experimental subjects. If this is right, then I think that it is clear that the problem is not just that we are testing the wrong cognitive subjects, but that we are testing the wrong sort of intuition. If experts have just as much trouble as novices with framing and order effects, then it seems as though the relevant intuitions are just not reliable.

#### **VI.4 Conclusions so far**

Here are the conclusions that follow from what I have argued in this section. I will begin by giving a more elaborate response to the experimentalist who calls for the testing of expert intuitions.

Apart from the worry that expert philosophers are just as bad with thought experiments as novices, there is an even more serious worry for the experimentalist who recommends testing experts. If the response

to the claim that intellectual seemings or spontaneous judgments are unstable is simply that we should not focus on novice/folk intuitions, then it would make *at least* as much sense to recommend that philosophers focus on the *history* of philosophical intuitions as it would be to recommend that contemporary philosophers use *one another* as test subjects. Here is what I mean by this. If experts have the *right* sort of philosophical intuitions, then we can proceed either by using experts as test subjects of proper experiments or by actually doing philosophy with one another. The latter seems more appropriate for at least some purposes. For instance, if we are concerned with how widespread certain intuitions are among experts, our ordinary philosophical practices are at least as good as surveys. In fact, conducting surveys that would check the distribution of philosophical intuitions would, in effect, be the same as doing philosophy. Imagine just asking someone whether they have an authoritative rational intuition that something cannot be both red and green all over. Perhaps they respond with “yes, of course,” or they will respond with “no,” in which case perhaps the surveyor would ask a follow-up question like “why is that?” to which the subject would respond with reasons, and so on and so forth. This is effectively just what professional philosophers do, so performing experiments on experts is either superfluous or no different at all from ordinary philosophical methodology.

Another important point I want to make with respect to expert rational intuition is that it is unclear whether the model outlined in this section is still appropriate for testing experts. One could apply the model when testing experts, but I see no reason to think that the target of the model is appropriate. Remember that the model is supposed to be testing for our passive or unreflective intuitions. However, expert rational intuitions are not like this. Expert intuitions, while they could be *elicited* by providing certain inputs like thought experiments, are “settled” or stable in some way, precisely because the experts have spent time reflecting on and reasoning about these particular intuitions. The conclusion we should draw, I think, is that the model provided above is not appropriate for testing expert rational intuitions. Thus, my more wide-reaching conclusion comes in the form of a challenge to the experimentalist: she must either re-think her experimental methodology pretty radically, or she must accept a different notion of intuition all together, i.e., intuition as authoritative rational intuition.

This is quite a strenuous challenge because it is difficult to see how a new model could emerge. This is not to suggest that it would be impossible, but consider what seems to make a model interesting and useful.

For one, the model needs to give us some idea about how the intuition is causally brought about. But, if our intuitions are of interest only once they have been settled over some period of time and reflection, then an appropriate cognitive model will have to capture this entire process, or somehow isolate the relevant process from the irrelevant processes. The reason that the model outlined above captures the relevant X-Phi-based notion of intuition is that intuitions in their sense are supposed to be passive or unreflective – either intellectual seemings or armchair judgments. Therefore, the model simply has to be a statistical formalization of the causal relationships between relevant inputs and outputs. But this is unsatisfactory if expert intuitions are not being captured.

The other option is to re-think the very notion of a philosophical intuition. Rather than insisting that the relevant intuitions are passive or unreflective, it is entirely possible to focus on expert rational intuitions and *avoid* the experimental work. As I have pointed out, it seems plausible that if the class of expert intuitions includes the right *sort* of intuition, namely authoritative rational intuitions, then doing philosophy is a way of accommodating at least some of the concerns that X-Phi has.

Finally, the biggest worry I have is one about doing X-Phi more generally. Philosophers who are using cognitive models to think about the role of intuitions are doing something akin to philosophical *doxology* (the theory of *opinion*) rather than serious *epistemology* (the theory of *knowledge*). And here is why I think this is the case. Since the notion of intuition that is relevant to X-Phi takes intuitions to be intellectual seemings or armchair judgments rather than authoritative rational intuitions, i.e., intuitions that deliver authentic or High-Bar a priori knowledge, and since the only kind of intuition that can be reasonably tested experimentally is intellectual seemings or spontaneous judgments, it follows that what X-Phi is doing is simply studying empirically how philosophical *opinions* work, rather than how real philosophical *knowledge* works.

I am very much open to conceding to the experimentalists that our passive or unreflective intuitions can be systematically manipulated and are thus prone to serious error and unreliability. So it would not at all be surprising to find that I have some unreliable intellectual seemings/armchair judgments when responding to a philosophical thought experiment while, say, a strobe light is being flashed in front of my face. It should also go without saying that there is something philosophically valuable and interesting about doing this sort of empirical work. It is philosophically valuable to understand what philosophical opinions

are and to understand how or whether they can actually reliably tell us that our judgments are accurate. Thus, X-Phi is not a worthless endeavor by any means, and it is philosophically valuable in a real sense. On the other hand, this sort of empirical work should not be properly considered *epistemology*,<sup>34</sup> since it is not actually studying *the High-Bar justifiers* of authentic a priori knowledge, i.e., cognitive activities that satisfy the anti-luck or externalist condition on authentic a priori knowledge, the evidential-phenomenological or internalist condition on authentic a priori knowledge, and the cognitive virtues condition on authentic a priori knowledge, i.e., authoritative rational intuitions. Therefore, the project of X-Phi is an important one, but only insofar as it is telling us something about the psychology of philosophical opinions, and not insofar as it is attempting to tell us something deep about the nature of authentic philosophical knowledge.

Moreover, and as I have already briefly pointed out, it should come to us as no surprise at all that intellectual seemings/armchair judgments can be manipulated. The important question is whether the manipulation of intellectual seemings/armchair judgments is in any way *relevant* to the epistemology of (authoritative) rational intuition. For instance, it is clear that under differing sets of circumstances people will favor one philosophical conclusion over another. It is easy to provide examples of this sort of behavior by appealing to the interesting psychological data about so-called “intuitive” judgments. For example, people will tend to do poorly on a standard Wason Card Selection task,<sup>35</sup> but they will perform fairly well when the cards are not labeled with numbers and vowels, and when instead the task is structured as a cheater-detection task. But it seems misguided to conclude from this sort of research that philosophical intuitions, understood as authoritative rational intuitions, are generally unreliable or in serious question just because certain surface-level philosophical opinions tend to be unreliable. Analogously, we would never conclude that we are generally not justified in appealing to well-grounded beliefs about our own characters or past behavior, just because strange or unusual circumstances can make otherwise reasonable people believe falsely that they committed a serious crime, e.g., when manipulative interrogation methods or certain drugs are used.

The upshot of this section is that the empirical study of philosophical intuitions, whatever it might have to say about intellectual seemings or armchair judgments, provides no good reasons whatsoever for thinking that philosophical *authoritative rational intuitions* are unreliable or seriously questionable.



## VII Five seriously problematic assumptions made by experimentalism and intuition-skeptical empiricism

I think that there are at least five seriously problematic assumptions lying behind experimentalism in particular, and intuition-skeptical empiricism more generally. If any or all of these assumptions is or are highly implausible, then there are good reasons for favoring a theory which does not make these questionable assumptions. Here are the assumptions I want to challenge:

**Assumption 1: one kind only.** There is one and only one kind of propositional intuition, or intuition-that.

**Assumption 2: one way only.** There is one and only one way of calibrating intuitions.

**Assumption 3: natural scientism.** Natural science does not itself require calibration.

**Assumption 4: no self-calibration.** No intuitions are self-calibrating.

**Assumption 5: intuition-skeptical empiricism.** Either classical Lockean-Humean Empiricism or radical Quinean Empiricism and also Scientific Naturalism are unquestionably true.

It should be already obvious why **assumption 1: one kind only**, is seriously problematic. Most philosophers concerned about intuition have a very narrow conception of what an intuition is, namely, either an intellectual seeming or an armchair judgment, sometimes together with the thought that it is produced by some dedicated unconscious cognitive mechanism. But as I argued in earlier sections of this chapter, it is at least *prima facie* plausible that there are several *categorically different kinds* of intuitions, especially including (authoritative) rational intuitions. In fact, if it is true that experimentalists assume that there is one and only one kind of propositional intuition, then they are playing a rigged game. Or in other words, X-Phi is already implicitly working under the assumption that intuitions amount to passive or unreflective philosophical opinions, which in turn provides a royal road to their intended conclusions. But if it is true that at least some of our intuitions are indeed authoritative rational intuitions in the sense I have outlined, then intuition skeptics are *not* going to be able to conclude that “philosophical intuitions are epistemologically useless,”<sup>36</sup> or even that intuitions tend to be formed by unreliable processes and need to be calibrated by an independent epistemic source, without further independent arguments.

**Assumption 2: one way only**, is also seriously problematic because calibration requires taking an independent standpoint for checking the reliability of some intuition, but natural science cannot be the *only* way of doing this. This is because there are no truly intuition-independent checkpoints. Since natural science is no more independent of intuition than, say, Rawlsian reflective equilibrium, there is just as much reason for deferring to reflective equilibrium as there is for deferring to natural science on its own as an authoritative domain of knowledge.

It is abundantly clear, though, that experimental philosophers do assume that natural science plays this role. Stich has explicitly claimed,<sup>37</sup> e.g., that while natural science does indeed rely on some basic philosophical intuitions, experimentalists are not typically concerned with *those* intuitions. The ones that do concern us are the intuitions about specific philosophical cases, and according to experimentalists, we can evaluate those by using empirical methods.

The basic project that underlies both the positive and the negative programs of X-Phi is predicated upon the idea that data gathered by the natural sciences give us a better understanding of what our intuitions really *are* than philosophy itself.<sup>38</sup> Since natural science is empirical science, one basic assumption underlying the project of X-Phi is that empirical data – e.g., surveys and self-reports – can themselves overturn philosophical intuitions, or show that they are modally unreliable. In order to believe that this is true, one must think that empirical science is somehow immune to (or at least less likely to be affected by) whatever worries there might be about the reliability of philosophical rational intuitions. But this does not take into consideration the fact that the sciences all rely upon some basic philosophical intuitions. For instance, we must take a stand on what counts as an observation, what counts as an experience, whether the basic principles of logic are true, and whether the basic axioms of mathematics are true. None of this is known independently of philosophical authoritative rational intuitions, and thus whatever conclusions we can draw about intuitions from the natural sciences will be conclusions that are also the result of philosophical authoritative rational intuitions. Therefore, there is no more reason to defer to natural science than there is for deferring to some other method that also depends on these philosophical basic authoritative rational intuitions. The thesis that natural science is an intuition-independent domain of authentic knowledge is, ironically, only a *mere* rational

intuition, and, it seems abundantly clear, *not* an *authoritative* rational intuition.<sup>39</sup>

**Assumption 3: natural scientism** is seriously problematic for reasons closely related to my worries about the second assumption. As we have seen, all experimentalists explicitly or implicitly hold that natural science is an epistemologically primitive starting point<sup>40</sup> – which entails that natural science itself is the one mode of inquiry that does not require calibration. If this were not true, then experimentalists would have to be open to the possibility that sometimes it is not natural science, but some other calibration method, which will do the most justice to our philosophical intuitions. This, however, seems strictly forbidden by X-Phi across the board. The basic assumption is that we have to suspend the justification classically or typically claimed by philosophical intuitions until natural science has given us enough good data for deciding on whether they really are reliable or not.

Now suppose that the experimentalist tried to reply to this worry by claiming that natural science is *self*-calibrating. Then this would undermine the experimentalist's basic reason for holding **assumption 4: no self-calibration** is true. If natural science is self-calibrating, then why cannot intuitions (at least sometimes) be self-calibrating too? In fact, I do think that both natural science and authoritative rational intuitions alike *are* self-calibrating. But at the same time, the self-calibration of natural science *presupposes* the self-calibration of authoritative rational intuitions.

Here is what I mean by that. It is plausibly arguable that there must be some authoritative rational intuitions guiding our use of natural science – e.g., authoritative rational intuitions about causation, authoritative rational intuitions about induction, authoritative rational intuitions about abduction, authoritative rational intuitions about elegance and Ockham's Razor, authoritative rational intuitions about deductive logic, authoritative rational intuitions about mathematics, and so on<sup>41</sup> – and in this regard, natural sciences are calibrated by authoritative rational intuitions, and not conversely. We can then also infer two possible conclusions from this: either

- (i) we drop the thesis that methods of inquiry must be calibrated, or else
- (ii) if we retain the thesis that methods of inquiry must be calibrated, then we drop **assumption 2: one way only**.

Now suppose that we hold onto the thesis that methods of inquiry must be calibrated and opt for (ii). Then at least some rational intuitions must

be self-calibrating, i.e., the authoritative ones. And this, in turn, leads me to the fourth assumption.

**Assumption 4: no self-calibration** is seriously problematic in view of the worries I have already expressed about the first, second, and third assumptions. Intuitional self-calibration occurs when an intuition is manifestly reliable without appeal to an external and independent calibration source. For example, *an authoritative rational intuition* would be self-calibrating.

How are authoritative rational intuitions really possible? If some or another version of *rationalism* were true, then authoritative rational intuition could be adequately explained. As we already know from the Introduction, rationalism is the thesis that a priori knowledge of necessary truth is really possible, via human rational-intuitional cognitive capacities. And we also know from the Introduction that there are basically two different types of rationalism:

- (i) *the old rationalism*, e.g., of Plato and Descartes, which says (ia) that rational intuitions *always* deliver *absolutely infallible* information about those objects, and (ib) that that the truth-making objects of human rational intuitional a priori knowledge are *non-spatiotemporal*, *causally irrelevant*, and *causally inert* entities (e.g., Plato's Forms, or Descartes's "true and immutable natures"),  
and
- (ii) *the new rationalism*, or *neo-rationalism*, which says that rational intuitions do at least sometimes, but *not* always, deliver reliable, but *not* absolutely infallible, information about those objects.

My own view is that the *old rationalism* is false, for basically the same reasons offered by intuition-skeptical empiricists, but also that, contrary to intuition-skeptical empiricism, some or another version of *neo-rationalism* is nevertheless correct.

One version of neo-rationalism, not defended by us in this book, says that authentic a priori knowledge via intuitions as intellectual seemings is really possible because sometimes the determinate possession of a concept is enough to guarantee some analytic connection between the concept and the content of the concept.<sup>42</sup> By contrast, another version of neo-rationalism, worked out and defended in Part 2 of this book, invokes a contemporary Kantian theory of mind and knowledge, which would allow one to say that authentic a priori knowledge via authoritative rational intuitions is really possible because, necessarily, the essential structures of the manifestly real world conform to the innately-specified a priori mentalistic structures of our rational human

cognitive powers – i.e., because (an appropriately modest version of) transcendental idealism is true. In either case, it is clear that intuition can be self-calibrating. Clearly most defenders of X-Phi are going to think that this is highly implausible; but it is not clear *why*, apart from programmatic dogmatism. Experimentalists programmatically assume that one or another version of empiricism is true, and also that Scientific Naturalism is true, and no further arguments are offered for these assumptions.

This brings me finally to **assumption 5: intuition-skeptical empiricism**, which is that either classical Lockean-Humean empiricism or radical Quinean empiricism and also Scientific Naturalism are unquestionably true. If my argument against **assumption 4** is sound, then obviously **assumption 5** is also false.

### VIII A possible objection, and two replies

A possible way to object to my anti-experimentalist, or more precisely, *post*-experimentalist, project about philosophical intuitions is to suggest that there is, in fact, a way to confirm authoritative rational intuitions *empirically*.<sup>43</sup> If it is distinctively *like* something to be in possession of an authoritative rational intuition, then, the objection says, it must be possible to discover empirically *when* subjects are actually in possession of an authoritative rational intuition. If this is true, then it seems that it would still be possible to show, as per X-Phi, that there are, e.g., important differences between authoritative rational intuitions themselves and the philosophical intuitions that are actually widely held in a given community or culture, or across different communities or cultures.

I think there are at least two important problems with this objection, however.

(1) **The Reverse Calibration Dilemma.** On the assumption that X-Phi must be able to identify authoritative rational intuitions, in order to be able to discover whether they exist or not, then either

- (i) (first horn) the experimental philosopher discovers that the concept *authoritative rational intuition* is not instantiated, in which case only a priori philosophy is doing the real cognitive-semantic work, and experimental methods are not needed, or else
- (ii) (second horn) the experimental philosopher discovers that the concept *authoritative rational intuition* is instantiated, in which case only

a priori philosophy is doing the real cognitive-semantic work, and experimental methods are not needed.

Therefore, experimental work is epistemologically useless in determining whether a cognitive subject has an authoritative rational intuition or not, and similarly epistemologically useless in determining whether authoritative rational intuition is the appropriate kind of intuition to have in philosophy or not.

**(2) The Problem of Disagreement Revisited.** Even assuming that the experimental work is not epistemologically useless, in the sense that it is redundant, and even assuming that it does show that there are, e.g., important cross-communal or cross-cultural differences in the actual human possession of authoritative rational intuitions, it does not follow from this that we are not sufficiently justified in believing that our own rational intuitions are indeed, at least *sometimes*, authoritative. This is because quite naturally, like death and taxes, and given the highly nonideal character of the actual world and the people actually living in it, including professional philosophers, there are going to be a great many more or less serious philosophical disagreements about precisely *which* rational intuitions are the authoritative ones, without any adverse implications whatsoever for the thesis that *some* authoritative rational intuitions exist, provided that we have other independent good reasons for believing in their existence, such as the ones presented in Chapter 1.1 above, and Chapters 1.3 to 1.4 and Part 2 below. Let us suppose that millions of Americans actually believe in personal immortality and hate taxes to the point of believing that taxes are never morally justified. Is this a sufficient reason to doubt that permanent death is real and that taxes are, other things being equal, e.g., under conditions of fair redistribution of wealth, universal social security, and universal social welfare, morally justified? Of course not.

At this point, someone *might* want to bite the bullet and claim that if we have to accept the existence of significant communal or cultural variation in philosophical intuitions (whether intellectual seemings/armchair judgments or rational intuitions), then we should stop doing philosophy. But that is just to offer an a priori philosophical reason for stopping doing philosophy, and we are then back at The RCD. Of course one might still choose to stop doing philosophy, and instead assert post-modernist, anti-rational, nihilist skepticism, a.k.a. PARNs. But that would be simply to give up on philosophy as a matter of personal choice, not to have an *objective reason* for stopping doing philosophy.

## IX Conclusion

In this chapter, I have claimed that, contrary to what Experimental Philosophy, a.k.a. X-Phi, and intuition-skeptical empiricism either claim or simply assume, there must be some authoritative rational intuitions and that the only account of philosophical intuitions that will be satisfactory is one that adheres to The Undercutting Solution of The CD. I do not spell out any *particular* theory of what the rational-intuitional intrinsic compellingness or self-evidence delivered by a properly-functioning cognitive mechanism will actually look like, or of what the non-accidental or necessary rational-intuitional mind-to-world connection will actually be like, because there are a number of different possible ways to flesh out such notions and because that project goes well beyond the limited scope of my argument. In any case, just such a theory is provided in Part 2 of this book.

To be more specific, I have argued for the following four theses:

- (i) that Cummins's Calibration Dilemma, a.k.a. The CD, is a serious worry for philosophical intuitions *only* insofar as intuitions are cashed out in terms of either intellectual seemings or armchair judgments;
- (ii) that X-Phi in particular and intuition-skeptical empiricism more generally presuppose at least five seriously problematic assumptions;
- (iii) that those who hope to defend intuitions must provide an account that conforms to The Undercutting Solution; and
- (iv) that X-Phi and intuition-skeptical empiricism alike not only fail to demonstrate the unreliability of *rational* intuitions, but also, via their reliance on natural science, presuppose the existence of at least some *authoritative* rational intuitions.

Or in other words, contemporary philosophers, and *especially* those who are defenders or fellow travellers of X-Phi, rationally ought to pursue what we might call *the three Bs*: going *beyond* experimentalism, *becoming* neo-rationalists, and *building* an adequate theory of authoritative rational intuitions.

# 1.3

## Rational Intuitions and Analytic Metaphysics

*Tyler Hildebrand*

### I Introduction

In the first two chapters of Part 1, we have argued (i) that a commitment to the existence of authoritative rational intuitions is rationally obligatory, and (ii) that the experimentalist critique of intuitions not only fails to have any critical purchase on a theory of authoritative rational intuitions but in fact presupposes their indispensability. The present chapter goes after similar neo-rationalist conclusions, but from a somewhat different point of view.

The first part of this chapter is critical of standard practices in contemporary metaphysics. My central contention is that contemporary methods in metaphysics rely on rational intuitions of a variety that most contemporary philosophers themselves find troublesome: those constituting synthetic a priori reasoning. I agree that some of these rational intuitions are indeed potentially troublesome, and the first part of this chapter explains why. Although critical, the first part also contains a degree of optimism. For some rational intuitions of this synthetic a priori sort are also (i) widely shared, and (ii) indispensable for logic, mathematics, and natural science. Rational intuitions with *these* features cannot be all that bad! Unfortunately, the methods of contemporary metaphysics often involve appeals to rational intuitions that have neither feature. Thus we have a challenge: defend a method of practicing metaphysics that does not rely on *problematic* appeals to rational intuitions. The second part of this chapter meets this challenge by offering a new, mostly empirical method of practicing metaphysics. I argue that metaphysics can proceed from the very same epistemological foundations as logic, mathematics, and natural science. In other words, metaphysics is epistemically on a par with these disciplines.<sup>1</sup>



More precisely, this chapter is organized as follows. In Section II, I provide a by-now familiar classification of different types of intuitions, including authoritative rational intuitions, and suggest that appealing to certain kinds of rational intuitions constitutes synthetic a priori reasoning. In Section III, I explain why appeals to rational intuitions of these kinds are potentially troublesome, but I suggest that there is a class of such rational intuitions that are significantly less troublesome than others – namely, the class of precisely those authoritative rational intuitions that are required to justify sufficiently our basic beliefs in logic, mathematics, and natural science. In Section IV, I explain why analytic metaphysicians appear to be committed to problematic appeals to rational intuitions and discuss the severity of this problem. Thus ends the first, critical part of the chapter. The second part of the chapter offers a vindication of metaphysics by showing that it does not actually require the *problematic* appeals to rational intuitions discussed in the first part. In Section V, I explain some of the resources available to metaphysicians; these resources are justified because they are the very same resources required to explain the epistemic successes of natural science. In Section VI, I put these resources together to justify a *non-Humean* empiricist method of practicing metaphysics that presupposes all and only those authoritative rational intuitions required for the sufficient justification of our basic beliefs in logic, mathematics, and natural science. In Section VII, I provide a sample application of this method to the metaphysics of laws of nature.

## II Intuitions

Philosophers are not in widespread agreement about the nature of intuitions. As we have already seen in Chapters 1.1 and 1.2 above, there is the *sui generis* view, according to which intuitions are “intellectual seemings,” and there is also the *doxastic* view, according to which intuitions are either occurrent “armchair judgments,” or dispositions to carry out such judgments. Over and above those, there is the view I shall adopt for the purposes of my argument, which is that intuitions are *rational* intuitions, that is, active, self-conscious or reflective takings of propositions to be necessarily true and a priori. There are also four other features<sup>2</sup> we can attribute to rational intuitions in this sense. **First**, rational intuitions are non-perceptual. **Second**, rational intuitions are non-inferential; that is, we do not arrive at them on the basis of inference. **Third**, rational intuitions are fallible.<sup>3</sup> **Fourth**, if rational intuitions are to do any serious epistemic work, they must be taken

to provide sufficient evidence or reasons; the rational intuition that P must be taken as sufficient evidence for or a sufficient reason to believe that P. This fourth feature would of course be fully secured if there are some *authoritative* rational intuitions, i.e., rational intuitions that are intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable.

For my purposes in this chapter, there are two rather different sorts of authoritative rational intuitions. Consider the following propositions:

- (1) Classical sentential logic is sound and complete.
- (2) It is possible for there to be a world in which space is Euclidean.

One might have the rational intuition that (1) is necessarily and a priori true after learning the semantics and natural deduction rules for the basic sentential operators. A proof of (1) can be given to support the rational intuition. This is not so for (2). The rational intuition that (2) is necessarily and a priori true (or that its denial is) seems to have no independent grounds of support.

This distinction gives rise to a sort of dilemma.<sup>4</sup> Let us say that a rational intuition is *calibrated* when it is independently justified (that is, shown on independent grounds to be either correct or incorrect), as the rational intuition about (1) is, and *uncalibrated* otherwise. There are *empirical* and *non-empirical* means of calibration. Empirical calibration might help to justify what Bealer calls “physical intuitions.” For example, suppose it seems to me that I can throw a baseball a certain distance. This so-called physical intuition can be calibrated by empirical testing. Non-empirical calibration can take multiple forms. For instance, (1) is calibrated non-empirically. The calibration (namely, the proof) does not require empirical observation of any kind. But it is not objectionable because the proof proceeds merely from stipulative definition – that is, from the ways in which the connectives are defined.<sup>5</sup> For this reason, let us call this kind of calibration *analytic calibration*. Now consider the rational intuition that (2) is necessarily true and a priori (or, if one wishes to consider an example further removed from science: that composition is unrestricted). On the surface, it does not appear that this rational intuition can be calibrated empirically. If it is to be calibrated at all, it will have to be calibrated non-empirically. But analytic calibration does not seem to suffice; non-empirical non-analytic calibration is required. In other words, this proposition requires *synthetic a priori* calibration. Thus we have the following types of intuitions:

- (i) *synthetic a posteriori* (a.k.a. “physical”) intuitions: beliefs or judgments whose calibration is a posteriori,
- (ii) *analytic rational intuitions*: rational intuitions whose calibration is analytic a priori, and
- (iii) *synthetic a priori rational intuitions*: rational intuitions whose calibration is synthetic a priori.

Thus we can say that our rational intuition that (1) is an analytic rational intuition. To accept that (1) is sufficiently justified, one merely needs to accept the possibility that propositions like (1) can be justified through analysis alone (or something similar – see Chapter 1.4 below). To accept (2), however, one must appeal to some very controversial epistemological, semantic, and/or metaphysical resources. Again, I will not endorse a particular version of the analytic/synthetic distinction; all that is required for present purposes is that there are respects in which so-called analytic calibration is apparently less epistemically problematic than synthetic a priori calibration. But even this is not required for my parity thesis.

We are now in the position to state the dilemma. (I suppose that my presentation of it is, in fact, more of a trilemma.) Synthetic a posteriori so-called “physical intuitions” are dispensable; we can ignore them and just perform the relevant a posteriori investigation. Analytic rational intuitions are also (it seems) dispensable; we can (it seems) ignore the rational intuitions and just perform the relevant analysis, thereby proving them (although it may still be true, that in order to carry out such proofs, authoritative rational intuitions of basic logical principles are required). Synthetic a priori rational intuitions cannot be calibrated unless we possess synthetic a priori reasoning, but treating these rational intuitions as self-calibrating involves the acceptance of synthetic a priori reasoning. It should be clear, then, why empiricists often eschew talk of rational intuitions: for them, appeals to rational intuitions are either unnecessary or unjustified.<sup>6</sup>

As I will explain in the next section, I think that some synthetic a priori rational intuitions are utterly rationally indispensable – that to reject them would be to succumb to global skepticism. But I hope to have illustrated part of the problem with synthetic a priori rational intuitions. Their sufficient justification – if they have any – is *prima facie* mysterious. Therefore, if metaphysics requires synthetic a priori rational intuitions not required for other disciplines, that is a mark against metaphysics. In the next section, I will articulate more carefully the adequacy criteria for accepting an authoritative rational intuition.

### III Adequacy criteria for rational intuitions

Before articulating the relevant adequacy criteria, I want to explain how I understand adequacy. This chapter does not provide a full-scale vindication of rational intuitions – that is the task of Part 2 of this book; this chapter is merely intended to provide a vindication of metaphysics. Even then, this chapter vindicates metaphysics only insofar as it shows that metaphysics is epistemically on a par with logic, mathematics, and natural science. Thus, when I say that a certain class of rational intuitions is “adequate,” I say only that they are adequate to *this* task; I do not claim that they are *all things considered* epistemically adequate. In order to claim that, one would have to have an adequate philosophical theory of *authoritative* rational intuitions in hand, which, again, is the task of Part 2.

My argument in this section has two parts. **First**, I argue that some synthetic a priori authoritative rational intuitions are required to explain why the disciplines of logic, mathematics, and natural science provide justified beliefs about the world. **Second**, I argue that these very same synthetic a priori authoritative rational intuitions are precisely those that are not subject to intersubjectivity problems (this is to say that they *are* widely shared). I will stipulate that authoritative rational intuitions with these two features are adequate in the relevant sense. Perhaps there are others, but I will not investigate this matter here. The justification for this omission is that the method of practicing metaphysics that I will ultimately defend relies on exactly the same authoritative rational intuitions as logic, mathematics, and natural science. Thus we do not need to determine all the features of these authoritative rational intuitions that make them epistemically adequate.

#### III.1 The indispensability of synthetic a priori authoritative rational intuitions

I will now argue that logic, mathematics, and natural science require certain synthetic a priori authoritative rational intuitions in order to discover truths about the world. It is with some regret that I have presented these arguments with the brevity found here. However, the general problems are, I think, sufficiently familiar that this brief summary will suffice.<sup>7</sup>

**First**, logic. (Note that this example is more controversial than the others – see Quine’s “Truth by Convention” for the classical dissenting opinion – but if it turns out to be incorrect that will not pose problems

for my overall argument in this chapter.) Consider the following proposition:

- (3) Classical sentential logic is correct, which is to say that any statement that is (a) adequately translated into classical sentential logic and (b) true (false) according to the rules of classical sentential logic is true (false) *simpliciter*.

How should we classify (3)? It cannot be supported by a synthetic a posteriori so-called “physical intuition.” Our empirical evidence is too weak to support it. Nor does it seem to be supported by an analytic rational intuition. It is an answer to a question about the world: To which system of logic does the world conform? We have multiple and incompatible systems of logic, and questions about which system is correct cannot be answered merely through an analysis of the rules of each system.<sup>8</sup> Thus (3) is not analytic in any sense of analyticity according to which analytic truths are entirely epistemically unproblematic. The most straightforward interpretation is to hold that the authoritative rational intuition supporting it must be synthetic a priori.

The problem can be restated in terms of Carnap’s (from his “Empiricism, Semantics, and Ontology”) distinction between internal and external questions. Let a *linguistic framework* be a language consisting of a set of terms governed by a set of rules. An *internal question* is one that arises within a linguistic framework. An *external question* is a question about which framework to adopt. Since rules of a framework only apply within a framework, external questions cannot be answered by appealing to these rules. (1) is an answer to an internal question; (3) is an answer to an external question. Carnap thought that only pragmatic grounds could justify an answer to (3). I am assuming that there can be epistemic grounds for preferring one answer to (3) to another, since such an assumption seems to be required to hold that logic provides us with true beliefs about the world. But we have just seen that these epistemic grounds must constitute synthetic a priori reasoning.

**Second, mathematics.** Insofar as we take mathematics to be a guide to the world, it appears to require synthetic a priori authoritative rational intuitions. For one, mathematics presupposes logic. For another, the failure of classical Logicism strongly suggests that some mathematical propositions are synthetic a priori. They are taken to be necessarily true if true at all, and they are poor candidates for a posteriori calibration. Furthermore, we can run an argument parallel to the argument provided in the case of logic (regardless of whether mathematics requires

logic). Consider a geometrical pluralism. The question “which geometry is correct?” cannot be answered through mere analysis of the axioms of competing systems of geometry; it is a question about which system of geometry correctly describes the world. It cannot be answered empirically. Thus an adequate answer to the question requires synthetic a priori knowledge. Correspondingly, it follows that synthetic a priori authoritative rational intuitions are indispensable for mathematics, at least insofar as mathematics is taken to provide us with sufficiently justified beliefs about the world, and not merely with sufficiently justified beliefs about formal features of systems of mathematics.

**Third**, natural science. Insofar as we take natural science to be a guide of the world, it appears to require synthetic a priori authoritative rational intuitions. For starters, the practice of natural science requires both logic and mathematics. Logic is assumed in scientific practice – e.g., many scientists are deeply troubled by the incompatibility between standard interpretations of quantum mechanics and relativity – and scientific models require mathematics.<sup>9</sup> In order for natural science to be a guide to the world, logic and mathematics must be taken to be guides to the world. Thus natural science requires the very same authoritative rational intuitions required for logic and mathematics. Additionally, natural science appears to require even more tools; e.g., perhaps it requires a solution to the problem of induction. The principle of induction, in whatever form it takes, is a synthetic principle; it cannot be demonstrated to be correct through analysis alone, and, as is well known, neither can it be justified through purely empirical means. Its justification would seem to presuppose synthetic a priori authoritative rational intuitions of some sort. (To be clear, my claim is merely that natural science requires a sufficient justification of induction in order to explain why many of our scientifically justified beliefs about the world are in fact sufficiently justified. I will discuss this with greater care in Sub-section V.2.)

**Fourth**, the same problems arise for arguments *against* synthetic a priori rational intuitions. Consider Cummins’s Calibration Dilemma, briefly explained in Section II.<sup>10</sup> That dilemma has a certain logical form. The dilemma does not arise unless we make certain assumptions about the correctness of logical axioms. Namely, the concept of calibration employed presupposes a correct logic. Insofar as the general argument requires logic – and of course it does! – it cannot be taken to provide a guide to the justificatory status of rational intuitions unless the logic it utilizes is itself taken to be sufficiently justified.<sup>11</sup> Further, the idea that synthetic a posteriori so-called “physical intuitions” are

dispensable through empirical calibration seems to require (again) a solution to the problem of induction. Thus the solution to this problem surely requires synthetic a priori authoritative rational intuitions.

To sum up, we have very good reason to suppose that our most cherished and successful disciplines cannot provide epistemic sufficient justification unless supported by synthetic a priori authoritative rational intuitions. That is a conclusion very favorable to contemporary Kantian neo-rationalism. But suppose I am wrong. Suppose it could be soundly argued that the indispensable authoritative rational intuitions – namely, those required for logic, mathematics, and natural science – in fact are not synthetic a priori authoritative rational intuitions. This would be less favorable to contemporary Kantian neo-rationalism, but it would make no difference to my theses in this chapter. In this case, one would have avoided contemporary Kantian neo-rationalism for authoritative rational intuitions for logic, mathematics, and natural science, but *not* for the authoritative rational intuitions required for most approaches to contemporary analytic metaphysics, as we will see in the next section. Furthermore, any philosophically acceptable vindication of the relevant authoritative rational intuitions would also provide a full-scale vindication of the method I will defend in the second part of this chapter.

### III.2 Intersubjectivity

In the sub-section immediately above, I argued that some synthetic a priori authoritative rational intuitions are indispensable for the sufficient justification of beliefs concerning the truth of logic, mathematics, and science. But this does not license a wholesale acceptance of synthetic a priori rational intuitions, as such. An argument for the indispensability of *certain* synthetic a priori *authoritative* rational intuitions does not constitute an argument for the legitimacy of *all* synthetic a priori rational intuitions. In fact, we have clear examples in which synthetic a priori rational intuitions can be misleading, that is, in which they are not truth-conducive. For instance, Russell's paradox demonstrates that Frege's otherwise rationally intuitive naïve comprehension axiom is paradoxical. Further, many synthetic a priori rational intuitions are not shared; in particular, it is very easy to find differences in synthetic a priori modal intuition across philosophers and non-philosophers alike. In a dispute where two parties differ in their synthetic a priori rational intuitions, one party must be mistaken. Awareness of the subjective variation of synthetic a priori rational intuitions provides a defeater for those rational intuitions. In most cases, such defeaters are themselves defeatable only by further

synthetic a priori reasoning, because synthetic a priori rational intuitions have no independent means of calibration – no independent means of determining whose rational intuitions are correct.<sup>12</sup> For these reasons, we cannot endorse a *wholesale* acceptance of synthetic a priori rational intuitions. This in turn suggests that a wholesale acceptance of synthetic a priori rational intuitions, as they are broadly defined in this chapter, is problematic. I am open to the possibility that we might be able to restrict the class of synthetic a priori rational intuitions in some principled way, thereby explaining the features according to which some narrower class of synthetic a priori rational intuitions – i.e., all and only the authoritative ones – are sufficiently justified.<sup>13</sup> However, since my project in this chapter is not a full-scale vindication of rational intuitions, I will not consider this possibility here. As I have said before, that is the remit of Part 2.

Instead, I will suggest that we appeal only to those authoritative rational intuitions that are both indispensable for logic, mathematics, and science, and also widely shared. This is a safe, conservative strategy, given that I have not explained what sufficiently justifies synthetic a priori authoritative rational intuitions in the first place. Unsurprisingly, those synthetic a priori authoritative rational intuitions required for logic, mathematics, and natural science appear to be very widely shared. This follows from the fact that these three disciplines are those in which some amount of agreement has been reached – not perfect agreement of course, but certainly more than can be found in other disciplines. The law of noncontradiction is widely shared. The common axioms of competing geometries are widely shared. That induction can be justified is widely shared among those who take science to be a reliable guide to discovering the nature of the natural world.

I can now restate the goals of this chapter. The goal of this first part of this chapter (and the next section in particular) is to argue that the standard approach to analytic metaphysics requires synthetic a priori rational intuitions *beyond* those required for logic, mathematics, and science. The lack of sufficient justification for these additional synthetic a priori rational intuitions constitutes a serious problem for the discipline as it is currently practiced. The goal of the second part of this chapter is to demonstrate that analytic metaphysics does *not* actually require these additional synthetic a priori rational intuitions; in other words, the goal is to show that analytic metaphysics can proceed from the very same widely shared assumptions required to vindicate the position that logic, mathematics, and science provide sufficiently justified beliefs about the world.



## IV Appeals to synthetic a priori rational intuitions in analytic metaphysics

Analytic metaphysicians explicitly or implicitly commit themselves to synthetic a priori rational intuitions beyond those required for logic, mathematics, and natural science in a variety of ways. **First**, there are (explicit and implicit) appeals to synthetic a priori rational intuitions that P, taken as evidence that P; **second**, there are appeals or commitments to synthetic a priori rational intuitions in supporting the methodological principles employed in metaphysics. It is easy enough to find examples of the first sort of appeals to rational intuitions in recent literature, so I will restrict my focus to a few notable examples.<sup>14</sup> I will then direct my focus on the more general problem of justifying a general methodological approach to metaphysics.

### IV.1 Explicit appeals to synthetic a priori rational intuitions

In *Naming and Necessity*, Saul Kripke appeals to rational intuitions to support his thesis that names are rigid designators.<sup>15</sup> For instance, it seems that we can use the name “Gödel” to refer to Gödel, even if Gödel does not in fact uniquely satisfy the description we associate with the name. Kripke then employs this thesis to defend a number of theses of metaphysical importance, notably that all identity statements are either necessarily true or necessarily false (even if the statements themselves are synthetic and their truth is discoverable only by a posteriori methods) and that the origins of an object are essential to it.

The appeals to rational intuitions are essential to Kripke’s arguments. They are not required for logic, mathematics, and natural science. And they do not meet the intersubjectivity criterion; some, myself included, simply do not have the relevant intuitions.

### IV.2 Implicit appeals to synthetic a priori rational intuitions

In *Four Dimensionalism* (pp. 120–139), Theodore Sider defends the following argument for unrestricted composition, the thesis that every class has a fusion:

- (4) If not every class has a fusion, then there must be a pair of cases connected by a continuous series such that in one, composition occurs, but in the other, composition does not occur.
- (5) In no continuous series is there a sharp cut-off in whether composition occurs.
- (6) In any case of composition, either composition definitely occurs, or composition definitely does not occur.

- (7) Therefore, if not every class has a fusion, then there must be a pair of adjacent cases in a continuous series such that in one, composition occurs, but in the other, composition does not occur. [(4), (6)]
- (8) Therefore, every class has a fusion. [(5), (7)]

Most of Sider's effort is directed toward (6), but I wish to focus on (5). Why accept it? Sider spends relatively little time discussing it, but it appears that the justification for (5) is ultimately the fact that (5) is rationally intuitive.

Personally, I do not find (5) particularly rationally intuitive. I think that

- (9) Not every class has a fusion.

is at least as rationally intuitive. But if we replace (5) with (9), the conclusion is instead

- (10) Therefore, there must be a pair of adjacent cases in a continuous series such that in one, composition occurs, but in the other, composition does not occur. [(7), (9)]

Either way, it looks like we are stuck with intuition as our guide. Sider implicitly appeals to the rational intuition that if one class is a fusion then the class with one very slightly different property must be a fusion also. I have appealed to the rational intuition that some classes are not fusions (consider any gerrymandered object of choice such as a trout-turkey). How are we to distinguish between these two rational intuitions? I do not think that there is any way to calibrate these competing rational intuitions. Clearly, they are synthetic a priori rational intuitions, and they are not required for logic, mathematics, or natural science.

### **IV.3 Methodological commitments to synthetic a priori rational intuitions**

I will now provide a rough diagnosis of the reason that metaphysicians have often relied (implicitly or explicitly) on rational intuitions. Most contemporary analytic metaphysicians adopt a broadly Quinean method that can be described as follows:

*Contemporary Quinean Metaphysics (CQM)*: Metaphysical theorizing, like scientific theorizing, consists of selecting the best set of theoretical beliefs that undergird, support, and fit nicely within our web of

pretheoretical background beliefs – that is, our logical beliefs, ordinary beliefs, beliefs concerning immediate experiences, and so on. Potential criteria for selection of the best set include (but may not be limited to) considerations of simplicity, unity, and explanatory strength.<sup>16</sup>

As stated, CQM is not fully specified. This is a benefit of using it; it is sufficiently general that it captures all approaches to realist metaphysics of which I am aware. But its generality also leads to a problem. In order to apply the method, we need to have some idea of what constitutes the best theory or, more broadly, the best web of beliefs. We need rules that give us some guidance as to how the criteria for theory choice are to be applied. For example, suppose that we had never seriously entertained metaphysical hypotheses and were then presented with CQM. We would not get very far in metaphysics with this guidance alone. Which background beliefs are most central in our web? As is well known, certain kinds of theories might force us to abandon or revise certain kinds of background beliefs. How are we to choose which background beliefs are worth keeping at various costs? Or consider the theoretical criteria. What kind of simplicity matters? What is unity? What is the relevant sense of explanation? Supposing we could answer these questions, how are we to weight these answers? Suppose we have a theory with lots of explanatory power but little simplicity on the one hand, and a very simple theory with lesser explanatory power on the other. Which do we choose? None of these questions constitute an objection to CQM on their own. But if the only possible way to answer them required appeals to dispensable synthetic a priori rational intuitions, that would constitute an objection to CQM, at least given the assumptions of this chapter. Insofar as metaphysics requires CQM – and given the breadth of CQM this is plausible – this constitutes an objection to the practice of metaphysics also.

Let us explore this possibility. Generalizing from the questions above, an ideally specified version of CQM would include (a) a set of weighted background beliefs and (b) a set of weighted criteria for theory choice, where the weights tell us the importance of each type of belief or criterion. If the method included those two components, it would provide clear guidance as to how metaphysics is to be practiced; it would answer the questions raised in the paragraph above. But herein lies a problem. How do we specify (a) and (b) without appealing to dispensable synthetic a priori rational intuitions? Insofar as metaphysicians are doing something over and above that which logicians,

mathematicians, and scientists are doing, one would expect that they require additional methods. For example, both explicit and implicit appeals to intuitions (like the examples from Kripke and Sider, respectively) require a specification of CQM according to which synthetic a priori rational intuitions about the subject matter of metaphysics constitute evidence for accepting a given metaphysical theory. Such rational intuitions appear to be dispensable for logic, mathematics, and natural science.

A disclaimer: I do not wish to *overstate* contemporary metaphysicians' reliance on synthetic a priori rational intuitions. Indeed, the standard response to this problem is precisely to deny such reliance. Suppose we add to CQM a *Quinean holism* according to which metaphysics is distinguished from natural science only by its location in the web, by its distance from the periphery of experience: the metaphysical beliefs are further removed from experience than the natural scientific beliefs, but they are connected all the same. The same criteria for theory choice that tell us how to determine which natural scientific theories fit best in our web – especially those purely theoretical criteria (simplicity, unity, and so on) that adjudicate between competing natural scientific theories underdetermined by empirical evidence – will also tell us how to choose metaphysical theories. Perhaps the criteria apply to metaphysics less directly, less precisely, and with more vagueness than in the natural scientific case, but this is to be expected given the nature of metaphysical questions. It is especially important to note that the metaphysicians employing this strategy do not try to make metaphysics *too much* like natural science; in particular, they assume that competing metaphysical theories are empirically equivalent (or at least that all have attained roughly comparable levels of empirical adequacy prior to considering their theoretical relations to empirically significant natural scientific theories). This approach has been defended recently by L.A. Paul (“Metaphysics as Modeling”) and Sider (*Writing the Book of the World*, pp. 11–15).

Obviously, there is much more that can be said about this approach. My intention is not to criticize it – in fact, I am quite sympathetic towards it, other things being equal – but there are two potential shortcomings that we can highlight without developing it more carefully. These derive in some way from the insistence that competing metaphysical theories lack their own empirical significance. A consideration of these shortcomings will help to motivate my own version of the epistemic parity thesis between natural science and metaphysics, even if they can be avoided by the standard approach.

**First**, in “Science, Metaphysics, and Method,” James Ladyman suggests that the criteria for theory choice in metaphysics are not the same as those employed in natural science (or, if they are the same, that they do not provide epistemic sufficient justification when employed in metaphysical contexts). Thus Ladyman (in “Science, Metaphysics, and Method,” section 4.3):

We have inductive grounds for believing that pursuing simplicity and explanatory power in science will lead to empirical success, but no such grounds where we are dealing with distinctively metaphysical explanations, since the latter is completely decoupled from empirical success.

The thought here is this. Suppose you want to explain why we are sufficiently justified in appealing to a principle of simplicity. You note that natural scientists do it, that natural science provides remarkable predictions, and thus conclude that simplicity must be truth-conducive. If it were not, you could not explain the remarkable predictions of simple theories.<sup>17</sup> Ladyman’s point is that this merely justifies the truth-conduciveness of simplicity *in natural scientific contexts*. We need something else to show that simplicity is truth-conducive in metaphysical contexts as well, but metaphysics has not enjoyed the empirical success of natural science.

**Second**, Alyssa Ney (in “Neo-Positivist Metaphysics,” section 7) and Karen Bennett (in “Composition, Colocation, and Metaontology”) have suggested that the relevant criteria for theory choice are often too weak to answer metaphysical questions. For example, my above assessment of Sider’s argument shows that the metaphysical dispute in question requires authoritative rational intuitions for its resolution. We may not need authoritative rational intuitions to learn certain conditionals – (7) for instance – but if we want to learn whether composition actually occurs, we do require authoritative rational intuitions. Ney provides a nice analogy:

Suppose that observation gave us some very small reason for thinking that some planet’s orbit was in the shape of a circle around its sun, and it gave some equally tiny reason for thinking that the planet’s orbit was in some distinct, complicated shape *S*, and it gave us some equally tiny reason for thinking the planet’s orbit was in another complicated shape *S'*, and so on for very many hypotheses. Like I said, our empirical evidence is very, very small for each hypothesis. Let’s grant that, out of

all of these many shapes, the circle is the simplest. I don't see that this would give us reason to think that we now have established this scientific hypothesis that the shape of the planet's orbit is circular. This isn't to say that the simplicity of the circle hypothesis doesn't increase its confirmation with respect to its rivals. But it seems a large stretch to say that when the empirical evidence is so small, we can appeal to the theoretical virtues and this will allow us to settle hypotheses... We need more substantial empirical backing.<sup>18</sup>

Imagine trying to employ virtues like simplicity, fecundity, and unity to select between (5) and (9). These virtues are not likely to provide much support. We need something epistemically stronger, and in the present case it does not appear that it can be empirical.

I do not have the space to assess the merits of these objections to the standard response. Instead, my goal is to present a method of practicing metaphysics that satisfies the following desiderata. **First**, it does not require metaphysics to be continuous with the natural sciences in the sense that metaphysical questions acquire empirical significance only through their theoretical relations to natural scientific theories. **Second**, it employs numerically the same methods employed in the vindication of (even very weak forms of) scientific realism, in such a way that the methods employed by metaphysicians need not be decoupled from empirical success. Thus it avoids Ladyman's criticism. **Third**, it aims to make metaphysical theorizing empirically significant in a strong respect. It is not just that metaphysical theories have empirical significance because they have theoretical connections to empirically significant natural scientific theories: metaphysical theories have empirical significance of their own, independent of any natural scientific theories to which they may be connected. Thus it avoids the worries expressed by Ney and Bennett.

Summing up, the challenge for the metaphysician is to provide a vindication of CQM that relies only on synthetic a priori authoritative rational intuitions that are both widely shared and indispensable for either logic, mathematics, or natural science.<sup>19</sup> In this section, I have suggested that contemporary metaphysicians often fail to meet this challenge. In my opinion, this failure is responsible for the fact that many philosophers are critical of metaphysics. But I believe that we can meet this challenge. In the next part of this chapter, I will defend a method of practicing metaphysics that relies on all and only the same synthetic a priori authoritative intuitions required for logic, mathematics, and natural science.

## V Resources of the method

In this section I will discuss some resources employed by my method. As I said above, the basic idea behind the method is that metaphysical theories can be empirically confirmed and disconfirmed in the same way that natural scientific theories can be confirmed and disconfirmed. Here is how this works in practice. I will argue that there are principles of the following form:  $P(T|O)$ , where  $T$  is the proposition that a certain metaphysical theory is true,  $O$  is a set of possible observations, and  $P(T|O)$  is an atomic statement of the probability of  $T$  given  $O$ . I claim that these principles can be discovered using exactly those epistemic resources already required for logic, mathematics, and natural science. It is the conjunction of these principles with actual observations that provides sufficient justification for accepting certain metaphysical theories  $T$ . I will recommend an objective Bayesian approach for setting and updating the relevant probabilities. The first is a method of updating beliefs by conditionalization, which I will simply take for granted (this is the Bayesian part). The second is an objective method of assigning the relevant probabilities in the first place (this is the objective part). Before discussing this method, however, it will be helpful to make a few remarks on confirmation.

### V.1 Confirmation

In practice, it is often easier to discover principles of the form  $P(O|T)$  than  $P(T|O)$ , where  $T$  is a theory and  $O$  is an observation. The reason is that we have fairly straightforward means of determining the former simply by looking at what the relevant theory says.<sup>20</sup> The latter cannot be determined in this way in normal practice. It can be determined only through an examination of all competing theories. The method of confirmation will tell us how the latter is informed by the former. For our purposes, we will require little more than the theorems of the probability calculus.<sup>21</sup>

Let  $T_1$  and  $T_2$  be mutually exclusive and jointly exhaustive theories. The following version of Bayes's theorem tells us how to compute  $P(T_1|O)$ :

$$P(T_1 | O) = \frac{P(T_1)(P(O | T_1))}{P(T_1)(P(O | T_1)) + P(T_2)(P(O | T_2))}$$

Crudely speaking, we can say that this theorem employs two types of concepts.  $T_1$  has more *explanatory power* over observation  $O$  than  $T_2$  if

and only if  $P(O|T_1) > P(O|T_2)$ .  $T_1$  is *initially more plausible than*  $T_2$  if and only if  $P(T_1) > P(T_2)$ . The equation tells us how to weight the explanatory power and initial plausibility of the two theories to determine how likely a theory is given an observation – that is, to choose a theory on the basis of evidence.  $P(T_1|O)$  tells us just how likely  $T_1$  is, given the observation  $O$ .

Now consider a demanding sufficient condition for an observation's *confirming* a theory: if  $T_1$  and  $T_2$  are mutually exclusive and jointly exhaustive theories and  $O$  is an observation such that  $P(O|T_1) > P(O|T_2)$ , then  $O$  *confirms*  $T_1$  and *disconfirms*  $T_2$ .<sup>22</sup> This condition is demanding because theories must be mutually exclusive and, more importantly, jointly exhaustive in order for the condition to apply. Why might we want to work with such a demanding condition? Two reasons. **First**, it is surprisingly easy for the metaphysician to satisfy. She can just define her theories in such a way as to guarantee that this condition is met. (Things are not so easy for the scientist, since theories defined in this way are unlikely to yield useful predictions.) **Second**, it is an uncontroversial account of a sufficient condition for confirmation. It does not presuppose a solution to the problem of induction. It is not susceptible to the Duhem-Quine problem. These are bold claims, but allow me to explain.

Popper (see his *The Logic of Discovery*) believed that scientific hypotheses could be falsified, but that they could not be confirmed. That is, he believed that empirical investigation could provide evidence *against* a hypothesis, but that it could not provide evidence *for* a hypothesis. The basic reason was that Popper thought that genuine confirmation required a solution to the problem of induction – a solution that we do not have. There are, however, circumstances in which confirmation is possible within a falsificationist framework even without a solution to the problem of induction. Consider, for example, the rule of *disjunctive syllogism* in classical logic, which says that, given a disjunction and the negation of one disjunct, one may infer the other disjunct. Let  $H_1$  and  $H_2$  be competing hypotheses, and suppose one knows that either  $H_1$  or  $H_2$  is true. Now suppose that one learns that  $H_2$  is false due to its incompatibility with empirical evidence.  $H_2$  has been falsified,  $H_1$  has not. This entails that  $H_1$  has been confirmed, and no appeal to induction is required. So says disjunctive syllogism. If our situation is like this – namely, that we know that the disjunction is true, and then we come to have evidence against one of the hypotheses – there is no problem of explaining, in general, how confirmation works. This sort of confirmation is acceptable even to the falsificationist. For the same reason, it precludes the existence of



auxiliary assumptions (if the theories are truly jointly exhaustive, there are no auxiliary assumptions – they are just part of the theories under consideration) and so avoids the Duhem-Quine problem.

Perhaps this all seems stronger than necessary. Why cannot the metaphysician simply accept whatever theory of confirmation that is required for science? Well, perhaps she can. But the present approach has at least one benefit relevant to our purposes. As we saw above, Ladyman (in “Science, Metaphysics, and Method,” section 4) argues that the success of science does not justify the metaphysician’s appeals to criteria for theory choice – that is, that even if such criteria can be used in scientific contexts, they cannot be used in metaphysical contexts. (This is the respect in which most of analytic metaphysics is supposed to require resources beyond those required for scientific realism.) For our purposes, Ladyman’s argument can be construed as limiting the resources available to the metaphysician. I do not know whether Ladyman’s objection can be sustained, but for my purposes it does not matter. The theory of confirmation and evidence I have just presented employs none of the resources that Ladyman wishes to block the metaphysician from using. It proceeds from a very minimal set of assumptions – it may even be analytic – and thus does not require independent justification by the success of science. In this respect, metaphysics requires even fewer resources than science.

## **V.2 Assigning probabilities: the general approach**

How are we to assign probabilities in the first place? As I said above, I will assume an objective method. Logic and mathematics do not require objective methods of assigning prior probabilities. Accordingly, to show that objective methods are indispensable, we will need to show that they are required for natural science. In this sub-section I will argue that scientific realism of a very minimal form requires an objective method of assigning probabilities. In the next sub-section I will sketch an objective method that can be employed later in a sample application of my method.

Suppose that natural scientific theories provide us with true beliefs about the world only insofar as they *falsify* certain hypotheses. As far as scientific realism goes, this is about as minimal a form of realism as one can endorse (it may not even deserve the label “realism”): science gets at truth, but only by telling us that certain theories are false. Initially, falsificationism may not appear to rely on any substantive intuitions, but on closer inspection it does. As is well known, when an observation contradicts an hypothesis, there are (in scientific contexts) always auxiliary

assumptions in play. Rather than rejecting the hypothesis when one encounters an apparent disconfirming observation, one can always reject an auxiliary assumption. This is the well-known Duhem-Quine problem.<sup>23</sup> But we often think that, despite the presence of background assumptions, it is the hypothesis – not the background assumption – that is at fault in such cases. That is, we often think that the hypothesis ought to be rejected. Why? In such cases, we find the hypothesis to have less initial plausibility than the background assumptions. The background assumptions are more “stable” than the hypothesis. But, ultimately, the only way to determine the relative likelihood or stability of hypothesis and background assumption, and thereby support the assumptions required for falsificationism, is to grant that we can assign these prior probabilities.<sup>24</sup> These prior probabilities are required to support falsificationism, as well as all stronger versions of scientific realism.

One crucial question is whether the assignment of these prior probabilities is a priori or a posteriori. If it is a priori – whether they are analytic, or whether they are assigned by appeal to indispensable synthetic a priori authoritative rational intuitions – that will suffice for the point I am trying to make. Either way, this constitutes the acceptance of some a priori method of assigning prior probabilities. If, on the other hand, the assignment of prior probabilities is a posteriori, then perhaps we would have a disanalogy between natural science and metaphysics. Fortunately, it is not. Although many of our scientific “priors” result from updating our probability functions in accordance with evidence, all assignments of priors must ultimately bottom out in the a priori assignments of certain priors. Even scientists have to start somewhere! Thus the synthetic a priori authoritative rational intuitions required for the a priori assignment of prior probabilities are indispensable for the very minimal version of scientific realism under consideration.

(Disclaimer: This is not to say that scientists actively, consciously, or intentionally employ any principles in assigning a priori probabilities. It is merely to say that if we are to interpret the practices of science as providing us with true beliefs about the world then we must accept the justification or (approximate) truth of such principles. That suffices to demonstrate their indispensability.)

Why think that these indispensable a priori methods of assigning probabilities must be objective rather than subjective? I cannot resist quoting Evan Fales:

The rules which govern such epistemic probability assignments must be given objective justification. These constraints, as will

become apparent, go beyond the usual minimal requirement of Bayesians, that probability assignments be consistent. And we need to go beyond. Consistency will keep the Dutch bookie at bay, but it won't satisfy the needs of science, or for that matter, build new bridges. A bridge engineer whose predictions about the behavior of his materials is guided by an arbitrary (though consistent) choice of priors would not be someone to rely upon to design bridges.<sup>25</sup>

The worry here is that different probability functions lead to different justified beliefs. Sider provides the following example:

Bizarre prior probability distributions will result in bizarre responses to evidence. Consider, for example, making a series of pre-3000 A.D. observations of green emeralds. Intuitively, this would result in increasing confidence that emeralds observed after 3000 A.D. will likewise be green. This increasing confidence is indeed forthcoming for a Bayesian if she begins with an appropriate prior probability function  $Pr$  – one that assigns high probability to emeralds observed after 3000 A.D. being green conditional on earlier observed emeralds being green. But if she begins instead with a prior probability function  $Pr'$  that assigns high probabilities to emeralds observed after 3000 A.D. being *blue* conditional on earlier observed emeralds being green, then observing the green emeralds will result in increasing confidence that emeralds observed after 3000 A.D. will be blue. Garbage in, garbage out.<sup>26</sup>

In these kinds of cases, scientific realism requires that we have objective reasons to prefer one probability function to another.<sup>27</sup> We want to say, for example, that one who maintains Newtonian physics after understanding the Eddington experiment has an inferior probability function. How do we defend that claim? For my present purposes, that does not matter. This discussion shows that an objective method of assigning probabilities is indispensable for scientific realism, even of the most minimal kind.

We now come to the conclusion of this sub-section. The vindication of scientific realism relies on a priori methods of assigning prior probabilities, even when realism is constrained minimally as a version of falsificationism; these methods can only be justified by appeals to intuition. What kind of principles might be employed to justify scientific realism? I will sketch one possibility in the next section.

### V.3 Assigning probabilities: a specific approach

For the sake of providing a sample application, it will be helpful to provide a more precise method of assigning probabilities. As a neo-rationalist with sympathies for logical empiricism, I will suggest a method inspired by Carnap (see his *The Logical Foundations of Probability*): we assign probabilities by comparing the number (and perhaps kind) of epistemic possibilities countenanced by the competing theories. I will explain the method in two steps. **First**, it provides a method of determining epistemic possibilities. **Second**, it provides a method of assigning epistemic probabilities to the epistemic possibilities.<sup>28</sup> (Disclaimer: Of course I am aware that Carnap's interpretation of probability has fallen out of favor, but that will not matter for our purposes. My method does not require Carnap's interpretation of probability. It just requires some method of assigning epistemic prior probabilities.)

Carnap's basic proposal for the first step was that one's epistemic possibilities are determined through logical and semantical analysis of one's language. We have a set of basic individual terms  $\Sigma$  and basic predicate terms  $\Phi$ . The basic terms are those formed in accordance with whatever epistemological assumptions we accept; for example, a classical Lockean-Humean empiricist will hold that all basic terms are either logical or presented in immediate experience. We can describe the world in terms of sentences, formed from the elements of  $\Sigma$  and  $\Phi$ . Carnap calls a maximal consistent sentence a *state description*. State descriptions are our epistemic possibilities. Thus a state description is just a proposition describing an epistemically possible world.

If desired, we can augment Carnap's system in various ways. I will sketch a single augmentation that will help with the later sample application of this method. We might want to accommodate synthetic necessities – perhaps if we follow Anscombe (*Causality and Determination*), Armstrong (*What Is a Law of Nature?*), and Fales (*Causation and Universals*, Chapter 1) in thinking that causal relations are immediately observable, or if we think that a respectable analysis of the concept of synthetic necessity can be given (I defend the latter in a different project). Let us introduce a new parameter: a set  $\Omega$  of synthetic necessary or probabilistic connections postulated to hold between members of  $\Phi$ . For example, the relation of *nomic necessitation* is such that if P stands in the relation of nomic necessitation to Q in a certain state description, any individual in that state description which instantiates P must instantiate Q on pain of inconsistency. As before, state descriptions are maximal consistent sentences, but now these sentences are formed from the elements of  $\Sigma$ ,  $\Phi$ , and  $\Omega$ .

Having explained how the method determines epistemic possibilities, I will now explain how the method might assign probabilities to these epistemic possibilities. I will suggest one such approach for assigning probabilities, but it must be emphasized that *this particular approach is not required for the method*. In fact, I would reject this particular approach. But it is simple, and it works well for the purposes of illustration.

One proposal for assigning epistemic probabilities is to give equal weight to each state description:

*Equiprobability of state descriptions:* for any class of state descriptions that fall within a certain range of values for  $\Sigma$ ,  $\Phi$ , and  $\Omega$ , the probability that a given state description is satisfied is  $1/[\text{the number of state descriptions specifiable within the ranges of } \Sigma, \Phi, \text{ and } \Omega]$ .

This postulate entails that every state description (that is, every epistemically possible world) is a priori equally likely. It is essentially a restricted version of the well-known *principle of indifference*.<sup>29</sup> I have optimism that something along the lines of the principle of indifference is correct, and for a concise explanation of its rational intuitive force I can do no better than quote Huemer:

Suppose that the probability of a proposition (for a given person) is understood as a measure of how much reason one has to believe that proposition, or the degree to which that proposition is supported by one's evidence. Then the Principle of Indifference amounts to the claim that, if one has no reason for preferring one alternative over another, then one has as much reason, or evidence, for the one proposition as for the other. This principle seems close to an analytic truth, though it presupposes the substantive assumption that how much reason one has to believe a proposition may be treated as a quantity. It seems that, if one does not have an equal amount of reason to believe A as to believe B, then one must have more reason to believe one than to believe the other. But this is incompatible with one's having no reason to prefer either alternative. Therefore, if one has no reason to prefer either A or B, then they must have equal epistemic probabilities.<sup>30</sup>

The scientific realist can employ a version of the principle of indifference to avoid the Duhem-Quine problem – namely, by showing that the auxiliary assumptions occur in more state descriptions consistent with one's evidence than the hypothesis one wishes to reject – and I

will argue that it can be employed to discover principles of the form  $P(T|O)$  as well.

So much for an explanation of the technical resources my method employs. We can now turn to the method itself.

## VI The method

Having explained the above resources, I will now present the method.

*Step 1:* Define metaphysical theories such that the theories under consideration are mutually exclusive and jointly exhaustive.

This step places a constraint on the process of theorizing and is required for the later application of the method of confirmation. This step ensures that the method avoids Popper's worries about confirmation and the Duhem-Quine problem. (I will also address the worry that it is not possible to define metaphysical theories at all after the method has been stated.)

*Step 2:* Utilize the method of assigning probabilities to determine the prior probabilities (initial plausibilities) of the theories in question (statements of the form  $P(T)$ ).

*Step 3:* Utilize the method of assigning probabilities to determine the conditional probabilities of relevant observations given each theory (statements of the form  $P(O|T)$ ).

Together, these steps are required to employ the method of confirmation. For some metaphysical disputes, further steps may not be required. For example, there may be cases where some theory in question is determined to be necessarily false by Step 2. (The matter of determining which observations are relevant to Step 3 is discussed shortly.)

*Step 4:* Apply the theorems of the probability calculus (e.g., Bayes's theorem) to determine the probabilities of the theories conditional on each of the relevant possible observations.

Taken together, Steps 1 through 4 establish principles of the form  $P(T|O)$ , where  $T$  is the proposition that some metaphysical theory is true,  $O$  is a set of possible observations, and thus  $P(T|O)$  is an atomic statement of the probability of  $T$  given  $O$ . The discovery of such principles does not require dispensable intuitions.

*Step 5:* Observe! Then conditionalize – that is, compare the observations with the linking principles to determine the a posteriori probabilities of the metaphysical theories under consideration.

The results of this method are paradigmatic of metaphysics. They require only observation and indispensable intuition, and thus they are on the same epistemic footing (insofar as synthetic a priori authoritative intuitions are concerned) as logic, mathematics, and natural science.

Each step is required for the method. Without Step 1, we would not be in the position to employ the principle of confirmation I have suggested. This would be problematic, because this particular principle provides an uncontroversial sufficient condition for an observation's confirming a theory, and competing principles of confirmation may require further intuitions for their support. Without Step 2, the conclusions of metaphysical inquiry would at best be conditional in nature. Without Step 3 the method would collapse. We need to justify propositions concerning the truth of metaphysical theories without appealing to any dispensable rational intuitions. As a heuristic supposition, we might say that the propositions of metaphysics are synthetic a priori, but that any appeal to synthetic a priori reasoning constitutes an appeal to dispensable rational intuitions. Thus we need the method to appeal to experience in some new way. The solution is to require competing metaphysical theories to differ in their observational consequences, since these theories can be weighed against our experiences. Without a means of determining the observational consequences of a theory, this empirical approach simply would not work. Without Step 4, we would require a different theory of evidence; see the importance of Step 1. Without Step 5, we could not determine which principles to use. It tells us which observations are actual (it assigns truth values to the possible observations), and allows us to apply them to the principles to determine the a posteriori probabilities of the metaphysical theories under consideration. When the principles are understood as atomic statements of conditional probability, the final step justifies our selection of a particular set of principles – namely, those that “match” our actual observations – as specifying the (actual) a posteriori probabilities of the metaphysical theories in question.<sup>31</sup>

At this point, we must consider a worry. What ensures that metaphysical theories can be defined so as to differ in their observational consequences? A full answer to this question will depend on one's underlying epistemological assumptions, specifically the assumptions concerning semantic adequacy – that is, concerning what is required for

a given concept to be epistemically respectable. I have tried to remain as neutral as possible on this matter. But supposing as I have that metaphysical theories can meet whatever criteria for semantic adequacy we possess, there are two good reasons to think that there are ways to define metaphysical theories such that they differ in their observational consequences. One is that we have examples of metaphysical theories that fail to be empirically equivalent. One example is provided in the next section; other well-known examples include arguments for and against the existence of God, in which it is taken that certain observed features of the universe are more likely/unlikely given the existence of God than they are in God's absence. Another reason is that, provided that we possess certain background concepts, there is an established method of defining scientific theories so they differ in their observational consequences: the Ramsey/Carnap/Lewis method of defining theoretical terms.<sup>32</sup> A full discussion of this method would take us well beyond the scope of this chapter, but if we can use it to generate scientific theories that differ in their empirical consequences, and if we possess the requisite background metaphysical concepts (e.g., the concept of synthetic necessity), then there is no reason to think that we cannot employ this kind of method to define metaphysical theories that differ in their observable consequences also. Thus I believe that we should be optimistic about the method's ability to generate genuine metaphysical results.

## VII Sample application

In this section I will discuss an application of the method. This sample application is intended merely to illustrate how the method works; I do not take it to constitute a strong argument in the abbreviated form in which it is presented here.<sup>33</sup> Consider the problem of determining whether there are laws of nature, and, if so, what kind.

*Step 1.* We must define our mutually exclusive and jointly exhaustive theories. This step is not difficult to satisfy, as the following example illustrates. Suppose that part of the world consists of a mosaic of local matters of fact – local natural properties standing in external spatiotemporal relations. Let us call the arrangement of properties in the mosaic, the *structure* of the world. Now let us ask whether there are any restrictions on structure – that is, on ways in which the properties can be distributed. Different ways of answering that question constitute different metaphysical theories of laws of nature. *Humeanism* holds that there are no restrictions on structure whatsoever; any recombination of natural



properties is possible.<sup>34</sup> *Governing Laws* places restrictions on structure from *outside* of the structure itself, by holding that there are states of affairs distinct from regularities in the structure that necessitate (or probabilify) regularities in the structure.<sup>35</sup> *Essentialism* places restrictions on structure from *inside* the structure itself (but not from outside), perhaps by holding that some of the natural properties are essentially dispositional in nature.<sup>36</sup> On this view, the structure of the world is determined at least in part by the nature of properties within the structure itself, but not by anything external to the structure itself. These three theories are mutually exclusive and jointly exhaustive (given the assumption that there is a structure of natural properties), and they are intelligible according to a wide range of epistemological positions.

For later use, let *non-Humeanism* be the thesis that either Essentialism or Governing Laws is true. In the sample application that follows, I will not distinguish Essentialism from Governing Laws. This is somewhat artificial, as I have argued elsewhere that the precise form of natural necessity matters a great deal.<sup>37</sup>

*Step 2.* The basic idea behind the method of assigning probabilities sketched in sub-section V.3 is that the a priori epistemic probability of a theory depends on the amount of epistemic possibilities that it countenances relative to all other theories. One way to compare theories is to look at their breadth. Other things being equal, broad theories are a priori more likely than narrow theories. For example, Governing Laws countenances more possibilities than the specific version of Governing Laws according to which there are exactly three laws; the former is broader than the latter, and so the former is a priori more likely. The first point, then, is that our three theories appear to be theories of the same breadth. They are all very general, and this suggests that they do not differ widely in their a priori probabilities. A second, slightly more careful consideration is this: for each Humean world (that is, for each specification of parameters  $\Sigma$  and  $\Phi$ ), there are many non-Humean worlds (remember, probabilistic necessary connections are compatible with every specification of a world in terms of  $\Sigma$  and  $\Phi$ ). Thus we have a very natural one-to-many mapping from Humean state descriptions to non-Humean state descriptions, and this suggests that Humeanism does not have a higher initial plausibility than non-Humeanism. Of course, we ultimately want a much more thorough investigation than this; my discussion of the priors has not been very careful, and we may want to consider other factors such as simplicity or parsimony. For now, however, I will just express my conviction that *if* all three theories are intelligible *then* it is not the case that Humeanism has a significantly

greater a priori probability than non-Humeanism. For simplicity, let us just say that a priori  $P(H) = P(\sim H)$ , where H stands for Humeanism.

*Step 3.* Which conditional probabilities are relevant? Those for which the theories might differ. Since these theories differ with respect to the restrictions they place on the structure of the world, we ought to be concerned with the distribution of properties in the structure. So let us consider the possibility that our three theories differ in what they predict about the *regularity/uniformity* of the structure of the world. From the definitions of our theories, it should be apparent that Humeanism does not predict a great deal of uniformity. It permits any distribution of properties in the structure, and there is no ontological basis for thinking that any particular distribution is any more likely than any other. (This result should be somewhat familiar to anyone who has studied the problem of induction.) On the other hand, the two varieties of non-Humeanism both place restrictions on the structure of the world; both hold that natural properties must be arranged in certain ways. Thus our varieties of non-Humeanism appear to entail a higher degree of structural uniformity than Humeanism. Thus it seems reasonable to conclude that  $P(U|H) < P(U|\sim H)$ , where U stands for the actual degree of observed uniformity and H stands for Humeanism.<sup>38</sup>

Ideally, the above line of reasoning must be carried out in accordance with our method of assigning probabilities. It is important to recognize that we are able to determine these conditional probabilities by looking at the definitions of the theories themselves. The crucial step is to select a type of observation for which these theories have different consequences, and that is not hard to do given that the theories are defined with respect to their treatment of the distribution of properties in the structure of the world. I will quickly provide a sketch of how such an argument might go. For simplicity, let us consider the position that the entire natural world – past, present, and future – includes a great many natural regularities, and that we know this because we have a complete catalog of particular matters of fact and have seen that these matters of fact fit special patterns deserving to be called natural regularities. Call this proposition  $U^*$ . (I believe that the argument still works on the much more limited position that the *observed* parts of the world exhibit a high degree of natural regularity, but showing that this is so is much more difficult.) Now there is exactly one Humean world compatible with  $U^*$ , but there are a great many non-Humean worlds compatible with it – for instance, one in which only the first regularity is law-governed, one in which only the second regularity is law-governed, one in which the first two regularities are law-governed, and so on. By equiprobability of state

descriptions, we may immediately conclude that  $P(H|U^*) < P(\sim H|U^*)$ . Thus, those who accept equiprobability of state descriptions and believe that the natural world exhibits multiple regularities ought to accept non-Humeanism over Humeanism. Anyway, this is just for the purposes of showing how equiprobability postulates might be used to settle the matter precisely. As I said before, there are problems with this equiprobability postulate, and of course there are epistemological problems in accepting the  $U^*$ . Let us get back to the general argument.

*Step 4.* Putting these two results together, Bayes's theorem entails that  $P(H|U) < P(\sim H|U)$ .

*Step 5.* All that remains is observation. There are many observations we have made about the structure of our world. The most important – and also, perhaps, the most apparent – is that our world has a uniform structure; it is full of observed natural regularities. Now consider the principles we have derived that concern uniformity. What we must do is select the principles that concern the observed degree of uniformity. In our case, the actual observed degree of uniformity is specified by  $U$ , thus we are allowed to use the principle determined by Step 4 as a statement of the relative a posteriori probabilities of our two theories, Humeanism and non-Humeanism. Accordingly, the last step of the method tells us that the a posteriori probability of Humeanism is less than the a posteriori probability of its denial. Our credence in Humeanism should be set to  $P(H|U)$ , and our credence in non-Humeanism should be set to  $P(\sim H|U)$ . Since the latter is greater than the former, we should reject Humeanism.

This sample application has been extremely brief – so brief that it does not even approach a rationally completely convincing defense of the argument just presented. And I have made a great many simplifying assumptions that have not even been mentioned. Nevertheless, it is useful for two reasons. **First**, it shows that the method can be applied to traditional problems in metaphysics. This should dissuade philosophers from thinking that all familiar metaphysical theories are empirically equivalent. **Second**, it provides a sample strategy for employing the method – in this case, it shows what would be required in order to defend an empirical argument against Humeanism. This is important because it illustrates that the method can accommodate and clarify some of the existing practices in metaphysics. For example, my definitions of Humeanism, non-Humeanism, essentialism, and Governing Laws are not new; the idea that regularities constitute a reason to reject Humeanism is not new; and so on. Though I have recommended a revisionary method, it is not so revisionary that it renders all of metaphysics useless.

## VIII Conclusion

The first part of this chapter was critical of contemporary practices in metaphysics. I presented a challenge to contemporary Analytic metaphysicians – show that your practices stand on the same epistemic ground as logic, mathematics, and natural science! – and suggested that contemporary Analytic metaphysicians have not met this challenge adequately, primarily in virtue of their methodological commitments. I could be wrong. But there are various objections to the standard approach, and the most straightforward way to meet them is to ground our practice of metaphysics more squarely in observation.

I provided this type of approach in the second part of this chapter. Armed only with the synthetic a priori authoritative rational-intuitive epistemic resources required for logic, mathematics, and natural science, I argued that philosophers can answer genuine metaphysical questions empirically. My method will, of course, be controversial. In particular, I worry about the method of assigning probabilities on which its success rests.<sup>39</sup> Scientific realism's commitment to such methods may be viewed as a reason to reject scientific realism rather than as a reason to accept metaphysical realism, although it must also be noted that the scientific realism in question is a very minimal realism. Quine argued that natural science and metaphysics are on a semantic par because natural science is, epistemically speaking, in the same sorry state as metaphysics. Surely some will be tempted to draw a parallel line of reasoning in the epistemic case. This is not my preferred position, but I do not have the space to defend my case here. Instead, for present purposes I will be content with having argued that metaphysics is on an epistemic par with logic, mathematics, and natural science. Thus, as is all too common in philosophy, I have argued for a conditional: *if we possess methods that provide epistemic sufficient justification, via synthetic a priori authoritative rational intuitions, in the domains of logic, mathematics, and natural science, then we possess methods that provide epistemic sufficient justification via synthetic a priori authoritative rational intuitions in the domain of metaphysics.* Obviously the consequent is more interesting than the conditional itself – and the antecedent is probably most interesting of all – but the conditional is still of great importance. In effect, it poses a new dilemma: accept the epistemic legitimacy of metaphysics, together with the indispensability of synthetic a priori authoritative rational intuitions, or reject epistemic legitimacy altogether, even concerning our most cherished disciplines.

# 1.4

## Towards a Defense of Rational Intuitions

*Henry W. Pickford*

### I Introduction

Here is what we have argued so far:

- (i) that a commitment to the existence of authoritative rational intuitions is rationally obligatory (Chapter 1.1);
- (ii) that the experimentalist critique of intuitions not only fails to have any critical purchase on a theory of authoritative rational intuitions but in fact presupposes their indispensability (Chapter 1.2); and
- (iii) that if we possess methods that provide epistemic sufficient justification, via synthetic a priori authoritative rational intuitions, in logic, mathematics, and natural science, then we possess methods that provide epistemic sufficient justification via synthetic a priori authoritative rational intuitions in metaphysics (Chapter 1.3).

What I will argue in this chapter is that the very same fact of *rational indispensability* holds for authoritative rational intuitions of *conceptually necessary a priori truths*, i.e., for *analytic*<sup>1</sup> a priori authoritative rational intuitions, given the rational human cognitive power for *correctly exercising our fallible conceptual capacities*.

Current controversies concerning the nature, source and reliability of philosophical intuitions, and any methodology that avails itself of them, intersect with debates surrounding analyticity and the a priori, and in some cases metaphysical modality. The current locus of many of these debates is the Experimental Philosophy, a.k.a. X-Phi, movement and especially metaphilosophical questions surrounding its preferred method of surveying respondents for their intuitions when presented with a thought experiment. Skeptics and “restrictionists”<sup>2</sup> argue against

the evidentiary role intuitions are typically taken to play in “standard philosophical practice” in part because intuitions’ epistemic source is mysterious,<sup>3</sup> but chiefly because the results of experimental-philosophical surveys reveal diversity in responses. Thus intuitional responses vary according to factors in cultural and educational background.<sup>4</sup> Furthermore, experimental results suggest that intuitions are unduly influenced by affective content,<sup>5</sup> are affected by contextual conditions in the sequential presentation of scenarios,<sup>6</sup> and in general are fallible and hence unreliable.<sup>7</sup> In turn, neo-rationalists seek to answer these skeptical challenges in ways that secure the epistemic dignity of philosophical intuitions and their continued use in what Bealer calls “the standard justificatory procedure” of analytic philosophy.<sup>8</sup>

It is highly reasonable to hold that if there really exists such a thing as *analytic philosophy*, then some *analytic truths* must also really exist – since analytic philosophy principally, if not by any means exclusively or exhaustively, consists in the a priori knowledge of analytic truths. Now, surely, analytic philosophy really exists. So, just as surely, some analytic truths must also really exist, via some analytic philosophers’ a priori knowledge of them. In this chapter, then, I will lay the groundwork for a defense of rational intuitions – understood to be active, self-conscious reflective takings of propositions to be necessary and a priori – of conceptually necessary a priori truths, i.e., *analytic* truths, by focusing on the question of their non-inferential, a priori justification: that is, given that one has the rational intuition that P (where that P is conceptually necessary a priori, or analytic), how does that rational intuition justify, or explain, the likelihood that the proposition that P is true? More strongly, if the logical space can be discerned for an account of how a rational intuition that P (where that P is conceptually necessary a priori, or analytic) constitutes authentic a priori *knowledge* that P – say, as an *authoritative* rational intuition – then at least the beginnings of a defense of the thesis that rational-intuitive judgments can serve as bona fide evidence in philosophical practice will be established.<sup>9</sup> The account I shall defend holds that a thinker can know, via authoritative a priori rational intuition, that P (where that P is conceptually necessary a priori, or analytic), in virtue of her possessing the concepts involved in the judgment that P (where that P is conceptually necessary a priori, or analytic), where such possession includes the conceptual capacities exercised in judging that P (where that P is conceptually necessary a priori, or analytic). This account is general enough to remain agnostic regarding the explicit, deep explanation of what such exercise of conceptual capacities involves, e.g., whether it be

understood as the grasping of truth-conditions, or canonical conceptual role, or some other variety of explanation; the purpose here is to demarcate the logical space for such an account. Henceforth and for the rest of the chapter, for expository convenience, I will also assume that “that P” means the same as “that P (where that P is conceptually necessary a priori, or analytic).”

In Section II, I offer a preliminary characterization of rational intuitions. In Section III, I attempt to answer perhaps the strongest recent challenge to a priori justification, one posed by Timothy Williamson. In Section IV, I describe how my account of authoritative rational intuition as the exercise of conceptual capacities in a priori judgment that P differs from the dogmatic, entitlement, and reliabilist accounts of rational intuition’s justificatory force. I conclude the chapter by briefly exploring some implications of my account for X-Phi.

## II A preliminary characterization of rational intuitions

Intuitions are invoked as evidence in various sorts of philosophical arguments, and in the X-Phi movement such intuitions are solicited by surveys that typically present thought-experiment scenarios and request respondents to affirm or deny a particular concept-predication or classification. Often the thought experiments are intricate and recondite, as for instance: a Gettier-style scenario is, or is not, a case of knowledge; in a specific trolley scenario, an action is or is not the morally right thing to do; in a Parfit-style fission scenario, personal identity is or is not preserved. But other examples from the literature involve accepting or rejecting a logical or mathematical principle (e.g., De Morgan’s laws; Frege’s Axiom V, etc.), an analytic truth (if something is red, then it is colored; a vixen is a female fox), an arguably synthetic a priori truth (something completely determinately red is not completely determinately green, etc.), or performing an inference (reasoning according to *modus tollens*, conjunction-elimination, etc.). In this section I present various features of rational intuitions as I understand them, in order in later sections to consider their epistemic source and justificatory force. As an initial *terminus a quo*, my use of the notion of “rational intuition” here is meant to contrast with non-philosophical uses of the word ‘intuition’ and of the concept of intuition expressed by them, and also with what Bealer reports physicists call “physical intuitions,” as in the intuition, upon viewing a house’s foundation, that it will not support the structure.<sup>10</sup> So in what follows, I will develop my understanding of the nature of rational intuitions in terms of some of their minimal features, in contrast to other contemporary thinkers’ characterizations.

There is broad agreement among experimental philosophers and rationalists alike, whether defenders of the old rationalism or of neo-rationalism (see the Introduction for this distinction), that rational intuitions are assertive *judgings*, as in predicating a concept, endorsing an inference rule or analytic truth, and so on. By “assertive judging,” I mean that a rational intuition is a taking things to be *necessarily and a priori* thus and so, and the intuitive judgment – the “intuited” produced by the “intuiting” – can thus be considered a Fregean thought, whereby on the Fregean view, a thought is “something for which the question of truth can arise at all.”<sup>11</sup> To entertain a thought that P, at a minimum, is to consider whether P, that is, whether things are thus and so; to judge that P is, at a minimum, to take the thought to be true, that is, to judge that things are thus and so. Frege identifies true thoughts with facts<sup>12</sup> understood as a possible layout of reality, and so it follows that if one has knowledge of Fregean thoughts one thereby has knowledge of the possible layout of reality. Frege defines “laws of thought” as the “most general laws, which prescribe universally the way in which one ought to think if one is to think at all,”<sup>13</sup> which can therefore be taken to be laws of logic, inferential rules, color concepts’ incompatibility relations, rules of predication and classification, and so on. Since these laws combine atomic thoughts into more complex thoughts, knowledge of these general laws likewise provides one with knowledge of complex facts. If true thoughts are identified with facts, then exercising – and reflecting upon – one’s capacity to think, to form and combine Fregean thoughts, can be a source of knowledge.

On my understanding, rational intuitions are also *a priori*. By this I mean, minimally, that the justification for a rational intuition (i.e., a judging that necessarily and a priori P) does not derive from experience and/or contingent natural facts either directly (e.g., via sense perception<sup>14</sup>) or indirectly (via deductive, inductive or abductive inferences whose premises derive their justification from experience). While a priori justification might rely on the judger possessing concepts that were acquired through experience and/or contingent natural facts (as a so-called “enabling condition” for the belief that necessarily and a priori P), the idea is that the justification of belief in the proposition that necessarily and a priori P itself does not derive from experience and/or contingent natural facts.<sup>15,16</sup>

For me, rationally intuitive judgments are also *non-inferentially* justified. For some propositions, one has *inferential* justification to believe them because they are epistemically supported by other propositions one has justification to believe. If these latter propositions proved to be false, their epistemic support for those former propositions would



vanish. On the other hand, when one's justification to believe that necessarily and a priori P does not derive from one's justification to believe other propositions, this justification is "non-inferential," or "immediate," or "direct." Rational intuitions are like this; as Weinberg puts it, "[a]lthough they are used to provide evidence, one does not, and need not, provide further evidence for them."<sup>17</sup>

On my understanding, rational-intuitive judgments are also, in the specifically Kantian sense, *spontaneous*. By this I mean that unlike perception or involuntary memory, the conceptual capacities are exercised actively, not passively, and also self-consciously or reflectively. For example, if a person rationally-intuitively judges that necessarily and a priori X is F, then her judgment "necessarily and a priori X is F" is the result of an act of synthesis, of which typically she is self-consciously or reflectively aware, and for which she bears cognitive responsibility. This specifically Kantian sense of spontaneity should *not* be confused with taking rational intuitions to be unreflective "snap judgments"<sup>18</sup> or "spontaneous mental judgments."<sup>19</sup>

Moreover, rational intuitions can be false, and hence they are *fallible*. One might report rationally-intuitively believing such propositions as the naïve comprehension axiom, or some proposition stating the central thesis of classical Logicism (the analytic reducibility of arithmetic and/or geometry to the logic of Russell/Whitehead's *Principia Mathematica*), although these propositions are false. The fallibility of rational intuitions is also in accordance with recent work on a priori justification and what in this book we are calling *neo-rationalism* more generally.<sup>20</sup> Thus my neo-rationalist account of rational intuitions in this chapter amounts to a defense of what Bonjour and Peacocke call "moderate rationalism": it is meant to deny the "immoderate rationalist" claim (characteristic of the *old* rationalism) that there is a special, dedicated cognitive faculty for rational intuition or rational insight or intellectual intuition (*intellektuelle Anschauung*) that delivers *infallible* a priori knowledge for *every* rational intuition.<sup>21</sup> My neo-rationalist account in this chapter further aims to give an adequate explanation of the a priori justificatory force of analytic authoritative rational intuitions that P, *without* any recourse to a special, dedicated cognitive *faculty* for rational intuition.

Rational intuitions always involve necessity claims, and as a consequence many thinkers, especially rationalists, whether defenders of the old rationalism or neo-rationalism, characterize rational intuitions in part by their *modal* status. This feature has been advocated by Bonjour and also by Bealer,<sup>22</sup> who claims that intuiting that P is also

experiencing that it is necessary that P; by Sosa,<sup>23</sup> who excludes contingent propositions from being objects of intuition; and by Pust, who allows that this feature of intuition might be captured by a disposition to have an experience of necessity:

At t, S has a rational intuition that p IF AND ONLY IF (a) at t, S has a purely intellectual experience, when considering the question of whether p, that p; and (b) at t, if S were to consider whether p is necessarily true, then S would have a purely intellectual experience that necessarily p.<sup>24</sup>

There are several questions and puzzles in these connections that are tangential to the sketch I am offering here. While rational intuitions are, indeed, of necessary and a priori propositions, and while it is the case that one who has a priori justification that necessarily and a priori P must indeed believe that P is necessarily and a priori true, one can still lack self-conscious or reflective knowledge of *the concepts of necessity and apriority* and yet still have a priori justification, and a priori knowledge, that “ $2 + 2 = 4$ ” or that “if something is red then it’s colored.”<sup>25</sup> Saul Kripke and Gareth Evans have also argued that there are contingent propositions that can be known a priori (e.g., “if actually P, then P”).<sup>26</sup> Given the complexity of these issues and the limited aims of this chapter, I will generally avoid discussing how rational intuitions involve modal properties. In any case, all of these issues are covered in Part 2.

My understanding of rational intuition diverges from other rationalists, especially including several other contemporary neo-rationalists, by denying that rational intuitions have any specific *phenomenology*. Bealer, e.g., claims that an intuition is “a *sui generis*, irreducible natural (i.e., non-Cambridge-like) propositional attitude that occurs episodically,” a special kind of “intellectual seeming.”<sup>27</sup> When S has the intuition that P, the proposition that P “just seems” true to S.<sup>28</sup> Similarly Peacocke speaks of such propositions being “primitively compelling,”<sup>29</sup> and Ernest Sosa holds that intuitions are “intellectual attractions,” such that

[w]hen such attraction is exerted by one’s entertaining a proposition, with its specific content, then the attraction is intuitive. But the entertaining is not the intuition, not what is distinctively characteristic of *intuitive* justification. After all, conscious entertaining is always there in conscious belief, even when the belief is not intuitive, but introspective, perceptual, or inferential. What is distinctive

of intuitive justification is rather *its being the entertaining itself of that specific content that exerts the attraction*.<sup>30</sup>

And in another place, Sosa writes:

An intellectual seeming is *intuitive* when it is an attraction to assent triggered simply by considering a proposition consciously with understanding. (Of course, one may so much as understand the proposition only through a complex and prolonged process that includes perception, memory or inference).<sup>31</sup>

Neo-rationalists like Bealer, Peacocke, and Sosa therefore invoke specific phenomenal characters by which to distinguish intuitions from other forms of *sui generis* or doxastic mental states.<sup>32</sup> By contrast, Williamson denies the existence of any particular cognitive phenomenology for intuitions:

Although mathematical intuition can have a rich phenomenology, even a quasi-perceptual one, for instance in geometry, the intellectual appearance of the Gettier proposition is not like that. Any accompanying imagery is irrelevant. For myself, I am aware of no intellectual seeming beyond my conscious inclination to believe the Gettier proposition.<sup>33</sup>

Other philosophers also report no distinctive cognitive phenomenology for their intuitions.<sup>34</sup> Given the divergence in reported experience of intuitions, when “intuitions” are understood according to either *the sui generis account* or *the doxastic account*,<sup>35</sup> it seems rationally prudent to maintain that what contemporary philosophers call “intuitions,” *per se*, exhibit no specific and defining phenomenology and in that regard are indistinguishable from the genus to which they belong – Fregean thoughts or judgments.

It is to be particularly noted, however, that this divergence in reported experience of intuitions according to either the *sui generis* account or the doxastic account does not in any way preclude the possibility that *a specifically demarcated proper subset of intuitions* consisting of, say, *basic authoritative rational intuitions* will uniformly exhibit a characteristic cognitive phenomenology. Indeed, in the positive neo-rationalist account we are developing in this book, according to which intuitions are *rational* intuitions, and according to which *authoritative* rational intuitions satisfy (i) the evidential-phenomenological, or internalistic, condition, (ii) the anti-luck, or externalistic,

condition, and (iii) the cognitive virtues condition, on authentic or “High-Bar” a priori knowledge, then there *is* indeed a characteristic cognitive phenomenology for *that* special class of rational intuitions. See Part 2, Sections IV and IX below for a full presentation and defense of that thesis.

In any case, and consistently with that account, the central idea I shall explore in this chapter is that an analytic rational intuition that P is the disposition to judge that necessarily and a priori P upon being queried “P?,” and that analytic authoritative rational intuitions of such propositions are proper exercises of our conceptual capacities: specifically, the concepts involved in the judgment that necessarily and a priori P. The *rational intuiting* is the judging that necessarily and a priori P, understood as the exercise of the conceptual capacities involved in judging that necessarily and a priori P, and the *rationally intuited* is the resulting judgment that necessarily and a priori P. Analytic authoritative rational-intuitive judgments, i.e., analytic authentic a priori knowledge via rational intuitions that P are thus the achievements of our conceptual capacities, the proper exercise of which is part of what it means to possess the concepts in question.<sup>36</sup>

Perhaps the strongest argument in the contemporary neo-rationalist literature for distinguishing intuitions from beliefs is due to Bealer.<sup>37</sup> According to Bealer, intellectual seemings, like perceptual seemings, exhibit what can be called *epistemic recalcitrance*: they can elicit a *prima facie* belief despite settled belief or even knowledge to the contrary. Thus one might have a persistent inclination to believe the naïve comprehension axiom – that for any property F there is a set  $\{x: x \text{ is } F\}$  – despite knowing that such a belief is false in the light of Russell’s paradox. Here the analogy is to optical illusions such as the Müller-Lyer illusion, in which one line seems longer than the other, even after one has confirmed that the lines are equivalent in length. Thus, similar to such optical illusions, one’s intuition or “intellectual seeming” that P persists even after one comes to believe conclusively or know that not-P. It is this epistemic behavior that distinguishes intuitions from beliefs, which do not persist despite knowledge that they are false.

Roderick Chisholm helpfully distinguishes three different functions of utterances of the statement “It seems to me that P”:<sup>38</sup>

- (i) To report one’s belief. In this sense “It seems to me that P” is logically equivalent to “I believe that P,” and adds nothing of epistemic significance to the report of one’s belief.

- (ii) “To provide the speaker with a way out,” that is, to hedge the report of one’s belief. In this case it is the contrary of Austin’s performative utterance “I know that P.” If “I know that P” implies that the speaker, if asked, could provide the reasons for taking himself to know that P, then “it seems to me that P” implies that the speaker is not in fact certain of his reasons for believing that P. This function is akin to Wilfrid Sellars’s “looks talk,” where “it looks green” logically presupposes and qualifies the “is green” statement, and indicates that the speaker is withholding endorsement of the claim.<sup>39</sup>
- (iii) Lastly, an utterance of “It seems to me that P” may function in a phenomenological, descriptive way, describing a certain state of affairs that is not itself a belief.

Now Bealer and other neo-rationalists who endorse the Bealerian or *sui generis* view that intuitions are intellectual seemings hold that the statement “it seems to me that P” in cases of rational intuition is being used in the third sense, to describe a psychological, mental state: an “intellectual seeming” that is a *sui generis* propositional attitude towards the proposition that P. We have already seen one reason for doubting this view, namely that many philosophers report no distinctive or uniform phenomenology when they reflect on their intuitions, construed as either intellectual seemings or armchair judgments. Another worry for the *sui generis* view is that it raises the question of how a statement with psychological content – the report of an intellectual seeming *qua* intuiting – can provide justification for the non-psychological content of the intuited, i.e., for the proposition that P. I will address that question directly in Section IV, but for now note that neither sense (i) nor sense (ii) is subject to that worry, for neither is an empirical description of an episode or state, but rather both are reports of beliefs, judgments that are already, to speak with Sellars, in “the logical space of reasons, of justifying and being able to justify what one says.”<sup>40</sup>

For present purposes, the key claim by Sellars regarding “looks talk” is that, for any color C, “looks C” logically presupposes “is C,” that is “that the concept of *looking green*, the ability to recognize that something *looks green*, presupposes the concept of *being green*, and that the latter concept involves the ability to tell what colors objects have by looking at them – which in turn involves knowing in what circumstances to place an object if one wishes to ascertain its color by looking at it.”<sup>41</sup> Contrary to the empiricists’ claim that a visual seeming is presupposed by both illusory and veridical perceptual claims – which then raises the question of how one can move from a visual seeming that Q to the perceptual knowledge

that Q – the logic of looks presupposes the acquisition of concepts and the practice of assertively predicating them of objects, and the self-conscious knowledge of conditions favoring the reliability of such assertions, such that one might on occasion hedge the assertion of a perceptual claim because of doubts regarding the favorability of those conditions.

We can now specify how the analogy between visual seeming and intellectual seeming should be unpacked. Corresponding to the logical priority of “x is C” vis-à-vis “x looks C” is the logical priority of the judgment “that P” vis-à-vis “it seems that P.” In both cases the latter claim is a weakening or retraction of the endorsement of the assertion in question. The retreat to “it seems that P” is a latecomer to the discursive practice in question, rather than its epistemic *arché*. “It seems to me that P,” I suggest, functions analogously in the case of epistemic recalcitrance proposed by Bealer: the content of the intuition is the proposition (Fregean thought) that P, but intuiting that P in this sense is more tentative than asserting that P, far less than asserting that necessarily and a priori P. If this explanation is persuasive, then we are certainly not required to accept that intuitings are sui generis “seemings” or “attractions” conferring some kind of justificatory warrant on their propositional contents.<sup>42</sup>

In the case of looks talk, someone asserting “X looks C to me” has learned that seeing that X is C is subject to defeaters, including fallible perceptual and conceptual capacities and unfavorable environmental circumstances. Analogously, someone asserting “it seems to me that P” has learned that simply asserting that P is subject to defeaters, but in the case of rational intuitions, which are a priori, defeaters might be such things as: failure completely or sufficiently to understand the concept in question, failure to take into account background or side constraints affecting the circumstances of application of a concept (for instance, there may be gaps or underdetermination in the applicability of a specific concept), and so on. Similarly, as *acts* of a priori judging, contingent “human, all too human” factors (being tired, distracted, depressed, eager to please or anxious regarding the questioner, etc.) can obviously affect the reliability of resulting judgments. In these cases too one might retreat to the weaker commitment of “it seems to me that P.” Knowing that not-P while yet prima facie judging that P, as in Bealer’s case of the naïve comprehension axiom, would be a case where thorough reflection and episodic judging – understood as the exercise of fallible conceptual capacities – diverge.<sup>43</sup>

So the picture I am suggesting is one in which, when soliciting a rational intuition whether P, the questioner requests an assertion that

necessarily and a priori P or an assertion that necessarily and a priori not-P, and this is simply a judging, a self-conscious or reflective, spontaneous (in the Kantian sense) exercise of one's conceptual capacities (in applying a concept, in endorsing an inference rule, etc.). The "phenomenological" difference, if any, between an "intellectual seeming" that P ("it seems that P") and assertively judging that P ("that P") is merely the expression of different degrees of confidence in one's judgment that P. As we will see in Section IV, clarifying the picture along these lines prevents making the move analogous to the argument from illusion, namely to claim that the intuition that P functions as a mere experience that somehow provides justification that P, in view of the possibility that this experience is merely a hallucination induced by an evil demon. On the picture I am proposing, it is not some phenomenologically distinctive mental state or propositional attitude, to which "intuition" refers when this is understood according to either the sui generis account or the doxastic account, that sufficiently justifies the proposition that P, but rather the fact that the judging that P issues from normatively "good" or "rational" dispositions to use the concepts involved in the proposition that necessarily and a priori P. On this view, the analytic authoritative rationally intuitive judgment that necessarily and a priori P is sufficiently justified non-inferentially and a priori in virtue of the judger's understanding the concept(s) involved in the proposition that necessarily and a priori P, that understanding itself being a manifestation of the dispositions or capacities to deploy correctly the concept(s) involved in the proposition that necessarily and a priori P.

By *justification*, as specifically opposed to *sufficient justification*, I mean the minimal notion that person S has justification to believe that P if and only if S is in a position where it would be epistemically appropriate for S to believe that P, that is, a situation in which the proposition that P is epistemically likely to be true for S.<sup>44</sup> I will argue for the plausibility of this account in Section III and have more to say about justification in Section IV.

If analytic authoritative rational intuitions sufficiently justify a priori propositional knowledge of necessary and a priori truth that P, then that sufficient justification is not a seeming, nor is it narrowly and specifically *theoretical and propositional* as opposed to *rationally practical*.<sup>45</sup> This is a central Wittgensteinian claim in the overall account of analytic authoritative rational intuitions that P, that I will offer here. The claim is that the *discursive practice* of inferring, and the *disposition* to infer correctly, say according to modus ponens, is more basic than

the narrowly and specifically *theoretical and propositional belief* that the inference rule modus ponens is valid. Likewise the claim is that the discursive practice of using the concept of *knowledge*, and the disposition to use the predicate “has knowledge” correctly, say, is more basic than the narrowly and specifically theoretical and propositional belief that, say, “Knowledge is not justified true belief,” and Gettier-style thought experiments and X-Phi surveys are meant to get a grasp on such practices and dispositions. In support of this, Paul Boghossian offers two arguments for denying that some kind of narrowly and specifically theoretical and propositional knowledge grounds our basic inferential practices. The first argument is that children acquire the disposition to reason according to modus ponens long before – if ever – they acquire the belief that modus ponens is necessarily a valid rule of logical entailment, a sophisticated belief that requires mastery of modal and logical concepts. The second argument flows from Lewis Carroll’s famous essay “What the Tortoise Said to Achilles.” If our most fundamental a priori knowledge is narrowly and specifically theoretical and propositional in nature, then in order to infer correctly by modus ponens one would have to know the inference rule modus ponens and know that it is necessary, truth-preserving, etc. But the representation of modus ponens (either logically, as:  $\Box p \rightarrow ((p \rightarrow q) \rightarrow q)$ ); or metalogically, as: if p and  $(p \rightarrow q)$  are true, then q is true) itself presupposes modus ponens, and justification thus becomes an infinite regress. Boghossian concludes from these arguments “that at some point it must be possible simply to *move* between thoughts in a way that generates justified belief, without this movement being grounded in the thinker’s justified belief about the rule used in the reasoning.”<sup>46</sup>

My account seeks to develop this view along the lines of concept possession and conceptual competence grounded in dispositions and discursive practices. On this account, understanding and mastery of words (in a natural language) and concepts (in mentalese) is the epistemic source and justification for authoritative rational intuitions that P characterized with the features outlined above. One’s mastery of the concepts in question confers authority upon the exercise of those conceptual capacities in analytic authoritative rationally intuitive (a priori, non-inferential) judgments. My account of analytic authoritative rational-intuitional a priori justification thus also relies on the *epistemological* notion of analyticity – corresponding to, but still distinct from, the *cognitive-semantic* notion of analyticity as conceptually necessary a priori truth that I have assumed for the purposes of my argument – the general idea being that knowing the meaning of a word or concept just



is being able to use the word or concept correctly, and by contraposition, failure to use a word or concept correctly is constitutive of failure to know its meaning.<sup>47</sup> For example, one has a priori justification for analytic authoritative rational-intuitional judgments involving the concept of *conjunction* just if one knows the meaning of “and” (and *and*), understood as the inferential roles “and” (and *and*) can occupy: for instance, conjunction-introduction and conjunction-elimination rules. Therefore the proper, non-defective exercise of one’s conceptual capacities in Kantian-spontaneous judging would epistemically sufficiently justify belief in the conceptually necessary and a priori proposition that is cognitive-semantically constituted by the conceptual contents of one’s judgment.

While Bealer, Boghossian, and Peacocke have each proposed a version of epistemological analyticity, according to which a priori knowledge of a concept entails a fixed set of dispositions to deploy it correctly in judgments and inferences, Williamson in turn has lodged a powerful objection to epistemological-analytical accounts of a priori knowledge and justification. Answering his objection will therefore serve dialectically to develop my account in greater detail and to differentiate it from related views by other contemporary neo-rationalists.

### III A criticism of Williamson’s criticism

In *The Philosophy of Philosophy*, Williamson presents a general critique of epistemological conceptions of analyticity, by denying that there are *any* constitutive “understanding-assent” links: no particular sentence (or inference) need be assented to or performed by a thinker as a condition of that thinker’s understanding a given word or concept. If Williamson’s claim stands, then my account of authoritative rational intuitions having their authority in mastery – competent use – of conceptual capacities must fall. And since, e.g., inferentialist and use-dispositional theories of meaning rely on such constitutive understanding-assent links, explanations of concept-mastery in either framework would likewise fall.<sup>48</sup>

Williamson’s argument runs as follows. For any word *w*, suppose that understanding the meaning of *w* requires assenting, or being disposed to assent, to some sentence *S*. Williamson claims it is possible to conceive of some expert who could become convinced that *S* is false, and so would not assent to *S*, and yet still understands *w*. Thus there is no sentence *S* such that assent to it is necessary for understanding *w*. Williamson’s example is directed against what seems to be the strongest

candidate for the epistemological-analytical view of a priori knowledge, namely, a priori knowledge of the logical constants. So the epistemological-analytical account of, say, conjunction, holds that understanding the concept *conjunction*, and the word “and,” just means being able to perform in compliance with the inference rules for conjunction-introduction (viz.,  $A, B, (A \& B)$ ) and conjunction-elimination (viz.,  $(A \& B), \text{ so } A; (A \& B), \text{ so } B$ ).<sup>49</sup> So, to possess the concept *conjunction* is to possess a fixed set of dispositions that are manifested in certain acts of inferring, and thus knowledge of what “and” means is a priori analytically justified. Understanding the concept of *conjunction* is evidenced by assenting, or being disposed to assent, to such inferences.<sup>50</sup>

Williamson’s story of Simon is intended to provide a decisive counter-example to such an account. Upon considered philosophical reflection regarding vagueness, Simon holds that indefinite cases constitute truth-value gaps, rejects bivalence, and adopts Kleene’s weak three-valued truth tables into his reasoning practice. According to these tables, a conjunction is indefinite (neither true nor false) if at least one conjunct is indefinite, regardless of the value of the other conjunct. Thus if “A” is indefinite and “B” is false, then “(A & B)” is indefinite. Williamson further stipulates that Simon regards both truth and indefiniteness as designated (acceptable) semantic values for an assertion: what matters is to avoid falsity. So, supposing that “A” is false and “B” is borderline, “(A & B)” is indefinite, and the corresponding instance of conjunction-elimination – “A and B; therefore A” – has a designated premise and an undesignated conclusion. On these grounds, Simon rejects the conclusion of that instance while accepting its premise. The proponent of the epistemological analyticity of conjunction must conclude that in a dispute between a classical logician and Simon, one of the disputants does not correctly or completely understand the concepts they are using. But it seems that both parties are linguistically and conceptually competent despite their local disagreement. So Williamson concludes that

there is no litmus test for understanding. Whatever local test is proposed, someone could fail it and still do well enough elsewhere with the word to count as understanding it.<sup>51</sup>

In other words, he concludes that epistemological analyticity accounts of a priori knowledge of individual words or concepts fail because local disputes can be offset by overall ascription of understanding and competence to both disputants.

However, while Williamson takes his objection to entail that epistemological analyticity is false, and that therefore there can be no significant distinction between a priori and a posteriori justification, that conclusion follows only on the presupposition that conceptual competence or understanding be conceived *individually*, as a determinate set of uniform, universal and necessary dispositional “understanding-assent” links for each concept or word, such that partially divergent dispositions to assent at the local level can be offset by the attribution of overall understanding of that word or concept at the *global* or *holistic* level, that is, at the level of a linguistic or conceptual *discursive practice*. And this picture presupposes, as Williamson briefly describes, a conception of linguistic practice according to which meanings are determined socially: “when an individual does use a shared language, as such, individual meaning is parasitic on social meaning.”<sup>52</sup> Williamson defines “social meaning,” a linguistic practice, as follows:

a complex web of interactions and dependencies can hold a linguistic or conceptual practice together even in the absence of a common creed that all participants at all times are required to endorse.<sup>53</sup>

Williamson’s preferred picture of a linguistic or conceptual discursive practice is thereby decidedly empirical and *accidental*: if enough of the dispositional “understanding-assent” links coincide or overlap to allow communication and coordination, then such interactions and dependencies amount to a “practice.” But this picture, which we could call psychological or sociological in its statistical empiricism, leaves out, or leaves unexplained, how a *normative* standard or measure of appraisal – say, the *Kantian-spontaneous rationality* of a discursive practice, as a good, under the guise of which one can judge linguistic acts – can *constitute* the unity of a discursive practice or disposition. Williamson’s account of practice posits a false dichotomy between a merely accidental, ad hoc patchwork of overlapping communication on the one hand, and an exceptionless normative universalization on the other, “a common creed that all participants at all times are required to endorse,” which is the same criterion of understanding he presupposed in his target epistemological-analytical account of individual concept possession, but now applied to the level of a practice. The question that then arises for the defender of analytic authoritative rational intuitions via conceptual competence is whether one can jettison Williamson’s picture of practice and disposition and still defend the possibility of authoritative rational intuitions that P as a form of a priori justification.

To jettison Williamson's picture and its false dichotomy is to conceive rational competence ("understanding-assent," in Williamson's phrase) as participation in a *discursive practice* that is nonetheless *rational in the broadly Kantian sense*, that is, normatively constrained a priori. Williamson's claim that "there is no litmus test for understanding" at the level of individual concepts and words presupposes that such understanding or competence is explicated by means, rules, or norms that brook no exceptions; only in this way can the local dispute be a genuine, principled one because the disputants manifest genuinely different, indeed at least partially mutually exclusive dispositions to assent to specific inferences.

But there is an alternative picture of how rational dispositions and discursive practices might be conceived, one which moreover avoids the false dichotomy of discursive practice-membership that Williamson outlines. I shall rehearse some thoughts worked out by Michael Thompson in *Life and Action* about the normative concepts of *disposition* and *practice*, but mutatis mutandis transposed from the context of practical thought to that of thought in general.<sup>54</sup> For some action-type A, for instance, inferring according to modus ponens, a person P's disposition to A is instanced by many individual A-type actions by P, and is expressed by the *generic* judgment-form "her disposition is to do A" or more generally "she As." And a group's practice of doing A is instanced by many individual A-type actions by many people, and is expressed by the *generic* judgment-form "it is their practice to do A" or more generally "they A." The categories of disposition and practice both exhibit characteristic features of a specific kind of *generality* and *actuality*. A disposition is manifested in a potentially infinite series of acts by a single agent, all of them sharing a common description (A-type action), and a discursive practice is something that will characteristically be exhibited in indefinitely many acts of indefinitely many agents, all of those actions sharing a common description. The relation between disposition and an action manifesting it on the one hand, and between discursive practice and an action falling under it on the other, is not one of execution, completion, whole-part, or set-member: there is no number of actions which exhausts the disposition or practice, as it were. Moreover, the disposition or discursive practice is "present" in the agents, even when they are not actively doing A: they are not external or abstract principles that an agent must first grant significance in order to act then in accordance with them, precisely the *second* disjunct of the practice-membership dichotomy Williamson describes.<sup>55</sup> That dispositions and discursive practices share the same kind of generality – one

that does not admit of limit, or completion, or exhaustion – is shown by the past tense of their characteristic judgment-forms: not “she A-ed” but “she used to A”; and not “they A-ed” but “they used to A.” That dispositions and practices share the same kind of actuality is evidenced by the alethic behavior of their characteristic judgment-forms: “she As” may be true, although she isn’t A-ing now and perhaps hasn’t in a long while; and “they A” may be true, although none of them are now A-ing and perhaps none of them have in a long while.<sup>56</sup> Judgments of this form do not express empirical, statistical or probabilistic preponderance – the *first* disjunct of the practice-membership dichotomy Williamson describes – for this amounts to an *accidental* relation between practice and instance, disposition and manifestation. Rather this judgment-form expresses a kind of a priori descriptive norm, even though bearers of the discursive practice or possessors of the disposition may not fulfill that norm with any statistical significance. Therefore, Thompson suggests that disposition and discursive practice be viewed as individual and collective versions of the same one principle for explaining action.

The *normativity* of the disposition or practice is inherited by the instances it manifests. That is, a justified or “good” or rational discursive practice makes the actions falling under it justified or “good” or rational, and a justified or “good” or rational disposition makes the actions manifesting it justified or “good” or rational. So, if inferring in accordance with *modus ponens* is a rational discursive practice or disposition, then individual instances of such inferring are likewise rational. But the specific kind of generality expressed in the logical and alethic behavior of the generic judgment-form, unlike for instance judgments of Fregean universal quantification, allows an indeterminate number of exceptions without impugning the truth of the judgment.

This consideration suggests a first response to Williamson’s counter-example: that Simon’s deviant conjunction-introduction and conjunction-elimination inferences might be deemed *exceptions* to his inferences’ generally manifesting the normatively correct (rational) dispositions to reason, i.e., that the deviant inferences might be deemed exceptions to his inferences’ generally falling under the normatively correct (rational) discursive practice of reasoning. On this line of argument, it would be a contingent judgment by others whether his thought and behavior accord with the dispositions reflecting the discursive practice for him to continue to be accorded the status of bearing the rational discursive practice and manifesting the rational dispositions. Nonetheless, the generic judgments expressing the dispositions and practice attribute epistemological-analytic a priori justification to

possessors of those dispositions and bearers of that discursive practice for the judgments they do make. As long as Simon is accorded membership in the discursive practice and possession of the dispositions, the generic judgments expressing epistemological-analytic knowledge of the discursive practice and dispositions will be true of him.

Conversely, it is also possible to deny that Simon possesses the *same* dispositions as those possessed by people who infer according to classical logic, i.e., to deny that he bears the *same* discursive practice as do those who infer according to classical logic. Suppose that we, as bearers of a single discursive practice normatively appraised as “good,” that is, here, rational, in part because defined by adherence to bivalence, classical logic, and so on, come upon the likes of Simon: we should say that he and his like are in error, that his inferences do not fall under the same practice, that he does not instance the discursive practice or manifest the disposition. Understanding-assent, on this picture, attaches not atomistically and universally to individual concepts and words, but is expressed in assenting, or being disposed to assent, to the generic judgments that describe the constitutive norms of the discursive practice as a rational *unity*, that specific kind of generality presented above that does not admit of local divergence (one part) and offsetting overlap elsewhere (another, statistically greater part). If one were to object that a *part* of the discursive practice under which Simon’s inferences fall is indeed good/rational, in that they all somehow “belong together” under such a discursive sub-practice, then we have achieved again the “unity” of a discursive practice, and the difference between the good or rational acts of inference and the deviant cases (“local disagreement”) will consist again in this, that the latter do not express the discursive practice exhibited in the former. As Thompson concludes:

We need only say that if the practice makes some action good, then any action the practice cannot make good does not express the practice.<sup>57</sup>

So if a discursive practice makes some inference schema “good” or rational, then any inference the discursive practice cannot make good (rational) does not express the practice, and likewise, *mutatis mutandis*, for dispositions as conceptual capacities. So the deviant logician’s three-valued inference dispositions do not express the same discursive practice as ours. We understand him, as he explains his reasoning about vagueness and inferring with indeterminate cases, but we take him to be in error: we judge him *not* to grasp the discursive practice.<sup>58</sup> It may

be useful here to invoke Rawls's distinction between constitutive practice rules and regulative rules, whereby in the former "the practice is logically prior to particular cases: unless there is the practice the terms referring to actions specified by it lack a sense."<sup>59</sup> By logical priority I take it that Rawls means that the practice has a *constitutively* explanatory role relation to the acts that fall under it. The deviant logician's particular acts of mind, as it were, cannot be explained by reference to the discursive practice, and hence are not expressions of it. A normatively constitutive discursive practice conceived along these lines is decidedly different from Williamson's sociological, empirical conception of a practice as ultimately an *accidental* unity:

a complex web of interactions and dependencies can hold a linguistic or conceptual practice together even in the absence of a common creed that all participants at all times are required to endorse.<sup>60</sup>

As Thompson says:

Where we judge that a practice or disposition lays hold of some good – or, rather, where we judge that some good apt to be realized in a practice or a disposition *is* realized in such a thing – then, it seems, we take leave of the purely sociological or psychological domain.<sup>61</sup>

This constitutive normative account of conceptual competence under the guise of rationality acknowledges Williamson's objection against atomistic epistemological analyticity, while retaining an explanation of how a member of a rational discursive practice may have authoritative rational-intuitional a priori knowledge of, for instance, the meaning of logical constants. This account in effect turns Williamson's objection into a virtue: it will be a contingent, historical matter how membership in a conceptual discursive practice is acknowledged, and members of such a discursive practice may contingently suffer local disagreements while – on the whole – possessing a priori knowledge sufficient to constitute their membership in the same discursive practice by whose lights they are sufficiently justified in their authoritative analytic rational intuitions, so long as the local disagreement is understood as erroneous *exceptions* from the generic judgments that describe the dispositions and the discursive practice. Conversely, it is likewise a contingent possibility that someone who diverges widely in her concept use or inference rules would be deemed *not* to belong to the conceptual discursive practice or to possess the relevant conceptual capacities, and such an individual

would not be recognized as normatively rational at all, rather than – as the psychologist or sociologist would hold – simply being a member of a different discursive practice or possessor of a different disposition. I think Frege captures this point when he contrasts his understanding of the foundational normativity of logic with that of the “psychological logician”:

But what if beings were ever found whose laws of thought flatly contradicted ours and therefore frequently led to contrary results even in practice? The psychological logician could only acknowledge the fact and say simply: those laws hold for them, these laws hold for us. I should say: we have here a hitherto unknown type of madness.<sup>62</sup>

It is important to remark that the above account avoids the assumption made by two possible but ultimately unsatisfactory lines of response to Williamson’s criticism by other contemporary neo-rationalists. Both of these responses accept the assumption that epistemological analyticity attaches to individual words or concepts in such a way as to be expressed by a determinate set of rules or “understanding-assent” links. On the first line of response, one might bite the bullet and claim that indeed one of the disputants must have defective understanding of the concept *conjunction* and the word “and.” Yet this conception of understanding presupposes epistemological analyticity by stipulating that such understanding *excludes* the possibility of a priori error. For instance, Bealer defines the notion of modal-realist “determinate understanding” of a concept this way:

determinateness = the mode *m* of understanding such that, necessarily, for all *x* and property-identities *p* which *x* understands *m*-ly [where “*m*” ranges over modes of understanding], *p* is true if it is possible for *x* to settle with a priori stability that *p* is true.<sup>63</sup>

The modal notion of “a priori stability” is meant to capture the feature of determinate understanding of a property-identity that *P* whereby no improvement in one’s conceptual repertoires nor in one’s cognitive conditions can alter one’s intuitions regarding that *P* so long as that *P* is understood *m*-ly. Similarly, Ludwig holds the following claims.

Since intuitions are the expression of our competence in the deployment of the concepts involved in them, there can be no genuine conflict between intuitions, any more than there can be genuine



conflict between memories. If I really remember that *p* and you really remember that *q*, then that *p* and that *q* are compossible because they are both true. If I have the intuition that *p* and you have the intuition that *q*, then that *p* and that *q* are compossible because they are both true. If I have the intuition that *p* and you judge that *q*, and that *p* is not compossible with that *q*, then your judgment is not an intuition, no matter what other features your judgment has.

Therefore, the differences in responses among those surveyed [in certain experiments] are not differences in intuitions about cases conceived of in the same way. They are not because it is conceptually impossible.<sup>64</sup>

Bealer's response denies Williamson's challenge, as it were, by stipulation: at most only one of the disputants can have "determinate understanding" of *conjunction*. Similarly, Ludwig maintains:

Intuitions are expressions of the mastery of concepts. If one has an intuition, it is an expression of the application conditions of the concepts involved in it. Concepts are individuated by their application conditions. So sameness of concepts implies sameness of application conditions. So sameness of concepts implies sameness of intuitions.<sup>65</sup>

This type of response amounts to dismissing Williamson's objection by stipulating its impossibility on the grounds of an epistemological-analytical conception of individual concept possession, and is thus question-begging. Furthermore, Bealer's view also entails that a priori intuitions are (asymptotically) necessarily true, despite general consensus that rational intuition is fallible (as discussed earlier). And finally, Bealer's view admittedly entails the implausibly strong Hegelian-Peircean view that only at the end of inquiry will one actually know precisely *what* one knows by a priori intuition: "Determinate concept possession is in this sense 'Hegelian' – a present feature revealed only in the future."<sup>66</sup>

A second line of response would be to maintain the epistemological-analytical account of individual concept possession, but to relocate the determinate set of rules or "understanding-assent" links from the domain of self-conscious knowledge to that of tacit knowledge of what Peacocke calls "implicit conceptions":

An implicit conception is, amongst other things, a content-involving subpersonal state, involved in fundamental cases in the explanation of a thinker's application of a given concept or expression to something. The content of the implicit conception specifies the condition of something's falling under the concept, or for the expression to be true of an object. To possess the concept, or to understand the expression, is to have the right implicit conception for it.<sup>67</sup>

On this view and contrary to Bealer's and Ludwig's view, there can be genuine a priori disputes because one of the disputants possesses conflicting explicit and implicit conceptions of the same concept or word:

The content of the [implicit] knowledge need not be something a thinker consciously accepts, even would accept if presented to him. Some thinkers may mischaracterize their own understanding. When two philosophers disagree about the nature of observational concepts, at least one of them must be wrong...

Since it can be hard to make explicit the content of one of one's own implicit conceptions, we should... not be surprised if thinkers sometimes mischaracterize the content of their implicit conceptions. A thinker's explicit endorsement of an incorrect definition does not mean that he does not have an implicit conception whose content is the correct definition.<sup>68</sup>

Hence on this view one would not be compelled to conclude that one of the disputants does not understand the concepts or words in dispute: in the case of the deviant logician Simon, the implicit conceptions of inference rules of classical logic are in principle inaccessible to self-consciousness, because located, at least partially, in subpersonal systems. But this entails that Simon's access to his own implicit conceptual capacities is in principle no different than an observer's (say, a cognitive scientist's or an experimental philosopher's). To speak with Aristotle, in this case one relates to oneself-as-another: he would treat his own thought as empirically observed data for inductively or abductively generating a theory of his conceptual competence, say. Clearly this would not be a priori justification, but at best a posteriori externalist justification for beliefs regarding his own implicit conceptions and reasoning capacities.<sup>69</sup> Thus Williamson's objection to the neo-rationalist proponents of epistemological analyticity seems sound in

respect to responses such as Bealer's and Ludwig's stipulative account and also Peacocke's implicit conception account.

By contrast, in this section, I have attempted to defend an epistemological-analytical account of a priori knowledge, via analytic authoritative rational intuition, against the challenge posed by Williamson, by replacing the content of such knowledge from a determinate set of universal "understanding-assent" links attached to individual concepts and words with the constitutive normative account of discursive practice and dispositions expressed by generic judgments. This alternative account of rational dispositions and discursive practices can accommodate the local disagreements between concept users as erroneous exceptions to the generic judgments that characterize such conceptual competencies while retaining the normativity of the dispositions and the practice. The account thus is a version of an epistemological-analytical account of a priori knowledge and analytic authoritative rational intuition that can accommodate the phenomena of local disagreement without retreating to a merely statistical, ultimately *accidental* conception of practice-membership and overlapping dispositions. If this account holds, then it provides an account of how analytic authoritative rational intuitions can provide a priori non-inferential sufficient justification for such judgments by grounding the sufficient justification *constitutively* in the dispositions and discursive practice conceived as the rational exercise of one's conceptual capacities.<sup>70</sup> In the next section, I consider more closely the source and nature of this justification.

#### **IV Authoritatively rationally intuiting analytic truths by correctly exercising our fallible conceptual capacities**

We have seen how a normatively constitutive account of rational dispositions and practice, expressible in generic judgments, can answer Williamson's objection to epistemological analyticity accounts of a priori justification. In this section, I will continue this dispositional account by arguing directly that analytic authoritative rational-intuitional judgments, as a priori Kantian-spontaneous exercises of reason, are sufficiently justified in virtue of their source, understood as fallible conceptual capacities, even if rational intuitions per se are fallible. That is, the question is, given an analytic authoritative rational intuition by S that P, what sufficient justification does the rational-intuiting activity provide S that the proposition that P is necessarily and a priori true? If that question can be given a convincing answer, then the use of analytic authoritative rational intuitions as sound evidence in philosophical arguments will at least be in some measure explained.

My account is intended to answer skepticism regarding the epistemic soundness and value of intuitions that has been raised by experimental philosophers as well as by Williamson,<sup>71</sup> who frames the problem in terms of what Jessica Brown calls “the gap objection.”<sup>72</sup> In typical thought-experiment scenarios, intuitions function as evidence for or against a given theory. For instance, the intuition that a subject in a Gettier scenario has a justified true belief but lacks knowledge is interpreted as evidence for the view that knowledge is something more than justified true belief. The question is: How does a psychological occurrent state (it seeming or striking or attracting one that P) or a psychological proposition (“it seems to me that P”) provide justification or evidence for the belief that P or the non-psychological proposition that P? That is, given that I have an intuition – a (controversially) phenomenologically distinct, occurrent mental state, whether an intellectual seeming or an armchair judgment (or a disposition so to judge) – that P, why should I believe that P, or *a fortiori* know that P? I will briefly consider two internalist and one externalist accounts, all of which attempt but ultimately fail to bridge the “gap,” before (re)turning to my positive account.

The first internalist account – *dogmatism* – claims that the experience of an intellectual seeming that P provides *prima facie* justification for believing that P. Michael Huemer states this view in broad form, for the genus of appearance – of which intellectual seeming is a species – with his Principle of Phenomenal Conservatism: “If it seems to *S* that *p*, then, in the absence of defeaters, *S* thereby has at least some degree of justification for believing that *p*,” which “holds that it is by virtue of having an appearance with a given content that one has justification for believing that content.”<sup>73</sup> Elijah Chudnoff defends a similar view, restricted to intuitions: “If it intuitively seems to you that *p*, then you thereby possess some *prima facie* justification for believing that *p*” on the basis of “presentational phenomenology” of the intuition such that “when in it you both seem to fact-*intuit* that *p* and seem to be *intellectually* item-aware of an item that makes it the case that *p*,”<sup>74</sup> that is, an item which serves as evidence for the proposition that P. Both Huemer and Chudnoff draw explicitly on the analogy with visual appearances and their role in providing evidence or justification for perceptual judgment. Huemer, e.g., argues against BonJour’s view that introspective beliefs can provide justification by rehearsing a version of the argument from illusion on the plausible assumption that introspection is fallible. Given the possibility of false but *prima facie* justified introspective beliefs, there must be a “highest common factor” conferring *prima facie* justification that is present in such introspective experiences, regardless of whether the experience is veridical or illusory, namely “appearance” or “seeming”:<sup>75</sup>

Similarly [just having rehearsed the argument from illusion], I argue that a false introspective belief may have the same sort of justification as a correct introspective belief. But a false introspective belief is not justified by virtue of one's having direct awareness of the putative fact that it represents; instead, it is justified by virtue of its *seeming* to the subject that there is such a fact, or that he is directly aware of such a fact. Therefore, correct introspective beliefs are also not justified by virtue of one's having direct awareness of the facts they represent; instead, they are justified by the appearances.<sup>76</sup>

After denying any specific features of intuition that could epistemically affect this picture, he concludes that intuitions, like introspection, perception, and so on, provide prima facie justification for their contents in virtue of their appearances. That is, Huemer assumes that even if an intuitional state is not veridical – even if the seeming of “it seems to me that P” is illusory – it nevertheless provides for the related that P (which is false if the intuitional state is not veridical) an instance of the kind of justification that intuitional states in general provide for beliefs. This “highest common factor” implies that the justification provided by an intuitional seeming cannot in principle guarantee the truth of the belief it justifies, for had one been deceived by the illusory appearance, one would have believed the intuitive judgment based on the same grounds upon which one believes the intuitive judgment when not deceived by a veridical appearance: the appearance constitutes the same justification or evidence for the false and the true judgment. But this entails that that justification or evidence cannot establish the truth of one's intuitive judgment, and hence cannot provide one with knowledge.<sup>77</sup> This assumption that experience – in this case, the experience formulated as “its seeming to one that P” – cannot provide better than defeasible justification for the belief that P I shall call rather infelicitously the “seeming-*qua*-evidence” assumption, and it follows directly from the “gap” objection raised by Williamson. The assumption underlies the dogmatic view of Huemer and Chudnoff, and it also underlies the second internalist account, conventionally called the “entitlement” view.

The *entitlement* view derives from Tyler Burge's work on the philosophy of perception<sup>78</sup> and has been developed in the context of the epistemology of logical laws by Crispin Wright<sup>79</sup> and generalized for intuitions by David Enoch and Joshua Schechter.<sup>80</sup> This view concedes that there is no evidence for believing that P, given that it seems to one that P, but concludes that one has a priori justification without evidence, so long as

one has no evidence to the contrary, viz., no evidence that the seeming is illusory. Thus this account too assumes what I called the “seeming-*qua*-evidence” assumption, that is, the assumption that the intellectual seeming that P must stand in a logical relationship to the proposition (the Fregean thought) that P that is *weaker* than a constitutive relation, and is thus in a sense *accidental*, and hence liable to epistemic luck, so that the justification provided is at best *prima facie*, i.e., defeasible.<sup>81</sup> The entitlement account accepts this assumption regarding intuitions, finds that nothing can provide more than such defeasible evidence, and so retreats to a weaker epistemic claim, not of justification or evidence, but rather of provisional epistemic entitlement, where epistemic entitlement denotes “a kind of warranted acceptability which originates quite otherwise than in the existence of *evidence* for the truth of the proposition accepted,” and which constitutes “an unavoidable kind of risk.”<sup>82</sup> Thus regarding the use of our cognitive faculties, Wright says:

Our cognitive faculties are merely abilities and, like all abilities, their successful exercise depends upon the co-operative nature of the prevailing circumstances. That circumstances are appropriately co-operative is clearly a presupposition of any cognitive project in the sense we defined, namely, that to have a reason to doubt it in a particular case would indeed be to have reason to doubt the significance or competence of the project in question. It is thus an entitlement of project to take it that the prevailing circumstances are indeed appropriately co-operative in any case where there is no antecedent reason to suppose that they are not, and where to attempt to investigate the matter nevertheless would throw up further, no safer presuppositions of the same sort.<sup>83</sup>

Thus this weaker epistemic status regarding, for instance, knowledge of logical laws, rests on the

distinction between being rationally entitled to proceed on certain suppositions, and the having of evidence that those suppositions are actually true ... It would be wonderful to be in the second situation, of course, but it is by no means useless if we are merely in the first.<sup>84</sup>

So here too, as with dogmatism, the entitlement view presupposes the “seeming-*qua*-evidence” assumption, but while the former view attempts to vindicate it, the latter view offers us a weaker epistemic status as compensation, as it were, for denying that it can be vindicated.

*Externalist* accounts likewise accept the “seeming-*qua*-evidence” assumption and seek to vindicate it typically by means of some empirical reliabilist theory.<sup>85</sup> Here the defeasibilist relation is upheld by arguing that cognitive science will explain why there is a *statistically* high probability or likelihood that intellectual seemings that P correlate with the truth of the proposition that P. Thus Brown envisages how Williamson’s “gap” might be bridged:

Suppose that, in fact, the method of forming beliefs about the nonpsychological subject matter of philosophy on the basis of the relevant psychological propositions is reliable. Combining this supposition with a reliabilist approach to justification has the result that beliefs formed in this manner are justified.<sup>86</sup>

Goldman and Pust, and also Goldman on his own, similarly advocate an empirical, process-reliabilist account of the justificatory relation between the intellectual seeming that P and the likely truth that P, and offer their account specifically in answer to a skeptical challenge based on the fallibility of intuition:

[I]nspection of empirically based theories of categorization suggests that infallibility of judgment is not to be expected. It is therefore perfectly appropriate to worry about the level of reliability of categorization. This process cannot be assumed, a priori, to have a high enough reliability level (whatever “high enough” amounts to) to escape skeptical challenge.<sup>87</sup>

This brief survey of epistemic accounts that offer justification for an intuitive judgment demonstrates that they all rest on the “seeming-*qua*-evidence” assumption, and – as Goldman above explicitly states – suggests that what motivates that assumption is the belief that whatever mental state or capacity that generates an intuitive judgment is fallible, and *therefore* unreliable; and that therefore, the accounts emphasize how confidence in an intuitive judgment can be secured through dogmatic credence in the reliability of the appearance, default entitlement to assume reliability, or empirical study of the process that produces the judgment with a statistically high level of reliability.

But fallibility of judgment, the likely motivation for the “seeming-*qua*-evidence” assumption, does *not* entail unreliability. Fallibility is a property of capacities, including conceptual capacities, and there is a conception of capacities available to us according to which the fact

that a capacity is fallible does *not* entail that its non-defective exercise is unreliable.<sup>88</sup> It is possible, and quite commonsensical, to consider the non-defective exercise of a capacity to  $\succ$  as necessarily resulting in  $\succ$  being done. Thus my capacity to add two numbers, when exercised non-defectively, necessarily results in the correct sum being produced; it is not an *accident* that the sum produced is correct if I have exercised my capacities non-defectively. This general account holds for analytic rational-intuitive judgments as Kantian-spontaneous exercises of our conceptual and reasoning capacities, capacities self-consciously possessed and exercised by mature rational thinkers. For example, the analytic rational capacity to infer according to modus ponens, when exercised non-defectively, does not *accidentally* result in the correct inference being made: the capacity to  $\succ$  and its proper, non-defective exercise is internally related to  $\succ$  where  $\succ$  is defined as what the capacity is a capacity to do. The proponents of the dogmatic, entitlement and empirical reliabilistic accounts commit a fallacious inference from the true statement that one's rational-intuitive judgment that P might be defective, hence false, to the incorrect conclusion that therefore one does not know that P when one non-defectively rational-intuitively judges that P.

This is a claim about the *logical* relation between a capacity and its non-defective exercise, namely that the relation is a *constitutive*, rather than an *accidental* – that is, causal, statistical, or probabilistic – relation. This latter relation belongs to the logic of naturalistic reliability, not to the notion of a capacity on the conception advocated here. Our conception of a capacity and its non-defective exercise dovetails with our earlier discussion of generic judgments regarding dispositions. The non-defective exercise of a capacity is the actualization of a disposition, constitutively defined as the disposition to  $\succ$ : that is, the disposition or capacity is constitutive of the acts that manifest it. That the disposition is fallible, sometimes failing to manifest itself in  $\succ$ -ing, does not affect the definition or identity of the disposition as a capacity to  $\succ$ ; rather, generic judgments acknowledge exceptions, countervailing circumstances, and defective actualizations of the disposition.<sup>89</sup> To be sure, as Wright states above, our cognitive abilities, like any capacity, depend upon “the co-operative nature of the prevailing circumstances.” On my conception of capacity, this must be understood as the claim that there are circumstances that hinder, prevent, or otherwise interfere with the successful exercise of the capacity.<sup>90</sup> To return to my example of performing an addition, the conditions conducive to the proper exercise of my capacity might include being well-rested; focused; calm;



my memory and calculating faculties, etc., working well; and so on. Any of these conditions for the exercise of my capacity might be absent or insufficient and result in the defective exercise of the capacity. But when the relevant conditions are cooperating, then the exercise of my capacity fully, that is, conclusively, explains the success of my activity. Likewise, when prevailing circumstances are cooperating, and I exercise my analytic rational capacities non-defectively, I have *indefeasible* or sufficient justification for my analytic rational-intuitive judgment, i.e., an analytic *authoritative* rational intuition, as a case of what the capacity is specified as a capacity to do. If, as I also hold, knowledge is factive, then it is an added advantage of my account of the constitutive relation between the non-defective exercise of a capacity and the resulting Fregean thought that it can adequately explain the source of a priori analytic rational-intuitional authentic *knowledge*, rather than merely accidental – causally, statistically, probabilistically reliable – belief. And since Fregean thoughts are judgments about facts understood as the possible layout of reality, when I have a priori analytic rational-intuitional knowledge of a Fregean thought I have a priori analytic knowledge of the necessary and a priori layout of reality; there is no “gap.”

This argument against the view that an intuition that P, in the sense of the *sui generis* account of intuitions as intellectual seemings, constitutes reliable evidence that P (including its entitlement version attributing presumptive justificatory force to the judgment in the absence of evidence) works by analogy with the disjunctivist denial of the presence of evidence such as “appearances” for perceptual knowledge, and suggests that talk of intuitions as “intellectual seemings” or “intellectual appearances” gives rise to an intellectual (rather than perceptual) version of the argument from illusion, as we saw with Huemer. But if we suppose that the warrant for one’s rational intuition that P cannot be better than *prima facie*, hence inconclusive, then there are only two positions one can adopt regarding the possibility of a priori analytic rational-intuitional knowledge. On the one hand is skepticism, that is, the denial that there is such a thing as analytic rational-intuitional knowledge. And on the other hand there is the triad dogmatism-entitlement-reliabilism: dogmatism, the claim that a *prima facie* warrant can itself be sufficient for a belief to count as knowledge; its weaker cousin entitlement, the claim that one is permitted to believe as though one had such warrant; and reliabilism, the claim that a statistically high enough probability is sufficient for belief to count as knowledge. But this dilemma issues from a single, common assumption of at best defeasible justification for one’s intuitional judgments, for the dogmatic-entitlement-reliabilist position,

like the skeptical position, in acknowledging that one's justification for belief is merely *prima facie*, leaves open the possibility that one's judgment is false. And this seems to amount to the concession that despite the believer's best evidence, she might judge falsely. The way to avoid the apparent dilemma is to give up the assumption that the *best* justification possible for one's rational-intuitional judgments is *prima facie*, to give up the assumption that the logical relation between intuiting and intuited is merely accidental rather than constitutive. Treating analytic authoritative rational intuitions as Fregean thoughts about which the thinker possesses indefeasible justification when all her relevant fallible conceptual capacities and rational competences are functioning non-defectively, exercises of which stand in a constitutive relation to the Fregean thoughts they produce, averts the fall back into that assumption that in turn elicits the dogmatic, entitlement and reliabilist accounts in the attempt to secure ourselves against skepticism while watching the real possibility of authentic analytic a priori knowledge slip from our rational grasp.

An objection might be raised on the basis of Jonathan Weinberg's distinction between a hopeful fallibility and an "unmitigated" or "hopeless" fallibility. The latter is characterized as "a fallibility uncompensated by a decent capacity for detecting and correcting the errors that it entails," whereas the former is a fallibility that does allow for such "checkability" and improvement. Weinberg adduces four features that increase the trustworthiness of an epistemic source: external corroboration, internal coherence, detectability of margins ("the practices are sensitive to the conditions in which the device is less likely to give good results"), and theoretical illumination ("as to how [the devices] work [or fail] when they do"). He can then reject rational intuitions because they are unmitigatedly fallible and untrustworthy: "it is our capacity to detect and correct errors that makes the difference between the trustworthy and untrustworthy [epistemic] source."<sup>91</sup> The force of this objection is dissipated, however, by our conception of the non-defective exercise of a fallible capacity, say for a priori intuitive knowledge, which *is* a trustworthy epistemic source by virtue of the constitutive relation between the capacity's proper functioning and what it is a capacity to do.

The objector might, in response, shift the ground of her objection in the following way. Granted that the non-defective exercise of one's conceptual capacities provides indefeasible warrant for the analytic authoritative rational-intuitive judgment produced, the skeptic may ask how one knows that a given act of analytic rational-intuitional judgment is

a case of non-defective exercise? If one does not know which case – the defective or non-defective – obtains, how can she claim to know the judgment and know that it is true? Granted that the capacities in question are not infallible, how can one tell when one's capacities are working correctly? Here Weinberg's distinction has traction, in that purely conceptual capacities delivering a priori rational-intuitive judgments are less liable to the means of correction and improvement than say, perceptual capacities that are cross-modally checkable.<sup>92</sup>

The conceptual competencies whose non-defective exercise delivers authentic analytic a priori knowledge via analytic authoritative rational intuition are, like all fallible capacities, liable to defective performance, uncooperative conditions, and so on. The self-conscious mature reasoner, in considering the possibilities of mitigating or defeating conditions, might withdraw her assertion of the judgment, or hedge it with "it seems to me that P," as we suggested earlier. And certainly advances in empirical psychology and cognitive science regarding the workings of conceptual competencies might add further auxiliary conditions, consideration of which the mature, self-conscious reasoner should take into account before asserting her judgment. And inferential, consistency and coherence relations among her intuitive judgments and her other beliefs will also factor into those auxiliary conditions.<sup>93</sup> But none of these considerations vitiates the claim that when her conceptual capacities are working non-defectively, they provide indefeasible warrant for her claim authentically to know a priori the analytic rational-intuitional judgment they produce, i.e., analytic authoritative rational intuition.

Note that this conception of fallible capacities accords precisely with the treatment of dispositions and practices in our earlier defense of epistemological analyticity against Williamson's objection. There we argued that the alethic behavior of generic judgments describing dispositions and practices allows for exceptions, unlike quantificationally universalized judgments: the truth of what a capacity is a capacity to do is not impugned by the fact that the capacity on occasion, or even most often, fails. We also argued – against Williamson's sociological conception of practice – for the constitutive logical priority of the practice and disposition to the cases that fall under it, so that a case that does not fall under the practice is by contraposition not an instance of it, and a case that does not fall under the disposition is by contraposition not a manifestation of it. This is precisely the constitutive – not accidental (causal, statistical, or probabilistic) – relation between the capacity and its non-defective exercise advocated here.

## V Three interesting implications for X-Phi

The account of the sufficient justificatory force of analytic authoritative rational intuitions sketched here has three interesting implications for critical treatments of the evidential status of philosophical intuitions by contemporary proponents of Experimental Philosophy, a.k.a. X-Phi.

**First**, it reintroduces a version of Putnam's division of linguistic labor. Those thinkers who are less likely to be defective in the self-conscious or reflective exercise of their conceptual capacities should provisionally be accorded greater epistemic authority regarding the deliverances of the a priori exercise of those capacities. Moreover, the expertise of accomplished self-conscious or reflective thinkers should here also encompass reflection specifically upon the conditions favoring the non-defective exercise of one's conceptual capacities.

**Second**, the conditions under which conceptual capacities are exercised should be incorporated into the design and implementation of experimental-philosophical experiments. As McGee,<sup>94</sup> and Kahneman, Slovic and Tversky,<sup>95</sup> and others have demonstrated, experiments can be conducted which reveal and often increase the propensity for error in judging and reasoning. The account proposed here certainly allows for the deleterious influence of such conditions on the exercise of conceptual capacities, as well as what might be called the persistent or endemic fallibility of some capacities, to explain epistemic recalcitrance involved in phenomena like the gambler's fallacy, the Monty Hall fallacy, the false rational intuition that the naïve comprehension axiom is true, and so on. Moreover, since conceptual capacities include inferential relations of varying complexity and intricacy, one's background theory is in principle also one of those conditions.

**Third**, and perhaps most controversially, the contingent membership-relation entailed by the dispositional and discursive-practice-based account of epistemological analyticity offered in Section III implies that in principle some experimental-philosophical intuition-pumping experiments may well produce non-convergent results, but such non-convergence would not impugn the sufficient justificatory force of analytic authoritative rational intuition, understood as the correct exercise of fallible conceptual capacities.



## Part 2

# Rationalism Regained: The Benacerraf Dilemmas and Rational Intuitions in Mathematics, Logic, and Philosophy

*Robert Hanna*



# I

## Introduction

Although these principles [of mathematics], and the representation of the object with which this science occupies itself are generated in the mind completely *a priori*, they would still not signify anything at all if we could not always exhibit their significance in appearances (empirical objects). Hence it is also requisite for one **to make** an abstract concept **sensible**, i.e., display the object that corresponds to it in intuition (*Anschauung*), since without this the concept would remain...without **sense**, i.e., without significance. Mathematics fulfills this requirement by means of the construction of the sensible form (*Gestalt*), which is an appearance present to the senses (even though brought about *a priori*). In the same science, the concept of magnitude seeks its standing and sense in number, but seeks this in turn in the shapes, in the beads of an abacus, or in the strokes and points that are placed before the eyes. The concept is always generated *a priori*, together with the synthetic principles of formulas from such concepts, but their use and reference to supposed objects can in the end be sought nowhere but in experience, the possibility of which (as far as its form is concerned) is contained in them *a priori*.

(CPR A239–40/B299)<sup>1</sup>

F.P. Ramsey once emphasized in conversation with me that logic was a “normative science.” I do not know exactly what he had in mind.

– L. Wittgenstein<sup>2</sup>



[T]he distrust of the “intuitional” basis of analytic philosophy ... is rooted in nothing less than an imperfect understanding of scientific method.

– A. Pap<sup>3</sup>

Of course, some philosophers think that something’s having intuitive content is very inconclusive evidence in favor of it. I think it 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.

– S. Kripke<sup>4</sup>

[A]lthough we cannot speak of the absolute security of finitism, there is a sense in which we can speak of its *indubitability*. That is, any nontrivial reasoning about number will presuppose finitist methods, and there can be no preferred or even equally preferable method from which to launch a critique of finitism. In other words, it is simply pointless to doubt it.

– W. Tait<sup>5</sup>

Pure intuition as Kant understood it was evidently supposed somehow to get us across the divide between the fuzzy *Lebenswelt* with its everyday objects and the sharp, precise realm of the mathematical, in terms of which mathematical conceptions of the physical world are developed.

– C. Parsons<sup>6</sup>

## I.1

In Part 1, we argued for these four neo-rationalist theses:

- (i) that a commitment to the existence of authoritative rational intuitions is rationally obligatory (Chapter 1.1);
- (ii) that the experimentalist critique of intuitions not only fails to have any critical purchase on a theory of authoritative rational intuitions, but in fact presupposes their indispensability (Chapter 1.2);
- (iii) that if we possess methods that provide epistemic sufficient justification via synthetic a priori authoritative rational intuitions in logic, mathematics, and natural science, then we possess methods that provide epistemic sufficient justification via synthetic a priori authoritative rational intuitions in metaphysics (Chapter 1.3); and

- (iv) that analytic authoritative rational intuitions are rationally indispensable, given the rational human cognitive power for correctly exercising our fallible conceptual capacities (Chapter 1.4).

In Part 2, I present and defend a positive contemporary Kantian neo-rationalist theory that fully accounts for those four basic results and also provides adequate solutions to *the justification problem* and *the explanation problem* for rational intuition.

## I.2

“3 + 4 = 7.” Few statements, even necessarily true statements, are objectively<sup>7</sup> and authentically knowable in such a way that one’s act, state, or process of knowing is (i) completely convincing, intrinsically compelling, or *self-evident*, (ii) evidentially delivered to belief by a properly-functioning cognitive mechanism, i.e., *cognitively virtuous*, and also (iii) *essentially reliable*, i.e., such that it includes a non-accidental or necessary tie to the necessary-truth-makers of belief, but this is one of them. And I can prove it to you. Just look at this carefully and thoughtfully:

$$||| + |||| = |||||$$

Therefore – to use Descartes’s famous terminology – it is *clearly, distinctly, and indubitably* objectively known by you that necessarily, 3+4=7. By “clarity” I mean that the intentional content of the mental act, state, or process is *phenomenologically salient*. By “distinctness” I mean that the intentional content of the mental act, state, or process is *phenomenologically discriminable*. And by “indubitability” I mean that *it is epistemically impossible for the cognitive subject sincerely to believe the denial of the propositional content of the intentional act, state, or process, once the cognitive subject has adequately understood that content*. It is possible for the content of an intentional act, state, or process to be clear but not distinct, but the converse is not the case: necessarily, every distinct act, state, or process is also clear.<sup>8</sup> Finally, clarity or distinctness can be either non-conceptual or conceptual. But the main point I am making here is that the clarity, distinctness, and indubitability of this cognition all add up to its being intrinsically compelling or self-evident.

Now although your cognition of “3 + 4 = 7,” via the stroke diagram, obviously *began* in human sensory experience, nevertheless its specific content and evidential character were *not derived from* – that is, they were *not necessarily determined by*, or otherwise put, they were *modally*

or strictly underdetermined by – any and all human sensory experiences and/or contingent natural objects or facts. So you also know it *a priori*.

This consistent combination, within objective authentic *a priori* knowledge, of

- (i) the necessity of a sense-experiential and contingent natural starting point for all actual or possible human cognition  
and
- (ii) the modal or strict underdetermination of meaning, truth, and belief-justification by any and all sense-experiences and/or contingent natural objects or facts

is closely related to Immanuel Kant's equally famous and very deep remark in the B or 1787 Introduction to the *Critique of Pure Reason* about the subtle modal relationship between the necessary empirical origins of all human cognition, and the existence and specific character of the *a priori*:

Although all our cognition commences **with** experience, yet it does not on that account all arise **from** experience.... It is therefore a question requiring closer investigation, and one not to be dismissed at first glance, whether there is any such cognition independent of all experience and even of all impressions of the senses. One calls such **cognitions *a priori***, and distinguishes them from **empirical** ones, which have their sources *a posteriori*, namely in experience. (CPR B1–2)

It is also closely related to David Hilbert's slightly less famous, but equally deep, remark about the "intuitively present" character of the basic objects of finitistic mathematical reasoning:

[A]s a condition for the use of logical inferences and the performance of logical operations, something must already be given to our faculty of representation, certain extralogical concrete objects that are intuitively present as immediate experience prior to all thought. If logical inference is to be reliable, it must be possible to survey these objects completely in all their parts, and the fact that they occur, that they differ from one another, and that they follow each other, or are concatenated, is immediately given intuitively, together with the objects, as something that can neither be reduced to anything else

nor requires reduction. This is the basic philosophical position that I consider requisite for mathematics and, in general, for all scientific thinking, understanding, and communication.<sup>9</sup>

A little later I will come back to the consistent combination, within objective authentic a priori knowledge, of the necessity of empirical starting points (whether merely causally triggering or also evidential) and the modal or strict underdetermination by all empirical starting points, to Kant's very deep remark about this combination, and also to Hilbert's equally deep remark about the basic objects of finitistic mathematical reasoning. For the moment, I am only highlighting the manifest fact that "3+4=7" immediately presents itself to you as objectively necessarily true and authentically known a priori. Moreover, it also immediately presents itself to you in such a way that neither its necessary truth nor the apriority of your act, state, or process of knowing it depends on anything merely subjective or idiosyncratic: *any* mature rational human animal could, and should, know this. And you are a mature rational human animal. So you have intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable objective a priori knowledge that necessarily,  $3+4=7$ , i.e., High-Bar a priori knowledge. Furthermore, by means of your act of cognition, a strongly normative fact has also emerged. Precisely insofar as you are a rational human animal cognizer, you categorically (i.e., non-instrumentally and unconditionally) *ought* to believe that  $3+4=7$ . In that sense, arithmetic is a *robustly normative science*, that is, one of the *moral sciences* in the classical 19th century sense of *Geisteswissenschaften*. But how is all this possible?

### I.3

More specifically, Part 2 has five topics. **First**, it is about the nature of mathematical necessary truth and a priori knowledge. So it is an essay in *the philosophy of mathematics*, with special reference to its cognitive semantics and epistemology. **Second**, it is about the nature of logical necessary truth and a priori knowledge. So it is also an essay in *the philosophy of logic*, with special reference to *its* cognitive semantics and epistemology. **Third**, it is about the nature of necessary truth and a priori knowledge of any kind whatsoever. So it is also an essay in *modal epistemology* as such, that is, an essay in the general theory of our a priori knowledge of necessity (and correspondingly, of actuality and possibility) and essence. **Fourth**, it is about the nature and epistemic status of

rational intuitions, and more specifically, it shows how a contemporary Kantian neo-rationalist, innatist, rational-intuition-based modal epistemology can, and indeed must, be defended against skeptical attacks by classical or contemporary philosophers, especially including those who currently operate under the rubric of Experimental Philosophy, a.k.a. X-Phi. So it is also, in effect, *a contemporary Kantian neo-rationalist manifesto*. **Fifth** and finally, I am also interested in developing some substantive analogies between an innatist, rational-intuition-based modal epistemology of mathematics and logic on the one hand, and an innatist, rational-intuition-based modal epistemology of *philosophy* on the other, such that mathematics, logic, and also philosophy itself, can all be shown to be *objective* robustly normative a priori sciences for all actual and possible rational human animals, that is, objective rational a priori moral sciences.

More precisely and positively now, I believe that mathematics, logic, and philosophy all include and presuppose some *basic* (i.e., primitive, starting-point-providing) and *authoritative rational intuitions* that constitute authentic a priori knowledge of objectively necessary truths, such that those rational intuitions are

- (i) intrinsically compelling or self-evident,
- (ii) cognitively virtuous, and also
- (iii) essentially reliable, or *absolutely skepticism-resistant*, in the triple sense that
  - (a) the beliefs included in those rational intuitions are *factive* and *modally grounded*, i.e., beliefs that are inherently connected to necessary-truth-makers for those beliefs,
  - (b) the cognitive capacities or mechanisms yielding self-evidence for those beliefs track truth in the actual world and also counterfactual \_\_\_\_\_ across all relevant nomologically possible and meta-phy\_\_\_\_\_ possible worlds, and
  - (c) any explicit or implicit denial or rejection of those beliefs would be *self-stultifying* in the strongly normative sense that human rationality itself would then be impossible, including also *skeptical* human rationality.

Hence we *categorically ought not to reject them* insofar as we are rational human animals. In short, if I am correct, then these basic authoritative a priori rational intuitions, constituting self-evident, cognitively virtuous, and also essentially reliable, or absolutely skepticism-resistant, a priori knowledge of objectively necessary truths, are robustly normative

conditions of the possibility of human rationality and implicit even in every attempt to reject these intuitions for *any* intelligible or defensible reason whatsoever.

And that is not all. I also believe that, starting with these basic authoritative a priori rational intuitions of objectively necessary truths, mathematicians, logicians, and philosophers can also rationally construct *non-basic*, and *non-authoritative* (i.e., not completely convincing, not intrinsically compelling, or not self-evident, and not essentially reliable, not absolutely skepticism-resistant), but still *fairly convincing*, *fairly compelling*, or *fairly evident*, and *fairly reliable*, *fairly skepticism-resistant* a priori rational intuitions,<sup>10</sup> and thereby effectively extend their foundational corpus of basic authoritative a priori knowledge to a *fairly secure non-foundational constructed corpus* of a priori knowledge, thus making rational progress in mathematics, logic, and philosophy.

Of course, a *postmodern anti-rational nihilist skeptic* could still choose to reject all of these rational intuitions, whether basic authoritative intuitions or non-basic constructed intuitions, for *no* defensible or intelligible reason whatsoever, that is, *just for the hell of it*. So at least as a form of emotional self-expression, postmodern anti-rational nihilist skepticism – as it were, PARNS – is possible. And, to be sure, someone's striking an attitude, or acting-out some passion, is always *psychologically or sociologically fascinating*. Nevertheless PARNS, for all its psychological or sociological interest, is philosophically perverse and pointless. An attitude struck, or a passion acted-out, is *not* an argument made.

#### I.4

Even more precisely, however, and corresponding to the five topics I mentioned in sub-section I.3, in Part 2 I will also address five hard philosophical problems.

The **first** hard problem I will address is *The Original Benacerraf Dilemma*, which seems to entail that objective mathematical necessary truth on the one hand, and rational human a priori knowledge of objective mathematical necessary truth on the other hand, are mutually incompatible. In order to solve this problem adequately, I think that we must adopt two contemporary Kantian doctrines.

First, I think that we must adopt a *non-platonic, Kantian conception of abstractness*, which says:

*X is abstract if and only if X is not uniquely located in actual spacetime, and X is concrete otherwise.*

(By *X is uniquely located in actual spacetime*, I mean: *X is exclusively located at and exclusively located in*, and thereby *occupies*, one and only one actual spacetime volume.)

Or otherwise put, something is concrete if and only if it is uniquely located in actual spacetime, and abstract otherwise. In this way, roughly speaking, *X* is concrete if and only if *X* is what Kant calls “a real object of experience” (CPR B289–91), and *X* is *abstract* otherwise, i.e., roughly speaking, *X* is abstract if and only if *X* is *not* a real object of experience in Kant’s sense. In any case, according to this non-platonic, Kantian conception of abstractness, whatever is either *multiply located*, *non-actual*, or *non-spatiotemporal* will count as abstract. It is to be especially noted that this non-platonic, Kantian conception of abstractness in fact *includes* the platonic conception of abstractness – under the special constraint of *radical agnosticism* about platonically abstract objects in particular and noumenal objects more generally, whereby *we know that we cannot know* whether they exist or do not exist – but is also significantly less restrictive than the platonic conception, robustly non-dualistic, and fully compatible with causal relevance.

Second, I think that we must also adopt Kantian versions of *Mathematical Structuralism* and *mathematical authoritative rational intuition*. Mathematical Structuralism says that mathematical entities are not independent substances of some sort, but instead are nothing more and nothing less than relational positions or roles in a larger mathematical theory-structure. Correspondingly, mathematical authoritative rational intuitions, as I am understanding them, are self-evident, cognitively virtuous, and essentially reliable (although not *strictly*, or logically necessarily, infallible) a priori conscious pattern-matching graspings of some proper parts of a larger mathematical theory-structure, via our direct conscious experience, in spatiotemporally-framed, diagrammatic, pictorial, structural, or schematic sense perception, memory, or sensory imagination, of – in effect – Hilbert’s basic objects of finitistic mathematical reasoning.

This kind of direct conscious experience is equivalent to what, in the first epigraph of Part 2, Kant calls *the construction of a sensible form (Gestalt) in pure or a priori intuition (Anschauung) via the productive imagination (produktive Einbildungskraft)*. It is also equivalent to what the cognitive psychologist Philip Johnson-Laird calls *mental models*.<sup>11</sup> We could also call it *mental diagrams*, *mental pictures*, *structural imagery*, or *schemata*. Whatever we call it, the main claim I am making here is that mathematical necessary truths directly express proper parts of larger mathematical

theory-structures, and mathematical rational intuitions are self-evident, cognitively virtuous, and essentially reliable (although not *logically, conceptually, or analytically* necessarily infallible) a priori conscious pattern-matching graspings of some of *those* proper parts of *those* very structures, by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata. In turn, the ground of the necessary conformity between mathematical authoritative rational intuitions in the human mind on the one hand, and mathematical structures in the manifest natural world outside the human mind on the other hand – a necessary conformity which suffices to close the gap between justification and truth, and thereby guarantee essentially reliable a priori knowledge of objective necessity – will then be explained within a specifically Kantian metaphysical and epistemological framework.

The **second** hard problem I will address is what I call *The Extended Benacerraf Dilemma*, which smoothly extends The Original Benacerraf Dilemma from mathematics to logic. In order to solve this extended version of the problem adequately, I think that we must, correspondingly, appeal directly and substantively to Kantian versions of *Logical Structuralism* and *logical authoritative rational intuition*, as well as to the same specifically Kantian metaphysical and epistemological framework used for the adequate solution of The Original Benacerraf Dilemma.

The **third** hard problem I will address is what I call *The Generalized Benacerraf Dilemma*, which elaborates the shared deep structure of The Original and The Extended Dilemmas, and then projects that deep structure onto a priori knowledge of any kind whatsoever, including mathematical a priori knowledge, logical a priori knowledge, philosophical a priori knowledge, moral a priori knowledge, axiological a priori knowledge, linguistic a priori knowledge, semantic a priori knowledge, etc. On the face of it, factive a priori knowledge of necessary a priori truth must be such that its connection to its necessary truth-makers is not just a *cosmic accident* or a *massive coincidence*, for otherwise it is wide open to the skeptical charge that it is not reliable. Let us call this possibility of cosmic accident or massive coincidence *the possibility of cognitive-semantic luck*. If the possibility of cognitive-semantic luck is not ruled out, then a priori knowledge of any kind whatsoever is impossible. Now the truth-makers of factive, modally-grounded a priori knowledge are either non-natural or natural. But on the one hand, if they are non-natural, then the purportedly non-accidental truth-making connection between rational human beliefs and their truth-makers is a metaphysical



mystery. Yet on the other hand, if they are natural, then the purportedly non-accidental truth-making connection between rational human beliefs and their truth-makers entails the contingency and aposteriority of those beliefs, not their necessity and apriority. So either way, a priori knowledge of any kind whatsoever is impossible, precisely because the possibility of cognitive-semantic luck has not been ruled out.

If The Original Benacerraf Dilemma and The Extended Benacerraf Dilemma are hard problems, then The Generalized Benacerraf Dilemma is *a very hard problem indeed*. But even despite that, I do think that The Generalized Benacerraf Dilemma is adequately soluble, by appealing to the self-same specifically Kantian metaphysical and epistemological framework used for the adequate solutions of the original and extended versions of The Dilemma. More boldly, I will also claim that what the generalization of The Dilemma shows is that appealing to a Kantian metaphysical and epistemological framework is ultimately the *only* way of adequately solving *any* version of The Dilemma.

The **fourth** hard problem I will address is *The Problem of the Epistemic Status of Rational Intuitions*. The Benacerraf Dilemma, whether in its Original or Extended version, is based on a logical, semantic, metaphysical, and epistemological clash between two seemingly basic authoritative *philosophical rational intuitions* about our natural-language semantics of mathematical and logical truth on the one hand (i.e., “Truth is uniform and broadly Tarskian”<sup>12</sup>), which entails the abstractness and causal inertness of mathematical and logical truth-makers, and the fact of our causally-and-empirically anchored, natural-world directed, directly referential, non-conceptual, sense-perceptual epistemology on the other hand (i.e., “Human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts”). Correspondingly, The Generalized Benacerraf Dilemma is based on another logical, semantic, metaphysical, and epistemological clash between two further closely-related, and equally seemingly basic authoritative philosophical rational intuitions about the need to rule out the possibility of cognitive-semantic luck on the one hand, and the fact that the truth-makers of knowledge are either non-natural or natural on the other hand.

My proposed solutions to The Original, Extended, and Generalized Benacerraf Dilemmas not only preserve the objective necessity, apriority, and basic authoritative epistemic force of the two pairs of seemingly incompatible yet also seemingly self-evident, cognitively virtuous, and essentially reliable philosophical rational intuitions, but also include a substantive general theory of

- (i) basic and non-basic,
- (ii) essentially reliable, fairly reliable, and defeasible/fairly unreliable,  
and
- (iii) authoritative, constructed, and *prima facie*,

mathematical, logical, and philosophical rational intuitions alike. Therefore, precisely to the extent that my Kantian solutions to the three Benacerraf Dilemmas are all cogent, then they will also jointly constitute an adequate vindication of what are classically known as *rational intuitions*, whether *clear, distinct, indubitable, and objectively certain* (i.e., authoritative, i.e., self-evident, cognitively virtuous, and essentially reliable) or *not wholly clear, not wholly distinct, and not indubitable, but still not merely defeasible/fairly unreliable* (i.e., constructed, i.e., fairly evident, fairly cognitively virtuous, and fairly reliable). Or otherwise put, in explaining how we can objectively know a priori and with basic full-strength epistemic force via *mathematical* authoritative rational intuition that, e.g.,

$$3 + 4 = 7, \text{ i.e., } ||| + |||| = |||||$$

and also objectively know a priori and with basic full-strength epistemic force via *logical* authoritative rational intuition that, e.g.,

It is not the case that every sentence or statement in any or every language or logical system whatsoever is both true and false, i.e.,  
 $\sim (\forall S) (S \ \& \ \sim S)$ , i.e., **Minimal Non-Contradiction**,

without at the same time falling into any inconsistency with respect to our basic authoritative philosophical rational intuitions about the nature of truth and truth-makers on the one hand, and the nature of human knowledge and its relation to the possibility of cognitive-semantic luck on the other hand, then I will also have effectively answered the radically skeptical worries raised not only by classical skeptics (whether Pyrrhonian or Cartesian) and classical Empiricists like Hume but also by contemporary proponents of Experimental Philosophy, a.k.a. X-Phi, in particular, and by contemporary proponents of Scientific Naturalism in general, about the reliability of mathematical, logical, or philosophical intuitions.

The usual strategy in contemporary meta-philosophy for determining the reliability of philosophical intuitions is to treat them as if they were somehow inherently separate, or at least *prima facie* separate, from

mathematical and logical intuitions, and then to argue that *philosophical* intuitions count as minimal “data” or evidence for philosophical justified beliefs and theories, because *all* intuitions count as minimal data or evidence for justified beliefs and theories. My idea, on the contrary, is that a correct treatment of the reliability of philosophical rational intuitions *can flow only from a theory of mathematical and logical basic authoritative rational intuitions, understood as paradigms of rational normativity, and essential starting points, and as providing conscious evidence for sufficiently justified mathematical and logical beliefs and theories.* This in turn is because, in my opinion, **first**, as moral sciences, mathematics, logic, and philosophy alike ultimately have their foundations in what Kant called a *metaphysics of morals*, i.e., a *general theory of human rationality and its categorical normativity*, and **second**, philosophy is different from all the other forms of science, knowledge, freely-chosen self-conscious social practice, and freely-chosen self-conscious individual activity *only* in the maximally synoptic scope of its critical and reflective reach over *all and only* topics of fully natural and robustly normative relevance to us in our rational and “human, all too human” predicament.

In his famous paper, “Philosophy and the Scientific Image of Man,” Wilfrid Sellars glossed the nature of philosophy in the following way –

The aim of philosophy, abstractly formulated, is to understand how things in the broadest possible sense of the term hang together in the broadest possible sense of the term.<sup>13</sup>

I think that this formulation is *almost* correct, but still not *quite* right, and that what Sellars should have written instead is –

The aim of philosophy, abstractly formulated, is to understand how things in the broadest possible sense of the term, *insofar as they really matter to rational human animals or real human persons*, hang together in the broadest possible sense of the term.

The **fifth** and final hard problem I will address is *The Problem of Objectivity*, or the classical problem of how it is that truth and the intentional targets of all knowledge – especially including mathematical, logical, and philosophical a priori knowledge – can all be genuinely *mind-independent*, without also making them into what J. L. Mackie derisively called “Queer Facts,” i.e., supernatural items that are *humanly impossible* to know.<sup>14</sup> Otherwise put, somehow objectivity must be the necessary conjunction of mind-independence *and* human

knowability. The Benacerraf Dilemmas, whether Original, Extended, or Generalized, pose The Problem of Objectivity in a particularly sharp way. In order to resolve the worry about Objectivity, I will argue that truths of all kinds and the other proper intentional targets of rational human knowledge are indeed objective, and furthermore that anything *X* which belongs to the manifestly real world is objective if and only if

- (1) *X* is underdetermined by all actual or possible contingent idiosyncrasies of individual minds and cultural or social agreements, i.e., *X* is inherently non-subjective and non-relative (**the moderate mind-independence thesis**),  
and
- (2) necessarily, *X would be* veridically cognized by some rational human animals, at least to some extent, *were* some rational human animals to exist (**the weak or counterfactual mind-dependence thesis**).

Claim (1), **the moderate mind-independence thesis**, entails the necessary presence of some a priori factors in the constitution of all truths and human knowledge about the manifestly real world. Claim (2), **the weak or counterfactual mind-dependence thesis**, entails that it is necessarily possible for rational human animals to cognize the manifestly real world veridically, at least to some extent, and also that the manifestly real world basically contains some necessary *converse intentional properties* (a.k.a. “response-dependent properties”) including the general subjunctive conditional (a.k.a. “counterfactual”) modal converse intentional property such that necessarily, any of these manifestly real worldly properties *would be* veridically cognized by some rational human animals, at least to some extent, *were* some rational human animals to exist. And this, again in turn, is equivalent to a modest version of transcendental idealism I call *weak or counterfactual transcendental idealism*, a.k.a. WCTI. But in any case, the upshot of the two claims is that *objectivity is non-subjective, non-relative, necessary counterfactual universal rational human intersubjectivity*.

Bounded in a nutshell, then, the main thesis of this part of the book is that mathematics, logic, and by the very same token, philosophy, are all *rational human constructions* in the quite specific sense that they are all objective robustly normative sciences for all actual and possible rational human animals, i.e., objective rational moral sciences, which is *why* we can know them via authoritative or constructed rational intuition, but that

- (i) the primitive procedural rules by which we construct mathematical, logical, and philosophical systems of principles are strictly universal, necessary, and non-empirical or a priori, flowing from the underlying structures of our universally shared, integrated system of innately specified cognitive capacities or competences, across all actual and possible rational human animals,  
and
- (ii) necessarily, the manifestly real world structurally conforms to the strictly universal, necessary, and non-empirical or a priori primitive procedural rule-structures of our universally shared innately specified rational human cognitive capacities or competences.

Or in other and even fewer words, the main thesis of Part 2 is that *objectivity has a human face, with rationality written all over it.*

# II

## Rationalism Lost: The Original Benacerraf Dilemma

I who erewhile the happy garden sung,  
By one man's disobedience lost, now sing  
Recovered Paradise to all mankind,  
By one man's firm obedience fully tried  
Through all temptation, and the Tempter foiled  
In all his wiles, defeated and repulsed,  
And Eden raised in the waste wilderness.

– J. Milton<sup>1</sup>

As an account of our knowledge about medium-sized objects, in the present, this is along the right lines. [A reasonable epistemology] will involve, causally, some direct reference to the facts known, and, through that, reference to those objects themselves... [C]ombining *this* view of knowledge with the “standard” view of mathematical truth makes it difficult to see how mathematical knowledge is possible. If, for example, numbers are the kinds of entities they are normally taken to be, then the connection between the truth conditions for the statements of number theory and any relevant events connected with the people who are supposed to have knowledge cannot be made out.

– P. Benacerraf<sup>2</sup>

### II.1

The Original Benacerraf Dilemma, a.k.a. The OBD, as formulated by Paul Benacerraf in 1973, is about the apparent impossibility of reconciling a *standard, uniform* semantics of truth in natural language

with a *reasonable* epistemology of cognizing true statements when the relevant kind of true statement to be semantically explained is *mathematical truth* and the relevant kind of cognition to be epistemologically explained is *mathematical knowledge*.

A “standard, uniform” semantics of truth, in Benacerraf’s terminology, is a broadly Tarskian satisfaction-theoretic and model-theoretic semantics<sup>3</sup> applying across natural language as a whole, whereby each meaningful indicative sentence or statement *S* in the language conforms to the simple “disquotational” T-schema:

“*S*” is true if and only if *S*.

For our purposes, there are two important things to notice about this characterization. **First**, the fully generalized version of the T-schema includes, on its left-hand side, *a structural description* of a meaningful sentence or statement, and on its right hand side, *a translation* of that sentence or statement into the meta-language.<sup>4</sup> **Second**, by characterizing Benacerraf’s standard, uniform semantics of truth as “broadly Tarskian,” as opposed to merely “Tarskian,” I mean to abstract away from the highly contentious debate about the *real and ultimate* character and implications of Tarski’s disquotational, semantic conception of truth, including, e.g., whether it can be made into a full-fledged semantics of natural language or not, whether it implies a “redundancy theory of truth” or not, whether it is “naturalizable” or not, and so on.<sup>5</sup> I am intending only to capture *the overall rational intuitive philosophical spirit* of Tarski’s conception, as he himself informally explicates it.

And this is how Tarski informally explicates his disquotational, semantic conception of truth. He initially says that

*a true sentence is one which says that the state of affairs is so and so, and the state-of-affairs indeed is so and so.*

And he then says, by way of qualification:

From the point of view of formal correctness, clarity, and freedom from ambiguity of the expressions occurring in it, the above formulation leaves much to be desired. Nevertheless its intuitive meaning and general intention seem to be quite clear and intelligible.<sup>6</sup>

I take this Tarskian thesis about truth to be the expression of a basic authoritative (i.e., self-evident, cognitively virtuous, and essentially reliable), a priori (i.e., underdetermined by all actual or possible sense-experiential and/or contingent natural objects or facts) objectively necessarily true *philosophical* rational intuition, in just the way that our knowledge of “3 + 4 = 7” is yielded by a basic authoritative a priori objectively necessarily true *mathematical* rational intuition. For example, looking carefully and thoughtfully at the simple disquotational version of the T-schema, i.e.,

“S” is true if and only if S

has *precisely* the same sort of high-powered semantic, metaphysical, and epistemic force as looking carefully and thoughtfully at the Hilbert-style stroke diagram

||| + |||| = |||||||

Therefore:

(I) Truth is uniform and broadly Tarskian.

Now a “reasonable” epistemology is any epistemology that ties human linguistic knowers causally, directly, non-conceptually, non-inferentially, and sense-perceptually to the known objects themselves. I take this thesis *also* to be the expression of basic authoritative a priori objectively necessarily true philosophical rational intuition. Therefore:

(II) All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts.

Our standard, uniform broadly Tarskian semantics of truth, together with some natural assumptions about standard mathematical linguistic practices, very plausibly, smoothly, and jointly yield classical platonism about mathematics. And our reasonable epistemology, together with some equally reasonable assumptions about causation and its inherently spatiotemporal character, very plausibly, smoothly, and jointly yield the *denial* of classical platonism about mathematics. So mathematical knowledge is both possible and impossible, which is absurd. Hence The OBD.



## II.2

In Sections VIII, IX, and X, I will spell out a new solution to The OBD. I call this new solution *a positive or anti-skeptical, innatist, rational-intuition-based solution* for three reasons:

- (1) It accepts Benacerraf's preliminary philosophical assumptions about the nature of truth and human knowledge as basic authoritative a priori objectively necessarily true philosophical rational intuitions, as well as accepting all the basic steps of The OBD, and then it shows how we can, consistently with those very assumptions and premises, *still* reject the skeptical conclusion of The OBD and *also* adequately explain mathematical knowledge.
- (2) The standard, uniform broadly Tarskian semantics of mathematical truth that I offer is based on Kant's philosophy of arithmetic, especially including his innatist theory of *pure intuition*, as interpreted by Charles Parsons and by me.<sup>7</sup>
- (3) The reasonable (or causally-and-empirically-anchored, anthropocentric) epistemology of mathematical knowledge that I offer is based on a theory about mental content that I call *Kantian Non-Nonconceptualism*,<sup>8</sup> together with a critical appropriation of the phenomenology of logical and mathematical self-evidence and rational intuition developed by early Husserl in *Logical Investigations*, by early Wittgenstein in *Tractatus Logico-Philosophicus*, and also of Parsons's theory of Mathematical Structuralism and mathematical rational intuition – drawing on basic Kantian ideas, Brouwer's intuitionism, and Hilbert's finitist epistemology – as developed in *Mathematical Thought and its Objects*.

More precisely, however, what I will argue is that we can solve The OBD in three stages:

*First*, I explicitly accept Benacerraf's preliminary philosophical assumptions about the nature of truth and human knowledge as basic authoritative a priori objectively necessarily true philosophical rational intuitions, as well as explicitly accepting all the basic premises of The OBD.

*Second*, I hold that mathematical truth is adequately explained by accepting the following three claims:

- (1) The natural numbers are essentially positions or roles in the mathematical natural number structure provided by Peano

Arithmetic or PA, especially including the finitist sub-structure of Primitive Recursive Arithmetic or PRA.

- (2) The mathematical natural number structure provided by PA, especially including the finitist sub-structure of PRA, is abstract only in the non-platonic, Kantian sense that it is *weakly transcendently ideal*, which is to say that this non-platonic, Kantian abstract structure is identical to the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, together with all the formal concepts and other logical constructions, including specific logical inference patterns such as mathematical induction, needed for an adequate rational human comprehension of PA, especially including the finitist sub-structure of PRA, by means of conceptual understanding or thinking.
- (3) In our actual world, the unique, intended model (i.e., the one and only real truth-maker) of the non-platonic, Kantian abstract natural number structure provided by PA, especially including the finitist sub-structure of PRA, is nothing more and nothing less than *an immanent non-platonic, Kantian abstract structure* that is fully embedded in the set of manifestly real directly and veridically sense-perceivable spatiotemporal causally-efficacious material objects, cognized via non-conceptual content – the natural inhabitants of Parsons’s “fuzzy *Lebenswelt* with its everyday objects” – insofar as they are the role players of the PA-and-PRA-specified natural number roles in the non-platonic, Kantian abstract formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, together with all the formal concepts and other logical constructions, especially including specific logical inference patterns such as mathematical induction, needed for an adequate rational human comprehension of PA, especially including the finitist sub-structure of PRA, by means of conceptual understanding or thinking.

*Third*, I hold that mathematical knowledge is grounded on basic authoritative a priori objectively necessarily true *mathematical rational intuition*, by which I mean what cognitively flows from

- (1) a rational human animal’s *veridical sensible-form-in-Kantian-pure-or-a-priori-intuition-via-the-productive-imagination-or-mental-model-or-mental-diagram-or-mental-picture-or-structural-imagery-or-sche-*

- ma-constructing-and-manipulating* capacity, which is innately specified in her mind as a cognitive competence, and is also inherently present, as a necessary ingredient, in all rational human sense perception, and which also entails her self-conscious and self-reflective cognition of phenomenologically self-evident formal structures of rational human sense perception, together with
- (2) a rational human animal's *logic-and-language-constructing-and-manipulating* capacity, which is innately specified in her mind as a cognitive competence, and also is inherently present, as a necessary ingredient, in all rational human empirical conceptualizing and perceptual judgment, and which also entails her self-conscious and self-reflective cognition of phenomenologically self-evident formal conceptual contents and specific patterns of logical inference in classical or non-classical logics.

The second stage of this argument invokes what I call *Kantian Structuralism* about the nature of numbers and mathematical truth. And the third stage includes Kantian Structuralism, and adds to it what I call *Kantian Intuitionism* about mathematical a priori knowledge. The basic idea behind Kantian Intuitionism is that basic authoritative a priori objectively necessarily true mathematical rational intuition, in a Kantian Structuralist framework, can be construed in such a way as to preserve the non-platonic, Kantian abstractness and *causal inertness* of **the truth-makers** of mathematical statements, and also the *causal relevance* of **the intentional targets** of mathematical rational intuition, as well as the *causal efficacy* of **the evidential verifiers** of mathematical beliefs or judgments.

In bold-facing these phrases, I want to emphasize specifically the point that truth-makers, intentional targets, and evidential verifiers can be *distinct sorts of things*, even if they are *essentially connected*. Suppose, e.g., that

- (i) **the truth-maker** is a *non-platonic, Kantian abstract mathematical immanent structure in the manifestly real world*;
- (ii) **the intentional target** is a *constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, mental model, mental diagram, mental picture, structural image, or schema*, picking out a proper part of that very structure; and
- (iii) **the evidential verifier** is a *manifestly real worldly fact, picked out by direct, veridical sense perception, via non-conceptual content*,

which *implements* the immanent non-platonic, Kantian abstract world-structure and thereby *satisfies* the non-platonic, Kantian abstract mathematical structure, and also strictly *conforms* to the constructed-and-manipulated veridical sensible forms in Kantian a priori intuition via the productive imagination, mental models, etc.

These are all obviously distinct from one another, and also obviously necessarily and inherently connected with one another. I will come back to these crucial points again later.

Odd as it might at first seem, I think that there is an interesting and important parallel between The OBD and Milton's epic poetry. Milton's *Paradise Lost* and *Paradise Regained*, as I read them, are about the necessary transition from the impossibly super-human objective conception of moral virtue embodied by pre-lapsarian Adam and Eve, and our consequent tragic Fall and expulsion from the Garden of Eden, towards a fully realistic and objective knowledge of our own "human, all too human" moral limits and of our inescapably finite, mortal condition in this actual, thoroughly nonideal, and fully natural world. Correspondingly, the philosophical story I am telling about mathematical knowledge in Sections VIII, IX, and X, and also about logical knowledge in Section XI, is about the necessary philosophical transition from the impossibly super-human *old rationalist* conception of mathematical, logical, and philosophical truth and knowledge offered by classical platonism and classical Cartesian Rationalism, and our consequent tragic Fall and collapse into The OBD, and, by implication, also into The Extended Benacerraf Dilemma and The Generalized Benacerraf Dilemma, and then our post-lapsarian progress towards a fully infinitary, strongly modal, realistic, and objective, but also inescapably causally-and-empirically anchored, *anthropocentric, neo-rationalist* conception of mathematical, logical, and philosophical truth and knowledge, based on the two fundamental ideas (i) that abstractness is essentially non-platonic and Kantian in nature, and (ii) that objectivity is non-subjective, non-relative, necessary counterfactual universal rational human intersubjectivity. In short, this is *objective necessarily true a priori knowable mathematics, logic, and philosophy for rational human animals*, and not for gods or angels. So if my argument is sound, then the result will be, in effect, a mathematical, logical, and philosophical neo-rationalist Paradise Regained – with Kantian bells on.

### II.3

It is philosophically illuminating to have before us a more fully explicit rational reconstruction of The OBD, as follows:

- (1) Natural language requires a standard, uniform semantics of truth. Hence: Truth is uniform and broadly Tarskian. (Preliminary assumption I.)
- (2) A reasonable epistemology of cognizing true (mathematical) statements should be modelled on human sense perception. Hence: All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. (Preliminary assumption II.)
- (3) Mathematical knowledge in the classical sense (i.e., as a priori knowledge of objectively necessary truth) exists as a basic feature of standard mathematical linguistic practices, so mathematical truth in a classical sense (i.e., as objectively necessary truth) also exists as a basic feature of those standard practices.
- (4) Given (1) and (3), our standard, uniform semantics of truth in natural language, as applied to mathematical truths, commits us to a necessary-truth-making ontology of abstract mathematical objects and also to the non-empirical knowability of true mathematical statements.
- (5) On the one hand, given (2), the fact that a reasonable epistemology of cognizing true (mathematical) statements should be modelled on human sense perception entails that knowledge involves causally efficacious, contact-involving or efficient, directly referential, non-conceptual, non-inferential, sensory and inherently spatiotemporal relations between human linguistic knowers and the known objects themselves.<sup>9</sup>
- (6) But on the other hand, given (4), and since all abstract objects are causally non-efficacious or inert, it then follows that all abstract mathematical objects are causally non-efficacious or inert.
- (7) So if we accept all of (1) – (6), then mathematical knowledge in the classical sense is both possible and impossible, which is absurd.

I will say that any proposed solution to The OBD is *negative* or *skeptical* if it rejects either of Benacerraf's preliminary philosophical assumptions about a standard, uniform semantics of truth and a reasonable epistemology or else rejects one or more of steps (3) to (6). Then there are at least six different categories of possible negative or skeptical solutions

to The OBD. The first two categories I will call *pre-emptive* negative or skeptical solutions since they consist in pre-emptively rejecting at least one of the two preliminary assumptions.

### Pre-Emptive Negative or Skeptical Solutions

- (1) *Reject the preliminary assumption (I) that natural language requires a standard, uniform semantics of truth, i.e., reject the assumption that truth is uniform and broadly Tarskian.*

This in turn arguably entails either

- (1.1) rejecting the broadly Tarskian semantics of truth,

or

- (1.2) accepting a multiform semantics of truth in natural language.<sup>10</sup>

- (2) *Reject the preliminary assumption (II) that a reasonable epistemology of cognizing true (mathematical) statements should be modelled on human sense perception, i.e., reject the assumption that all human knowledge begins in causally-and-empirically triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts.<sup>11</sup>*

This in turn arguably entails either

- (2.1) asserting that at least some human knowledge is non-causal and modelling the epistemology of cognizing true (mathematical) statements on human conceptual competence or concept-possession, human judgment, or human inference;<sup>12</sup>

- (2.2) asserting that at least some human knowledge is non-causal and modelling the epistemology of cognizing true (mathematical) statements on human self-consciousness;<sup>13</sup> or

- (2.3) asserting that at least some human knowledge is non-causal and modelling the epistemology of cognizing true (mathematical) statements on the human imagination.<sup>14</sup>

The other four categories I will call *concessive* negative or skeptical solutions, since they involve conceding both of the preliminary assumptions I and II, and then rejecting at least one of the other steps leading to the unacceptable conclusion.

### Concessive Negative or Skeptical Solutions

- (3) *Reject the classical necessity or apriority of mathematical truth.*

This in turn arguably entails accepting either

- (3.1) the contingency of mathematical truth,

or

- (3.2) the aposteriority of mathematical truth.

- (4) *Reject the truth-making ontology of abstract mathematical objects.*<sup>15</sup>

This in turn arguably entails accepting either

- (4.1) empirical or phenomenal idealism (whether communal or solipsist),
- (4.2) Brouwer-style intuitionism,
- (4.3) Hilbert-style finitist formalism,
- (4.4) Carnap-style conventionalism,
- (4.5) fictionalism or some other form of nominalism,
- (4.6) non-cognitivist anti-realism, or
- (4.7) pragmatic/practical realism.

- (5) *Reject the thesis that human sense perception involves causally efficacious, contact-involving or efficient, directly referential, non-conceptual, non-inferential, and inherently spatiotemporal relations between human cognizers and the cognized objects themselves.*

This in turn arguably entails accepting either

- (5.1) the replacement of causal efficacy by causal relevance,
- (5.2) the counterfactual theory of causation,
- (5.3) the probability-raising theory of causation,
- (5.4) a non-causal theory of perception,
- (5.5) an indirect causal theory of perception (whereby a perceptual subject *S* can sense perceive a universal *U* or type *T* just by standing in a direct causal sense perceptual relation to an instance of *U* or a token of *T*),<sup>16</sup>
- (5.6) referential descriptivism, or
- (5.7) conceptual-role semantics and inferentialism.<sup>17</sup>

- (6) *Reject the thesis that abstract objects are causally non-efficacious or inert.*

This in turn arguably entails accepting both

- (6.1) the causal relevance of abstract objects  
and
- (6.2) the causal efficacy of abstract objects.

Looking back over this menu of possible solutions, some caveats and qualifications are obviously required.

**First**, it is very important to note that each of the possible negative or skeptical solutions I just mentioned is preceded by the qualifier “arguably.” I certainly do not intend to suggest that my taxonomy of negative or skeptical solutions is complete or exhaustive.<sup>18</sup> No doubt there are other ways of carving up the logical space of possible solutions that I have not considered. And it also strikes me as probably impossible to provide a principled procedure for generating a total list of possible

solutions. I am just trying to provide a relatively orderly *indication* of how *some* other philosophers *might* go about attempting to solve The OBD in a *non-positive* way, as illuminating contrasts to the positive or anti-skeptical, innatist, rational-intuitionist intuition-based solution that I am going to work out here.

**Second**, even fully *granting* my taxonomy of possible negative or skeptical solutions, it remains obvious that some of these logically entail or logically exclude others, while at the same time, many of them are also consistent with others – all of which gives rise to a large number of distinct possible *combined* negative or skeptical solutions. This in turn makes the project of proving the falsity of *all* the possible negative or skeptical solutions, one by one, highly strenuous and even simply unfeasible, given the usual limits on human time, energy, and patience. And if on the other hand it turns out that my taxonomy is *incorrect*, then even if I *were* to succeed in refuting all the negative or skeptical solutions I have surveyed, together with all their combinations, obviously it still would not follow that I have fully cleared the field of relevant opposing views. In order to rule out this problem, then I would have to have a sound demonstration of the completeness of my taxonomy, which, as I have already conceded, I do not have in hand, and which is probably impossible.

**Third**, as a consequence of the first and second points, I am hereby making the following executive decision about philosophical strategy: In Part 2, as I have said, I will attempt to work out a positive or anti-skeptical, innatist, rational-intuition-based solution to The OBD, as well as to The Extended Benacerraf Dilemma and also The Generalized Benacerraf Dilemma, but will *not* explicitly attempt to criticize or defeat all the many possible negative or skeptical solutions, each of which would require a separate book-length treatment on its own, and in any case it would presuppose a sound demonstration of the completeness of my taxonomy of these possible solutions, which, again, I have already conceded I do not have in hand and is probably impossible.

**Fourth** and finally, as I have said already, I call my solution to The OBD a “positive” or anti-skeptical one because it accepts Benacerraf’s preliminary philosophical assumptions I and II about the nature of truth and knowledge as basic authoritative a priori objectively necessarily true philosophical rational intuitions, as well as accepting all the basic premises of The OBD – captured in steps (1) to (6), under plausible interpretations of those premises – and then attempts to show how we can, consistently with those very assumptions and premises, under those plausible interpretations, still *reject* the skeptical conclusion of The



OBD – captured in step (7) – and also adequately explain mathematical knowledge. Now on the face of it, *any positive or anti-skeptical solution should have a distinct rational edge over any negative or skeptical solution* because only a positive or anti-skeptical solution will adequately preserve the rational force of (what I take to be) the basic authoritative a priori objectively necessarily true philosophical rational intuitions that generated the dilemma in the first place. If any of these philosophical intuitions did not have *basic authoritative a priori objectively necessarily true* rational force, then The OBD would not be a *genuine* dilemma. In other words, The OBD would simply dissolve if either

- (I) Truth is uniform and broadly Tarskian,
- or
- (II) All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts,

turned out to be *other than* a basic authoritative a priori objectively necessarily true philosophical rational intuitive claim. It is certainly true that a critic might try to be dismissive of the whole philosophical backdrop of The OBD. But on the contrary, both (I) and (II) *do* seem to me to be basic authoritative a priori objectively necessarily true philosophical rational intuitive claims. I simply cannot see how, if logic is to be possible after the discovery of the semantic paradoxes and after Gödel's incompleteness theorems, truth can be *other than* uniform, broadly in conformity with Tarski's disquotational, semantic conception, and thereby such as to satisfy universally either the simple version of the T-schema,

“S” is true if and only if S,

or the fully generalized version. And I simply cannot see how *human* knowledge could be *other than* causally-and-empirically anchored in direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. For this expresses only a *minimal* Empiricism, which says that, as rational human animals and cognizers, *we directly, non-conceptually, non-inferentially, and sense-perceptually belong to the causally efficacious natural world*. How could that be rationally denied? It also fully concedes that *not* all our knowledge is strictly determined by causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts, given the rock-solid

starting point that *some* of our knowledge is basic authoritative and a priori objectively necessarily true – e.g.,

$$3+4=7, \text{ i.e., } ||| + |||| = |||||$$

and

It is not the case that every sentence or statement in any or every language or logical system whatsoever is both true and false, i.e.,  $\sim (\forall S)(S \ \& \ \sim S)$ , i.e., **Minimal Non-Contradiction**.

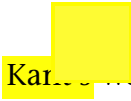
So if those points are correct, the fact that we can and do take The OBD seriously clearly entails that if there really is a positive or anti-skeptical solution, then other things being equal it will trump any of the negative or skeptical solutions. This line of reasoning, in turn, is a specific expression of what I call *Preservationism about Rational Intuitions*, which I should say something about before advancing to my positive or anti-skeptical, innatist, intuition-based solution to The OBD. But before I do *that*, we will need to know what a priori knowledge and rational intuitions *are*. And even before we investigate *those* issues, I also want to extend and then generalize The Original Benacerraf Dilemma.

# III

## The Benacerraf Dilemma Extended and Generalized

These considerations bring us up to the problem: In what sense is logic something sublime? For there seemed to pertain to logic a peculiar depth – a universal significance. Logic lay, it seemed, at the bottom of all the sciences. For logical investigation explores the nature of all things. It seeks to see to the bottom of things and is not meant to concern itself whether what actually happens is that or that. It takes its rise, not from an interest in the fact of nature, nor from a need to grasp causal connexions: but from an urge to understand the basic, or essence, of everything empirical.

– L. Wittgenstein<sup>1</sup>

As I thought through the theoretical part [of  working manuscript, *The Limits of Sense and Reason*], considering its whole scope and the reciprocal relations of its parts, I noticed that I still lacked something essential, something that in my long metaphysical studies I, as well as others, had failed to pay attention to and that, in fact, constitutes the key to the whole secret of hitherto still obscure metaphysics. I asked myself: What is the ground of the relation of that in us which we call “representation” to the object? If a representation is only a way in which the subject is affected by the object, then it is easy to see how the representation is in conformity with this object, namely as an effect in accord with its cause, and it is easy to see this modification of our mind can *represent* something, that is, have an object.... However I silently passed over the further question of how a representation that refers to the object without being in any way affected by it can be possible. I had said: The sensuous representations present things as they appear, the intellectual representations present them as they are. But

by what means are these things given to us, if not by the way in which they affect us? And if such intellectual representations depend on our inner activity, whence comes the agreement that that they are supposed to have with objects – objects that are nevertheless not possibly produced thereby? And the axioms of pure reason concerning these objects – how do they agree with these objects, since the agreement has not been reached with the aid of experience? In mathematics this is possible, because the objects before us are quantities and can be represented as quantities only because it is possible for us to produce their mathematical representations (by taking numerical units a given number of times). But in the case of relationships involving qualities – as to how my understanding may form for itself concepts of things completely a priori, with which concepts the things must necessarily agree, and as to how my understanding may formulate *real* principles concerning the possibility of such concepts, with which principles experience must be in exact agreement, and which nevertheless are independent of experience – this question, of how the faculty of understanding achieves this conformity with the things themselves, is still left in a state of obscurity. (*PC* 10: 129–135)

### III.1

It is easy enough to extend The Original Benacerraf Dilemma to logic, and thereby raise the fundamental philosophical problem so evocatively identified by the later Wittgenstein: “In what sense is logic something sublime?” One need only substitute “logical” for every occurrence of “mathematical” in The OBD, as follows, with the relevant substitutions boldfaced:

- (1) Natural language requires a standard, uniform semantics of truth. Hence: Truth is uniform and broadly Tarskian. (Preliminary assumption I.)
- (2) A reasonable epistemology of cognizing true (**logical**) statements should be modeled on human sense perception. Hence: All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. (Preliminary assumption II.)
- (3) **Logical** knowledge in the classical sense (i.e., as a priori knowledge of objectively necessary truth) exists as a basic feature of standard **logical** linguistic practices, so **logical** truth in a classical sense (i.e., as objectively necessary truth) also exists as a basic feature of those standard practices.

- (4) Given (1) and (3), our standard, uniform semantics of truth in natural language, as applied to **logical** truths, commits us to a necessary-truth-making ontology of abstract **logical** objects and also to the non-empirical knowability of true **logical** statements.
- (5) On the one hand, given (2), the fact that a reasonable epistemology of cognizing true (**logical**) statements should be modeled on human sense perception entails that knowledge involves causally efficacious, contact-involving or efficient, directly referential, non-conceptual, non-inferential, and spatiotemporal sensory relations between human linguistic knowers and the known objects themselves.
- (6) But on the other hand, given (4), and since all abstract objects are causally non-efficacious or inert, it then follows that all abstract **logical** objects are causally non-efficacious or inert.
- (7) So if we accept all of (1) – (6), then **logical** knowledge in the classical sense is both possible and impossible, which is absurd.

For convenience, I will call this sublimity-of-logic problem *The Extended Benacerraf Dilemma*. While it is easy enough to generate The Extended Benacerraf Dilemma, sadly, it is not so very easy to solve it. Eventually, in Section XI, I will argue, **first**, that necessarily, logic is weakly transcendently ideal, and **second**, that Kantian Structuralism and Kantian Intuitionism can be smoothly extended from mathematics to logic and thereby solve The Extended Benacerraf Dilemma. If I am correct, then this solution to The Extended BD shows us that logic *really is* sublime in a precisely characterizable way, and that logic is sublime in this way *just insofar as* it is weakly transcendently ideal, but *not* otherwise.

But The Extended BD does not exhaust the philosophical power of The OBD. Indeed, as I mentioned above, there is a generalized version of The OBD that brings out its deep structure and then projects that deep structure onto a priori knowledge of any kind whatsoever.<sup>2</sup> Moreover as it turns out, and not entirely coincidentally, The Generalized BD was also fully anticipated by Kant in 1772, under the rubric of what I will call *the problem of cognitive-semantic luck*.

### III.2

It is well-known that Kant himself was a fully committed classical rationalist in the tradition of Leibniz and Christian Wolff during his Pre-Critical period. Kant's Pre-Critical period, in turn, runs from the

1740s until at least the middle-to-late 1760s or the early 1770s, when, by his own retrospective testimony in 1783, he was suddenly jolted out of his Leibnizian and Wolffian dreams by a skeptical Humean Empiricist wake-up call:

I openly confess that my remembering David Hume was the very thing which many years ago first interrupted my dogmatic slumber and gave my investigations in the field of speculative philosophy a quite new direction. I was far from following him in the conclusions at which he arrived... [But if] we start from a well-founded, but undeveloped, thought which another has bequeathed to us, we may well hope by continued reflection to advance further than the acute man to whom we owe the first spark of light. (*Prol* 4: 260)

In the *Treatise of Human Nature* and again in the *Enquiry Concerning Human Understanding*, Hume defends and develops three crucial theses, each of which importantly influenced Kant, whether positively or negatively, after 1771:

- (i) all human cognition is strictly limited as to its content, truth, and epistemic scope by sensory experience,
- (ii) the class of all judgments is exhaustively divided into those concerning “relations of ideas” (i.e., necessary a priori definitional or stipulative truths, e.g., truths of logic or mathematics) and those concerning “matters of fact” (i.e., contingent a posteriori experimental truths, e.g., truths of natural science), and
- (iii) all our judgments concerning supposedly necessary causal relations in fact refer exclusively to experience and matters of fact, and that their content and justification is determined solely by non-rational “custom” or “habit,” not reason.

In the *Critique of Pure Reason* Kant fully accepts a carefully qualified version of Hume’s thesis (i), namely

(i\*) all human cognition begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts, but at the same time neither the form nor the content of human cognition is reducible to or necessarily determined by sensory experiences and/or contingent natural objects or facts, i.e., the form and the content of human cognition is modally or strictly underdetermined by all sense experiences and/or contingent natural

objects or facts, i.e., the form and content of human cognition necessarily is, at least in part, *non-empirical or a priori*,

and also firmly rejects Hume's theses (ii) and (iii).

In another fundamentally important and closely-related autobiographical remark in the *Reflexionen*, Kant says that "the year '69 gave me great light" (*R* 5037, 18: 69). By this, I think, he means that in that particular year – falling exactly midway between his seminal 1768 essay "Concerning the Ultimate Ground of the Differentiation of Directions in Space" and his breakthrough 1770 Inaugural Dissertation, "On the Form and Principles of the Sensible and Intelligible World" – he discovered and formulated the revolutionary two-part *transcendentally idealistic* metaphysical doctrine that

- (a) all the proper objects of a rational but also specifically *human* capacity for cognition are only manifest, apparent, or phenomenal objects of the human senses, and never non-manifest, non-apparent, essentially non-relational or monad-like, Really Real objects – i.e., "things-in-themselves" (*Dinge an sich*) or noumena,
- (b) the ontic structures of manifest, apparent, or phenomenal physical spacetime *necessarily conform to* the innate and non-empirical mentalistic structure of the rational human cognitive capacity for causally-triggered, direct, non-conceptual sensory intuition (*Anschauung*), and
- (c) the ontic structures of all manifest, apparent, or phenomenal natural objects and facts, together with all the causal-dynamic relations between manifest, apparent, or phenomenal natural objects and facts, also *necessarily conform to* the innate and non-empirical mentalistic structure of the rational human cognitive capacities for conceptualization, judgment, understanding or thought, and logical reasoning.

I will call thesis (a) **The Idealism Thesis**, and the conjunction of theses (b) and (c), **The Conformity Thesis**.

What would justify Kant's asserting **The Idealism Thesis** and **The Conformity Thesis**, i.e., what would justify his asserting the truth of transcendental idealism, a.k.a. TI? I think that we can rationally reconstruct his basic argument for TI in the following way. Suppose that we accept, as initial suppositions,

- (i) the minimal empiricist assumption that all human cognition begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts,

- (ii) the minimal rationalist assumption that we rational human animals actually cognitively possess some non-empirical or a priori mental representations, and that we also have non-empirical or a priori knowledge of some objectively necessary truths, e.g., in mathematics, logic, and metaphysics, and
- (iii) the minimal cognitive-semantic assumptions that (iiia) truth is the agreement (*Übereinstimmung*) of a belief with the object described by the propositional content of that belief, and (iiib) reference is the direct relation (*Beziehung*) between any cognition and its object.

For expository convenience, let us call all non-empirical or a priori mental representations, including a priori beliefs and a priori knowledge, “a priori cognitions.” What then rules out the possibility that the cognitive-semantic connection between our a priori cognitions on the one hand, and the truth-making objects or facts on the other hand, is nothing but a cosmic accident or massive coincidence? And if it *is* a cosmic accident or massive coincidence, then the connection between our a priori cognitions and their truth-making objects or facts is merely *accidental* or *contingent*, and could just as easily have *failed* to obtain in at least some introspectively cognitively indistinguishable situations. If so, then a priori cognition is inherently unreliable and cannot constitute a priori knowledge. This deep skeptical worry is the problem of cognitive-semantic luck.

Now one possible solution to the problem of cognitive-semantic luck is that the truth-making objects or facts are all platonically abstract, non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert in nature – say, they are constituted by platonic Essences, Forms, Ideas, or *eide* – and that those truth-making objects or facts are directly encountered by our immortal souls in a previous condition of disembodied mindedness, and then in this embodied life, or perhaps in another later more fortunate embodied life of the same soul, we “remember” that earlier direct encounter, by means of philosophical dialectic. That is Plato’s theory of *anamnesis*, and of course it is an early version of the *innate ideas* theory later held by Descartes, the Cambridge Platonists, and Leibniz. But not only does the classical rationalist platonic theory require the transmigration of immortal souls, it also provides no explanation whatsoever of either how immortal souls in a state of disembodied mindedness can ever directly *encounter* platonically abstract, non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert objects or facts, or how souls in their “human, all too human” embodied state can ever *re-encounter* them. In short, such encounters and re-encounters are a metaphysical mystery.



Another possible solution to the problem of cognitive-semantic luck is that the objects and facts are all and only concrete, spatiotemporal, natural, sensory, causally relevant, and causally efficacious objects and facts, and that they thereby *naturally cause* our a priori cognitions. That is the *classical empiricist* or Lockean-Humean solution. The basic problem with the classical empiricist solution, however, is that it is incompatible with the initial assumption that the cognitions naturally caused by these truth-making objects, facts, or states of affairs are a priori, and not a posteriori. Otherwise put, how could these cognitions be other than a posteriori, if their truth-making objects are strictly concrete, spatiotemporal, natural, sensory causally relevant, and causally efficacious natural causes of those cognitions?

And another pair of possible solutions to the problem of cognitive-semantic luck takes the two-step strategy that, **first**, the truth-making objects or facts are all, again, platonically abstract, non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert, and **second**, an all-powerful, all-knowing, and all-good or non-deceiving God creates either

- (i) a direct non-causal cognitive-semantic relation of *acquaintance* (*kennen*),
- or
- (ii) an indirect non-relational cognitive-semantic *pre-established harmony*,

between the a priori cognitions on the one hand, and the platonically abstract, non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert truth-making objects or facts on the other. Those, respectively, are the classical rationalist *Cartesian* and *Leibnizian* solutions. But given the fact that all the proper objects of a rational but also specifically human capacity for cognition are apparent, phenomenal, or manifest natural objects, and never things-in-themselves or noumena, then the appeal to a non-deceiving God and to God's creation of humanly-inaccessible mysterious cognitive acquaintance relations or equally mysterious pre-established harmonies seems no better justified – in effect, no more than an arbitrary and question-begging appeal to a *deus ex machina* – than the skeptical hypothesis that the correspondence is nothing but a massive coincidence. Indeed, in the light of the implausibility of the Cartesian and Leibnizian *deus ex machina*-style solutions, what could decisively rule out the further skeptical possibility that the correspondence is *simply illusory* and has been created by an Evil Demon, i.e., by a God-like being who *is* a deceiver, given the

introspective cognitive indistinguishability of at least some worlds in which this is possible?

In view of the failures of the classical rationalist platonic, classical empiricist or Lockean-Humean, classical rationalist Cartesian, and classical rationalist Leibnizian solutions to the problem of cognitive-semantic luck, and assuming that these four possible solutions exhaust the logical space of all the most promising and relevant solutions to the problem, then we can infer the truth of TI, by philosophical abduction or inference-to-the-best-explanation, as the only adequate solution.

In the famous letter to Marcus Herz of 21 February 1772 that I have already partially quoted as the second epigraph of this section, and then again 15 years later in the B edition of the first *Critique*, Kant formulates this basic argument for TI in the following ways:

As I thought through the theoretical part [of Kant's working manuscript, *The Limits of Sense and Reason*], considering its whole scope and the reciprocal relations of its parts, I noticed that I still lacked something essential, something that in my long metaphysical studies I, as well as others, had failed to pay attention to and that, in fact, constitutes the key to the whole secret of hitherto still obscure metaphysics. I asked myself: What is the ground of the relation of that in us which we call "representation" to the object? If a representation is only a way in which the subject is affected by the object, then it is easy to see how the representation is in conformity with this object, namely as an effect in accord with its cause, and it is easy to see how this modification of our mind can *represent* something, that is, have an object. Thus the passive or sensuous representations have an understandable relationship to objects, and the principles that are derived from the nature of our soul have an understandable validity for all things insofar as those things are supposed to be objects of the senses. In the same way, if that in us which we call "representation" were active with regard to the object, that is, if the object were created by the representation (as when divine cognitions are conceived as the archetypes of all things), the conformity of these representations to their objects could be understood. Thus the possibility of both an *intellectus archetypi* (on whose intuitions the things themselves would be grounded) and an *intellectus ectypi* (which would derive the data for its logical procedure from the sensible intuition of things) is at least intelligible. However, our understanding, through its representations, is not the cause of the object... nor is the object the cause of the intellectual representations in the mind... Therefore the pure

concepts of the understanding must not be abstracted from sense perceptions, nor must they express the reception of representations through the senses; but though they must have their origin in the nature of the soul, they are neither caused by the object nor bring the object into being. In my dissertation I was content to explain the nature of intellectual representations in a merely negative way, namely, to state that they were not modifications of the soul brought about by the object.

However I silently passed over the further question of how a representation that refers to the object without being in any way affected by it can be possible. I had said: The sensuous representations present things as they appear, the intellectual representations present them as they are. But by what means are these things given to us, if not by the way in which they affect us? And if such intellectual representations depend on our inner activity, whence comes the agreement that they are supposed to have with objects – objects that are nevertheless not possibly produced thereby? And the axioms of pure reason concerning these objects – how do they agree with these objects, since the agreement has not been reached with the aid of experience? In mathematics this is possible, because the objects before us are quantities and can be represented as quantities only because it is possible for us to produce their mathematical representations (by taking numerical units a given number of times). But in the case of relationships involving qualities – as to how my understanding may form for itself concepts of things completely a priori, with which concepts the things must necessarily agree, and as to how my understanding may formulate *real* principles concerning the possibility of such concepts, with which principles experience must be in exact agreement, and which nevertheless are independent of experience – this question, of how the faculty of understanding achieves this conformity with the things themselves, is still left in a state of obscurity.

Plato assumed a previous intuition of divinity as the primary source of the pure concepts of the understanding and of first principles. [Malebranche] believed in a still-continuing perennial intuition of this primary being. Various moralists have accepted precisely this view with respect to basic moral laws. Crusius believed in certain implanted rules for the purpose of forming judgments and ready-made concepts that God implanted in the human soul just as they had to be in order to harmonize with things. Of these systems, one may call the former the *influxum hyperphysicum* and the latter the *harmonium preabilitatem intellectualem*. But the *deus ex machina* is

the greatest absurdity one could hit on in the determination of the origin and validity of our knowledge. It has – beside its deceptive circle in the conclusion concerning our cognitions – also this additional disadvantage: it encourages all sorts of wild notions and every pious and speculative brainstorm. (PC 10: 129–135)

Up to now it has been assumed that all our cognition must conform to the objects; but all attempts to find out something about them *a priori* through concepts that would extend our cognition have, on this presupposition, come to nothing. Hence let us once try whether we do not get farther with the problems of metaphysics by assuming that the object must conform to our cognition, which would agree better with the requested possibility of an *a priori* cognition of them, which is to establish something about objects before they are given to us... If intuition has to conform to the constitution of the objects, then I do not see how we can know anything of them *a priori*; but if the object (as an object of the senses) conforms to the constitution of our faculty of intuition (*Anschauungsvermögens*), then I can very well represent the possibility to myself. (CPR Bxvi–xvii)

Now there are only two ways in which a **necessary** agreement of experience with the concepts of its objects can be thought: either the experience makes these concepts possible, or these concepts make the experience possible. The first is not the case with the categories (nor with pure sensible intuition); for they are *a priori* concepts, hence independent of experience (the assertion of an empirical origin would be a sort of *generatio aequivoca*). Consequently only the second way remains (as it were a system of the **epigenesis** of pure reason): namely, that the categories contain the grounds of the possibility of all experience in general from the side of the understanding... If someone still wanted to propose a middle way between the only two, already named ways, namely, that the categories were neither **self-thought** *a priori* first principles of our cognition, nor drawn from experience, but were rather subjective predispositions of our thinking, implanted in us along with our existence by our author in such a way that their use would agree exactly with the laws of nature along which experience runs (a kind of **preformation-system** of pure reason), then (besides the fact that on such a hypothesis no end can be seen to how far one might drive the presupposition of predetermined predispositions for future judgments) this would be decisive against the supposed middle way: that in such a case the

categories would lack the **necessity** that is essential to their concept. For, e.g., the concept of cause, which asserts the necessity of a consequent under a presupposed condition, would be false if it rested only on a subjective necessity, arbitrarily implanted in us, of combining certain empirical representations according to a rule of relation. I would not be able to say that the effect is combined with the cause in the object (i.e., necessarily), but only that I am so constituted that I cannot think of this representation otherwise than as so connected; which is precisely what the skeptic wishes most, for then all our insight through the supposed objective validity of our judgments is nothing but sheer illusion, and there would be no shortage of people who would not concede this subjective necessity (which must be felt) on their own; at least one would not be able to quarrel with anyone about that which merely depends on the way in which his subject is organized. (*CPR* B166–168)

Unfortunately for Kant-scholars and contemporary Kantians, the positive formulation of TI at *CPR* xvi-xvii is not itself *perfectly* clear and distinct, and could, at least in principle, express any one of the four following versions of **The Conformity Thesis**, where the options run from the strongest formulation to the weakest:

- (i) there is a physical-to-mental “*type-type-identity*” relation between
  - (ia) the ontic forms or structures of manifestly real, apparent, or phenomenal physical spacetime, together with the causal-dynamic relations between apparent, phenomenal, or manifestly real natural objects and natural facts on the one hand, and (ib) the innate mentalistic forms or structures of rational human sensibility, understanding, and reason on the other, such that the former are “upwardly type-identical” to the latter, or
- (ii) there is a mental-to-physical *logical-supervenience-without-“type-type-identity”* relation between (iia) the innate mentalistic forms or structures of rational human sensibility, understanding, and reason on the one hand, and (iib) the ontic forms or structures of apparent, phenomenal, or manifestly real natural spacetime together with the causal-dynamic relations between apparent, phenomenal, or manifestly real natural objects and natural facts on the other hand, such that the latter logically supervene on the former but are not type-identical to the former, or
- (iii) there is a physical-to-mental *isomorphism-without-either-“type-type-identity”-or-logical-supervenience* relation between (iiia) the ontic

forms or structures of apparent, phenomenal, or manifestly real natural spacetime together with the causal-dynamic relations between apparent, phenomenal, or manifestly real natural objects and natural facts on the one hand, and (iiib) the innate mentalistic forms or structures of rational human sensibility, understanding, and reason on the other hand, such that the former necessarily have the same form or structure as the latter but are not either type-identical to or logically supervenient on the latter,

or most weakly of all:

- (iv) there is a physical-to-mental *strong modal actualist counterfactual dependency relation* between (iva) the ontic forms or structures of apparent, phenomenal, or manifestly real natural spacetime together with the causal-dynamic relations between apparent, phenomenal, or manifestly real natural objects and natural facts on the one hand, and (ivb) the innate mentalistic forms or structures of rational human sensibility, understanding, and reason on the other, such that the former metaphysically depend on the latter in the sense that necessarily, if the manifestly real natural world actually exists, then if rational human cognizers *were* also to exist, then they *would* be able to know the ontic structures of manifestly real natural spacetime veridically through non-conceptual content (= intuition, *Anschauung*), and also *would* be able to know the causal-dynamic relations between manifestly real natural objects and natural facts veridically through concepts (*Begriffe*), judgments (*Urteile*), and inferences (*Vernunftschlüsse*), at least to some extent.

As I previewed it in sub-section I.4 above, my own view is that *the most philosophically defensible* version of **The Conformity Thesis** is the conjunction of (iii) and (iv), which I call *weak or counterfactual transcendental idealism*, a.k.a. WCTI. In turn, WCTI, it should be noted for later discussion, holds even if, and whenever, no rational human minds, or any other kinds of minds, actually *do* exist, or ever *have* existed.

### III.3

With the Kantian provenance of the problem of cognitive-semantic luck clearly in front of us, I will now formulate The Generalized Benacerraf Dilemma, a.k.a. The GBD.

- (1) *All knowledge* is factive, i.e., all knowledge contains an objective truth-making component, so all *a priori knowledge* whatsoever is factive, especially including a priori knowledge in mathematics, logic, and philosophy.
- (2) If all a priori knowledge is factive in that it contains an objective truth-making component, then what rules out the possibility that its factive component is nothing but the result of a cosmic accident or massive coincidence, in that its truth-maker is merely accidentally connected to rational human belief and justification in the actual world (which is the classical Gettier worry, now extended to a priori knowledge),<sup>3</sup> and also introspectively cognitively indistinguishable from connection with falsity-makers in relevantly similar possible worlds (which is the classical global skeptical worry)? Call this *the possibility of cognitive-semantic luck*, a.k.a. the possibility of CSL.
- (3) If nothing rules out the possibility of CSL, then a priori knowledge of any kind whatsoever is impossible.<sup>4</sup>
- (4) There are only two possible candidates for ruling out the possibility of CSL: either (i) non-naturalism about the objective truth-makers and their connection with rational human beliefs, or else (ii) naturalism about the objective truth-makers and their connection with rational human beliefs.
- (5) But non-naturalism about the objective truth-makers and their connection with rational human beliefs – e.g., as per classical rationalist platonism, Cartesian innate clear and distinct ideas of real essences, grounded in God's existence and non-deceitfulness, Leibnizian pre-established harmony, etc. – puts the truth-makers outside of space and time and renders their connection with rational human beliefs a metaphysical mystery. Hence it does not explain how rational human a priori knowers can stand in a non-accidental, global-skepticism-resistant connection with the known truth-making objects of a priori knowledge.
- (6) And although naturalism about the objective truth-makers and their connection with rational human beliefs, at least *prima facie*, can account for how rational human knowers can stand in a non-accidental, global-skepticism-resistant connection with the known truth-making objects – e.g., via some or another causally reliable connection<sup>5</sup> – nevertheless it cannot explain how rational human beliefs can be either necessary or a priori. Indeed, on the contrary, precisely what it shows is that those rational human beliefs are contingent and a posteriori, as per classical either Lockean-Humean empiricism or Quinean radical empiricism. Hence, again, it does

not explain how rational human a priori knowers can stand in a non-accidental, global-skepticism-proof connection with the known truth-making objects of specifically *a priori* knowledge.

- (7) So, since the possibility of CSL cannot be ruled out, then a priori knowledge of any kind whatsoever is impossible, including a priori knowledge in mathematics, logic, philosophy, morality, axiology, linguistics, semantics, etc.

For our purposes here, there are three crucial points to notice about The GBD.

**First**, since The GBD captures the deep structure of The OBD and The EBD alike, then, assuming that they raise fundamental epistemological and metaphysical worries about mathematical and logical a priori knowledge, it follows that The GBD raises an even more fundamental epistemological and metaphysical worry about a priori knowledge of any kind whatsoever.

**Second**, given the internal structural connection between The OBD, The EBD, and The GBD, then in order to be able to provide an adequate solution to The GBD, one will also have to be able to provide adequate solutions to The OBD and The EBD too. Indeed, the failure of a theory to provide an adequate solution to either The OBD or The EBD entails a corresponding failure to provide an adequate solution to The GBD.

**Third** and finally, given the fact of the Kantian historical-philosophical origins of The GBD in the problem of cognitive-semantic luck, and given the further fact that transcendental idealism or TI was specifically *designed* to solve the problem in the face of the failure of the other leading philosophical contenders – classical rationalist platonism, classical Lockean-Humean Empiricism, and classical Cartesian or Leibnizian Rationalism – then it is at least *prima facie* arguable that *only* TI will be able to provide an adequate solution to it, and correspondingly at least *prima facie* arguable that *only* TI will be able to provide an adequate solution to The OBD and The EBD. This in turn entails that it is at least *prima facie* plausible that *only* TI will be able to provide *an adequate general theory of a priori knowledge*.

In order to begin to vindicate this very bold claim, however, I must first go somewhat further into the nature of a priori knowledge, and then also say something more about the nature of TI.



# IV

## What Is A Priori Knowledge?

[W]e will understand by *a priori* cognitions not those that occur independently of this or that experience, but rather those that occur *absolutely* independently of all experience. Opposed to these are empirical cognitions, or those that are possible only *a posteriori*, i.e., through experience.... Experience teaches us, to be sure, that something is constituted thus and so, but not that it could not be otherwise. **First**, then, if a proposition is thought along with its **necessity**, then it is an *a priori* judgment;... **Second**: Experience never gives its judgments true or strict but only assumed and comparative **universality** (through induction), so properly it must be said: as far as we have perceived, there is no exception to this or that rule. Thus if a judgment is thought in strict universality, i.e., in such a way that no exception is allowed to be possible, then it is not derived from experience, but is rather valid absolutely *a priori*.... Necessity and strict universality are therefore secure indicators (*Kennzeichen*) of an *a priori* cognition, and also belong together inseparably. But since in their use it is sometimes easier to show the empirical limitation in judgments than contingency in them, or is often more plausible to show the unrestricted universality that we ascribe to a judgment than its necessity, it is advisable to employ separately these two criteria, each of which is infallible.

(CPR B2–4)

### IV.1

What is *the nature of a priori knowledge*? I will address this question in four steps by discussing, **first**, the nature of knowledge; **second**, the

nature of apriority; **third**, the nature of the a priori – a posteriori distinction, and its eleven major varieties; and then **fourth**, the nature of transcendental idealism or TI as the foundation of an adequate theory of a priori knowledge and the a priori – a posteriori distinction.

## IV.2

In what follows, by *a conscious-evidence-based reason*, I mean a reason that is based on evidence provided by a conscious act, state, or process. And by *a conscious act, state, or process* I mean a *subjectively-experienced, intentionally-directed* mental act, state, or process. In this way, e.g., reasons that are based on sense perception, memory, imagination, apperception or self-consciousness, judgment (including the reception of testimony), deductive inference, inductive inference, abductive inference, mathematical intuition, logical intuition, or philosophical intuition are all conscious-evidence-based reasons.

My account of the nature of knowledge is robustly normative in character, and also flows naturally from the widely-known and almost universally-accepted “Gettier counterexamples” to the classical analysis of knowledge, according to which knowledge is the same as justified true belief.<sup>1</sup> Duncan Pritchard and others have correctly pointed out that the Gettier cases show that the classical analysis of knowledge leaves justified true belief open to *luck*, or a merely accidental or contingent connection between justifying evidence and the truth-maker of the belief. Hence, in addition to justified true belief, authentic knowledge further requires the satisfaction of (1) an *anti-luck*, or *externalist*, condition. Pritchard and others have also correctly pointed out that the classical analysis of knowledge fails to require that cognitive subjects acquire their justifying evidence via properly-functioning cognitive capacities or mechanisms. Hence authentic knowledge also requires the satisfaction of (2) a *cognitive virtues*, or *virtue epistemology*, condition.<sup>2</sup> My account of what I call *High-Bar knowledge* includes maximally strong versions of both the anti-luck condition and the cognitive virtues condition alike, as well as requiring the satisfaction of (3) an *evidential-phenomenological*, or *internalist*, condition, and in this way it also rules out global or radical skepticism.

Here is what I mean by all that. The simplest kind of Gettier counterexample goes like this. I look at my iPhone, and it says that it is 7:00 am. And I know by experience that my iPhone has been working fine for months. So I have a conscious-evidence-based reason for asserting that it is 7:00 am. And, as it happens, it really is 7:00 am. But, unbeknownst

to me, my iPhone has been broken since 7:00 pm last evening, when, by a malfunction of the digital mechanism, it started reading 7:00 am and froze at that setting; and I have not looked at it since then. So even though I have a conscious-evidence-based reason for asserting that it is 7:00 am, and it is true that it is 7:00 am, and I believe that it is 7:00 am, I do not know that it is 7:00 am. So, supposedly, knowledge is not justified true belief.

How should we understand this result? My own take on the Gettier counterexamples is that *although knowledge really is justified true belief*, the counterexamples initially suggest the opposite, by trading on a special internal normative feature of the concepts and facts of epistemic justification and knowledge: Epistemic justification and knowledge are *normatively two-dimensional*, in the sense that by their very nature they are either (1) *Low-Bar*, or (2) *High-Bar*. Let me now, in turn, explain what I mean by this.

(1) **Re Low-Bar.** The “Low-Bar” dimension of epistemic justification allows for justification to be more or less detached from truth, and means: *Whatever provides a conscious-evidence-based reason for the believer to assert her belief-claim, even if that belief turns out false*, in which case that belief obviously is not knowledge in the normatively highest sense. But most importantly for the Gettier counterexamples, what I will call *Low-Bar justification* is also consistent with cases (like the case of the broken iPhone) in which the believer’s claim is actually true, yet that actual truth is neither *inherently or intrinsically* connected to the believer’s conscious-evidence-based reason for asserting her belief-claim, nor even *in a context-sensitive way, causally reliably* connected to the believer’s conscious-evidence-based reason for asserting her belief-claim. Otherwise put, the truth of the claim in these cases is only *accidentally or contingently* connected to the believer’s conscious-evidence-based reason for asserting her belief-claim. That is Low-Bar justification.

Now this clearly and distinctly points up the fact that knowledge in the normatively highest sense, or what I will call *High-Bar knowledge*, requires *an inherent or intrinsic connection* – i.e., a *non-accidental or necessary* connection – between the truth of a believer’s belief-claim and a believer’s sufficient conscious-evidence-based reason for asserting her belief-claim, i.e., it requires *High-Bar justified true belief*. This is because in the cases in which there is only an accidental or contingent connection, the believer’s belief-claim could just as easily have been false with no change whatsoever in the believer’s conscious-evidence-based reason for asserting her belief-claim. So knowledge in the normatively highest sense, or High-Bar justified true belief, is *not* the same as

Low-Bar knowledge, which involves justified true belief in the Low-Bar sense only. In that sense, *High-Bar* knowledge is not *Low-Bar* justified true belief, although *High-Bar* knowledge still is and always will be *High-Bar* justified true belief. Correspondingly, *Low-Bar* knowledge still is and always will be *Low-Bar* justified true belief. Hence, provided that we keep our bar-levels straight, knowledge really is justified true belief.

(2) *Re High-Bar*. By sharp contrast, then, the “High-Bar” dimension of knowledge and justification requires that belief be inherently or intrinsically connected to truth, via properly-functioning cognitive capacities or mechanisms of the cognitive subject, and means: *Whatever provides a sufficient conscious-evidence-based reason for the believer to assert her belief-claim, via her properly-functioning cognitive capacities or mechanisms, and also is inherently or intrinsically connected to the truth of that belief-claim*. Otherwise put, *High-Bar* knowledge has the following three fundamental features:

- (i) belief is *self-evident*, i.e., completely convincing or intrinsically compelling, thereby satisfying *an evidential-phenomenological or internalist condition* on knowledge,
- (ii) this evidence is delivered to belief by *a properly-functioning cognitive mechanism*, thereby satisfying *a cognitive virtues condition* on knowledge, and
- (iii) belief provides a non-accidental or necessary tie to the truth-makers of belief, thereby satisfying *an anti-luck or externalist condition* on knowledge.

An example of this would be the sharply variant case, introduced as a rational paradigm in sub-section I.1, in which I know objectively, via basic authoritative a priori objectively necessarily true mathematical rational intuition, that

$$3+4=7, \text{ i.e., } ||| + |||| = |||||$$

Now by *an essentially reliable cognitive mechanism*, I mean a cognitive mechanism that tracks truth counterfactually and in a context-sensitive way across *all relevantly similar metaphysically possible worlds*. So *High-Bar* justified true belief is the same as *High-Bar* knowledge, precisely because justification occurs by means of an essentially reliable cognitive mechanism, in this case, basic authoritative mathematical rational intuition.

This case should also be distinguished from another variant case in which my iPhone says it is 7:00 am, and my iPhone is still working fine, and it is actually 7:00 am, and I believe that it is 7:00 am, and it is also the case that

- (i) whenever, in relevantly similar cases, it were to be such-and-such a time, call it *T*, and I looked at my iPhone and it read “*T*,” then I would believe that it is *T*,
- and
- (ii) whenever, in relevantly similar cases, it were, by some salient difference, not to be *T* and I looked at my iPhone, yet my iPhone still read “*T*,” then I would not believe that it is *T* and would instead believe that my iPhone was malfunctioning.

So I know that it is 7:00 am, because my conscious evidence for asserting my belief is connected to the truth of that belief-claim with *context-sensitive causal reliability*. Now by a *context-sensitive causally reliable cognitive mechanism* I mean a cognitive mechanism that tracks truth in the actual world, and also counterfactually and in a context-sensitive way across *all relevantly similar nomologically possible worlds*. In this case, then, the context-sensitive causally reliable cognitive mechanism is my capacity for veridical, direct sense perception,<sup>3</sup> together with a further online capacity of mine for detecting salient breakdowns of my iPhone whenever they occur.

But this kind of context-sensitive causally reliable knowledge, as good as it is, is not the normatively *highest* kind of knowledge, precisely because the connection between my conscious-evidence-based reason and the truth-maker of my belief is not inherent or intrinsic. On the one hand, it is open to global skeptical worries: in at least some introspectively indistinguishable conceivably possible worlds containing the very same conscious-evidence-based reason, that belief is instead connected to a falsity-maker, not a truth-maker.<sup>4</sup> And on the other hand, even given context-sensitive causally reliable knowledge, it is not as if my capacity for veridical, direct sense perception together with my capacity to detect salient iPhone breakdowns *completely convincingly, intrinsically compellingly, or self-evidently “locks onto”* the context-sensitive causal sequence that ties my well-functioning iPhone to the US standard atomic clock (or whatever) that grounds it, although, to be sure, my iPhone *is* well-functioning and causally connected in the right way to the natural world when I do know with context-sensitive causal reliability that it is 7:00 am by looking at my iPhone. That is,

even given context-sensitive causally reliable knowledge, it is not as if I have *rational insight* into the *underlying structure* of what connects my conscious-evidence-based reason for believing to the truth-maker of my belief. Indeed, my conscious-evidence-based reason for believing could be epistemically flawed in various ways, including greater or lesser irrelevance to the situation at hand, greater or lesser superficiality, greater or lesser triviality, or more or less obvious formal inconsistency with other beliefs I hold, and so-on.

This point is also brought out clearly, although in a sense unintentionally, by Keith Lehrer's well-known "Truetemp" thought-experiment, whose explicit aim is to show that context-sensitive causally reliable true belief is not the same as knowledge.<sup>5</sup> Lehrer's example describes a context-sensitive causally reliable temperature-reading device connected to Mr Truetemp's brain, unbeknownst to Mr Truetemp himself, that together with Truetemp's brain yields a context-sensitive causally reliable cognitive mechanism for Mr Truetemp's beliefs about temperature. This example, in turn, is supposed to trigger our judgment that Mr Truetemp's context-sensitive causally reliable true beliefs about temperature are *not* knowledge. But in fact, what the Truetemp case shows, just like the case of my iPhone, is simply that context-sensitive, causally reliable Low-Bar knowledge is *not* the same as High-Bar knowledge. Otherwise put, just like Mr Truetemp and his device, my context-sensitive causally reliable perceptual knowledge that it is 7:00 am by looking at my iPhone is not *essentially reliable*, as it is in the case where I know that

$$3+4=7, \text{ i.e., } ||| + |||| = |||||$$

via basic authoritative mathematical rational intuition.

In this way, what the Gettier counterexamples and their variant cases show us are four distinct synthetic a priori philosophical truths about knowledge:

- (i) High-Bar knowledge is *not* the same as Low-Bar knowledge, i.e., not the same as Low-Bar justified true belief,
- (ii) High-Bar knowledge is also *not* the same as context-sensitive causally reliable Low-Bar knowledge, i.e., not the same as context-sensitive causally reliable Low-Bar justified true belief, which in turn is distinct from mere Low-Bar knowledge, i.e., Low-Bar justified true belief,
- (iii) High-Bar knowledge *is* the same as High-Bar justified true belief, i.e., essentially reliable justified true belief, and

- (iv) Low-Bar knowledge is the same as Low-Bar justified true belief, and context-sensitive causally reliable Low-Bar knowledge is the same as context-sensitive causally reliable true belief, and High-Bar knowledge is the same as High-Bar justified true belief: therefore, provided we keep our bar-levels straight, knowledge really is justified true belief.

The leading notion here is *High-Bar knowledge*. Any theory of knowledge that adequately establishes an inherent or intrinsic connection between the sufficient conscious-evidence-based reason for a believer's assertion of her belief-claim, via her properly-functioning cognitive capacities or mechanisms, and the truth of her belief, also shows that this is an essentially reliable belief, and this theory thereby constitutes an adequate philosophical explanation of the highest kind of knowledge, which in turn counts as the highest good, or *summum bonum*, of epistemology. Furthermore, this conception of a philosophical explanation of the normatively highest kind of knowledge – that it adequately establishes an inherent or intrinsic connection between the sufficient conscious-evidence-based reason for a believer's assertion of her belief-claim, via her properly-functioning cognitive capacities or mechanisms, and the truth of her belief – perhaps surprisingly, is largely compatible with Timothy Williamson's highly plausible “knowledge first” approach to epistemology in *Knowledge and Its Limits*.<sup>6</sup> This large measure of compatibility flows directly from the fact that, according to my conception of the theory of knowledge, which I call *categorical epistemology*,<sup>7</sup>

- (i) High-Bar knowledge or HBK, i.e., intrinsically compelling, cognitively virtuous, essentially reliable justified true belief, which is the normatively highest kind of knowledge, is the primitive, non-analyzable, non-reducible, immanently structured, and categorically normative highest good and ideal standard of rational human cognition with which epistemology is fundamentally concerned,
- (ii) High-Bar justification, i.e., intrinsically compelling, cognitively virtuous, essentially reliable justification, truth, and belief are the metaphysically non-detachable, essentially-related elements of HBK, and
- (iii) a priori knowledge via basic authoritative objectively necessarily true rational intuition is the *perfection* of our capacities for rational human cognition, and therefore counts as the *normative paradigm* of HBK.

Or in other words, categorical epistemology is a *perfectionist* Kantian morality of rational human cognition. No doubt, Williamson would sharply disagree with me about the robust rational normativity of authentic a priori knowledge – not to mention sharply disagreeing with my contemporary Kantianism. But at the same time, we do both hold that

- (i) knowledge is a primitive, non-analyzable, non-reducible cognitive phenomenon with which all serious explanatory epistemology must begin,  
and
- (ii) knowledge is inherently *mentalistic* and *factive*.

So there is some significant common ground shared between us.

Categorical epistemology shares with virtue epistemology<sup>8</sup> and other recent or contemporary practically-oriented approaches to epistemology<sup>9</sup> the basic idea that both the ascription and also the actual occurrence of human knowledge, alike, are inherently sensitive to our properly-functioning cognitive capacities or mechanisms, inherently motivated by rational human interests, inherently governed by rational human ideals, values, and reasons (i.e., norms), and ultimately grounded in the real fact of (or in at least the non-eliminable conception of ourselves as having) free agency. But on the other hand, categorical epistemology sharply differs from other practically-oriented approaches to human knowledge in the following respect. According to categorical epistemology, the principles of rational human animal knowledge are grounded in *categorically normative* principles, which in turn are all ultimately subsumable *under* the Categorical Imperative. Hence the governing norms of knowledge are also explicitly and irreducibly categorical – i.e., unconditional, strictly universal, non-instrumental, and a priori – and also ultimately constrained by the Categorical Imperative.

Correspondingly, it should also be fully noted that the fundamental distinction in categorical epistemology between High-Bar justification and knowledge, and Low-Bar justification and knowledge, is itself only a specification of a more general and necessary structure of human rationality, which I call *Two-Dimensional rational normativity*. Two-Dimensional rational normativity is the fact that the conditions on normative evaluations of rationality fall into two importantly different kinds:

- (1) **Low-Bar rational normativity:** the necessary and sufficient conditions for *minimal or nonideal rationality*, which include the possession



of online, uncompromised versions of all the cognitive and practical capacities constitutive of intentional agency,  
and

- (2) **High-Bar rational normativity:** the necessary and sufficient conditions for *maximal or ideal rationality*, which include all the necessary and sufficient conditions for Low-Bar rational normativity as individually necessary but *not* jointly sufficient conditions, and also include the *perfection*, or *correct and full self-realization*, of all the cognitive and practical capacities constitutive of intentional agency, as individually necessary *and* jointly sufficient conditions.

Non-satisfaction of the conditions for *Low-Bar* rational normativity entails non-rationality and non-agency – and, as we shall see in the next sub-section, in a certain special range of cases of the non-satisfaction of the conditions for *Low-Bar* knowledge, it also allows for the possibility of *proto-knowledge* in non-human animals, and also in non-rational human animals such as infants or unfortunate adult victims of various pathological cognitive conditions. But by sharp contrast, it is *not* the case that non-satisfaction of the conditions of *High-Bar* rational normativity entails either non-rationality or non-agency.

This point, in turn, makes it possible to see very clearly the fundamental flaw in *One-Dimensional* theories of rational normativity, no matter how plausible and sophisticated these theories might otherwise be.<sup>10</sup> According to a *One-Dimensional* theory, any failure to meet the ideal standards of rational normativity entails *non-rationality*, *non-agency*, and *non-responsibility*. Or in other words, if you are not ideally or *perfectly rational*, then you are a *rationally defective* or *irrational animal*, and *off the hook*. For example, if you fail to know in the highest sense (i.e., if you fail to have *High-Bar* justified true belief), then you are not in any sense a rational or responsible cognitive agent. And if you fail to act in the practically or morally highest way – e.g., if you fail to have a *good will* in Kant's sense (*GMM* 4: 393) – then you are not in any sense a rational or responsible practical or moral agent. Disastrously, these results of *One-Dimensionalism* play directly into the hands of radical cognitive, practical, and moral skeptics since as a matter of fact no actual rational human animal ever manages to meet *all* or even *most* of the *High-Bar* standards of rational normativity, but instead is doing extremely well indeed if she *ever* manages to meet *some* of them – e.g., successfully performing some basic authoritative a priori objectively necessarily true rational intuitions in mathematics, logic, or philosophy. How convenient for the radical skeptic, then, that most or all of us, most or all of

the time, turn out to be *irrational animals*. Perhaps even more disastrously, these results also play directly into the hands of “human, all too human” intentional agents looking for a fast track out of their everyday cognitive and practical difficulties in a thoroughly nonideal actual natural world. How convenient for them that falling short of rational perfection should entail the suspension of responsibility: *If rationality – like God – is dead, then everything is permitted*, and they can take *the nihilist’s way out*, like the pathetically wicked character Smerdyakov in *The Brothers Karamazov*:

“Take that money away with you, sir,” Smerdyakov said with a sigh.

“Of course, I’ll take it! But why are you giving it to me if you committed a murder to get it?” Ivan asked, looking at him with intense surprise.

“I don’t want it at all,” Smerdyakov said in a shaking voice, with a wave of the hand. “I did have an idea of starting a new life in Moscow, but that was just a dream, sir, and mostly because ‘everything is permitted’. This you did teach me, sir, for you talked to me a lot about such things: for if there’s no everlasting God, there’s no such thing as virtue, and there’s no need of it at all.

Yes, sir, you were right about that. That’s the way I reasoned.”<sup>11</sup>

For these reasons, it is clear that One-Dimensional theories of rational normativity are false.

On The Two-Dimensional theory, however, things are very different. Satisfaction of the conditions for Low-Bar rational normativity is a necessary and sufficient condition of the cognitive, practical, and moral *responsibility* of intentional agents, but it does not guarantee that any of the further conditions of High-Bar rational normativity are actually satisfied. In other words, it is fully possible for an intentional agent to be minimally and nonideally rational, but *in a bad or wrong way*, to any degree of badness or wrongness, all the way down to the lowest limiting case of *cognitive or practical monstrosity within its kind*, for all of which the intentional agent is also fully cognitively or practically responsible, and thus correspondingly blameworthy to any of those degrees, down to the limiting case. At the same time, it is also fully possible for an intentional agent to be minimally and nonideally rational *in a good or right way*, to any degree of goodness or rightness, all the way up to the highest limiting case of *cognitive or practical perfection within its kind* – e.g., successfully performing some basic authoritative a priori objectively necessarily true rational intuitions in mathematics, logic, or philosophy

– for all of which, again, the intentional agent is also fully cognitively and practically responsible, and thereby correspondingly praiseworthy to any of those degrees, up to the limiting case.

### IV.3

As my discussion in sub-section IV.2 implies, explicitly situating categorical epistemology within the framework of Two-Dimensional rational normativity yields a *fourfold* classification of different, basic, normatively-graded kinds of cognition, when we recognize the notion of context-sensitive causal reliability, together with the fact that certain kinds of cognitive acts or states in non-human animals, and in non-rational human animals such as infants or unfortunate adult victims of various pathological cognitive conditions, fall short of Low Bar knowledge, yet still include factive belief, truth, and a context-sensitive causally reliable cognitive mechanism for evidentially connecting factive belief with truth. More specifically, the larger Two-Dimensional framework that enframes categorical epistemology provides for a non-justificatory, non-reasons-sensitive, and distinctively different fourth kind of cognitive activity that I call *Proto-knowledge* or PK – which is similar in several basic ways to what Ernest Sosa calls “animal knowledge”<sup>12</sup> – to go along with mere Low-Bar knowledge or LBK, with context-sensitive causally reliable Low-Bar knowledge or LBK\*, and with High-Bar knowledge or HBK.

In what follows, by a *contingently reliable cognitive mechanism* I mean a cognitive mechanism that tracks truth *in the actual world*. The notion of a contingently reliable cognitive mechanism can then be put alongside the two notions of a context-sensitive causally reliable cognitive mechanism and an essentially reliable cognitive mechanism that I previously formulated. Granting all that, then, here are explicit formulations of the four basic kinds of cognition recognized by categorical epistemology:

- (i) **Proto-Knowledge (PK):** Belief B in an animal subject S is PK if and only if (ia) B is true, and (ii) S possesses a properly functioning and context-sensitive causally reliable cognitive mechanism that yields S’s conscious evidence E for B.
- (ii) **Low-Bar Knowledge (LBK):** Belief B in an animal subject S is LBK if and only if (iia) B is true, (iib) S possesses a properly functioning and at least contingently reliable cognitive mechanism that yields S’s conscious evidence E for B, and (iic) S has a reason for asserting B based on E, i.e., S has a Low-Bar justification for B.

- (iii) **Context-Sensitive Causally Reliable Low-Bar Knowledge (LBK\*):** Belief B in an animal subject S is LBK\* if and only if (iiia) B is true, (iiib) S possesses a properly functioning and context-sensitive causally reliable cognitive mechanism that yields S's conscious evidence E for B, and (iiic) S has a reason for asserting B based on E, i.e., S has a Low-Bar justification for B.
- (iv) **High-Bar Knowledge (HBK):** Belief B in an animal subject S is HBK if and only if (iva) B is true, (ivb) S possesses a properly functioning and essentially reliable cognitive mechanism that yields S's intrinsically compelling conscious evidence E for B, and (ivc) S has a sufficient reason for asserting B based on E, i.e., S has a High-Bar justification for B.

This fourfold classification of kinds of cognition combines elements of epistemic internalism, epistemic externalism, virtue epistemology, and contextualism<sup>13</sup> within the progressively larger frameworks of categorical epistemology and Two-Dimensional rational normativity, while also sustaining the classical thesis that knowledge is justified true belief. It should be specifically noted that although PK is context-sensitively causally reliable and thereby not subject to Gettier considerations – i.e., not subject to the possibility of a *merely* accidental or contingent connection between the evidence for the minimal rational warrant and the truth-maker of the belief – nevertheless PK is *not* reasons-sensitive, and so not “in the logical space of reasons,”<sup>14</sup> or subject to the constraints of rational normativity. So although PK is *knowledge-like*, and also constitutes a kind of reliable animal cognition, and although PK anticipates some necessary features of rational human knowledge in the normatively highest sense, it is nevertheless *pre-rational* and *pre-agential*, and therefore strictly speaking, PK is *not* a kind of knowledge.

At the same time, although LBK is indeed in “the logical space of reasons,” and thereby subject to the constraints of rational normativity, it is open both to Gettier considerations, and also to global skeptical worries: in some introspectively indistinguishable conceivably possible worlds the very same conscious-evidence-based reason for S's belief is connected to a falsity-maker, not a truth-maker.<sup>15</sup> Thus LBK falls well short of knowledge in the normatively highest sense. By sharp contrast to both PK and LBK, however, HBK is not only “in the logical space of reasons,” and thereby subject to the constraints of rational normativity, and both contingently and causally reliable, but also essentially reliable, as well as sufficiently justified by a conscious-evidence-based reason, via a properly-functioning cognitive capacity or mechanism,

and thereby impervious to Gettier worries and global or radical skepticism alike. Hence, again, HBK is the highest good or *summum bonum* of epistemology.

Now what about LBK\*? If S possesses LBK\*, then S possesses *context-sensitive causally reliable Low-Bar a posteriori knowledge*, which is a very good kind of knowledge to have, but at the same time LBK\* is without complete conviction, intrinsic compellingness, or self-evidence, and also without essential reliability. For one thing, just as with LBK, so too with LBK\*, in some introspectively indistinguishable conceivably possible worlds the very same conscious-evidence-based reason for S's belief is connected to a falsity-maker, not a truth-maker, which still leaves LBK\* open to radical or global skepticism. And for another thing, as I pointed out earlier in this section, because LBK\* does not necessarily include rational insight into the underlying structure of what connects S's conscious-evidence-based reason for believing to the truth-maker of her belief, her conscious-evidence-based reason for believing could be epistemically flawed in various ways, including greater or lesser irrelevance to the situation at hand, greater or lesser superficiality, greater or less triviality, or more or less obvious formal inconsistency with other beliefs she holds, and so-on. However, when I look at this sequence of strokes, i.e.,

|||||||

and thereby come to believe that there are seven strokes on the page, then I possess *High-Bar a posteriori knowledge*, because my evidence-based reason for believing that there are seven strokes on the page is inherently or intrinsically connected to the truth-maker for that belief via veridical, direct sense perception, which thereby constitutes an epistemically appropriate, properly-functioning cognitive capacity or mechanism, and the *cognitive phenomenology*<sup>16</sup> of my perceptual belief is also intrinsically compelling or self-evident.

By another important contrast, when a normal, healthy, minimally linguistically competent 3-year old child comes to believe that  $3+4=7$  by counting aloud on her fingers, which for her is at best a semi-reliable cognitive process and clearly not mathematical rational intuition, then she possesses *Low-Bar a priori knowledge*.

And by a final important contrast, in the now-familiar case in which I know that

$3+4=7$ , i.e., |||+||||=|||||||

via mathematical authoritative rational intuition, then I possess *High-Bar a priori knowledge*, which is the very best of all kinds of knowledge, even better than High-Bar a posteriori knowledge, and thus the jewel in the crown of the *summum bonum* of epistemology. But in order to explain all these cognitive-semantic facts, I will also need to give a detailed account of the a priori – a posteriori distinction.

#### IV.4

What is apriority? As I noted in sub-section I.1, in the first *Critique*, Kant says that

Although all our cognition commences **with** experience, yet it does not on that account all arise **from** experience.... It is therefore a question requiring closer investigation , and one not to be dismissed at first glance, whether there is any such cognition independent of all experience and even of all impressions of the senses. One calls such **cognitions a priori**, and distinguishes them from **empirical** ones, which have their sources *a posteriori*, namely in experience. (CPR B1–2)

Nevertheless, this text must also be juxtaposed with the text I quoted as the epigraph of this section, namely:

[W]e will understand by *a priori* cognitions not those that occur independently of this or that experience, but rather those that occur *absolutely* independently of all experience. Opposed to these are empirical cognitions, or those that are possible only *a posteriori*, i.e., through experience.... Experience teaches us, to be sure, that something is constituted thus and so, but not that it could not be otherwise. **First**, then, if a proposition is thought along with its **necessity**, then it is an *a priori* judgment;.... **Second**: Experience never gives its judgments true or strict but only assumed and comparative **universality** (through induction), so properly it must be said: as far as we have perceived, there is no exception to this or that rule. Thus if a judgment is thought in strict universality, i.e., in such a way that no exception is allowed to be possible, then it is not derived from experience, but is rather valid absolutely *a priori*.... Necessity and strict universality are therefore secure indicators (*Kennzeichen*) of an *a priori* cognition, and also belong together inseparably. But since in their use it is sometimes easier to show the empirical limitation

in judgments than contingency in them, or is often more plausible to show the unrestricted universality that we ascribe to a judgment than its necessity, it is advisable to employ separately these two criteria, each of which is infallible. (CPR B2–4)

I think that these two Kantian texts collectively express a deep twofold insight which explains how it can be true *both* that (1) “all our cognition commences **with** experience” and *also* that (2) there exist “*a priori* cognitions [which are] not those that occur independently of this or that experience, but rather those that occur *absolutely* independently of all experience.”

In what follows, by *empirical facts* I mean inner or outer sensory experiences and/or contingent natural objects or facts. Now let us take it as a given that necessarily, all human cognition begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. Then Kant’s deep twofold insight is, **first**, that apriority, or experience-independence, is *not* merely an epistemic notion, but also applies equally to semantic content, the truth/falsity of statements, and cognitive items of various kinds (e.g., cognitive faculties, the mental representations generated by them, and cognitive acts, states, or processes), and, **second**, that apriority, or experience-independence, is the *underdetermination* of the semantic content, truth/falsity, and/or justification of a mental representation *R*, of a cognitive faculty, act, state, or process *C*, or of a statement *S* by *any and all actual or possible empirical facts*, i.e., the *modal or strict* underdetermination of the semantic content, truth/falsity, and/or justification of *R*, *C*, or *S* by any and all empirical facts, or what is the same thing, *the failure of the strong supervenience of the semantic content, truth/falsity, and/or justification of R, C, or S on any and all empirical facts*. Or, to formulate the Kantian conception of apriority as a fairly simple slogan:

**Apriority = experience-independence = the modal or strict underdetermination of the semantic content, truth/falsity, and/or justification of *R*, *C*, or *S* by any and all empirical facts = the failure of the strong supervenience of the semantic content, truth, and justifiability of *R*, *C*, or *S* on any and all empirical facts.**

Just to be perfectly clear and explicit about a familiar idea, strong supervenience<sup>17</sup> is a strict determination-relation between sets of properties of different ontological “levels,” a relation that is weaker than strict property-identity, and is usually taken to be asymmetric, although

two-way or bilateral supervenience is also possible. But assuming for the purposes of simpler exposition that supervenience is asymmetric, then, more precisely, *B*-properties (= the higher-level properties) strongly supervene on *A*-properties (= the lower-level properties) if and only if

- (i) for any property *F* among the *A*-properties had by something *X*, *F* necessitates *X*'s also having property *G* among the *B*-properties (upwards necessitation),  
and
- (ii) there cannot be a change in any of *X*'s *B*-properties without a corresponding change in *X*'s *A*-properties (necessary co-variation).

It follows from strong supervenience that any two things *X* and *Y* share all their *A*-properties in common only if they share all their *B*-properties in common (indiscriminability). Facts are just actual or possible instantiations of properties. Hence strong supervenience for properties entails strong supervenience for facts, and failures of strong supervenience for properties correspondingly entails failures of strong supervenience for facts.

For the purposes of later discussion, it must be reemphasized that, according to the Kantian conception of apriority as the not-merely-epistemic modal or strict underdetermination of the semantic content, truth, and/or justification of *R*, *C*, or *S* by any and all empirical facts, **first**, it is fully acknowledged that

all human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts,

and **second**, it is perfectly possible for a statement *S* to be such that

- (i) *S*'s content must bear some non-trivial relation to empirical facts,
- (ii) the truth/falsity of *S* must be learned or confirmed by means of empirical facts, at least in part, and
- (iii) *S*'s belief-justification must be supported by sense-experiential evidence about empirical facts and established by experimental methods, at least in part,

and *also* a priori and necessary. Here are three (in my opinion) incontrovertible examples of a priori necessary truths such that their content must bear some relation to empirical facts, their truth must be learned



or confirmed by means of empirical facts, at least in part, and their belief-justification must be supported by sense-experiential evidence about empirical facts and established by experimental methods, at least in part:

It is not always true that it is the case that Socrates is mortal and also not the case that Socrates is mortal.

If Socrates is a bachelor, then Socrates is an unmarried male.

3 martinis + 4 martinis = 7 martinis, i.e.,

Y Y Y + Y Y Y Y = Y Y Y Y Y Y Y

Otherwise put, Kant's deep twofold insight is that there is no such thing as a priori cognition, mental representation, or knowledge that *altogether excludes* empirical facts, which yields a *minimal* Empiricism, but that it does *not* follow from this that any version of *maximal* Empiricism (say, classical Lockean-Humean Empiricism, or Quine's radical Empiricism) is true – i.e., that the semantic content, truth, and/or justification of all mental representations *R*; of all cognitive faculties, acts, states, or processes *C*; or of all statements *S*, are necessarily determined by, strongly supervenient on or, even more radically, reducible to empirical facts. That is clearly and simply a non sequitur.

Here is an objection to my contemporary Kantian thesis about the relationship between apriority, aposteriority, and strong supervenience.<sup>18</sup> Sometimes it is claimed that since necessary truths hold in every logically possible world, *then they logically strongly supervene on everything*, including of course some (or all) actual or possible sensory experiences and contingent facts. So since – at least for Kantians – necessity and the a priori are necessarily equivalent,<sup>19</sup> then the a priori *also* logically strongly supervenes on everything, including some (or all) actual or possible sensory experiences and contingent facts. This, in turn, would directly entail that the a priori is in fact *a posteriori* by my criterion of aposteriority. But I think that this objection is wrong for this reason.

Even if the *existence* of all necessary truths logically strongly supervened on everything, it would not follow that their *specific character* logically strongly supervened too. For although all *logically* necessary truths are necessarily equivalent, their *structural senses* are different in virtue of their inherently different logical forms. For example, “ $P \rightarrow P$ ” does not have the same structural sense as “ $P \vee \sim P$ ” because its logical form is inherently different. It is in virtue of *transformation* rules – e.g., De Morgan's Equivalences – that we are able to move with logical spontaneity from

one logical truth having a certain structural sense, to another logical truth having a distinct although necessarily equivalent structural sense. So their structural senses can, in a purely logical sense, spontaneously vary independently of their being logically necessarily true, and this intensional fact is made manifest by the application of transformation rules. In turn, therefore, their structural senses do not logically strongly supervene on whatever it is that their existence logically supervenes on, under the supposition that their existence logically strongly supervenes on everything. And that is true in every logically possible world: logically necessary truths with inherently different logical forms are all intensionally non-equivalent. So their specific character does not logically strongly supervene on *anything*, except of course on pure logic itself.

#### IV.5

Now the Kantian not-merely-epistemic modal or strict underdetermination conception of apriority that I have just sketched may initially seem, in relation to other classical, recent, or contemporary conceptions of the a priori, and especially in relation to contemporary conceptions, distressingly non-standard and even tendentious. But this is an *illusory* seeming, and here are two reasons why.

**First**, even though a large majority of contemporary philosophers both explicitly believe in the a priori – a posteriori distinction, and also presuppose and use it in their work – e.g., the fairly recent online *Philosophical Papers* survey of mainstream contemporary philosophers conducted by David Bourget and David Chalmers in November-December 2009 showed that 71 percent of the philosophers who replied accepted the existence of a priori knowledge<sup>20</sup> – very few of these philosophers have either formulated the distinction carefully, traced its philosophical history, examined it critically, or ever attempted to determine whether there is in fact a *single* version of the distinction, held by any of the classical, recent, or contemporary philosophers who believe in it and presuppose and use it in their work, that preserves *univocal, complementary, convertible, and jointly exhaustive conceptions of apriority and aposteriority*, in the two-part sense that

- (i) the underlying notion of experience-*independence* that is contained in the notion of apriority is adequately captured under complementation by the underlying notion of experience-*dependence* that is contained in the notion of aposteriority, and conversely,

- (ii) all knowledge whatsoever is either a priori or a posteriori but not both.

I will call this the superficiality problem.

Surprisingly, the superficiality problem holds even for those who have studied the a priori – a posteriori distinction most carefully and comprehensively, and want to defend it explicitly.<sup>21</sup> Even here, where several different versions of the distinction have been articulated and critically compared and contrasted, no one has been able to show that there is a single version of the distinction that preserves univocal, complementary, convertible, and jointly exhaustive conceptions of apriority and aposteriority.

Correspondingly and significantly, the same is true, *mutatis mutandis*, for those who criticize and reject the distinction. For example, Williamson regards the compatibility between apriority and empirical anchorage in human cognition as decisive evidence of the superficiality of the distinction between a priori and a posteriori knowledge as it is handled in much recent and contemporary work on the a priori.<sup>22</sup> I do fully agree that Williamson's argument shows the superficiality of the distinction as it is handled in much recent and contemporary work on the a priori. But at the same time, since Williamson has also selected for criticism what I regard as a philosophically flawed and indeed hopeless version of the distinction, it is not altogether surprising that he is able to prove that the superficiality problem applies to it.

**Second**, and following on directly from the first reason, I do think that in fact there are at least *eleven* importantly distinct versions of the a priori – a posteriori distinction that need to be carefully formulated, correlated to the most important traditions in the history of classical, recent, and contemporary philosophy, critically compared and contrasted with one another, and severally critically evaluated as to their intelligibility, defensibility, and truth, and, most importantly, as to their ability to avoid the superficiality problem. I make no claim whatsoever to completeness: my claims are only, first, that there are *at least* eleven importantly different versions of the distinction that need to be considered, and second, that only *one* of them withstands all the relevant criticisms, namely the Kantian not-merely-epistemic modal or strict underdetermination version.

What all this means, if I am correct, is that even though roughly 71 percent of contemporary philosophers accept the a priori – a posteriori distinction, very few of them *really* know what they are talking about when they believe in it, and presuppose and use it in their

work; so, in all likelihood, they are just talking past one another when they discuss it explicitly among themselves. More generally, if I am correct, then because the a priori – a posteriori distinction plays an essential role in the history of Analytic philosophy, and in recent and contemporary Analytic philosophy alike, this lack of close, critical attention to the distinction constitutes a philosophical scandal of epic proportions.

In order to remedy this scandalous situation somewhat, but also in order to support my claim that the Kantian not-merely-epistemic modal or strict underdetermination conception of the a priori – a posteriori distinction is the one and only version of the distinction that *should* be accepted by contemporary philosophers, both on historical and also independent philosophical grounds alike, I am now going to spell out these eleven versions, briefly indicate their provenance and sources in classical, recent, or contemporary philosophy, and then also briefly critically examine them, so that they can be critically compared, contrasted, and evaluated.

#### IV.6

In what follows in this sub-section, by *belief B contains empirical content* I mean that

- (i) B begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts,
- (ii) B involves some sort of learning process involving inner or outer sensory experiences and/or contingent natural objects or facts, and also
- (iii) B consciously refers to or describes inner or outer sensory experiences and/or contingent natural objects or facts – hence that B is not only *enabled by* but is also *conscious evidence for* empirical facts.<sup>23</sup>

#### **Conception 1: Classical Rationalism (e.g., Plato, Descartes, Leibniz<sup>24</sup>)**

According to **Conception 1 (C1)**,

- (1i) Belief B is a priori for a rational human subject S if and only if S rationally asserts<sup>25</sup> B, B is made true by abstract objects in *the platonic, noumenal* sense, and B contains no empirical content EC whatsoever,

- (1ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if S rationally asserts B, and B contains EC,
- (1iii) for every B, B is necessary if and only if B can be known a priori in sense (1i), and
- (1iv) there are some absolutely necessary a priori truths, e.g., mathematical truths, logical truths, and truths of metaphysics (e.g., “God exists and is not a deceiver”).

**Problems for C1:**

- (1) If it is true – as I think it most certainly is – that all human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts, then apriority in C1’s sense is clearly *humanly impossible*. For C1 says that rational human animals can and do have knowledge of non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert objects, without any empirical content whatsoever. But not only does this possibility falsely alienate the embodied subject of rational human cognition from her surrounding natural world, it is also plainly inconsistent with the obvious fact that human knowing is a conscious act, state, or process of mind,<sup>26</sup> and thereby a form of subjective experience.<sup>27</sup> Hence theories of a priori knowledge corresponding to C1 cannot be adequate theories of *human* a priori knowledge.
- (2) Theories of a priori knowledge corresponding to C1 cannot provide a positive solution to either The OBD, The EBD, or The GBD. This is principally because, although C1 can explain how a priori beliefs are necessary, and also how these beliefs can have necessary-truth-makers, nevertheless its doctrine of cognitive acquaintance or pre-established harmony with non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert *ante rem* Forms or Ideas, pure or separable essences, real essences, numbers, and other abstracta, is ultimately a metaphysical mystery.

**Conception 2: Classical Empiricism (e.g., Locke, Hume<sup>28</sup>)**

According to **Conception 2 (C2)**,

- (2i) B is a priori for S if and only if S rationally asserts B, and B is a “trifling proposition” or “relation of ideas,” i.e., a purely definitional or logical B,
- (2ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if S rationally asserts B, and B is a “matter of fact,” i.e., a B that contains EC, and is revisable,

- (2iii) for every B, B is necessary if and only if B can be known a priori in sense (2i), but then even though B contains EC, B is merely trivial or tautologous, and
- (2iv) for every other B, either (2iva) contains no EC and is nonsensical (e.g., metaphysical Bs), or else (2ivb) contains EC and is a matter of fact.

**Problems for C2:**

- (1) C2 does not explain how apriority reliably relates to truth, and therefore cannot explain the factive component in a priori knowledge. This is because there are no such things as *objective* truth-makers in a merely subjectively sense-experiential or merely subjectively phenomenal world.
- (2) Theories of a priori knowledge corresponding to C2 cannot provide a positive solution to either The OBD, The EBD, or The GBD. This is primarily because they cannot explain either how a priori beliefs are necessary or how these beliefs can have objective necessary-truth-makers, since there are obviously no such things as objective *necessary*-truth-makers in an exclusively and merely subjective sensory-experiential world in which there are no such things as *objective* truth-makers. It is open to defenders of C2 to reject the background thesis of The OBD, The EBD, and The GBD alike, to the effect that the semantics of truth is uniform and broadly Tarskian. Nevertheless the rejection of this thesis would entail at best a *negative* or *skeptical* solution to any version of The Dilemma, not a *positive* or *anti-skeptical* solution. And as I argued in sub-section II.3, there is a strong theoretical presumption in favor of a positive solution to The OBD (or indeed to any version of The Dilemma), other things being equal.
- (3) If Kant is correct, or I am correct, that there is synthetic a priori knowledge, i.e., a priori knowledge of non-logical, essentially non-conceptual, “strongly metaphysical,” *substantive* necessary truths whose necessity flows from the nature of things in the manifestly real world, then C2 is mistaken that all necessary truths are trivial or tautologous.

**Conception 3: Neo-Classical Rationalism (e.g., Frege, early Russell<sup>29</sup>)**

According to **Conception 3 (C3)**,

- (3i) B is a priori for S if and only if B is made true by abstract objects in the *platonic, noumenal sense*, and B contains EC that is sufficient for S to consider B, but not sufficient to prove B for S,

- (3ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if B contains EC that is not only sufficient for S to consider B, but also sufficient to prove B for S,
- (3iii) for every B, B is necessary if and only if B can be known a priori in sense (3i), and
- (3iv) there are some absolutely necessary a priori truths, e.g., analytic truths, including definitional truths and logical truths, and arithmetic truths – because Arithmetic Logicism (i.e., the ontological and explanatory reducibility of arithmetic to logic) is true.

### Problems for C3:

- (1) According to C3's conception of aposteriority, any necessary truth that can be proved via EC – e.g., “3 martinis + 4 martinis = 7 martinis,” which obviously can be proved by just my pointing to several martinis one-by-one, and adding them up – is a posteriori, but that is clearly false.
- (2) Theories of a priori knowledge corresponding to C3 cannot provide a positive solution to either The OBD, The EBD, or The GBD. This is mainly because, although C3 can explain how a priori beliefs are necessary and also how these beliefs can have necessary-truth-makers, nevertheless, just like C1, its doctrine of cognitive acquaintance with non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert mind-independent senses or *Sinne*, functions, classes or sets, universals, relations, logical constants, propositions, and other abstracta, is again ultimately a metaphysical mystery.
- (3) Arithmetic Logicism is arguably false, in view of (i) Kant's thesis that the truths of (at the very least, and in effect) Primitive Recursive Arithmetic or PRA are synthetic a priori, not analytic,<sup>30</sup> (ii) Russell's Paradox, which importantly stands in the way of a reduction of numbers to sets, (iii) Gödel's incompleteness theorems, which equally importantly stand in the way of a reduction of arithmetic truth to logical proof, (iv) Frege's failure to explain how logical definitions of number-theoretic notions are analytic and not synthetic,<sup>31</sup> and (iv) The Caesar Problem, which importantly stands in the way of any attempt to provide reductive or even sufficient identity-conditions for the natural numbers.<sup>32</sup>

### Conception 4: Logical Empiricism (e.g., C.I. Lewis, Carnap, Ayer<sup>33</sup>)

According to **Conception 4 (C4)**,

- (4i) B is a priori for S if and only if B is empirically indefeasible for S because, for some pragmatic reason R, S chooses/decides to assert

- (= creates by linguistic convention, or stipulates) the analyticity of B on the basis of R, no matter how EC presents B to S,
- (4ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if B is empirically defeasible for S (= B is synthetic a posteriori = B is contingent = B is revisable),
  - (4iii) for every B, B is necessary (= B is analytic) if and only if B can be known a priori in sense (4i), but then B also contains no EC and is merely trivial or tautologous,
  - (4iv) all meaningful Bs are either (4iva) analytic a priori, by virtue of meaning or logic, or (4ivb) synthetic a posteriori, by virtue of empirical fact and empirical verifiability (= The Verifiability Criterion of Meaning), and
  - (4v) there are no meaningful Bs that are synthetic a priori.

**Problems for C4:**

(1) C4 cannot explain how apriority reliably relates to truth, and therefore cannot explain the factive component in a priori knowledge, for two basic reasons. **First**, as Quine famously pointed out, the conventionalist/stipulationist theory of logical truth presupposes and uses *pre-conventional/pre-stipulated* logic, hence its “explanation” of logical truth in terms of linguistic conventions or stipulations plus logic is clearly circular.<sup>34</sup> **Second**, given the strict dependency of C4-style apriority on human interest and decision, then there is no sufficient reason why any randomly chosen, clearly crazy and false principles – e.g.,

The thought screen helmet scrambles telepathic communication between aliens and humans. Aliens cannot immobilize people wearing thought screens nor can they control their minds or communicate with them using their telepathy. When aliens can’t communicate or control humans, they do not take them,<sup>35</sup>

or

$3 + 4 \neq 7$ , except on rainy Tuesdays, when  $3 + 4 = 7$  all day long

– could not be a priori, provided that a sufficiently resolute believer or community of believers held those statements to be immune from empirical disconfirmation.

(2) Theories of a priori knowledge corresponding to C4 cannot provide a positive solution to either The OBD, The EBD, or The GBD. This is essentially because, like C2, C4, as a version of Empiricism, cannot explain either how a priori beliefs are objectively necessary or how these beliefs can have objective necessary-truth-makers since there are



no such things as either *objective* truth-makers or *necessary*-truth-makers in a subjectively sensory-experiential or phenomenal world. Again, it is open to defenders of C4 to reject the preliminary assumption of The OBD, to the effect that the semantics of truth is uniform and broadly Tarskian. But as a matter of historical fact all defenders of C4 *accept* that thesis, by appealing to a Tarskian and model theoretic, and even possible-worlds model theoretic, cognitive-semantic standpoint that is “internal” to conceptual schemes or language-systems. It is not at all clear how C4’s “internal” standpoint on conceptual schemes or languages, which is broadly Tarskian and model theoretic, can be made compatible with C4’s corresponding “external” standpoint on conceptual schemes and languages, which is fully pragmatic and anti-realistic.<sup>36</sup> But in any case, as with C2, the rejection of the Tarskian thesis by defenders of C4 would entail at best a negative or skeptical solution to The OBD, The EBD, or The GBD, not a positive or anti-skeptical solution – and as we have seen, there is a strong theoretical presumption in favor of positive solutions over negative solutions, other things being equal.

(3) Notoriously, The Verifiability Criterion of Meaning is neither analytic nor verifiable, and thereby deems itself meaningless. It is sometimes claimed that by means of “semantic ascent,” we can see that The Verifiability Criterion is a meta-linguistic thesis, not a first-order statement. But that only moves the worry about reflexive contradiction up one level: If The Revised Verifiability Criterion of Meaning is that all meaningful statements are either analytic, verifiable, or meta-linguistic, then since The Revised Verifiability Criterion is *meta*-meta-linguistic and neither analytic, nor verifiable, nor merely meta-linguistic, it deems itself meaningless, etc.

(4) C4’s version of the analytic – synthetic (A-S) distinction is false. Nevertheless, this is *not* because of Quine’s well-known critical arguments against the A-S distinction, but rather because of Kantian arguments for the specifically Kantian version of the distinction, which are equally critically effective not only against C4’s version of the distinction on the one hand, but also against Quine’s arguments against C4’s version of the distinction on the other.<sup>37</sup> For example, if Kant is correct that there is synthetic a priori knowledge of the truths of (at the very least, and in effect) Primitive Recursive Arithmetic or PRA, then just like C2, C4 is mistaken that all necessary truths are trivial or tautologous, and obviously also mistaken that there are no meaningful synthetic a priori beliefs.

**Conception 5: Radical Empiricism, a.k.a. Quineanism**  
(e.g., Quine<sup>38</sup>)

According to **Conception 5 (C5)**,

- (5i) B is a priori for S if and only if B is empirically indefeasible for S because, for some pragmatic reason R, S chooses/decides to assert B on the basis of R no matter how EC presents B to S,
- (5ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if B is empirically defeasible for S,
- (5iii) there are no Bs such that B is necessary (or analytic) if and only if B can be known a priori in sense (5i) because the analytic-synthetic distinction is unintelligible and/or indefensible,
- (5iv) belief-based confirmation holism and semantic holism are both true,
- (5v) every B is revisable (= every B is contingent), and
- (5vi) all knowledge is fully continuous with the natural sciences.

**Problems for C5:**

(1) Just like C4, C5 does not explain how apriority reliably relates to truth, and therefore cannot explain the factive component in a priori knowledge. This is primarily because, correspondingly, given the strict dependency of C5-style apriority on human interest and decision, there is no inherent reason why any randomly chosen, clearly crazy and false principles could not be a priori, provided that a sufficiently resolute believer or community of believers held those statements to be immune from empirical disconfirmation in a coherent holistic system, or “web,” of mutually reinforcing beliefs. To be sure, *Quine and his followers* prefer the methods of natural science, especially physics, but why should *anyone else with importantly different human interests* prefer this? As Quine himself famously points out,

For my part I do, qua lay physicist, believe in physical objects and not in Homer’s gods; and I consider it a scientific error to believe otherwise. But in point of epistemological footing the physical objects and the gods differ only in degree and not in kind. Both sorts of objects enter our conception only as cultural posits.<sup>39</sup>

So by Quine’s own reckoning, those who prefer the methods of natural science, like Quine himself, and those who prefer Homeric methods instead, are epistemologically on all fours. Or in other words, *anything goes*.

(2) C5 cannot provide a positive solution to either The OBD, The EBD, or The GBD. This is basically because, since C5 holds that every statement is revisable and that all knowledge is continuous with the natural sciences, it rejects the very idea of objectively necessary truth and objective necessary-truth-makers. At best, via “ontological relativity,” C5 can hold that certain kinds of abstract *objects* – say, linguistic types, numbers, or sets – are indispensable for natural science, insofar as its true statements either quantify over them or presuppose statements that quantify over them, but not that any of these abstracta are inherently or intrinsically *necessary*. As with C2 and C4, and their rejection of the basic Tarskian thesis, so too C5’s rejection of the *modal* Tarskian thesis entails at best a negative or skeptical solution to The OBD, The EBD, or The GBD, not a positive or anti-skeptical solution; and again there is a strong theoretical presumption in favor of a positive solution to any version of The Dilemma, other things being equal.

(3) Just as C4’s *version* of the analytic – synthetic distinction fails for essentially Kantian but not Quinean reasons, so too C5’s *rejection* of the A-S distinction fails for essentially Kantian reasons. But even if that were *not* so, as Grice and Strawson in the 1950s, and more recently Chalmers,<sup>40</sup> have pointed out, intelligible and at least somewhat defensible versions of the A-S and a priori – a posteriori distinctions are available that are fully consistent with Quine’s belief-based confirmation holism and semantic holism.

(4) C5’s Scientific Naturalism entails *Psychologism* about logic and mathematics, which says that the laws of logic and mathematics are explanatorily and ontologically reducible to empirical laws of nature, i.e., empirical laws of cognitive psychology, laws of fundamental biology, laws of fundamental chemistry, and ultimately laws of fundamental physics. But, arguably, Psychologism is self-refuting and therefore false.<sup>41</sup>

(5) The thesis that every B is revisable, when applied to itself, is self-refuting, and in any case it is clear that *not* every B is revisable, e.g., “Not every sentence or statement in any or every language or logical system whatsoever is both true and false,” i.e., “ $\sim (\forall S) (S \ \& \ \sim S)$ ,” i.e., **Minimal Non-Contradiction**, and truths of basic arithmetic, e.g., “ $3+4=7$ .”

### **Conception 6: Kripke-Putnamism (e.g., Kripke, Putnam<sup>42</sup>)**

According to **Conception 6 (C6)**,

- (6i) B is a priori for S if and only if S can know B in such a way that, even though S learns B via some or another EC, nevertheless no

- actual or possible EC is required for knowing B, and B is empirically infeasible for S (a.k.a. “epistemically necessary” for S),
- (6ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if S learns B via some or another EC and this EC is also required for knowing B, and
- (6iii) for some Bs, B is metaphysically necessary if and only if B can be known a priori in sense (6i), e.g., “ $\sim (\forall S) (S \ \& \ \sim S)$ ,” i.e., **Minimal Non-Contradiction**, and “ $3+4=7$ ,” but it is not the case that for every B, B is metaphysically necessary if and only if B can be known a priori in sense (6i), because (6iiia) there exist some metaphysically necessary a posteriori Bs, e.g., “Water = H<sub>2</sub>O,” “Hesperus = Phosphorus,” and Goldbach’s Conjecture, and/or some metaphysically contingent a priori Bs, e.g., “Stick S is one meter long at t<sub>0</sub>” and “Water is the watery stuff,” and (6iiib) some metaphysically necessary truths are unknowable by human cognizers.

### Problems for C6:

- (1) According to C6’s conception of aposteriority, any necessary truth that *must* be known via EC, e.g., “If Socrates is a bachelor, then Socrates is unmarried” and “If John and Paul are two, and George and Ringo are two, then they add up to four,” is a posteriori, but that seems clearly false.
- (2) Williamson has persuasively argued that the compatibility between apriority and empirical anchorage in human cognition is decisive evidence of the superficiality of C6’s distinction between a priori and a posteriori knowledge.<sup>43</sup>
- (3) C6 cannot solve either The OBD, The EBD, or The GBD. This is simply because C6 fully accepts all of the preliminary assumptions and basic reasoning of The OBD, The EBD, and The GBD, yet cannot reconcile them. More precisely, because C6 fully even if only implicitly accepts, **first**, that mathematical truth and logical truth involve abstract and causally inert truth-makers on the one hand (whether as a direct implication of the nature of metaphysical necessity, or as the result of an indispensability argument) and also that human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts on the other hand; and also fully even if only implicitly accepts, **second**, that it is necessary to rule out the possibility of cognitive-semantic luck on the one hand, and that the truth-makers of knowledge are either non-natural or natural on the other hand; and *also* fully even if only implicitly accepts, **third**, a broadly Cartesian,

property dualist, and essentialist epistemological and metaphysical framework, it cannot explain how all these theses could ever be compatible. In short, C6 is the paradigm case of a philosophical view that is subject to The OBD, The EBD, and The GBD.

- (4) It is plausibly arguable that, not only has it *not* been soundly demonstrated by Kripke that there are either metaphysically necessary a posteriori Bs or contingent a priori Bs,<sup>44</sup> but also there *really are no such things* as either metaphysically necessary a posteriori Bs or contingent a priori Bs.<sup>45</sup>

**Conception 7: Factualist Neo-Quineanism (e.g., Philip Kitcher<sup>46</sup>)**

According to **Conception 7 (C7)**,

- (7i) B is a priori for S if and only if no matter how EC presents B to S, S can rationally assert B, because some *non-naturalistic* human cognitive mechanism (e.g., “Kantian pure or a priori intuition”) exists for doing this,
- (7ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if EC presents B to S and S can rationally assert B because some *reliable naturalistic* human cognitive mechanism exists for doing this,
- (7iii) there are no Bs such that B can be known a priori in sense (7i), because there are no reliable non-naturalistic human cognitive mechanisms,
- (7iv) it is not the case that for every B, B is necessary if and only if B can be known a priori in sense (7i) because there exist contingent a priori Bs, and
- (7v) every B is revisable (= every B is contingent).

**Problems for C7:**

- (1) Like C4 and C5, C7 does not explain how apriority reliably relates to truth, and therefore cannot explain the factive component in a priori knowledge. In the case of C7, however, this is not due to the strict dependency of apriority on human interest and decision, but instead on the strict dependency of C7-style apriority on *unreliable* cognitive mechanisms.
- (2) The truth of the unreliability thesis, in turn, presupposes C7’s commitment to Scientific Naturalism in the Quinean sense, which, just like C5, entails Psychologism about logic and mathematics. But, again, arguably, Psychologism is self-refuting and therefore false.

- (3) C7 cannot solve either The OBD, The EBD, or The GBD. This is essentially because C7 rejects the preliminary assumption of The OBD to the effect that a priori mathematical knowledge requires abstract, causally inert truth-makers. Therefore C7 can provide at best a negative or skeptical solution to either The OBD, The EBD, or The GBD, and not a positive or anti-skeptical solution; and, yet again, there is a strong theoretical presumption in favor of a positive solution to any version of The Dilemma, other things being equal.
- (4) Just as in the case of C5, C7's thesis that every B is revisable, when applied to itself, is self-refuting, and again it is clear that *not* every B is revisable, e.g., "Not every sentence or statement in any or every language or logical system whatsoever is both true and false," i.e., " $\sim (\forall S) (S \ \& \ \sim S)$ ," i.e., **Minimal Non-Contradiction**, and truths of simple arithmetic, e.g., " $3+4=7$ ."

**Conception 8: Non-Factualist/Fictionalist Neo-Quineanism**  
(e.g., Hartry Field, Stephen Yablo<sup>47</sup>)

According to **Conception 8 (C8)**,

- (8i) B is a priori (as Field puts it, "in the strong sense of apriority") for S if and only if no matter how EC presents B to S, S can still rationally assert B (which, on its own, constitutes only "the weak sense of apriority") and B is empirically indefeasible for S (a.k.a. "epistemically necessary") because, for some pragmatic reason R, S chooses/decides to assert B on the basis of R no matter how EC presents B to S,
- (8ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if B is empirically defeasible for S,
- (8iii) all human knowledge is fundamentally either *evaluative* or *fictive* in that it fundamentally expresses human interests, value-commitments, games-playing, or other pretence-based practices, and not *factive*,
- (8iv) it is not the case that for any B, B is necessary if and only if B can be known a priori in sense (8i), because knowledge is non-factive or fictive and does not relate to necessary truth, and
- (8v) every B is revisable (= every B is contingent).

**Problems for C8:**

- (1) Because C8 is either *non-factualist* or *fictionalist*, it cannot explain the *factive* component in a priori knowledge, and therefore cannot explain how apriority reliably relates to truth.

- (2) Following on directly from the first problem, C8 cannot solve either The OBD, The EBD, or The GBD. This is because, as either non-factualist or fictionalist, C8 rejects the preliminary assumption of The OBD to the effect that, via a uniform, standard semantics for truth, a priori mathematical knowledge requires *objective truth-makers*. Therefore C8 can provide at best a negative or skeptical solution to either The OBD, The EBD, or The GBD, and not a positive or anti-skeptical solution – and yet again, there is a strong theoretical presumption in favor of a positive solution to any version of The Dilemma, other things being equal.
- (3) Just as in the case of C5 and C7, C8's thesis that every B is revisable, when applied to itself, is self-refuting, and yet again it is clear that *not* every B is revisable, e.g., **Minimal Non-Contradiction**: "Not every sentence or statement in any or every language or logical system whatsoever is both true and false," i.e., " $\sim (\forall S) (S \ \& \ \sim S)$ ," and truths of simple arithmetic, e.g., " $3+4=7$ ."

**Conception 9: Conceptualist Neo-Rationalism**  
(e.g., Boghossian, Brandom, Peacocke<sup>48</sup>)

According to **Conception 9 (C9)**,<sup>49</sup>

- (9i) B is a priori for S if and only if B is knowable by virtue of S's conceptual/discursive competence or concept-possession alone,
- (9ii) B is a posteriori for S if B is not a priori in sense (9i), i.e., if and only if B is not knowable by virtue of S's conceptual/discursive competence or concept-possession alone, but also requires EC,
- (9iii) Conceptualism (which holds that all representational content is strictly or necessarily determined by conceptual capacities alone) is true for a priori knowledge at the very least, and
- (9iv) conceptual role semantics and inferentialism are true for a priori knowledge at the very least.

**Problems for C9:**

- (1) Unless the natural world is either literally made out of concepts or else necessarily determined by concepts (= absolute idealism), or more specifically, unless it can be shown that all concepts *must* have referential semantic values just by virtue of their conceptual contents alone – which seems wholly unjustified,<sup>50</sup> again short of absolute idealism – then conceptual/discursive competence or concept-possession can systematically fail to connect either (a) with the

natural world as a whole or (b) with any or all of the “elusive” or “rogue” truth-making objects in the natural world that are cognitively accessible only by essentially non-conceptual means.<sup>51</sup> Hence, short of absolute idealism, C9 cannot explain how a priori knowledge reliably relates to truth.

- (2) Following on directly from the first problem, short of absolute Idealism, C9 cannot solve either The OBD, The EBD, or The GBD.
- (3) Conceptualism is arguably false for all kinds of cognition and knowledge.<sup>52</sup>
- (4) Conceptual role semantics and inferentialism are arguably false for a priori knowledge, at the very least.<sup>53</sup>

### Conception 10: Realistic Neo-Rationalism

(e.g., Bealer, Bonjour, Katz<sup>54</sup>)

According to **Conception 10 (C10)**,

- (10i) B is a priori for S if and only if S can know B in such a way that, even though S learns B via some or another EC, nevertheless no actual or possible EC is required for knowing B, and B is empirically infeasible for S (a.k.a. “epistemically necessary” for S), because B is made true by abstract objects in *the platonic, noumenal sense*, and B is also known by modal intuition, i.e., *a noninferential modal “intellectual seeming,”* involving conceptual competence with respect to, or concept-possession of, *semantically stable concepts and conceptually true propositions*, i.e., concepts and true propositions that apply across all qualitatively identical cognitive communities and are not undermined by Twin Earth scenarios,
- (10ii) B is a posteriori for S if and only if B is not a priori in sense (10i), i.e., if and only if S learns B via some or another EC and this EC is also required for knowing B, and
- (10iii) for some Bs, B is metaphysically necessary if and only if B can be known a priori in sense (10i), e.g., truths of logic, truths of mathematics, and truths of metaphysics, but it is not the case that for every B, B is metaphysically necessary if and only if B can be known a priori in sense (i), because (10iiia) there exist some metaphysically necessary a posteriori Bs, e.g., “Water = H<sub>2</sub>O” and “Hesperus = Phosphorus,” and/or some metaphysically contingent a priori Bs, e.g., “Stick S is one meter long at t<sub>0</sub>” and “Water is the watery stuff,” and (10iiib) some metaphysically necessary truths are unknowable by human cognizers.



**Problems for C10:**

- (1) According to C10, intuitions are noninferential modal “intellectual seemings,” but these provide at best *super-weak evidence* that is no better than *mere opinion*, precisely because, considered on their own, such seemings are cognitively indistinguishable from what might have been produced by a Cartesian evil demon, an epistemically malicious mad scientist, The Matrix, or a coherent hallucination or non-veridical dream: therefore they provide no minimally reliable or truth-indicating rational warrant for belief (see also sub-section V.2 below). What is supposed to guarantee the reliability of modal intuitions in this intellectual-seemings sense, according to C10, is the fact they can, under increasingly ideal conditions, be expressions of conceptual competence or concept-possession with respect to semantically stable concepts and conceptual truths. But, just like C9, unless the natural world is either literally made out of concepts or else necessarily determined by concepts (= absolute idealism), or more specifically, unless it can be shown that all concepts *must* have referential semantic values just by virtue of their conceptual contents alone – which seems fully unjustified, again short of absolute idealism – then C10’s version of conceptual/discursive competence or concept-possession can systematically fail to connect either (a) with the natural world as a whole or (b) with any or all of the “elusive” or “rogue” truth-making objects in the natural world that are cognitively accessible only by essentially non-conceptual means. Hence, just like C9, short of absolute idealism, C10 also cannot explain how a priori knowledge reliably relates to truth.
- (2) Following on directly from the first problem, just like C9, short of absolute Idealism, C10 cannot solve either The OBD, The EBD, or The GBD, especially in view of the *narrowly platonic and noumenal* conception of abstractness built into its realism about abstract objects, which, just like C1 and C3, makes it extremely difficult for C10 to explain how our knowledge of non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert objects is really possible.
- (3) Just like C6, according to C10’s conception of aposteriority, any necessary truth that must be known via EC, e.g., “If Socrates is a bachelor, then Socrates is unmarried” and “If John and Paul are two, and George and Ringo are two, then they add up to four” is a posteriori, but that seems clearly false.
- (4) As we saw above, Williamson has persuasively argued that the compatibility between apriority and empirical anchorage in human

cognition is decisive evidence of the superficiality of C6's distinction between a priori and a posteriori knowledge – and the same critical argument goes for C10's version of the distinction, *mutatis mutandis*.

- (5) Just like C6, C10 is also open to the critical argument that not only has it not been soundly demonstrated by Kripke that there are either metaphysically necessary a posteriori Bs or contingent a priori Bs, but also that there really are no such things as either metaphysically necessary a posteriori Bs or contingent a priori Bs.

### **Conception 11: Contemporary Kantian Neo-Rationalism (e.g., R.H.<sup>55</sup>)**

According to **Conception 11 (C11)**,

- (11i) B is a priori for S if and only if *even though* all human cognition begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts, and *even if* S learns B via some or another EC, and *even if* some actual or possible EC is required for knowing B, *nevertheless* neither the semantic content of B, nor the specific modal status of B (= whether B is necessarily true, necessarily false, contingently true, or contingently false), nor the general modal status of B (= whether B is necessary, contingent, or possible),<sup>56</sup> nor the justification of B, is necessarily determined by or strongly supervenient on EC, *because* B, which is made true by abstract objects in the non-platonic, Kantian sense *only*, is either non-inferentially known by or inferentially grounded on basic authoritative rational intuition (= an intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, self-conscious or reflective intentional cognitive performance in which S takes B to be necessarily true and a priori – see Section V below), and *because* the essentially reliable connection between B and the objective necessary-truth-maker of B is guaranteed by *weak or counterfactual transcendental idealism*, a.k.a. WCTI,
- (11ii) B is a posteriori for S if and only if B is not a priori, i.e., if and only if either the meaning of B, or the specific modal status of B, or the general modal status of B, or S's justification for B, is necessarily determined by or strongly supervenient on EC,
- (11iii) for every B, B is necessary if and only if B can be known a priori in sense (11i), because (11iiia) there really are no such things as either metaphysically necessary a posteriori Bs or contingent a

- priori Bs, and (11iii) there are no necessary Bs that are unknowable by rational human cognizers, and
- (11iv) not every B is revisable, because there are some absolutely necessary a priori truths, including (11iva) analytic truths, e.g., definitional truths, truths of monadic logic, and **Minimal Non-Contradiction** (a.k.a. “conceptual truths”) and (11ivb) synthetic a priori truths, e.g., truths of Primitive Recursive Arithmetic or PRA, truths of Peano Arithmetic or PA, logical truths of classical first-order non-monadic predicate logic, true essentialist identity statements, and philosophical truths yielded by transcendental arguments or transcendental explanations.

### Three Leading Theoretical Virtues of C11:

- (1) Unlike C1 through C10, C11, by virtue of its not-merely-epistemic modal or strict underdetermination conception of apriority, preserves univocal, complementary, convertible, and *jointly exhaustive* conceptions of apriority and aposteriority. For example, both Crispin Wright and Albert Casullo think that cognitive subjects can have a kind of “entitlement,” rational warrant, or justification for true beliefs that is not itself premised on conscious-evidence-based reasons whose cognitive source is either non-empirical or empirical – a thesis which, if true, entails that some knowledge is neither a priori nor a posteriori.<sup>57</sup> But if C11 is correct, then every putative example of such knowledge – Wright’s supposed case-in-point is our knowledge of basic laws of logic, but he might also have appealed to our knowledge of basic arithmetic, e.g., our knowledge of “3+4=7” – is, in fact, either non-inferentially known by or inferentially grounded on basic authoritative rational intuition, hence *modally or strictly underdetermined by any and all empirical facts* as to its fundamental semantic, alethic, cognitive, and justificatory features, and therefore clearly a priori in the sense of (11i). I will show this for the case of our knowledge of basic arithmetic in Section IX below, and also for the case of our knowledge of basic laws of logic in Section XI below. So C11 is not open to the problem of superficiality.
- (2) Unlike C1 though C10, C11 can explain how apriority essentially reliably relates to objectively necessary truth, and therefore can explain the factive component in High-Bar a priori knowledge, by appealing to its non-platonic, Kantian conception of abstractness, to basic authoritative rational intuition, and to WCTI.
- (3) In view of (2), unlike C1 though C10, C11 can adequately solve The OBD, The EBD, and The GBD alike by appealing to its non-platonic,

Kantian conception of abstractness, to basic authoritative rational intuition, and to WCTI. For confirmation of this claim, see Sections VIII, IX, X, and XI below.

Given these three leading theoretical virtues, it is clear that C11, and C11 alone, can adequately explain a priori knowledge. Therefore, C11 is arguably true.

#### IV.7

One obvious possible criticism of C11 is that if weak or counterfactual transcendental idealism, a.k.a. WCTI, is *false*, then C11's three leading theoretical virtues all come tumbling down like a house of cards. After all, I used the implicit commitment to *absolute* idealism as a critical defeater for C9 and C10. So what is so great about *transcendental* idealism? Indeed, a possible critic might rhetorically ask, after prefacing this with the contemporary Analytic philosopher's classic put-down, *the blank stare of incomprehension*:

“Isn't *every* version of idealism just crazy and philosophically indefensible?”

Before going on, then, I need to say more about TI in general and WCTI in particular.

According to Kant, a mental representation is *transcendental* when it is either part of, or derived from, our non-empirical (hence a priori) innately specified spontaneous cognitive capacities (CPR A11/B25) (*Prolegomena* 4: 373n.). Then transcendental idealism can be stated as a two-part philosophical equation: *Transcendental Idealism* =

(1) *Representational Transcendentalism* + (2) *Cognitive Idealism*.

- (1) **Representational Transcendentalism** = Necessarily, all the forms or structures of rational human cognition are generated a priori by the empirically-triggered, yet stimulus-underdetermined, activities of our innately specified spontaneous cognitive capacities (= cognitive competences, cognitive faculties, cognitive powers).
- (2) **Cognitive Idealism** = Necessarily, all the proper objects of rational human cognition are nothing but sensory appearances or phenomena (i.e., mind-dependent, spatiotemporal, directly perceivable, manifestly real objects) and never things-in-themselves or noumena (i.e., mind-independent, non-sensible, non-spatiotemporal,

real essences constituted by intrinsic non-relational properties) (CPR A369 and *Prologomena* 4: 293–294, 375).

Now (1) + (2) also = Kant's "Copernican revolution" in metaphysics:

Up to now it has been assumed that all our cognition must conform to the objects; but all attempts to find out something about them *a priori* through concepts that would extend our cognition have, on this presupposition, come to nothing. Hence let us once try whether we do not get farther with the problems of metaphysics by assuming that the objects must conform to our cognition, which would agree better with the requested possibility of an *a priori* cognition of them, which is to establish something about objects before they are given to us. This would be just like the first thoughts of Copernicus... (CPR Bxvi),

which I will rationally reconstruct as **The Conformity Thesis**:

It is *not* the case that rational human minds passively conform to the objects they cognize, as in classical Rationalism and classical Empiricism. On the contrary, necessarily, all the proper objects of rational human cognition conform to – i.e., they have the *same* form or structure as, or are *isomorphic* to – the forms or structures that are non-empirically generated by our innately specified spontaneous cognitive capacities. So necessarily, the essential forms or structures of the manifestly real world we cognize are *mind-dependent*.

In this way, all versions of TI hold that the manifestly real world we directly perceive conforms to the non-empirical forms or structures of our innately specified cognitive capacities *in some modally robust sense*. Many Kantians are also committed to *strong transcendental idealism*, a.k.a. STI, which says:

- (i) Things-in-themselves (a.k.a. "noumena," or Really Real things, i.e., things as they could exist in a "lonely" way, altogether independently of rational human minds or anything else, by virtue of their intrinsic non-relational properties) really exist and cause our perceptions, although rational human cognizers only ever perceive mere appearances or subjective phenomena.
- (ii) Rational human cognizers actually impose the non-empirical structures of their innate cognitive capacities onto the mani-

festly real world they cognize, i.e., necessarily, all the essential forms or structures of the proper objects of human cognition are literally *type-identical* to the a priori forms or structures that are non-empirically generated by our innately specified spontaneous cognitive capacities.

- (iii) Necessarily, if either all rational human cognizers went out of existence or all minded beings of any kind went out of existence, then so would the manifestly real world they cognize, and if either no rational human cognizers had ever existed or no minded beings of any kind had ever existed, then the manifestly real world would never have existed.

But some other Kantians think that Kant's STI is objectively false and are committed instead only to the objective truth of *weak or counterfactual transcendental idealism*, a.k.a. WCTI, which says:

- (i) Things-in-themselves/noumena are logically possible, but at the same time it is knowably unknowable and unprovable whether things-in-themselves/noumena exist or not, hence for the purposes of an adequate anthropocentric or "human-faced" metaphysics, epistemology, and ethics, they can be ignored (= ***radical agnosticism and methodological eliminativism about things-in-themselves/noumena***).
- (ii) Necessarily, all the proper objects of rational human cognition have the *same* forms or structures as – i.e., they are *isomorphic* to – the forms or structures that are non-empirically generated by our innately specified spontaneous cognitive capacities, but at the same time those manifestly real worldly forms or structures are *not* literally type-identical to those a priori cognitive forms or structures (= ***the isomorphism-without-type-identity thesis***).
- (iii) It is a necessary condition of the existence of the manifestly real world that if some rational human animals *were* to exist in that world, then they *would* veridically cognize that world, via either non-conceptual content or conceptual content, at least to some extent (= ***the counterfactual cognizability thesis***).
- (iv) The manifestly real world has at some earlier times existed without rational human minded animals, or any other minded beings, to cognize it veridically, and could exist even if no rational human minded animals, or any other minded beings, ever existed to cognize it veridically, even though some rational human animals now actually exist in that world – e.g., I (R.H.) now actually exist in the

manifestly real world – who do in fact cognize it veridically, at least to some extent (= *the existential thesis*).

Here is a slightly more precise formulation of WCTI's crucial thesis (iii), the counterfactual cognizability thesis:

$$\text{Syn Ap } \Box (\forall x) (\exists y) [\text{MRW}x \rightarrow \{(\text{RHA}y \ \& \ \text{MRW}y) \Box \rightarrow \text{VCy}x\}]$$

**Definitions:**

Syn Ap  $\Box$  = synthetically a priori necessarily

$P \Box \rightarrow Q$  = If P were the case, then Q would be the case

MRWx = x belongs to the manifestly real world

MRWy = y belongs to the manifestly real world

RHAy = y is a rational human animal

VCyx = y veridically cognizes x, at least to some extent = either y veridically cognizes x via non-conceptual content or y veridically cognizes x via conceptual content, at least to some extent

**Natural Language Translation:**

Synthetically a priori necessarily, anything that belongs to the manifestly real world is such that if some rational human animals *were* to exist in that world, then they *would* veridically cognize that thing, at least to some extent, via either non-conceptual content or conceptual content.

**Two Crucial Implications:**

- (1) The counterfactual cognizability thesis holds even if no rational human animals, or any other minded beings, actually exist, or ever existed.<sup>58</sup>
- (2) If anything is such that rational human animals are unable to cognize it veridically, via non-conceptual content or conceptual content, at least to some extent – e.g., things-in-themselves or noumena – then that thing does *not* belong to the manifestly real world.

Having stated WCTI as carefully as I can, there are at least two significant philosophical questions that can still be raised about it.

The **first** question is the *historical* philosophical question of whether Kant's own TI should be understood as STI or instead as WCTI. My own view on this question, for what it is worth, is that Kant himself simply *oscillated between* STI on the one hand and WCTI on the other hand. Some Kant-texts support one reading, and other Kant-texts support

the other reading. The Transcendental Aesthetic and the Analytic of Concepts in the first *Critique* mostly support the STI reading. But Kant's remarks about "empirical realism," the Refutation of Idealism, and the Analytic of Principles more generally (especially the Postulates of Empirical Thought), mostly support the WCTI reading.

The **second** question – and for me, the massively more important of the two questions – is the *objective* philosophical question of whether either STI or WCTI is in fact objectively true, or whether both are in fact objectively false. My own view on this question, again for what it is worth, is that STI is objectively *false*, whereas WCTI is objectively *true*. And here are my basic reasons for holding that STI is objectively false, and that WCTI is objectively true.

On the one hand, I think that it is clearly false that if either all actual human minds including mine, or all other kinds of minds, went out of existence, then the manifestly real world would necessarily go out of existence too. I think that it is clearly false that, e.g., the actual existence of Pike's Peak (a 14,000 foot mountain near Colorado Springs, CO, USA, with a cog railway that runs right to the summit<sup>59</sup>) strictly depends on the actual existence of human minds, including mine, or on the actual existence of any other kinds of minds. Clearly, I think, Pike's Peak *can* exist even if everyone, and every minded being, including myself, does not actually exist, and in fact I think that Pike's Peak *actually existed millions of years before any conscious minds of any kind existed*, including of course the conscious minds of all rational human animals, obviously including mine. In this way a great many things, including mountains like Pike's Peak, exist *objectively* – e.g., shoes, ships, sealing wax, cabbages, kings, seas that do not boil, and pigs without wings. They are, all of them, *neither* subjective (strictly dependent on individual minds of any kind) *nor* relative (strictly dependent on cultures or societies of any kind). They are all *moderately mind-independent*. So STI is clearly objectively false.

But on the other hand, I do also think that it is clearly objectively true that necessarily, if the manifestly real world were not veridically cognizable by some conscious rational animals like us, via either non-conceptual content or conceptual content, at least to some extent, then the manifestly real world would not exist. The manifestly real world, insofar as it now actually exists in its moderately mind-independent way, could not be such that *it is inherently impossible for rational human animals to cognize it veridically, at least to some extent*; and the manifestly real world, insofar as it now actually exists in its moderately mind-independent way, could not be such that *its actual existence renders our conscious rational animal*



*actual existence impossible*. How could that be the case, given the actual fact that the manifestly real world actually exists now in its moderately mind-independent state, given the other actual fact that we ourselves do actually exist now as rational human animals in the manifestly real world, and given the further actual fact that we do now directly, veridically perceive and recognize – and thereby veridically cognize via non-conceptual content, and also veridically cognize via conceptual content – some parts of the actual manifestly real world, e.g., our own living animal bodies in actual space and actual time?<sup>60</sup> Therefore, necessarily, the actual existence of the manifestly real world does not render our conscious rational human animal actual existence in that world impossible. On the contrary, the actual existence of the manifestly real world *renders our conscious rational human animal actual existence in that world necessarily possible*. Here, and now more explicitly, I am arguing in the following way, by using one empirical premise and two modal principles, in addition to the familiar classical logical principle of

**Existential Generalization:**

**Empirical premise:** I, R.H., a rational human animal, actually exist in the manifestly real world.

**Modal principle 1:** Actually P  $\rightarrow$  Possibly P

**Modal principle 2:** Possibly P  $\rightarrow$  Necessarily Possibly P (i.e., the characteristic modal axiom of S5).

- (1) I, R.H., a rational human animal, actually exist in the actual manifestly real world. (**Empirical premise**.)
- (2) Some rational human animals actually exist in the actual manifestly real world. (From (1), by **Existential Generalization**.)
- (3) Therefore, given the actual existence of the manifestly real world, some rational human animals actually exist in that world. (From (2).)
- (4) Whatever is actual is also possible. (Premise, from **Modal principle 1**.)
- (5) Therefore, given the actual existence of the manifestly real world, it is possible that some rational human animals actually exist in that world. (From (3) and (4).)
- (6) If anything is possible, then it is necessarily possible. (Premise, from **Modal principle 2**.)
- (7) Therefore, given the actual existence of the manifestly real world, it is necessarily possible that some rational human animals actually exist in that world. (From (5) and (6).) **QED**

This argument is sound whether, on the one hand, the modalities are logically, conceptually, “weakly metaphysically,” or analytically a priori necessary or possible, or on the other hand, they are non-logically, non-conceptually, “strongly metaphysically,” or synthetic a priori necessary or possible. For these reasons, then, I believe that STI is objectively false and that WCTI is objectively true.

In Sections VIII to XI, I will show, step-by-step, how Kantian Intuitionism and WCTI jointly solve The OBD, The EBD, and The GBD. But before I can do that, I need to discuss *the nature of intuitions* in some detail.

# V

## What Are Intuitions?

One apparently distinctive feature of current methodology in the broad tradition known as “analytic philosophy” is the appeal to *intuition*. Crude rationalists postulate a special knowledge-generating faculty of rational intuition. Crude empiricists regard “intuition” as an obscurantist term for folk prejudice, a psychological or social phenomenon that cannot legitimately constrain truth-directed inquiry. Linguistic or conceptual philosophers treat intuitions more sympathetically, as the deliverances of linguistic or conceptual competence.... [T]he common assumption of philosophical exceptionalism is false. Even the distinction between the *a priori* and the *a posteriori* turns out to obscure underlying similarities. Although there are real methodological differences between philosophy and the other sciences, as actually practiced, they are less deep than is often supposed. In particular, so-called intuitions are simply [armchair] judgments (or dispositions to [armchair] judgment); neither their content nor the cognitive basis on which they are made need be distinctively philosophical.

– T. Williamson<sup>1</sup>

Of course, we are not clueless on the factors relevant to our cognitive reliability. We know, for example, that the reliability of our eyesight suffers when it is too dark or too foggy, or when the object seen is too far or too small. We more easily introspect headaches than many of our attitudes or emotions. And we know that simple propositions of arithmetic, geometry, and logic are prime candidates for reliable intuition. The more systematic our knowledge of the conditions within which a

faculty is reliable, the better our epistemic perspective on that faculty, and the better our knowledge deriving from that faculty. These are matters of degree, however, and here intuition seems not inferior to introspection or perception.

– E. Sosa<sup>2</sup>

## V.1

Epistemic appeals to intuitions go at least as far back as Plato's *Republic* and *Seventh Letter* and Aristotle's *Nicomachean Ethics*, and can also be found in Descartes's *Rules for the Direction of the Mind* and *Meditations on First Philosophy*, and in Spinoza's *Ethics*, as well as in Leibniz's epistemological writings, in Kant's *Critique of Pure Reason* and his *Logic*, in Bolzano's *Theory of Science*, in Husserl's *Logical Investigations* and his later phenomenological writings, in Brentano's *Origin of the Knowledge of Right and Wrong*, in G.E. Moore's *Principia Ethica*, in Russell's *Problems of Philosophy*, in Brouwer's and Hilbert's writings on the foundations of mathematics, in W.D. Ross's *The Right and the Good*, in Kurt Gödel's later philosophically-oriented writings on the foundations of mathematics and logic, in Arthur Pap's *Semantics and Necessary Truth*, and also in the work of recent or contemporary post-Quinean epistemologists, post-Rawlsian ethicists, metaphysicians, and philosophers of language, logic, or mathematics, including Robert Audi, George Bealer, Lawrence Bonjour, Albert Casullo, Michael Huemer, Frances Kamm, Jerrold Katz, Saul Kripke, Derek Parfit, Charles Parsons, John Rawls, Ernest Sosa, and Judith Jarvis Thomson.

Obviously there are important differences between appeals to intuitions by classical Platonists and Aristotelians, classical Rationalists, Kantians, neo-Kantians, post-Kantians, post-Quineans, and post-Rawlsians. But formulated at a suitably high level of generality, here is the classical theory of intuitions shared by all (or at least most) of those philosophers:

- (1) an intuition is always a *rational* intuition, in that it directly expresses the operations of our innately specified and specifically rational cognitive capacities or cognitive competences, including self-consciousness, logical reasoning, mathematical reasoning, practical reasoning, linguistic understanding, judgment or propositional thinking, conceptualization, and the "productive imagination," i.e., mental modelling, mental diagramming, mental picturing, structural image construction, or schematization,

- (2) a rational intuition is a *non-inferential* rational cognition,
- (3) rational intuition can be either (3i) *rational intuition-that* some proposition *P* is (necessarily) true (and a priori), or (3ii) *rational intuition-of* special abstract or non-empirical objects of some sort,
- (4) rational intuition-that presupposes rational intuition-of, and
- (5) rational intuitions can sufficiently justify claims to objective a priori knowledge and also explain the cognitive acts, states, or processes by means of which objective a priori knowledge of necessary truth occurs.

According to the classical theory of intuitions, then, there are two different basic types of rational intuitions, namely

- (i) rational intuitions-*that*, which are non-inferential *propositional* cognitions aimed at objective a priori knowledge of necessary truth, and
- (ii) rational intuitions-*of*, which are non-inferential *directly referential* cognitions aimed at objective a priori knowledge of necessary truth.

This is the difference, e.g., between propositionally intuiting the necessarily true arithmetical statement that  $3+4=7$  via the cognitive construction and manipulation of a Hilbert-style stroke diagram for that proposition or statement, i.e.,

$$||| + |||| = |||||$$

and directly referentially intuiting the number 7 via a Hilbert-style stroke diagram for that number, i.e.,

$$|||||$$

It is also the difference between propositionally intuiting the necessarily true logical statement that it is not the case that every meaningful sentence or statement in any or every language or logical system whatsoever is both true and false, i.e., **Minimal Non-Contradiction**, via the cognitive construction and manipulation of a perspicuous formal translation of that proposition or statement into a standard system of logical symbols, i.e.,

$$\sim (\forall S) (S \ \& \ \sim S)$$

and directly referentially intuiting the logical constant Negation via a standard logical symbol for Negation such as the tilde, i.e.,

~

So the ultimate cognitive goals of rational intuitions-that and rational intuitions-of are the same – objective a priori knowledge of necessary truth – but both their immediate *intentional targets* and also their individuating *intentional contents* are importantly different.

Now rational intuitions-that can also be called *discursive* or *propositional* rational intuitions because, at the very least, they imply our joint possession of the cognitive capacities involved in *conceptualization* and *judgmental or propositional intentionality*, including self-consciousness in the sense of possessing a concept of oneself and the capacity to make psychological self-reports, logical reasoning, mathematical reasoning, practical reasoning, and also “reasons responsiveness” and “reasons seeking-ness” more generally.

By contrast, rational intuitions-of could also be called *non-conceptual* or *non-discursive*<sup>3</sup> rational intuitions because, independently of and even altogether apart from our capacity for discursivity, they imply our joint possession of the cognitive capacities involved in *directly referential cognition* generally, consciousness in the sense of pre-reflectively or non-self-consciously conscious embodied egocentric centering in space and time, and spatiotemporal cognition of all kinds, including minimal episodic memory,<sup>4</sup> the location of objects, the tracking of objects, representing events, representing motion, representing direction, representing orientation, and representing abstract spatial or temporal local displays, or global systems of spatial or temporal relations. Contemporary Kantians are particularly interested in non-conceptual or non-discursive rational intuitions, whether empirical or non-empirical, both in view of Kant’s own theory of empirical and pure or a priori spatial and temporal “intuitions” or *Anschauungen* in the Transcendental Aesthetic and in view of his spatiotemporal intuition-based philosophy of mathematics,<sup>5</sup> but also in view of his theory of the role of non-conceptual or non-discursive “productive imagination” or *produktive Einbildungskraft* in mathematical reasoning. Other philosophers in the intuitionist tradition like Plato, Descartes, Russell, Husserl, Brouwer, Hilbert, and Parsons have also talked about what I am calling “non-conceptual or non-discursive rational intuitions” under the rubrics of “acquaintance” (*Kennen*), “seeing essences” (*Wesensschau*), “insight” (*Einsicht*), “the perception of a move of time,” “immediate experience prior to all thought,” and so on.

Most recent and contemporary philosophers who are interested in rational intuitions have focused solely on discursive or propositional rational intuitions, and have either just neglected or else outright rejected non-conceptual or non-discursive rational intuitions. I think that this is an important mistake. But for the rest of this section and the next section as well, in order to keep things relatively simple, I will follow the lead of the majority and focus only on discursive or propositional rational intuitions. Rational intuitions-of, i.e., non-conceptual or non-discursive rational intuitions, will return, however, and play a co-starring role in Sections VIII–XI.

## V.2

In the early 1960s, rather like the contemporaneous craze for seeing UFOs, something strange also happened to the philosophical concept of an intuition. Jaakko Hintikka very accurately describes this socio-intellectual event:

Where does the current popularity of appeals to intuition come from? The timing of the great revival of intuitionist methodology gives us a clue to its causes. Before the early 1960s, you could scarcely find any overt references, let alone appeals, to intuitions in the pages of philosophical journals and books in the analytical tradition. After the mid-1960s, you will find intuitions playing a major role in the philosophical argumentation of virtually every article or book. Why the contrast? The answer is simple. Intuitions came into fashion in philosophy as a consequence of the popularity of Noam Chomsky's linguistics and its methodology. According to a widespread conception, generative linguists like Chomsky were accounting for competent speakers' intuitions of grammaticality by devising a grammar, that is, a set of generative rules that produces all and only such strings that are intuitively accepted by these speakers. This kind of methodology was made attractive by the tremendous perceived success of Chomsky's theories in the 1960s and 1970s. Not only was transformational grammar the *dernier cri* in linguistics, it was seen as a major revolution in the study of language. What is more, it was taken to provide a methodological paradigm of what can be done in those fields where the subject matter involves the tools of human thought and cognition. The use of intuitions in philosophical argumentation thus originated from philosophers' attempt to get on the bandwagon of transformational grammar.<sup>6</sup>

Still riding on this post-early-60s Chomskyan bandwagon, according to many contemporary epistemologists, intuitions are either “intellectual seemings”<sup>7</sup> i.e., non-inferential, sense-perception-like, self-conscious, *sui generis* propositional attitudes in which we are *appeared-to or presented-to intellectually*, or else “armchair judgments,” i.e., spontaneous, unreflective, pre-theoretical conscious non-inferential, or non-conscious inferential, uncalibrated or untested judgments (or dispositions so to judge) about thought experiments and actual-world topics of actual or possible concern to philosophers,<sup>8</sup> perhaps with a further minimal requirement that these topics be “abstract.”<sup>9</sup> Nowadays, as we have already seen in Part 1, these two views about intuitions are called, respectively, the *sui generis* view and the *doxastic* view.

But on my view, rational intuitions are *not* intellectual seemings, for three reasons. **First**, the very idea of an intellectual seeming falsely assimilates the *conceptual* and *propositional* content of rational a priori cognitions to the *perceptual* content of empirical a posteriori cognitions. **Second**, the very idea of an intellectual seeming also falsely suggests that rational intuitions are *passive* mental states rather than *active* intentional performances for which we must take rational responsibility. And **third**, most importantly, intellectual seemings provide, at best, super-weak evidence that is no better than mere opinion, precisely because such seemings, considered on their own, are cognitively indistinguishable from what might have been produced by a Cartesian evil demon, an epistemically malicious mad scientist, The Matrix, or a coherent hallucination or non-veridical dream – therefore, they provide no minimally reliable or truth-indicating rational warrant for belief.

Furthermore, with respect to armchair judgments (or dispositions so to judge), it is precisely at this point that a fundamental error arises in the recent and contemporary epistemology of intuitions, as we have already implicitly seen in Chapter 1.2. Crucially, intuitions construed as armchair judgments are *nothing like* what classical epistemologists (e.g., Plato, Aristotle, Descartes, Leibniz, Kant, Bolzano, Brentano, Husserl, Moore, Russell, Brouwer, Hilbert, Ross, or Gödel) meant by their use of the term “intuitions.” No classical epistemologist ever held that there is anything epistemically special, or especially reliable, about ordinary unreflective or shoot-from-the-hip philosophical opinions, e.g., in introductory philosophy classes or more advanced courses or seminars, in the debating periods after conference presentations or departmental philosophy colloquia, or in hallway philosophical discussions, or in philosophical discussions in coffee shops or pubs, just as no classical epistemologist ever seriously thought that there is anything



epistemically special, or especially reliable, about ordinary unreflective or shoot-from-the-hip *mathematical* opinions or ordinary unreflective or shoot-from-the-hip *logical* opinions. Why would anyone ever think that any special mathematical or logical credence should be given to what people – all the way from undergraduate students, to graduate students, to professors, but also including amateur aficionados or casual discussants of mathematics and logic – spontaneously assert in mathematics classes or seminars and logic classes or seminars, or in other more or less formal or informal academic or non-academic settings, including coffee shops and pubs? Correspondingly, then, why should anyone ever think that any special philosophical credence should be given to what people – all the way from undergraduate students, to graduate students, to professors, but also including amateur aficionados or casual discussants of philosophy – spontaneously assert in philosophy classes or seminars, or in other more or less formal or informal academic or non-academic philosophical settings, including coffee shops and pubs?

In short, the armchair judgments, or doxastic, approach to intuitions *falsely assimilates and downgrades rational intuitions to ordinary unreflective or shoot-from-the-hip opinions*. No wonder, then, that contemporary intuition-skeptical empiricists “discover” that there is a problem about the reliability of philosophical intuitions, or “discover” that, contrary to widely-held methodological and meta-philosophical beliefs, philosophers do not *really* rely on intuitions as evidence either for philosophical theories or for any other significant claims.<sup>10</sup> That would be like “discovering” that there is a similar problem about the reliability of ordinary or unreflective shoot-from-the-hip mathematical or logical intuitions, or like “discovering” that mathematicians and logicians do not *really* rely on ordinary or unreflective shoot-from-the-hip mathematical or logical intuitions as evidence for significant mathematical or logical claims. *Of course* there is a problem. Yet it is nothing but *the problem of the reliability of ordinary unreflective or shoot-from-the-hip opinions about these matters*, and has essentially nothing to do with *the problem of the reliability of rational intuitions*, whether in mathematics, logic, or philosophy. And *of course*, mathematicians and logicians do not really rely on such intuitions as evidence. But that is simply because mathematicians and logicians *do not really rely on ordinary unreflective or shoot-from-the-hip opinions about significant mathematical and logical matters*, not because they do not really rely on *rational intuitions* as evidence for significant mathematical and logical claims.

As against either the intellectual seemings (a.k.a. *sui generis*) or the armchair judgments (a.k.a. doxastic) approach to intuitions, then,

according to my *Kantian neo-rationalist* account, intuitions are specifically *rational* intuitions in the classical sense, i.e., *non-inferential beliefs or thoughts, insofar as they are actively and self-consciously or reflectively conceptually adopted or taken as candidates for a priori necessary truth and knowledge*. In intentionally and responsibly performing a rational intuition, at least dispositionally or implicitly, we actively and self-consciously or reflectively conceptually present or take certain non-inferential beliefs or thoughts not merely as *true*, but also as *if-true-then-necessarily-true, and a priori*. Even more precisely, according to my Kantian neo-rationalist account, in intentionally and responsibly performing a rational intuition, at least dispositionally or implicitly, we actively and self-consciously or reflectively conceptually adopt or take certain non-inferential beliefs or thoughts as:

- (i) if-true-then-necessarily-true, hence modally or strictly underdetermined by or not strongly supervenient on any and all *empirical facts*, i.e., any and all sensory experiences and/or contingent natural objects or facts, hence semantically necessary and a priori,
- (ii) objectively knowable by means of our innately specified rational cognitive capacities or cognitive competences in a way that is modally or strictly underdetermined by or not strongly supervenient on any and all empirical facts, hence epistemically necessary and a priori, and
- (iii) inherently open to, or poised for, critical reflection.

Here are two follow-up comments on the Kantian neo-rationalist account, to forestall certain misunderstandings. **First**, it is sometimes said that accounts of intuition like the one I have just presented are “elitist,” on the dual grounds (i) that they “privilege” necessity, apriority, and critical reflectiveness, and (ii) that they are the sorts of mental activities that only serious mathematicians, logicians, philosophers, etc., ever engage in, not ordinary folks. But that objection merely *presupposes* the truth of either classical Lockean-Humean or radical Quinean Empiricism, and the thesis that intuitions are ordinary, unreflective, shot-from-the-hip opinions, and doubly begs the question. My view is just that *rational* intuitions are *not* such things, whatever other post-Chomskyan philosophers may want to call “intuitions,” and it is not “elitist” merely to *identify* a concept of intuition that is equally or even more classical, but *also* rationalist, and also distinct from some mainstream contemporary views since the 1960s. It is simply a fact about the history of philosophy, that from Plato to Descartes to Kant to Husserl to

Russell to Gödel to contemporary Kantian neo-rationalists, by “intuitions,” philosophers have meant *rational intuitions*. If this is “elitist,” then by the same token it is also “elitist” to distinguish *pure* mathematics from *applied* mathematics. But that is absurd and nothing but a tendentious misuse of the pejorative term “elitist.”

**Second**, by saying that the beliefs or thoughts targeted by rational intuitions are “non-inferential,” I do *not* mean that these beliefs or thoughts *cannot* be cognized or justified by means of arguments and inferences, or that they *cannot* be critically reflected upon, but instead only that, as occurrent intentional performances, they *need not* be cognized or justified by means of arguments and inferences in that very performance, and that they *need not* be critically reflected upon in that very intentional performance, and therefore still *can* be known without argumentative or inferential mediation, or without critical reflection, in that very intentional performance. Indeed, necessarily and at least in principle, rational intuitions inherently can *also* be cognized or justified by means of arguments and inferences, whether deductive, inductive, abductive (i.e., by inference to the best explanation), or transcendental (i.e., by inference to an a priori necessary presupposition of some statement, belief, or thought such that, synthetically a priori necessarily, *were* this a priori necessary presupposition to hold, then this statement, belief, or thought *would be* fully meaningful, true, and/or justified<sup>11</sup>), and also inherently can *also* be critically reflected upon.

So qualified, then, this general three-part Kantian neo-rationalist description of intuitions is intended to hold for all *rational intuitions* in mathematics, logic, and philosophy, but *not* for intellectual seemings or armchair judgments (or dispositions so to judge) in these domains.

Moreover, I think that there is also a crucial difference between

- (i) *authoritative rational intuitions*, which are rational intuitions that are intrinsically compelling or self-evident, via our properly-functioning cognitive capacities or mechanisms, and essentially reliable, i.e., non-accidentally or inherently connected to their necessary-truth-makers, that retain their maximal, thick factive epistemic value under critical reflection, and that we categorically ought to believe if we are to achieve the High-Bar standards of rational human normativity,
- (ii) *constructed rational intuitions*, which are rational intuitions that presuppose one or more authoritative intuitions as a generative basis, but also include some evidence that is context-sensitive, contingent, and partially empirical, partially holistic, and partially inferential, and not itself fully authoritative, which means that they possess a

middle-range and moderately thick factive epistemic value, under certain critical restrictions, i.e., *fairly reliable* rational intuitions, and (iii) *prima facie rational intuitions*, which are rational intuitions that we have some sort of minimal, thin conscious evidential warrant for, but can be discounted upon critical reflection, i.e., *defeasible/fairly unreliable* intuitions.

According to my account, then, authoritative rational intuitions are inherently robust under critical reflection, full-stop, i.e., without qualification, constructed rational intuitions are inherently robust under critical reflection if and only if some well-specified set of other things remains equal, i.e., inherently robust under critical reflection *ceteris paribus*, and merely *prima facie* rational intuitions are inherently non-robust under critical reflection.

So, e.g., my rational intuition that  $3+4 = 4+3$ , i.e.,

$$||| + |||| = |||| + |||$$

is authoritative and essentially reliable; my rational intuition that for all natural numbers  $x$  and  $y$ ,  $x+y = y+x$ , is constructed and fairly reliable; and my off-the-cuff rational intuition that 43,311 is a prime number is *prima facie* and *defeasible/fairly unreliable*. To be sure, the generative basis for my constructed rational intuition that for all natural numbers  $x$  and  $y$ ,  $x+y = y+x$ , includes a large set of basic authoritative rational intuitions such as my rational intuitions that  $1+1=1+1$ , that  $1+2=2+1$ , that  $1+3=3+1, \dots$ , i.e.,

$$| + | = | + |$$

$$| + || = || + |$$

$$| + ||| = ||| + |$$

etc.,

but it is also plainly true that neither my grasp of the concept of a natural number, nor my grasp of the structural system of the natural numbers, nor my grasp of the concept or structure of the commutativity of the operation of addition over the natural numbers, is *itself* basic authoritative.

In view of what I have just asserted, it is also important to note that authoritative rational intuitions can be either *basic* or *non-basic*. Basic

authoritative rational intuitions, as a class, are axiomatic or primitive premises in mathematical, logical, moral, or philosophical reasoning. But if a statement  $S_2$  follows immediately as a logical or mathematical consequence from a statement  $S_1$ , and statement  $S_1$  is (High-Bar) known by a basic authoritative rational intuition, then  $S_2$  is inferentially (High-Bar) knowable a priori by means of a non-basic logical or mathematical authoritative rational intuition of the following strict conditional statement  $S_3$ :

( $S_3$ ) Necessarily, if  $S_1$  then  $S_2$ .

So non-basic authoritative intuitions are rational intuitions of strict logical or mathematical conditionals with antecedents containing statements (High-Bar) known a priori by basic authoritative rational intuitions. In this way, then, non-basic authoritative rational intuitions are distinct from constructed rational intuitions, since non-basic authoritative rational intuitions are all logical or mathematical *authoritative* rational intuitions of strict conditionals grounded on basic authoritative rational intuitions of axiomatic premises in logical, mathematical, or philosophical reasoning, and as such, are *essentially* reliable, whereas constructed intuitions are authoritatively-grounded, but partially empirical, partially holistic, and partially inferential (hence only *relatively* non-inferential), and therefore do not depend on basic authoritative rational intuitions plus non-basic logical or mathematical authoritative rational intuitions *alone*, and as such, are only *fairly* reliable.

To summarize so far, then, I think that there are three significant theoretical advantages of my Kantian neo-rationalist account of intuitions as *rational intuitions*, with its three distinct types of rational intuition, over the intellectual seemings, or *sui generis*, and armchair judgments, or doxastic, approaches to intuitions. These are, **first**, that my account lays down some fairly clear standards for what will count as an “intuition” in the specifically *philosophical* sense of that much abused and misused term, **second**, that my account connects directly and relevantly with classical epistemology and its history, and **third**, that my account does not deploy an overly simplified *univocal* theory of intuition. There seems to be no good reason to hold *either*

- (i) that everything anyone casually or unreflectively calls an “intuition” (e.g., “I have an intuition that there is a big martini sitting on the kitchen table” or “I have an intuition that the next President after Obama’s second term will be a Democrat too”) is going to count as an intuition in the specifically philosophical sense, *or*

- (ii) that the recent or contemporary (ab)use of the term “intuition” by philosophers is in any way relevantly or significantly continuous with what the classical epistemologists were talking about, *or*
- (iii) that whatever we decide to call an “intuition” in the specifically philosophical sense must be of one kind only.

In this connection, it needs to be especially emphasized that according to my Kantian neo-rationalist account, *all three* kinds of rational intuition (i.e., authoritative, constructed, and prima facie) are, in a certain definite sense, *fallible*. By this I mean that all three kinds of rational intuition are such that their connection to the truth is *not analytically, conceptually, or logically necessitated*.<sup>12</sup> Candidates for being objective a priori necessary truth and knowledge are never, as a matter of analytic, conceptual, or logical necessity, automatically *elected* to the status of being objective a priori necessary truth and knowledge. All candidates for election can, as a matter of analytic, conceptual, or logical possibility, fall short.

In this way, Descartes was simply wrong about the infallibility of clear and distinct rational intuition, as is clearly and distinctly shown by his explicit appeal to the existence and non-deceitfulness of God as a required mediating principle between clear and distinct rational intuition on the one hand, and necessary truth on the other. If either God does not exist or, assuming even that God exists and is a perfect being, if deceit is compatible with God’s perfect nature as an omnipotent, omniscient, and omnibenevolent (a.k.a. “3-O”) being, then infallibility fails. But it *is* analytically, conceptually, and at the very least logically possible that God does not exist, and it is *also* analytically, conceptually, and at the very least logically possible that deceit is compatible with God’s 3-O nature. Contrary to what Descartes at least implicitly held, *it is not an analytic, conceptual, or logical truth* that God exists and is not a deceiver. Therefore, even given the fact of a clear and distinct rational intuition, neither its maximal, thick factive epistemic force nor its necessity-to-believe – which, when conjoined, yield its indubitability – itself *analytically, conceptually, or logically entails* either necessary truth or sufficient justification. Otherwise put, all authoritative rational intuitions analytically, conceptually, or logically *can* be false.

Nevertheless, even in this fully natural and “human, all too human,” hence thoroughly nonideal, world, authoritative rational intuitions *just are* objectively necessarily true and sufficiently justified a priori – e.g.,

$$3+4=7, \text{ i.e., } ||| + |||| = |||||$$

It is not the case that every sentence or statement in any or every language or logical system whatsoever is both true and false., i.e.,  $\sim (\forall S) (S \ \& \ \sim S)$ , a.k.a., **Minimal Non-Contradiction**

– which is as much as to say that for *authoritative* rational intuitions, the connection between justification and truth is infallible, precisely because the connection between such intuitions and the truth is *inherent and synthetic a priori*, but this connection is not infallible in *an analytic, conceptual, or logical sense*. *Analytic fallibilism* about rational intuitions generally and also about authoritative rational intuitions is not the same as *skepticism* about authoritative rational intuitions in particular, and therefore analytic fallibilism about rational intuitions generally and also about authoritative rational intuitions in particular is also fully compatible with *synthetic a priori infallibilism* about authoritative rational intuitions in particular. Intuitions, according to my Kantian neo-rationalist account, are therefore

- (i) *rational* intuitions, i.e., non-inferential beliefs or thoughts, generated in intentional performances by our innately specified rational cognitive capacities or competences, insofar as those beliefs or thoughts are, at least dispositionally or implicitly, actively and self-consciously or reflectively conceptually presented or taken as candidates for a priori knowledge of objectively necessary and a priori truth, where
- (ii) apriority, or experience-independence, is the modal or strict underdetermination of the semantic content, truth, and/or justification of a mental representation *R*, of a cognitive faculty, act, state, or process *C*, or of a statement *S* by any and all actual or possible empirical facts, i.e., the modal or strict underdetermination of the semantic content, truth, and/or justification of *R*, *C*, or *S* by any and all empirical facts, or what is the same thing, the failure of the strong supervenience of the semantic content, truth, and/or justification of *R*, *C*, or *S* on any and all empirical facts, where
- (iii) these rational intuitions can be either (iiia) authoritative (intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable), (iiib) constructed (authoritatively-grounded, but partially empirical, partially holistic, and partially inferential, hence only fairly reliable), or (iiic) prima facie (defeasible/fairly unreliable), and, if authoritative, then
- (iv) either (iva) basic (axiomatic or primitive) or (ivb) non-basic (derived), where
- (v) all rational intuitions of any kind, including authoritative rational intuitions, are *analytically fallible*, although
- (vi) authoritative rational intuitions are also *synthetic a priori infallible*, objectively necessarily true, and a priori.

# VI

## Rational Intuitions and the Irrelevance of Experimental Philosophy

Philosophical intuition ... is epistemologically useless, since it can be calibrated only when it is not needed. Once we are in a position to identify artifacts and errors in intuition, philosophy no longer has any use for it. Moreover, the most plausible account of the origins of philosophical intuitions is that they derive from tacit theories that are very likely to be inaccurate. There is a sense, then, in which philosophical intuitions can always be “explained away”: when a dispute arises, I can always, with some plausibility, suppose your intuitions are the artifacts of bad tacit theory. This is a game everyone can play, and I think we should all play it. We should, that is, dismiss philosophical intuitions as epistemologically valueless.

– R. Cummins<sup>1</sup>

So ought we trust intuitions in philosophy? The first part of my answer is: no, when the intuitions are participating in practices that are hopeless, lacking any substantive means of error-detection and error-correction; and yes, when the intuition is embedded in practices that are hopeful. The second part of my answer is to suggest that [philosophers’ appeal to intuitions] falls into the first of those categories and thus ought be considered untrustworthy. But some uses of intuition, including those about logic and math and about epistemic principles whose merits can be partially tested in the laboratory of the history of science, can reasonably be placed in the second category, and



we can trust them for establishing premises to use in our arguments – including (I hope!) my arguments here. In general, though, we can now see a way for the opponent to answer the question from the Sosa quote from section 1: “Can intuition enjoy relative to philosophy an evidential status analogous to that enjoyed by perception relative to empirical science?” The opponent may now reply, “No, for intuition, as philosophers tend to appeal to it, lacks the hopefulness that perception has in science (and, indeed, in our ordinary lives). Once we learn *how* to be careful with our philosophical intuitions – that is, when our practices have been rendered hope [redacted] – then we will have a successful analogy between [the philosopher’s appeal to intuition] and scientist[s’] appeals to perception.”

– J. Weinberg<sup>2</sup>

From Plato to the present, appeal to intuition has played a central role in philosophy. However, recent work in experimental philosophy has shown that in many cases intuition cannot be a reliable source of evidence for philosophical theories. Without careful empirical work, there is no way of knowing which intuitions are unreliable. Thus the venerable tradition that views philosophy as a largely a priori discipline that can be pursued from the armchair is untenable.

– S. Stich<sup>3</sup>

[U]nder dialectical pressure Experimental Philosophers have applied the term “philosophical intuition” so broadly that it fails to capture anything useful.

– T. Williamson<sup>4</sup>

## VI.1

Are intuitions epistemically reliable? So formulated, I think that there is *no philosophically relevant answer to this question*, precisely because the question radically underspecifies what is meant by the word “intuitions”. And, by direct implication, the very same thing goes, as Williamson has pointed out, for “philosophical intuitions” as it is used by Experimental Philosophers. But once we have stated carefully what we take intuitions to be, i.e., *rational* intuitions in the Kantian neo-rationalist sense I just spelled out in Section V, then it seems to me that there are at least four distinct views one could take about the reliability of intuitions in *this* sense:

- (i) Preservationism about Rational Intuitions, a.k.a. PARI,
- (ii) Radical Skepticism about Rational Intuitions, a.k.a. RSARI,
- (iii) Preservationism about Philosophical Rational Intuitions Specifically, a.k.a. PAPRIS, and
- (iv) Radical Skepticism about Philosophical Rational Intuitions Only, a.k.a. RSAPRIO.

PARI says that all rational intuitions are at least minimally reliable, and it also postulates a mutually exclusive categorization of all rational intuitions into the three sub-classes of

- (i) authoritative (i.e., intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, synthetic a priori infallible) rational intuitions,
- (ii) constructed (authoritatively-grounded, but partially empirical, partially holistic, partially inferential, hence only fairly reliable) rational intuitions, and
- (iii) prima facie (defeasible/fairly unreliable) rational intuitions,

and, correspondingly, it also holds that at least some rational intuitions in mathematics, logic, and philosophy are authoritative. RSARI says that all rational intuitions are completely unreliable and proposes the elimination of the very idea of a rational intuition. PAPRIS says that all specifically philosophical rational intuitions are at least minimally reliable, and it also postulates a mutually exclusive categorization of all specifically *philosophical* rational intuitions into the three sub-classes of

- (i) authoritative (i.e., intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, synthetic a priori infallible) *philosophical* rational intuitions,
- (ii) constructed (authoritatively-grounded, but partially empirical, partially holistic, and partially inferential, hence only fairly reliable) *philosophical* rational intuitions, and
- (iii) prima facie (defeasible/fairly unreliable) *philosophical* rational intuitions,

and, correspondingly, it also holds that at least some specifically *philosophical* rational intuitions are authoritative. Finally, RSAPRIO says that all and only philosophical rational intuitions are completely unreliable and proposes the elimination of the very idea of a philosophical rational intuition, but also accepts that at least *some* rational intuitions

in mathematics or logic are *somewhat* reliable, and possibly some rational intuitions in mathematics or logic are even *very* reliable.

Perhaps the most important thing to notice, again, about the way I have sliced things up, is that I have explicitly narrowed the focus of all these views about the reliability of intuitions to *rational intuitions in the Kantian neo-rationalist sense*. This means that issues about the reliability of intellectual seemings, as per the sui generis view, and armchair judgments (or dispositions so to judge), as per the doxastic view, as such, are essentially *not* relevant to this categorization, and indeed, if I am correct, essentially *not* relevant to the modal epistemology of rational intuitions in mathematics, logic, and philosophy. For the basic motivation that moves contemporary intuition-skeptical empiricists to defend either RSARI or RSAPRIO, is the actual fact that intellectual seemings and armchair judgments are all or mostly completely unreliable. But *that* actual fact is essentially irrelevant to the question of the reliability of rational intuitions in the Kantian neo-rationalist sense.

## VI.2

Experimental Philosophy, a.k.a. X-Phi, is the contemporary fusion of either classical Lockean-Humean Empiricism or radical Quinean Empiricism, Sellars's version of Scientific Naturalism, and/or Quine's version of Scientific Naturalism,<sup>5</sup> with the addition of the important fact that such philosophy always involves actually *doing* scientific experiments, and with a special (although not necessarily exclusive) focus on the study of "intuitions," in the sense of either "intellectual seemings" or "armchair judgments."<sup>6</sup> As such, all or at least most defenders of X-Phi explicitly or implicitly hold that

- (i) all human cognition and knowledge both begin in empirical facts and also derive from empirical facts, i.e., is necessarily determined by or strongly supervenient on empirical facts,
- (ii) natural science – and in particular, empirical scientific psychology (e.g., cognitive neuroscience), fundamental biology, fundamental chemistry, and fundamental physics – tells us the ultimate truth about the world and ourselves, and all facts are necessarily determined by or strongly supervenient on the fundamental biological, chemical, and physical facts,
- (iii) empirical scientific psychology (e.g., cognitive neuroscience) tells us the truth about human knowledge, and

- (iv) empirical scientific psychology (e.g., cognitive neuroscience) tells us the truth about all intuitions of any kind, including rational intuitions.

Granting me, for the current purposes of argument, my strategic narrowing of focus to rational intuitions in the Kantian neo-rationalist sense, as I spelled it out in Section V, then the leading proponents of X-Phi – e.g., Cummins, Gendler, Goldman, Knobe, Nichols, Stich, and Weinberg<sup>7</sup> – can *all* be classed as defenders of either RSARI or RSAPRIO. Sometimes it is difficult to know precisely which grade of radical skepticism is being defended. But for my purposes, it does not matter. As Cummins very accurately and bluntly puts the RSAPRIO thesis: “philosophical intuition ... is epistemologically useless.” In a slightly more guarded way, Stich says that “recent work in experimental philosophy has shown that in many cases intuition cannot be a reliable source of evidence for philosophical theories.” Weinberg’s philosophical rhetoric, as encoded in his influential paper’s title, “How to Challenge Intuitions Empirically Without Risking Skepticism,” suggests that his view is non-skeptical or at least non-radically skeptical. But it is clear enough from the text I quoted above that although he rejects RSARI, nevertheless just like the blunter Cummins and the slightly more careful Stich, Weinberg too holds RSAPRIO.

It should be particularly emphasized, re-emphasized, and even re-re-emphasized, *that I do not have any quarrels with the empirical scientific study of so-called “intuitions” as such.* Empirical scientific evidence about the nature of human cognition, or empirical scientific evidence concerning what philosophers or non-philosophers are actually doing cognitively when they produce non-inferential passive propositional pro-attitudes of all sorts, or spontaneous philosophical judgments, spontaneous moral judgments, spontaneous logical judgments, spontaneous mathematical judgments, etc. – i.e., when they produce ordinary unreflective or shoot-from-the-hip opinions on matters of interest to philosophers – or what they actually say in response to various kinds of questionnaires, under various kinds of experimental conditions, across a wide range of cultural and social contexts, is *always relevant to the philosophy of mind and knowledge, and always philosophically interesting and illuminating in its own right.* In those respects, X-Phi is *philosophically OK by me.*

But at the same time, I do have four serious worries about RSARI and RSAPRIO. And if these worries are cogent, then X-Phi, for all its philosophical OK-ness in certain respects, is nevertheless *essentially irrelevant*

to the modal epistemology of rational intuitions in the Kantian neo-rationalist sense.

**First**, in light of what I argued in Section V.2, the fact that it can be empirically shown that most people's, including most philosophers', reported intellectual seemings or armchair judgments are not reliable has no more direct bearing on the epistemic status and value of rational intuitions than the fact that it can be empirically shown that most people, including most philosophers, are not good at simple arithmetic, probability judgments, or logical deduction tests, has any sort of direct bearing on the epistemic status and value of arithmetic, probability theory, or logic.<sup>8</sup> After all, the fact that experimental findings show that most people, including most philosophers, are quite bad and unreliable at these cognitive tasks presupposes *that the experimenters already know what it is to be good and reliable at these cognitive tasks*. To conclude from these findings that "arithmetic intuitions are epistemologically useless," that "probability intuitions are epistemologically useless," or that "logical intuitions are epistemologically useless" obviously would completely overlook the experimenters' implicit and fundamental reliance on their own arithmetic intuitions, probability intuitions, and logical intuitions. After all, the epistemic buck stops *somewhere*. It would be like arguing from the all-too-obvious fact that most people are not good at living up to their own moral principles, to the conclusion that "moral intuitions are ethically useless." Moral rational intuitions deliver knowledge of *moral principles*, not context-sensitive *moral judgments*, and how could the most basic moral principles, e.g., the following moral principle, fail to be objectively necessarily true and (High-Bar) knowable a priori?

**Against Wanton Torture:** Torturing randomly-chosen, completely innocent people to death, for no good reason whatsoever, like the Nazis did, is impermissible no matter what the consequences.<sup>9</sup>

So just as in rational-intuition-based moral epistemology, the sharp difference between the categorical *ought* and the factual *is* is partially constitutive of the very idea of rational-intuition-based epistemology in mathematics, logic, and philosophy, not counter-evidence *against* it.

**Second**, and correspondingly, the sharp difference between the basic or non-basic authoritative rational intuitions we categorically ought to have and only sometimes do have, and the constructed and prima facie rational intuitions that we mostly actually do have, is partially constitutive of the very idea of rational intuition, not counter-evidence *against* the epistemic status and value of rational intuitions.

**Third**, if either RSARI and RSAPRIO were (High-Bar) known to be true, then *how* would they be (High-Bar) known to be true, *except* by means of authoritative philosophical rational intuitions? Neither RSARI nor RSAPRIO is itself an *empirical* claim. On the contrary, if they are (High-Bar) knowable at all, then they are necessarily true and a priori knowable. This is clear enough from the fact that both RSARI and RSAPRIO implicitly presuppose *minimal Empiricism*, the second preliminary assumption of The OBD:

All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts.

But minimal Empiricism, if true and known at all, is an objectively necessary truth that is known a priori by basic authoritative rational intuition. So it is clear that if RSARI or RSAPRIO are (High-Bar) knowable at all, then it must be by means of at least some basic authoritative rational intuitions. It then directly follows that RSARI and RSAPRIO are both a priori self-contradictory, and also rationally and strongly normatively self-stultifying. In the case of RSARI, how could the *epistemic* reliability of aprioristic human rationality be *radically* challenged or *definitively* rejected without presupposing the essential reliability of aprioristic *global skeptical* human rationality? And in the more special case of RSAPRIO, how could the epistemic reliability of aprioristic human *philosophical* rationality be radically challenged or definitively rejected without presupposing the essential reliability of aprioristic *anti-philosophical skeptical* human rationality? So RSARI and RSAPRIO are not only, in effect, cognitive suicide – they are categorically cognitively *impermissible*.

**Fourth** and finally, the most interesting and seemingly powerful argument in X-Phi's repertoire for either RSARI or RSAPRIO – Cummins's Dilemma of Calibrating Intuitions, or The DCI for short – is in fact clearly unsound.<sup>10</sup>

Here is Cummins's argument in a nutshell. To "calibrate" intuitions is to have an effective way of testing them for reliability, and all intuitions are in-principle so testable. The DCI then says that *either* (i) intuitions *can* be calibrated, in which case philosophers do not need to appeal to intuitions, *or else* (ii) intuitions *cannot* be calibrated, in which case philosophers should not appeal to intuitions. So no matter how you look at it, intuitions are "epistemologically useless."

But on the contrary, I think that The DCI is a *false* dilemma, and that correspondingly, Cummins's argument fails. This is because

Cummins – or anyhow other defenders of The DCI, even if not Cummins himself – makes at least eight unargued assumptions, each of which is also presupposed by The DCI, and each of which is independently plausibly challengeable:

- (i) There is one and only one kind of intuitions-that, i.e., discursive or propositional intuitions, and this single kind is either the class of intellectual seemings, as per the *sui generis* view, or the class of armchair judgments (or dispositions so to judge), as per the doxastic view [**the single kind assumption**].
- (ii) There is one and only one method of calibrating intuitions [**the single method assumption**].
- (iii) If *any* method of inquiry can calibrate intuitions, it must be a method belonging to the natural sciences [**the naturalistic assumption**].
- (iv) Natural science does not itself require calibration [**the no-fault-naturalism assumption**].
- (v) Intuitions cannot be used to calibrate other intuitions [**the no-meta-calibration assumption**].
- (vi) No intuitions are self-calibrating [**the no-reflexive-calibration assumption**].
- (vii) Intuitions are all cognitively generated by a distinct, encapsulated “intuition faculty” or “intuition module” [**the modularity assumption**].
- (viii) An epistemology of intuitions must be either Foundationalist or Coherentist, and there are no other intelligible options [**the Founderentist assumption**].<sup>11</sup>

Nevertheless, if what I have already argued is correct, and if what I will argue in the rest of Part 2 is also correct, then *all eight of these assumptions are false*.

As against assumption (i), **the single kind assumption**, if I am correct, then there are at least *three* mutually distinct classes or kinds of *rational* intuitions: namely, authoritative, constructed, and *prima facie*, and *none* of the authoritative or constructed rational intuitions are either intellectual seemings or armchair judgments. *Prima facie* rational intuitions are closest to intellectual seemings and armchair judgments, in their being evidentially defeasible/fairly unreliable as a class. But *even there*, *prima facie* rational intuitions are importantly different, since

- (i) intellectual seemings or armchair judgments are either *passive* or *unreflective* mental states, whereas prima facie rational intuitions are always, at least dispositionally, self-conscious or reflective a priori *intentional performances*, for which we must take *rational responsibility*, and for which we can be held rationally responsible, and
- (ii) intellectual seemings or armchair judgments can be, and often are, directed at merely *contingent a posteriori* truths, whereas prima facie rational intuitions are always intentionally directed at objectively *necessary and a priori* truths.

It is relevant to note here that many *contemporary enemies* of The DCI also hold **the single kind assumption**, e.g., Bealer, Huemer, and Sosa. So if it is plausibly arguable that **the single kind assumption** is false, then this suffices to refute both all the friends and also many of the contemporary enemies of The DCI.

It is also relevant to note here that *another* unargued assumption and presupposition of The DCI is that intuitions are *neither* already calibrated *nor* not in need of calibration. I will call this **the neither-nor assumption**. But I think that it is *not* plausibly arguable either that intuitions are already calibrated or that intuitions are not in need of calibration. This is obviously true of prima facie rational intuitions, since by hypothesis these are all fairly unreliable, hence they can be neither already calibrated nor not in need of calibration. But if one holds **the single kind assumption**, as many contemporary enemies of The DCI do, then it is *also* not plausibly arguable either that intuitions are already calibrated or that intuitions are not in need of calibration. For as I noted in Subsections IV.3 and V.2, intellectual seemings and armchair judgments (or dispositions so to judge) are, at best, *super-weakly justified* in that they are not *completely* open to radical skepticism, i.e., not *completely unreliable*. But since this epistemic status is just the status of *mere opinion*, which is perfectly consistent with Evil Demon scenarios, Matrix scenarios, and hallucinations or non-veridical dreams, and is not *truth-indicative*, merely *truth-consistent*, this on its own falls *far* short of showing that intellectual seemings and armchair judgments (or dispositions so to judge) are either already calibrated or not in need of calibration, since calibration is just *an effective test for reliability*, and no intellectual seemings or armchair judgments, *as such*, can claim either to be already effectively tested for reliability or not in need of an effective test for reliability. So, ironically enough for many contemporary enemies of The



DCI, **the neither-nor assumption** is an unargued assumption and presupposition to which The DCI *is* actually entitled.

As against assumption (ii), **the single method assumption**, if I am correct, then *rational* intuitions need to be calibrated by at least *three* co-basic and inherently complementary methods: namely, (1) authoritative rational intuitions in mathematics, logic, philosophy, morality, axiology, linguistics, semantics, etc., (2) direct, veridical sense perception, and (3) natural science.

As against assumption (iii), **the naturalistic assumption**, if I am correct, then (as I just implicitly asserted in the immediately preceding paragraph) natural science is only *one* of three co-basic and inherently complementary ways of calibrating rational intuitions, and also natural science is *not* an entirely independent way of calibrating, since it presupposes, at the very least, some basic authoritative rational intuitions in mathematics and logic, e.g., the mathematical rational intuition that

$$3+4=7, \text{ i.e., } ||| + |||| = |||||||$$

and the logical rational intuition that

it is not the case that every sentence or statement in any or every language or logical system whatsoever is both true and false., i.e.,  $\sim (\forall S) (S \ \& \ \sim S)$ , i.e., **Minimal Non-Contradiction**.

Natural science without basic arithmetic or minimal logical consistency would be either impossible full stop, or at the very least crazy and self-stultifying. And since both the mathematical rational intuition that

$$3+4=7, \text{ i.e., } ||| + |||| = |||||||$$

and also the logical rational intuition that

it is not the case that every sentence or statement in any or every language or logical system whatsoever is both true and false., i.e.,  $\sim (\forall S) (S \ \& \ \sim S)$ , i.e., **Minimal Non-Contradiction**,

require direct, veridical sense perceptions of *numeral tokens, arithmetic operation-sign tokens, stroke tokens, ordinary natural language symbol tokens, or logic symbol tokens* – or in a word, direct, veridical sense perceptions of *Hilbert's basic objects of finitistic mathematical reasoning* – then natural

science without direct, veridical sense perception would also be either impossible full stop, or at the very least crazy and self-stultifying.

As against assumption (iv), **the no-fault-naturalism assumption**, if I am correct, then natural science *itself* needs to be calibrated by, at the very least, some presupposed basic authoritative rational intuitions in mathematics and logic (see also Chapter 1.3 above), including the ones I just mentioned, and also by direct, veridical sense perception.

As against assumption (v), **the no-meta-calibration assumption**, if I am correct, then prima facie rational intuitions can be calibrated either by basic or non-basic authoritative rational intuitions, or by constructed rational intuitions, or by a combination of the two, in mathematics, logic, philosophy, morality, axiology, linguistics, semantics, etc., in necessary conjunction with direct, veridical sense perception and the natural sciences.

As against assumption (vi), **the no-reflexive-calibration assumption**, if I am correct, then basic authoritative rational intuitions, such as the ones cited above, by virtue of the specific modal character of their internal justificational structure, together with their non-accidental or necessary connections to their necessary-truth-makers, via properly-functioning cognitive mechanisms, constitute intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, synthetic a priori infallible, absolutely skepticism-resistant a priori knowledge, and are thereby *self-calibrating*. Some *other* examples of these self-calibrating rational intuitions are the philosophical rational intuition that truth is uniform and broadly Tarskian, the philosophical rational intuition that all human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception, and the philosophical rational intuition (which will play an extremely important role in the next section) that at least some of the truths of Primitive Recursive Arithmetic, a.k.a. PRA, are (High-Bar) knowable a priori by basic authoritative rational intuitions on the basis of Hilbert-style basic objects of finitistic mathematical reasoning, i.e., on the basis of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, diagrams, structural imagery, or schemata. Such self-calibrating rational intuitions are *also* fully confirmed by direct, veridical sense perception and by the natural sciences alike.

As against assumption (vii), **the modularity assumption**, if I am correct, then rational intuitions in the Kantian neo-rationalist sense are in fact generated by the complete “central” or “global,” and thereby *non-modular*, innately specified human cognitive capacity or cognitive

competence for non-instrumental or categorically normative theoretical or practical *rationality*, involving all of the other basic or non-basic innately specified human cognitive capacities or cognitive competences, including consciousness, self-consciousness or reflection, sense perception, memory, imagination, conceptualization, non-conceptual cognition, judgment, and inference.

Finally, as against assumption (viii), **the Founderist assumption**, if I am correct, then the best overall epistemological explanation of authoritative rational intuitions is neither Foundationalist nor Coherentist, but in fact *weak or counterfactual transcendental idealist*. Foundationalism says that knowledge is grounded solely on some non-normative primitive facts (a.k.a. “The Given,” as it occurs in Sellars’s “Myth of the Given”<sup>12</sup>), whether internal or external, that somehow fully justify corresponding foundational beliefs just by means of causing, or otherwise strictly determining, those beliefs. Coherentism says that knowledge is grounded solely on networks of consistency or entailment relations between beliefs. The classical problem with Foundationalism is that *non-normative* primitive facts cannot *normatively* support (i.e., justify, via reasons) beliefs, and the classical problem with Coherentism is that compatibility-relations and inferential networks on their own do not guarantee any sort of correspondence with the actual facts, i.e., they do not guarantee *truth*. By sharp contrast to Foundationalism and Coherentism alike, weak or counterfactual transcendental idealist epistemology says that (High-Bar) a priori knowledge is necessarily true a priori belief that is sufficiently justified by conscious evidence, delivered by properly-functioning cognitive mechanisms, that includes an intrinsic connection to necessary and a priori truth – a non-accidental or necessary connection that is inherently governed by categorically normative a priori theoretical and practical principles, and is also metaphysically guaranteed by the necessary conformity of the underlying formal or structural features of the manifestly real world to the underlying formal or structural features of the innately-specified cognitive faculties of rational human animals. Even if I am wrong that the weak or counterfactual transcendental idealist explanation of authoritative rational intuitions is the *best* overall epistemological explanation, nevertheless, I am still right that it constitutes a distinct and intelligible *third* kind of epistemological explanation which is fundamentally distinct from both Foundationalism and Coherentism.

Therefore, if I am correct about all of this, then The DCI is not a real dilemma at all, and furthermore whatever real epistemic issues are raised by it can plausibly arguably all be resolved in a way that entails the

denial of both RSARI and RSAPRIO, and also the essential irrelevance of X-Phi to the modal epistemology of rational intuitions, together with the denial of each of the unargued assumptions or presuppositions of The DCI that I have spelled out – with the sole exception of **the neither-nor assumption**, which I take to be true.

### VI.3

By way of summary and conclusion, here are the four main points I have been making in this section.

**First**, X-Phi is *not* irrelevant to philosophy as such. As a natural science-driven, classical or radical Empiricism-oriented study of intellectual seemings or armchair judgments, i.e., of non-inferential passive propositional pro-attitudes of all sorts, or spontaneous philosophical judgments, spontaneous moral judgments, spontaneous logical judgments, spontaneous mathematical judgments, etc., under various sorts of experimental conditions, and across a wide range of cultural and social contexts, then X-Phi is always relevant to the philosophy of mind and knowledge, and always interesting and illuminating in its own right.

**Second**, nevertheless X-Phi is just the natural science-driven, classical or radical Empiricism-oriented study of *passive or unreflective, shot-from-the-hip opinions*, for which cognitive subjects *need not take any rational responsibility*. That is, X-Phi is just natural science-driven, classical or radical Empiricism-oriented *doxology*, i.e., the theory of *opinions* and as it were, of *cognitive idle chatter* – not the theory of *knowledge*.

**Third**, because *doxology* (the theory of opinions) is not *epistemology* (the theory of knowledge, especially High-Bar knowledge), then X-Phi is categorically not the *modal epistemology of rational intuitions*. In other words, X-Phi is essentially irrelevant to the modal epistemology of rational intuitions.

**Fourth**, given the three points just described, and also given the manifest unsoundness of Cummins's Dilemma of Calibrating Intuitions, then not only Preservationism about Rational Intuitions, or PARI, but also Preservationism about Philosophical Rational Intuitions Specifically, or PAPRIS, are strongly warranted, at least as working hypotheses.

In the next section, I will provide a direct argument for the *falsity* of RSARI, RSAPRIO, and X-Phi alike, which, equally but oppositely, will also provide direct support for the truth of PARI and PAPRIS.

# VII

## Philosophical Intuitions, Scientific Naturalism, and The Mathematico-Centric Predicament

[H]ow does mathematical language function? Does it relate the world in the same ways as the language of natural science? What happens when human beings come to understand mathematical theories? How does mathematics work in various kinds of applications? And so on. To answer these questions, [the scientific-naturalist philosopher of mathematics] must face many of the metaphysician's concerns: do mathematical entities exist, and if so, what is the nature of that existence? Are mathematical claims true, and if so, how do humans come to know this? These are not detached, extra-scientific pseudo-questions, but straightforward components of our scientific study of human mathematical activity, itself part of our scientific investigation of the world around us.

– P. Maddy<sup>1</sup>

### VII.1

As I pointed out at the beginning of Section VI.2, Experimental Philosophy, a.k.a. X-Phi, is the contemporary fusion of either classical Lockean-Humean Empiricism or radical Quinean Empiricism, Sellars's Scientific Naturalism, and/or Quine's Scientific Naturalism, with the addition of the important fact that such philosophy always involves actu-

ally doing scientific experiments, and with a special (although not necessarily exclusive) focus on the study of “intuitions,” in the sense of either intellectual seemings, as per the *sui generis* view, or armchair judgments (or dispositions so to judge), as per the doxastic view. And as I also pointed out, as such, all defenders of X-Phi explicitly or implicitly hold that

- (i) all human cognition and knowledge both begin in empirical facts and also derive from empirical facts, i.e., is necessarily determined by or strongly supervenient on empirical facts,
- (ii) natural science – and in particular, empirical scientific psychology (e.g., cognitive neuroscience), fundamental biology, fundamental chemistry, and fundamental physics – tells us the ultimate truth about the world and ourselves, and all facts are necessarily determined by or strongly supervenient on the fundamental biological, chemical, and physical facts,
- (iii) empirical scientific psychology (e.g., cognitive neuroscience) tells us the truth about human knowledge, and
- (iv) empirical scientific psychology (e.g., cognitive neuroscience) tells us the truth about all intuitions of any kind, including rational intuitions.

In this section I will argue that (i) through (iv) are all false. Hence X-Phi is false too.

## VII.2

The two-part philosophical thesis that the natural sciences (and in particular cognitive neuroscience, fundamental biology, fundamental chemistry, and fundamental physics) adequately and truly explain everything in terms of functional (i.e., second-order physical, causal-operational or computational) properties and facts, fundamental biological properties and facts, fundamental chemical properties and facts, and fundamental physical properties and facts, and that all knowledge claims are adequately justified only to the extent that they are warranted by empirical evidence and by natural scientific methods alone, is *Scientific Naturalism*, which is most crisply and gnomically expressed by Sellars’s well-known slogan:

In the dimension of describing and explaining the world, science is the measure of all things, of what is that it is, and of what is not that it is not.<sup>2</sup>

X-Phi is clearly a sub-species of Scientific Naturalism – or even more specifically, X-Phi is clearly Scientific Naturalism *as* applied either to intuitions in general or to philosophical intuitions in particular, and *with* a robustly critical attitude towards them that is inherited directly from classical Lockean-Humean Empiricism or radical Quinean Empiricism.

X-Phi is also committed to Psychologism. By *Mathematical Psychologism*, I mean the thesis that mathematical laws and principles, mathematical computation, and mathematical knowledge are all adequately explained and justified by empirical scientific psychology, e.g., contemporary cognitive neuroscience. Mathematical Psychologism is directly entailed by Scientific Naturalism and also by X-Phi. The leading contemporary proponent of Mathematical Psychologism is Penelope Maddy,<sup>3</sup> and although (as far as I know) she is not *officially* a member of the X-Phi movement, she is certainly a fellow traveler.

Now consider the following item reported in *Newsweek* in February 2010:

Native Chinese speakers use a different region of the brain to do simple arithmetic (3 + 4) or decide which number is larger than native English speakers do, even though both use Arabic numerals. The Chinese use the circuits that process visual and spatial information and plan movements (the latter may be related to the use of the abacus). But English speakers use language circuits. It is as if the West conceives numbers as just words, but the East imbues them with symbolic, spatial freight. ... “One would think that neural processes involving basic mathematical computations are universal,” says [Tufts psychologist Nalinin] Ambady, but they “seem to be culture-specific.”<sup>4</sup>

What should we conclude from this? Here is what *I* would want to conclude:

Well-formed and sound mathematical computations in basic arithmetic, as performed by rational human animals, although universally and necessarily true and also objectively knowable a priori by basic authoritative mathematical rational intuition, as the result of the activities of our innately specified cognitive capacities or cognitive competences, are nevertheless multiply instantiated in, and are therefore not identical to, neural computational processes, which in some cases are culturally specific.

But here is what a proponent of Mathematical Psychologism<sup>5</sup> would argue:

The two kinds of psychological processes (roughly, Western mathematical cognition and Eastern mathematical cognition) are non-identical. In which case there would not be a single mental kind multiply realized (after all, the processing differs in important ways). Content properties of the neural vehicles can be shared (i.e., the neural structures can share content-constituting – say, causal – relations to objectively existing mathematical properties in the world); so, the naturalist can still have her mathematical realism. But, to the extent that these content properties are relational complexes individuated by their relata (some of which are the varying neural vehicles), the relational complexes as wholes are of distinct kinds in the two cases. Thus, beyond the mathematical properties themselves, there remains only one shared portion across cultures: the content-determining relations various neural structures bear to mathematical properties; and these relations are reducible – to patterns of causal relations, in the first instance. Problem solved.

In immediate reply to the Mathematical Psychologist, I would want to claim that Ockham's Razor – which says that the entities postulated by explanations and theories should not be multiplied without necessity – for a change favors the *non*-reductionist side of this debate, and also that it seems significantly more explanatorily economical to postulate one non-reducible mathematical human cognitive process-type (i.e., the process-type of consciously and self-consciously calculating that  $3 + 4 = 7$ ), drawing on one underlying innately-specified cognitive capacity or cognitive competence with two distinct culturally specific neurobiological instances, than to postulate two distinct mathematical human cognitive process-types, each of which is then physically reducible to a culturally specific brain process-type. That is not only pleasingly philosophically ironic, but also a point in favor of innatist, intuitionist Mathematical Anti-Psychologism: Given these interesting empirical data, innatist, intuitionist Mathematical Anti-Psychologism is a *simpler* theory than Mathematical Psychologism. In short, Ockham's Razor cuts *two ways*: sometimes towards the reductionist, and sometimes towards the non-reductionist.

Needless to say, Scientific Naturalists generally and Mathematical Psychologists in particular will not accept my thesis that sometimes non-reductionists have a better all-things-considered claim on the use



of Ockham's Razor than reductionists. In any case, quite apart from the somewhat controversial issue of how correctly to apply Ockham's Razor in philosophical explanations and theories, I also think that there is a much deeper problem here that Mathematical Psychologism needs to face up to, and, by implication, that both Scientific Naturalism in general and X-Phi in particular need to face up to, in view of the fact that all tokens of human cognitive process-types in basic arithmetic *are also constructive finitist proofs in Primitive Recursive Arithmetic*, a.k.a. PRA,<sup>6</sup> which in turn is a necessary proper part of Peano arithmetic, a.k.a. PA.

Here is what I mean by all that. Elementary arithmetic, or PA, is defined by the following five axioms:

- (1) 0 is a number,
- (2) the successor of any number is a number,
- (3) no two numbers have the same successor,
- (4) 0 is not the successor of any number, and
- (5) any property which belongs to 0, and also to the successor of every number which has the property, belongs to all numbers,

together with the primitive recursive functions. Primitive recursive functions are the basic calculations or basic operations over the natural numbers – the successor function, addition, multiplication, exponentiation, etc. More precisely then, PRA is the fundamental fragment of PA that contains the quantifier-free theory of the natural numbers and the primitive recursive functions. Or otherwise put, PRA is *basic arithmetic* properly embedded within *elementary arithmetic* or PA. PRA or basic arithmetic, in turn, is consistent, complete, sound, and decidable, and thereby has all the primitive “logical perfections” – sharply *unlike* PA or elementary arithmetic, which, as Gödel's incompleteness theorems show, is (i) consistent if and only if it is incomplete, and (ii) such that its ground of truth must lie outside of the system of PA itself.<sup>7</sup>

Granting that PRA is objectively necessarily true and has all the primitive “logical perfections,” then the much deeper problem for Mathematical Psychologism, Scientific Naturalism, and X-Phi alike is this. Consider the following basic authoritative *philosophical* rational intuition, which I will somewhat long-windedly call **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**:

At least some of the truths of PRA are actually known and also repeatedly knowable a priori by basic authoritative rational intuitions, via Hilbert-style basic objects of finitistic mathematical reasoning, i.e.,

via our cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata.

**The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**, in turn, captures a specifically Kantian intuitionist interpretation of William Tait's deeply important philosophical insight about finitism, which I have already quoted as the fifth epigraph of Part 2:

[A]lthough we cannot speak of the absolute security of finitism, there is a sense in which we can speak of its *indubitability*. That is, any nontrivial reasoning about number will presuppose finitist methods, and there can be no preferred or even equally preferable method from which to launch a critique of finitism. In other words, it is simply pointless to doubt it.<sup>8</sup>

Now in giving natural scientific explanations and justifications of any kind, including all explanations and justifications of mathematics – e.g., in Mathematical Psychologism, and X-Phi as applied to mathematical intellectual seemings or mathematical armchair judgments (or dispositions so to judge) – we actually presuppose and use mathematics, and in particular PA, especially including PRA. As a direct consequence of this circularity, it follows that *either*

- (1) mathematics, and in particular PA, especially including PRA, is just inexplicable and unjustifiable,  
*or*
- (2) we actually presuppose at least one basic authoritative philosophical intuition, namely **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**, which entails that mathematics and in particular PA, especially including PRA, is inexplicable and unjustifiable *by means of natural science alone*, and nevertheless *can* be adequately explained and justified, but *only* by appealing to properties that are not (merely) second-order physical (functional) properties or fundamental physical properties, to evidence that is not (merely) empirical, and to methods of inquiry that extend beyond those of the natural sciences, even though they also include those of the natural sciences: hence Scientific Naturalism, Mathematical Psychologism, RSARI, RSAPRIO, and X-Phi are all false.

I call this *The Mathematico-Centric Predicament* because it is relevantly similar to another important circularity problem in the philosophy of the formal sciences, first clearly articulated by the Harvard logician Harry Sheffer (discoverer of the Sheffer stroke-function), and now known as the problem of *The Logocentric Predicament*:

The attempt to formulate the foundations of logic is rendered arduous by a... “logocentric” predicament. In order to give an account of logic, we must presuppose and employ logic.<sup>9</sup>

Here is my slightly more explicit reformulation of Sheffer’s deep worry:

In order to explain or justify logic, logic must be presupposed and used. As a direct consequence of this circularity, it seems to follow that logic is inexplicable and unjustifiable.<sup>10</sup>

The Logocentric Predicament forces philosophers of logic to face up to the task of explaining and justifying logic. Correspondingly, The Mathematico-Centric Predicament forces defenders of Scientific Naturalism in general, Mathematical Psychologism more specifically, and X-Phi in particular to face up to the fact that it is pragmatically self-contradictory and rationally self-stultifying for them to attempt to explain and justify mathematics and in particular PA, especially including PRA, without *also* actually presupposing at least one basic authoritative philosophical intuition, i.e., **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**, thereby showing the falsity of Scientific Naturalism, Mathematical Psychologism, RSARI, RSAPRIO, and X-Phi alike.

It seems to me obvious that defenders of Scientific Naturalism, Mathematical Psychologism, and/or X-Phi will *not* want to hold that PA, especially including PRA, is inexplicable and unjustified. How could they plausibly claim that “ $3+4=7$ ” or any other part of PRA, is inexplicable or unjustified, in view of the fact that they are already actually presupposing and using PRA in their cognitive-neuroscientific or experimental attempts to explain and justify mathematics by means of the natural sciences?

I have just indicated the relevant similarity between The Mathematico-Centric Predicament and The Logocentric Predicament. But there is also a certain *dissimilarity* between them that is important, and needs to be made explicit. The Logocentric Predicament starts from the premise that in order to explain or justify logic, logic *must* be presupposed and

used. But I am *not* making a parallel claim about mathematics and in particular PA, especially including PRA. In principle, you could at least *try* to explain or justify mathematics without actually presupposing or using PA or PRA. You could at least *try* to explain or justify mathematics by using pure logic alone, without any appeal whatsoever to the primitive recursive functions. In particular, that would mean trying to explain or justify mathematics without any appeal whatsoever to *counting* or *enumeration*, including *equinumerosity*. You could not even appeal rationally to calculations by means of an abacus, your fingers, or Hilbert-style stroke diagrams. Even the most radical Logicians have never tried to do that. But it is not impossible to try. It is just *pragmatically self-contradictory* and *rationally self-stultifying*.

The Mathematio-Centric Predicament should also be carefully distinguished from the well-known Quine-Putnam *Indispensability Argument* for the existence of numbers and other mathematical entities.<sup>11</sup> This argument says that mathematics is *indispensable* for the natural sciences, and that therefore numbers and other mathematical entities *exist*. I am not arguing that mathematics and in particular PA, especially including PRA, is indispensable for the natural sciences, and that therefore mathematics must be presupposed and used, and I am not thereby arguing for the existence of numbers and other mathematical entities. The Indispensability Argument may or may not be sound, and in this book I am taking no stand on that. Indeed, there seems to be good reason to believe that the long and heated debate about The Indispensability Argument has unfruitfully diverted philosophers of mathematics into a three-forked cul de sac, with *indispensabilist platonists* ending up in one dead end, *dispensabilist nominalists* ending up in another, and *indispensabilist non-platonists* ending up in yet another. And presumably, someone could also consistently defend *dispensabilist platonism* and run the debate into yet another dead end, just by conceding dispensability and then proposing a different and more direct argument for platonism.

What I am arguing, by contrast, is that mathematics and in particular PA, especially including PRA, *is in fact presupposed and used in the actual current practice of the natural sciences*. No one could deny this. But since mathematics and in particular PA, especially including PRA, *is in fact* presupposed and used in the actual current practice of the natural sciences, then either this actual presupposing and using is inexplicable and unjustified, or else it presupposes at least some essentially reliable basic authoritative philosophical intuitions – e.g., **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic** – and thus it is explicable and justified only by something

beyond the natural sciences themselves, so that Scientific Naturalism, Mathematical Psychologism, RSARI, RSAPRIO, and X-Phi are all self-refutingly false. That is The Mathematico-Centric Predicament.

Moreover, it is also just a fact that primitive recursive functions are presupposed and used in the actual current practice of computability theory, via The Church-Turing Thesis, which says that effective decidability is the same as general recursiveness, and that all general recursive functions are Turing-computable.<sup>12</sup> That doctrine, in turn, is actually and highly successfully applied in the real-world construction of main-frame and desktop computers, laptop computers, the Internet, iPods, iPads, iPhones, other “smart” phones, regular cell or mobile phones, etc., etc., at least some of which, I am sure, are used on a daily basis by all contemporary Scientific Naturalists, Mathematical Psychologists, and Experimental Philosophers. So it is very hard to see how defenders of RSARI or RSAPRIO could ever provide an “error-theory” for our knowledge of PA and PRA without pragmatic self-contradiction and rational self-stultification – i.e., without committing *cognitive suicide*, and without doing something that is *categorically cognitively impermissible*.

In other words, I think that The Mathematico-Centric Predicament decisively shows that Scientific Naturalism, Mathematical Psychologism (as a sub-species of Scientific Naturalism), RSARI, RSAPRIO, and X-Phi (as a sub-species of Scientific Naturalism and Mathematical Psychologism alike) are all *false*, even despite the fact that X-Phi is always relevant to the philosophy of mind and knowledge, and also interesting and illuminating in its own right. But we must keep our attention focused on what is true, and not merely on what is relevant to some or another sub-part of philosophy, and in itself interesting and illuminating. Correspondingly then, and most importantly, I think that this five-part negative result collectively provides a sufficient reason for holding that not only Preservationism about Rational Intuitions, a.k.a. PARI, but also Preservationism about Philosophical Rational Intuitions Specifically, a.k.a. PAPRIS, *are* both true.

# VIII

## Kantian Structuralism

**Number**...is a representation that summarizes the successive addition of one homogenous unit to another. Number is therefore nothing other than the unity of the synthesis of the manifold of a homogeneous intuition in general, because I generate time itself in the apprehension of the intuition.

(CPR A142–3/B182)

Time provides a universal source of models for the numbers.... What would give time a special role in our concept of *number* which it does not have in general is not its necessity, since time is in some way necessary for all concepts, nor an explicit reference to time in numerical statements, which does not exist, but its sufficiency, because the temporal order provides a representative of the number which is present to our consciousness if any is present at all.

– C. Parsons<sup>1</sup>

### VIII.1

The key to achieving a positive or anti-skeptical, innatist, rational-intuitionist solution to The Original Benacerraf Dilemma, a.k.a. The OBD, I think, is precisely how one interprets step (4) in my reconstruction, which says:

(4) Given (1) and (3), our standard, uniform semantics of truth in natural language, as applied to true mathematical statements, commits us to a necessary-truth-making ontology of abstract mathematical objects and also to the non-empirical knowability of these statements.

It is *very* natural, and all-too-easy, to interpret the notion of “a necessary-truth-making ontology of abstract mathematical objects” in terms of classical platonism. Classical platonism about mathematics says that mathematical objects, which are the necessary-truth-makers of mathematical statements, have a mind-independent, substantial existence in a separate non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert realm, that these objects have intrinsic non-relational properties, and that the natures of these objects are strictly determined by their intrinsic non-relational properties, i.e., by their “real essences.” In short, classical platonism interprets mathematical objects as what Kant would have called *things-in-themselves* or *noumena* (CPR Bxx-xxii, A27–30/B44–5, A235–60/B295–315). To be sure, were Kantian things-in-themselves or noumena to exist, some of them – e.g., God and noumenal finite rational agents – would have absolutely spontaneous, non-spatiotemporal, essentially mysterious causal powers. But that is not true of, e.g., platonic Forms or Ideas. So although all platonically abstract entities are also things-in-themselves/noumena, and although all the properties of platonically abstract entities are found in all things-in-themselves/noumena, some of the properties of some things-in-themselves/noumena are not realized in every platonically abstract entity.<sup>2</sup> Platonic abstractness is therefore the broader or more inclusive ontic category.

This classical platonist interpretation of the necessary-truth-making ontology of abstract mathematical objects postulated in step (4), I think, is precisely *the snake in the Garden of Eden*, by which I mean that I think that this interpretation is precisely the false and vitiating assumption which leads inevitably to The OBD and to skepticism. The OBD’s problem about mathematical objects lies not in their *abstractness* as such, since that is precisely what prevents their being necessarily determined by, or strongly supervenient on, contingent natural objects and facts, and also guarantees the apriority and necessity of the necessarily true statements whose necessary-truth-makers they are: instead, the problem lies in their *causally irrelevant* and *noumenal* character, since that is what *ontologically alienates* them from the spacetime natural world of causally efficacious processes and conscious, cognizing animals. So I hereby reject the *noumenal ontology* of classical platonism, and along with it, I also reject *the platonic conception of abstractness*.

In place of platonic abstractness, as I mentioned in Section I above, I want to substitute *a non-platonic, Kantian conception of abstractness*, which says this:

*X* is abstract if and only if *X* is not uniquely located in actual spacetime, and *X* is concrete otherwise.

(By *X is uniquely located in actual spacetime*, I mean: *X* is exclusively located **at** and exclusively located **in**, and thereby occupies, one and only one actual spacetime volume.)

According to this non-platonic, Kantian conception of abstractness, whatever is *multiply located* is abstract, which seems fully plausible insofar as it captures one classical function of abstracta. Hence multiply realizable items, repeatable items, types as opposed to tokens, patterns of all kinds, structures of all kinds, and universals of all kinds, are abstract. In addition, according to this non-platonic, Kantian conception of abstractness, whatever is *non-actual* is abstract, which again seems fully plausible insofar as it captures another classical function of abstracta. Thus whatever is merely possible, fictional, counterfactually necessary, or in any other way necessary is also abstract. And finally according to this non-platonic, Kantian conception of abstractness, whatever is *non-spatiotemporal* is abstract, which yet again seems fully plausible insofar as it captures yet another classical function of abstracta. So, e.g., platonic abstracta, immortal souls or spirits, monads, and all the other sorts of things-in-themselves/noumena, *were* they to exist – which I think we must remain *radically agnostic* about, in that we know that we cannot know or prove whether they exist or not – *would* also all count as abstract.

Correspondingly, in one or another of these ways, according to any classical doctrine of the nature of God, including Spinoza's, were God to exist, then God would *also* count as abstract, which seems entirely plausible too, since construing God as *concrete* implausibly reduces God's transcendent nature to finite, material objects, properties, or facts.

As I also mentioned in Section I, it is to be especially noted that this non-platonic, Kantian conception of abstractness in fact *includes* the platonic conception of abstractness, under the special constraint of radical agnosticism about the existence or non-existence of platonic or noumenal abstracta, but it is also significantly *less restrictive* than the platonic conception, in that it includes the several classical functions of abstracta as *disjunctive* criteria for abstractness, not *conjunctive* criteria. It is thereby also *robustly non-dualistic*, because, e.g., the Equator (as multiply located) plausibly counts as abstract according to it, yet the Equator obviously still actually exists in the natural spacetime world, since I and many other people, vehicles, and non-human animals have crossed it. And it is thereby also *fully compatible with causal relevance*, since, e.g., functional organizations (say, computer programs or economic systems) all count as abstract according to it, and all such organizations, when implemented, are causally relevant, even if they are not themselves causally *efficacious*.



Granting me, then, *both* the rejection of the noumenal ontology of classical platonism and its needlessly restrictive and metaphysically mysterious platonic conception of abstractness, and *also* the latter's replacement by the much more open-textured, epistemically user-friendly, and metaphysically user-friendly non-platonic, Kantian conception of abstractness, as starting points, then my positive or anti-skeptical, innatist, intuition-based solution to BD, as I previewed it in Section II – has two parts:

- (1) Kantian Structuralism,  
and
- (2) Kantian Intuitionism.

In the rest of this section, I want to develop and defend Kantian Structuralism. Then I will go on to develop and defend Kantian Intuitionism in Section IX. In Section X, I will critically compare and contrast Kantian Structuralism and Kantian Intuitionism with Parsons's theory. In Section XI, I will work out a positive or anti-skeptical, innatist, rational-intuition-based solution to The Extended Benacerraf Dilemma, a.k.a. The EBD, and then generalize it to The Generalized Benacerraf Dilemma, a.k.a. The GBD. As I noted in sub-section I.3, my argument for the existence of basic authoritative *philosophical* rational intuitions, and also my explanation for how they are possible, jointly naturally emerge from the modal epistemology of rational intuitions in mathematics and logic. I will also unpack this argument explicitly in Section XI, and finally sum things up in Section XII.

## VIII.2

Mathematical Structuralism, as an explanatory metaphysical thesis in the philosophy of mathematics – defended, e.g., by Benacerraf himself,<sup>3</sup> by Michael Resnick,<sup>4</sup> by Stewart Shapiro,<sup>5</sup> and most recently by Parsons<sup>6</sup> – says that mathematical entities (e.g., numbers or sets) are not ontologically autonomous or substantially independent objects, but instead are, essentially, *positions* or *roles* in a mathematical structure, where a mathematical structure is a complete set of formal relations and operations that collectively define a mathematical system. What counts as an individual object of the system is thereby uniquely determined by the system as a whole – that is, any such individual object is identical to whatever possesses a specific set of intrinsic structural system-dependent properties. So every individual object of the system is essentially a role

in the relevant mathematical system, and thus metaphysically dependent, and indeed *strongly supervenient*, on the whole system.

Mathematical Structuralism yields two significant philosophical payoffs.

**First**, Mathematical Structuralism gets between *the rock* of platonism and *the hard place* of nominalism because according to Mathematical Structuralism mathematical objects are metaphysically absorbed into mathematical structures, hence they lack independent, substantial existence (contra platonism), and yet it is also not true that there are no mathematical objects (contra nominalism), since the objects continue to exist in a theoretically transformed way *as* positions or roles in the structure.

**Second**, because according to Mathematical Structuralism the mathematical objects, as embedded in the relevant mathematical structure, continue to have whatever metaphysical status the relevant embedding structure has, then there is no longer any serious metaphysical “identity problem” about precisely *which* objects should be identified with the natural numbers, since we look to the embedding structures and not to the objects themselves for any relevant metaphysical identity conditions.

In a way that is highly analogous to Functionalism in the philosophy of mind,<sup>7</sup> there are at least two distinct ways we can interpret Mathematical Structuralism. On the one hand, we can identify mathematical objects with *the roles* determined by the mathematical system as a whole. Or on the other hand, we can identify mathematical objects with *the role players* of the mathematical roles determined by the system as a whole. Which interpretation of Mathematical Structuralism should we accept?

In the analogous case of Functionalism in the philosophy of mind, I think that there is good reason to take the Role-Player interpretation seriously because we think that it is intuitively plausible to identify a mind with whatever it is that actually does all the causally efficacious things that cognitive systems are empirically known to do and not merely to identify it with the set of causally relevant abstract patterns or rules that actual cognitive systems follow or instantiate. If a mind were merely identical with a set of causal-functional *roles*, then it would be open to the classical inverted qualia argument, Searle’s Chinese Room argument, and Block’s Chinese Nation argument (a.k.a. “the absent qualia argument”),<sup>8</sup> not to mention the deeper worry that causal relevance does not entail causal efficacy,<sup>9</sup> which yields the unhappy result that even *the representational mind* would be epiphenomenal – i.e.,

supposedly real, over and above the first-order, fundamental properties of the physical world, yet also *causally inert* and to that extent, arguably, *unreal* – if the Roles interpretation were true.

Correspondingly, and now to use an everyday non-philosophical, non-scientific analogy, it seems clearly and distinctly right to say that an ice hockey player is a person who actually and in a causally efficacious way does all the things that hockey players are supposed to do, according to the rules of ice hockey – and obviously, a real hockey player is *not merely* the same as a set of causally relevant abstract rules that hockey players follow or instantiate.

So if we want minds to be *real causal players*, as it were, in physical nature, not to mention being *really capable of consciousness or subjective experience* in addition to mental representation or intentionality, then I think that we should defend a *dual* Roles interpretation *and* Role-Player interpretation of Functionalism, as opposed to a Roles interpretation alone or a Role-Player interpretation alone.<sup>10</sup> We should say that for *some* rational purposes, the mind should be identified with functional roles, and also that for *other* rational purposes, the mind should be identified with the role-players of the roles.

By analogy, then, and for essentially the same basic reasons, I will adopt a *dual* Roles interpretation *and* Role-Player interpretation of Mathematical Structuralism, as opposed to a Roles interpretation alone or a Role-Player interpretation alone. To be sure, we want the natural numbers to be identified for many rational purposes with their abstract roles in the denumerable infinitary mathematical structure of PA, i.e., elementary arithmetic, especially including the finitary sub-structure of PRA, i.e., basic arithmetic. But for other rational purposes we also want the unique, intended model (i.e., the one and only real truth-maker) of infinitary PA, especially including the finitary sub-structure of PRA, *to be consciously knowable according to a reasonable epistemology*, which is the direct analogue of an adequate response to the problem of qualitative conscious experience for the Roles interpretation of Functionalism.<sup>11</sup> And we also want natural numbers and true statements about natural numbers *to be applicable to the actual spacetime world*, which is the direct analogue of an adequate response to the problem of epiphenomenalism for the Roles interpretation of Functionalism.<sup>12</sup>

So as I see it, Mathematical Structuralism should hold that mathematical objects are essentially the same, for some rational purposes, as the roles in a given mathematical structure, and *also* essentially the same, for some other rational purposes, as the role players of the specific mathematical roles in a given mathematical structure, and *not*

*reducible* either to those roles themselves or to the role-players themselves. The roles tell us precisely what will count as the unique intended model of that non-platonic, Kantian abstract mathematical structure, but they neither exhaust the total nature of the mathematical objects nor do they eliminate the objects altogether. The mathematical objects are strongly superveniently determined by the non-platonic, Kantian abstract structure as regards the precise roles they play, but they are also something over and above the non-platonic, Kantian abstract structure as regards their role-player status. Different objects can play the same mathematical roles; the same objects can play different mathematical roles; and as a consequence, there is no intelligible worry whether the natural number 12 is the same as or different from the real number 12. This metaphysical dependency relation between non-platonic, Kantian abstract mathematical structures and mathematical objects in Mathematical Structuralism thereby provides a precise analogue of *natural or nomological* strong supervenience, as opposed to either “downwards type-type identity” or *logical* strong supervenience – i.e., in either case, reduction – in the philosophy of mind.

An important and secondary *meta*-philosophical pay-off of this way of thinking about Mathematical Structuralism is the theoretically fruitful recognition that *the philosophy of mind* and *the philosophy of mathematics* are not only *formally analogous* to one another in certain ways, but also *necessarily connected* to one another in certain ways, and indeed *ultimately connected* to one another, via weak or counterfactual transcendental idealism, a.k.a. WCTI.<sup>13</sup>

But the primary and *first-order* philosophical pay-off of this way of thinking about Mathematical Structuralism is its application to The OBD. The OBD clearly and distinctly shows us that we do *not* want numbers to be the kind of abstract entities that are non-spatiotemporal, non-natural, non-sensory, causally irrelevant, causally inert, unknowable things-in-themselves, and thereby wholly alienated from the actual spacetime world of concrete events, forces, processes, minds, bodies, and minded bodies, lest we render both necessary mathematical truth and human a priori knowledge impossible. Or otherwise and more positively put, The OBD clearly shows us that the abstractness of the numbers *must* somehow correlate directly and intrinsically with what is humanly consciously-knowable according to a reasonable epistemology. This is possible, I think, if (and indeed also only if) the abstractness of the numbers is *not* the noumenal, platonic abstractness of independent substances in an ontologically separated, causally irrelevant, causally inert, non-spatiotemporal, non-natural, non-sensory realm, but instead

nothing more and nothing less than the non-platonic, Kantian abstractness of *the roles* in a non-empirical or a priori humanly consciously-knowable, *cognitively-accessible* mathematical *structure*. More precisely, on this philosophical picture, the natural numbers are abstract because *they are essentially roles in a weakly or counterfactually transcendentally ideal mathematical structure*.

To say that the denumerable infinitary natural number structure provided by PA, especially including the finitary sub-structure of PRA, is weakly or counterfactually transcendentally ideal, is just to say that, synthetic a priori necessarily, to the extent that this mathematical structure *is* immanent in the manifest natural world, then *were* some rational human cognizers to exist in that world, they *would* directly and veridically cognize that structure, via either non-conceptual content or conceptual content, at least to some extent.

In other words, then, I am proposing a specifically non-platonic, Kantian, and WCTI-ist version of what Parsons calls “non-eliminative structuralism.”<sup>14</sup> Even more specifically, however, I think that the natural numbers are essentially the same, for *some* rational purposes, as roles in the infinitary abstract mathematical structure provided by PA, especially including the finitary sub-structure of PRA, when this is interpreted as a certain kind of non-empirical or a priori humanly consciously-knowable, *cognitively-accessible* structure; and also that the numbers are essentially the same, for *other* rational purposes, as the role players of the natural number roles in the manifestly real, actual natural spacetime world, i.e., the natural numbers are just the set of manifestly real, directly and veridically sense-perceivable material objects in actual natural spacetime, insofar as they fall under, and are immanently structured by infinitary PA and its finitary proper part PRA, the primitive recursive or *finitist* arithmetic<sup>15</sup> of the natural numbers. I will come back to this thesis again shortly.

Even if we have decided to adopt a dual Roles and Role-Players interpretation of structuralism, there are also several further basic distinctions between different kinds of Mathematical Structuralism that need to be made more explicit. The two main divisions are these:

- (a) *Reductive* Structuralism vs. (b) *Non-Reductive* Structuralism
- and
- (c) *In Rebus* Structuralism vs. (d) *Ante Rem* Structuralism.

Let me now spell out these divisions more explicitly. (a) Reductive Structuralism, as I am construing it, says that the objects of the

mathematical system are either strictly identical with various elements and relations of the system or *logically* strongly supervenient on the whole system and thus nothing over and above the whole system. By contrast, **(b)** Non-Reductive Structuralism says that the objects of the system are *strongly supervenient on the whole system but still something over and above the whole system*, hence neither strictly identical with various elements and relations of the system nor logically strongly supervenient on the whole system. In other words, the Reductive vs. Non-Reductive distinction applies to the *objects* of mathematical structural systems. Correspondingly, the Role-Players interpretation, on its own, entails Non-Reductive Structuralism, and the Roles interpretation, on its own, is consistent with both Non-Reductive Structuralism and Reductive Structuralism.

On the other hand, **(c)** *In Rebus* Structuralism, as I am construing it, says that both the existence and specific character of the mathematical system are necessarily dependent on and determined by material things in the natural world, and that the systemic structures are not only literally proper parts of those material things but also ontologically non-detachable and epistemically non-abstractible from them. By contrast, **(d)** *Ante Rem* Structuralism says that the existence and specific character of the system are neither necessarily dependent on nor determined by the existence of material things in the natural world, and that the systematic structures are both ontologically detachable and also epistemically abstractible from those material things, even if they are also literally proper parts of them. In other words, the *In Rebus* vs. *Ante Rem* distinction applies not to the *objects* of mathematical structural systems, but instead to the *structural systems* themselves. For example, *In Rebus* Structuralism would be defended by a mathematical structuralist who is both a reductive or scientific naturalist and also an empiricist/nominalist, like Hartry Field<sup>16</sup> or Penelope Maddy,<sup>17</sup> whereas *Ante Rem* Structuralism would be defended by a mathematical structuralist who is both a platonist and also a realistic rationalist, like Shapiro.

Significantly, and perhaps because of the example set by Field, Shapiro identifies Reductive Structuralism with *In Rebus* Structuralism, and Parsons identifies both Reductive Structuralism and *In Rebus* Structuralism alike with what he calls “eliminative structuralism.”<sup>18</sup> But strictly speaking, at least in principle, one could consistently defend both *In Rebus* Structuralism and also Non-Reductive (a.k.a. “non-eliminative”) Structuralism. Consider, e.g., a specifically *Wittgensteinian* Mathematical Structuralism,<sup>19</sup> in which numbers are identified with the entities that play the roles *specified by living mathematical linguistic*

*practices* but not identified with those practice-specified roles, and in which those living mathematical linguistic practices themselves, conceived as rule-systems, are the enframing mathematical structural systems in which mathematical objects are embedded as the role-players of the roles in the structures. This Wittgensteinian Structuralism would be both *in rebus* and non-reductive. I myself am not going to defend Wittgensteinian Structuralism. But the very possibility of it does have a relevant bearing on the Kantian Intuitionist theory of mathematical a priori knowledge that I will defend in Sections IX and X, because I do think that mathematical *knowledge* is partially determined by living mathematical linguistic practices, even if mathematical *truth* is not so determined.

The brand of Structuralism I am proposing, *Kantian Structuralism*, is a non-platonically abstractive, hence *ante rem*, and non-reductive version of Mathematical Structuralism that also presupposes WCTI. More specifically, it is based on

- (i) the non-platonic, Kantian abstract formal structures of space and time as we directly and veridically cognize them in Kantian pure or a priori intuition, via non-conceptual content, together with
- (ii) formal concepts, including the ramified abstract formal structures of classical logic and conservative extensions of it, as we understand them in thinking,

insofar as rational human animals are capable of directly and veridically cognizing, via non-conceptual content – i.e., rationally intuiting, in the specific sense of rational “intuition-of” – those perceptually-embedded spatiotemporal structures, and also capable of understanding those conceptually-embedded logical structures. Otherwise put, Kantian Structuralism takes the necessity and apriority of mathematical truths at face value and then metaphysically explains those semantic features in terms of non-platonic, Kantian abstract and weakly or counterfactually transcendently ideal *spatiotemporal immanent structures of human sense perception*, and non-platonic, Kantian abstract and weakly or counterfactually transcendently ideal *logical immanent structures of human theoretical rationality*, together with

- (i) our innately specified cognitive capacity or competence for directly referential cognition, via non-conceptual content (i.e., Kantian pure or a priori intuition), that veridically picks out those spatiotemporal immanent structures,

- (ii) our innately specified cognitive capacity or competence for the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata that veridically pick out Hilbert's basic objects of finitistic mathematical reasoning, and
- (iii) our innately specified cognitive capacity or competence for conceptual understanding or conceptual thinking that veridically picks out those logical immanent structures.

It is particularly to be noted that because these weakly or counterfactually transcendently ideal structures are *immanent* non-platonic, Kantian abstract structures in the manifestly real world, then Kantian Structuralism reaps all the theoretical benefits of *In Rebus* Structuralism, without also suffering any of its nominalist or reductive liabilities.

By sharp contrast to Kantian Structuralism, however, Field's and Maddy's Structuralism is both reductive and *in rebus* because it says that numbers are nothing over and above their being positions in modal or physical structures, and also that mathematical truth is reducible to fundamental physical facts about the physical world. And by another sharp contrast to Kantian Structuralism, Shapiro's Structuralism is both reductive and platonically *ante rem* because it says that numbers are nothing over and above their being positions in non-modal structures, and also that mathematical truth is reducible to non-physical facts about non-spatiotemporal, non-natural, non-sensory, causally irrelevant, and causally inert *platonically abstract* structures. The comparisons and contrasts between Kantian Structuralism and *Parsons's* version of Mathematical Structuralism are more domestic and subtle, however, and I will work them out in detail in Section X.

### VIII.3

Here is the pith of what Kant says about the fundamental relationship between the pure formal intuitional representation of time and the concept of number:

[N]umber [is] a representation that summarizes the successive addition of one homogeneous unit to another. Number is therefore nothing other than the unity of the synthesis of the manifold of a homogenous intuition in general, because I generate time itself in the apprehension of the intuition. (*CPR* A142–3/B182)



Time is in itself a series (and the formal condition of all series). (*CPR* A411/B438)

Arithmetic attains its concepts of numbers by the successive addition of units in time. (*Pröl* 4: 283)

Time [is] the successive progression as [the] form of all counting and [and also as the form] of all numerical quantities; for time is the basic condition of all this producing of quantities. (*PC* 11: 208)

There is much here for Kant-interpreters to struggle with.<sup>20</sup> But for my purposes, this is what I take to be Kant's fundamental insight:

***Kant's Insight:*** The Kantian pure or a priori intuitional representation of time is the directly referential, non-logical representation, via non-conceptual content, of *an iterative sequence of homogeneous units that is inherently open to the primitive recursive functions*. Such a structural representation originally picks out a generic form of finite sequences of perceptually experienced objects (say, fingers on a hand, or strokes on a page). But considered on its own, purely as a singular formal structure – via the “formal intuition” of time (*CPR* B 160 n.) – it can also apply to infinite sequences or totalities. In turn, this representation provides a synthetic a priori necessary but not sufficient semantic condition for the representation of anything that will count as a number.

Or as Ian Hacking puts it:

The concept *natural number* cannot itself be categorically characterized in pure logic. We can only say that the natural numbers are those which come in the sequence 1, 2, 3, .... We do have an intuition of this sequence. Perhaps, as Kant supposed, it is connected to the intuition of succession in time.<sup>21</sup>

Or as William Tait puts it:

We are considering the generic form of a finite sequence, Number. We discern finite sequences as such in our everyday experience and this is what gives meaning to Number in the broad sense: it is the source of our ability to apply the number concept. But Number also has a purely formal content, independent of our experiences.... This is why the number concept (in contrast with the concept of motion, for example, which also derives from a kind of structure discerned in experience) is a part of mathematics.<sup>22</sup>

Granting *Kant's Insight*, I can now state more precisely, and with respect to infinitary denumerable PA, especially including finitary denumerable PRA, *as well as* with respect to the ontologically robust and impredicatively-constructed conservative extensions of PA such as transfinite non-denumerable Cantorian Arithmetic or CA, what the thesis of Kantian Structuralism is:

- (1) The natural numbers are essentially positions or roles in the mathematical natural number structure provided by PA in its full generality and denumerable infinitude, beyond the denumerable finitary sub-structure provided by PRA, and *also* including ontologically robust, non-denumerable, and impredicatively-constructed conservative extensions of PA such as CA. The Löwenheim-Skolem theorem, together with the Upward Löwenheim-Skolem theorem proved by Tarski, collectively show that CA is a conservative extension of PA, especially including PRA, by showing
  - (i) that a first-order mathematical theory has non-denumerably infinite models if and only if it has denumerably infinite models, and
  - (ii) that a first-order mathematical theory has denumerably infinite models only if it has denumerably finite models.<sup>23</sup>
- (2) The mathematical natural number structure provided by PA (and PRA and CA) is abstract only in the non-platonic, Kantian sense that it is *weakly or counterfactually transcendentally ideal*, which is to say that this structure is identical to the structure of the Kantian “formal intuition” of time – as an iterative sequence of homogeneous units that is inherently open to the primitive recursive functions – as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, together with all the formal concepts and other logical constructions, including specific logical inference patterns such as mathematical induction, needed for an adequate rational human comprehension of PA (and PRA and CA), that we cognize through conceptual understanding or thinking.
- (3) In our actual world, the unique, intended model of the non-platonic, Kantian abstract natural number structure provided by PA (and PRA and CA) is just the *immanent structure* that is fully embedded in the set of manifestly real directly and veridically sense-perceivable spatiotemporal material objects in nature, insofar as they are the role players of the PA-(and-PRA-and-CA)-specified natural number roles in the non-platonic, Kantian abstract formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, together with all the formal

concepts and other logical constructions, including specific logical inference patterns such as mathematical induction, needed for an adequate rational human comprehension of PA (and PRA and CA), that we cognize through conceptual understanding or thinking.

In this way, Kantian Structuralism adequately explains why something that is *abstract*, *ideal*, and *necessary* like PA in its full generality and infinitude, beyond the finitist sub-structure provided by PRA, and *also* including ontologically robust and impredicatively-constructed conservative extensions of PA such as CA, can really and truly apply to the hurly-burly *concrete*, *thoroughly nonideal*, and *contingent* world of rational human animals and other natural things and processes, and thereby really and truly apply to all the manifestly real, directly and veridically sense-perceivable material spatiotemporal objects in our actual world. For according to Kantian Structuralism, *since* the formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, is an immanent non-platonic, Kantian abstract structure of all manifestly real directly and veridically sense-perceivable material spatiotemporal objects in nature, and *since* this directly and veridically cognizable immanent structure, when it is taken together with the weakly or counterfactually transcendently ideal non-platonic, Kantian abstract formal structure of any classical logical system rich enough to capture PA (and PRA and CA), that we cognize through conceptual understanding or thinking, just *is* the unique, intended model of PA (and PRA and CA), *then* it follows with synthetic a priori necessity that PA (and PRA and CA) applies to all manifestly real material spatiotemporal objects in nature.

Here, the abstractness, ideality, and necessity of PA (and PRA and CA) are captured by the *number roles* in the composite structure of time and PA (and PRA and CA), insofar as these number roles can be conceptualized and understood by rational human animals. And correspondingly, the concreteness, non-ideality, and contingency of the things and people in the manifest natural world to which arithmetic applies are captured by the *number role players* in the composite structure of humanly cognizable time and humanly cognizable PA (and PRA and CA). Therefore this directly and veridically cognizable non-platonic, Kantian abstract time-structure is the weakly or counterfactually transcendently ideal *metaphysical glue* that ineluctably binds PA (and PRA and CA) to our manifestly real natural world; or to re-use Parsons's apt phrase, quoted as the sixth epigraph of this part of the book, our pure or a priori intuition of this non-platonic, Kantian abstract time-structure is precisely what

get[s] us across the divide between the fuzzy *Lebenswelt* with its everyday objects and the sharp, precise realm of the mathematical, in terms of which mathematical conceptions of the physical world are developed.

Otherwise put, Kantian Structuralism clearly and distinctly solves the classical *application problem* for the philosophy of arithmetic.<sup>24</sup>

#### VIII.4

So, finally, I am now in a position to solve The OBD by using Kantian Structuralism. I will begin by supposing that the two preliminary assumptions of The OBD are true, and that they express basic authoritative philosophical rational intuitions. That obviously satisfies steps (1) and (2) of The OBD.

This move also obviously raises an important issue about the epistemic status of basic authoritative philosophical rational intuitions. What about the skeptical claims of those philosophers who in fact *reject* either of the two preliminary assumptions of The OBD? Since if I am correct, all basic authoritative rational intuitions are intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, then either

- (i) some basic authoritative philosophical intuitions are in fact *not* intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, and I am wrong about the nature of authoritative rational intuitions, or
- (ii) I am correct about the nature of authoritative rational intuitions, but wrong that the two preliminary assumptions of The OBD are in fact known or knowable by authoritative rational intuition, or
- (iii) these skeptical philosophers have so far failed to understand the meanings of these two preliminary assumptions, or
- (iv) these philosophers have so far failed to be sufficiently rationally reflective about the implications of the meanings of these two preliminary assumptions, and have thereby also so far failed successfully to undertake the intentional performance of rendering their cognition of these assumptions authoritative, hence their rational intuitions to the effect that these assumptions are false are merely *prima facie* intuitions and defeasible/fairly unreliable.

My two-part claim is that, in all likelihood, (iv) is true, and also that (i), (ii), and (iii) are all false. Obviously I am fully committed to the

falsity of (i) and (ii) alike. Now the conditions under which possible cases of (iii), or a failure to understand the relevant meanings, could occur, include: agnosias or other cognitive disabilities, being drugged or drunk, cognitive immaturity, inattention, insanity, linguistic performance errors of an adventitious nature (i.e., brief slips of the eye or ear, or of the innate grammatical abilities for parsing verbal syntax or accessing one's lexicon/repertoire of concepts, etc.), seizures, sleepiness, and so on – in short, cases in which the cognitive mechanisms of these philosophers are not functioning properly. But obviously *those* conditions are quite unlikely to hold for *these* philosophers in *this* particular connection: indeed, we can even reasonably assume that they *fully* understand the meanings of these preliminary assumptions.

By sharp contrast, however, the conditions under which possible cases of (iv), or insufficient rational reflectiveness about the relevant implications of the relevant meanings, could occur are radically more sophisticated and subtle and include all the characteristic stages of the dialectic of philosophical and scientific inquiry, short of the final, rationally conclusive stage. Such preliminary stages can involve: commission of any of the classical informal or formal logical fallacies, confusion, dogmatism, equivocation, ignorance of relevant facts, intellectual arrogance, intellectual laziness, sociological pressures arising from the institutionalization and professionalization of philosophy and science (a.k.a. “group-think”), unacknowledged false assumptions or presuppositions, uncharitableness of interpretation, either unclarity or indistinctness of cognition more generally, and perhaps the most important and insidious error-causing condition of all, “being in the grip of a bad picture (*schlechtes Bild*)” in the later Wittgenstein's pregnant sense of that phrase:

112. A simile that has been absorbed into the forms of our language produces a false appearance, and this disquiets us. “But *this* isn't how it is!” – we say. “Yet *this* is how it has to be!”
113. “But *this* is how it is –” I say to myself over and over and over again. I feel as though, if only I could fix my gaze absolutely sharply on this fact, get it in focus, I must grasp the essence of the matter.
114. ... One thinks that one is tracing the outline of the thing's nature over and over again, and one is merely tracing round the frame through which we look at it.
115. A *picture* held us captive. And we could not get outside it, for it lay in our language and language seemed to repeat it to us inexorably.<sup>25</sup>

The very idea of a *bad* philosophical picture entails a fundamental meta-philosophical distinction between

- (i) *confusion-inducing* or bad philosophical pictures,
- and
- (ii) *clarity-inducing* or good philosophical pictures,

and points up the correspondingly seminal roles          in philosophical reasoning. For the present purposes, it suffices to say that obviously I do think that the broadly Tarskian and minimal Empiricist reasons I cited in sub-section II.3 above for accepting the two preliminary assumptions of The OBD *are* rationally conclusive, and that, in view of those reasons, both of these assumptions inherently express clarity-inducing or good philosophical pictures.

Now I will further suppose that Kantian Structuralism is true, and that it adequately explains the apriority and objective necessity of mathematical truth. This satisfies step (3) of The OBD.

This in turn allows me to re-interpret the realistic ontology of abstract objects described in step (4) of The OBD, as the weakly or counterfactually transcendently ideal non-platonic, Kantian abstract formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, when taken together with the weakly or counterfactually transcendently ideal non-platonic, Kantian abstract formal structure of any classical logical system rich enough to capture PA (and PRA and CA), insofar as it can be comprehended by rational human animals via conceptual understanding or thinking. This dual abstract structure is itself of course causally non-efficacious or inert, which satisfies step (6) of The OBD.

But this dual non-platonic, Kantian abstract structure is also *intrinsically temporal*, and in our actual world it strictly determines the unique intended model of the natural number structure, which is the directly and veridically sense-perceivable manifestly real natural world of spatiotemporal objects in nature *just insofar as they are the role players of the PA-(and-PRA-and-CA)-specified natural number roles in the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content*. So the dual non-platonic, Kantian abstract but also immanent structure consisting of the directly and veridically cognizable non-platonic, Kantian abstract formal structure of time together with PA (and PRA and CA) is *causally relevant*, even though it is *not* causally efficacious. Therefore in our actual world the unique intended model (i.e., the one and only

real truth-maker) of the natural number structure is identical to the manifestly real natural world of causally efficacious directly and veridically sense-perceivable real material spatiotemporal objects just insofar as they actually exist in various configurations, which obviously solves the application problem for PA (and PRA and CA); and mathematical knowledge is thereby possible on the assumption that a “reasonable epistemology” of cognizing true (mathematical) statements is modeled on a theory of sense perception which includes

causally efficacious, contact-involving or efficient, directly referential, non-inferential, and spatiotemporal relations between human linguistic knowers and the known objects themselves,

and thereby satisfies premise (5) of The OBD.

Hence if Kantian Structuralism is true, then all of (1) to (6) are true, under plausible interpretations of them, but the unacceptably skeptical conclusion of The OBD – step (7) – is clearly avoided, and mathematical knowledge is really possible after all. I will spell all this out more carefully in Section X, when I explicitly compare and contrast Kantian Structuralism and Kantian Intuitionism with Parsons’s account.

It should be particularly re-emphasized here that I am construing the essentially reliable basic authoritative philosophical intuition lying behind Benacerraf’s premise (2) – i.e., his assumption of a “reasonable epistemology” – to be best captured by the thesis that necessarily all human cognition *begins in* causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. But as Kant teaches us, even though all human cognition *begins in* causally-triggered sense perception, it does not follow that all cognition *arises out of it*, i.e., *is either reducible to it, or otherwise strongly supervenient on it*. Hence explicitly adopting a theory of sense perception that necessarily includes a causal component, and thereby causally-and-empirically anchors all human cognition in causally-triggered, direct, non-conceptual, non-inferential sense perception of the natural world, does *not* explanatorily or ontologically reduce all human cognition to causal or empirical factors, or otherwise entail the strong supervenience of human cognition on causal or empirical factors. So I am charitably interpreting Benacerraf as *not* embedding the causal dimension of his “reasonable epistemology” within any kind of reductive theoretical framework, although many (or perhaps even most) readers of “Mathematical Truth” have taken it that way. But in fact and on the contrary, I believe that Benacerraf is perfectly in line *with Kant* on this point. To postulate a

*necessary causal dimension in human knowledge is not thereby to assert a causal theory of knowledge.*

### VIII.5

Considered for a moment apart from its ability to help us achieve a positive solution to The OBD, and also apart from its ability to solve the classical application problem for arithmetic, what other reasons could we have for defending Kantian Structuralism? I think that there are at least five other very good reasons.

First, Kantian Structuralism offers a clean-and-simple solution to another important problem pointed up by Benacerraf, which is that many different models satisfy the abstract structure of any logical system rich enough to express PA, hence the second-order logic of PA underdetermines the identity conditions of the natural numbers.<sup>26</sup> Otherwise put, Benacerraf's *other* problem is that there seems to be in principle no way of determining or identifying just *which* of the many distinct models that satisfy the logic of PA, is *really* the natural numbers. This is what Parsons calls the "multiple reduction" problem,<sup>27</sup> and what others, following Frege, have called the "Caesar" problem, or the "Identification" problem. According to Kantian Structuralism, however, the non-platonic, Kantian abstract formal structure of the asymmetric successively synthesized series of moments (or simple events) in time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, *just is* the unique, intended model of PA (and PRA and CA). On this picture, a "standard" model of PA (and PRA and CA), is any possible world in which either time as we directly and veridically cognize it in Kantian pure intuition, via non-conceptual content, exists, or else something isomorphic to the time-structure exists.<sup>28</sup>

But then the proper part of the model that satisfies a particular natural number-role in the abstract system of PA (and PRA and CA), *just is* anything in our actual manifestly real natural world that occurs in time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, *insofar as* it intrinsically instantiates the thermodynamically asymmetric successive serial structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, and thereby plays at least some of the PA-(and-PRA-and-CA)-specified natural number roles. The natural numbers themselves exist in non-actual possible worlds as *the PA-(and-PRA-and-CA)-specified and*



*temporally-specified natural number roles*, and in our actual manifestly real natural world as the unique intended model of PA (and PRA and CA), namely *the totality of manifest natural PA-(and-PRA-and-CA)-specified and temporally-specified natural number role-players*. Now the actual inhabitants of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, are manifestly real material spatiotemporal objects that contain spatiotemporal immanent structural properties. So in our actual world, the unique intended model of the natural number structure is identical to the totality of directly and veridically sense-perceivable, manifestly real material spatiotemporal objects insofar as they are the role players of the PA-(and-PRA-and-CA)-specified natural number roles in the abstract formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content.

**Second**, if Kantian Structuralism can offer a unified solution to The OBD *and* Benacerraf's other problem, then that seems to be another strong point in its favor. For as Benacerraf himself has argued, The OBD and Benacerraf's other problem are essentially *interdependent*. So an adequate solution to The OBD must *also* solve Benacerraf's other problem.<sup>29</sup>

**Third**, Kantian Structuralism crisply explains why classical Logicism failed, and why it seems so clear that the arithmetic of the natural numbers is not reducible to second-order logic plus the Peano axioms alone. According to Kantian Structuralism, the elementary or Peano arithmetic of the natural numbers can be determined only by the ramified logical formal structure of PA (and PRA and CA), insofar as it can be conceptually understood or thought by rational human animals, together with any formal structure that is isomorphic to the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content.

To be sure, contemporary *Neo-Logicists* have shown that adding Hume's Principle (which says that the number of Fs = the number of Gs if and only if there are as many Fs as Gs) to second-order logic plus the Peano axioms, logically entails the elementary or Peano arithmetic of the natural numbers.<sup>30</sup> But it seems to be intelligibly and defensibly arguable that Hume's Principle is *not* an analytic, conceptual, logical, or "weakly metaphysically" necessary truth, precisely because it *presupposes* the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, and also whatever is isomorphic to

the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content. If so, then ironically enough the actual success of Neo-Logicism is metaphysically best explained by *Kantian Structuralism*, and not by postulating the analyticity, conceptual truth, logical truth, or “weakly metaphysically necessary” truth of *Hume’s Principle*, as the Neo-Logicians have done. But then in that case, Neo-Logicism is most adequately and correctly formulated as the thesis that Peano arithmetic is *best explained in terms of second-order logic, Hume’s Principle (which is synthetically a priori, non-conceptually, non-logically, or “strongly metaphysically” necessary), and Kantian Structuralism*, and *not* adequately or correctly formulated as the thesis that PA is *analytically, conceptually, logically, or “weakly metaphysically necessarily”* a priori derivable from and explanatorily reducible to second-order logic and Hume’s Principle.

**Fourth**, if that is true, then Kantian Structuralism would also crisply explain why, contrary to both classical Logicism and Neo-Logicism, mathematical truths clearly seem *not* to be analytically, conceptually, or logically necessary truths, but instead to be *synthetically, non-conceptually, non-logically, or “weakly metaphysically” a priori necessary truths*. Now Gödel’s incompleteness theorems – according to which

- (i) there must be logically unprovable true sentences in any formal system rich enough to contain the axioms of PA,
- and
- (ii) all such systems are consistent (i.e., non-contradictory) if and only if they are incomplete (i.e., not all the truths of the system are theorems of the system) and have their ground of truth outside the system itself,

– already strongly suggest to the Kantian Structuralist that the nature of mathematical truth outruns logical provability precisely because mathematical truths are synthetically, non-conceptually, non-logically, or “strongly metaphysically” a priori necessary, and not analytically, conceptually, logically, or “weakly metaphysically” a priori necessary.

But another and even more decisive reason for thinking that mathematical truths are not true in every logically possible world, hence are not analytic, is the clear and distinct conceivability and hence logical/weak metaphysical possibility, of either

- (1) possible worlds with *nothing whatsoever* in them – which would of course entail the non-existence of numbers in those worlds, and

thus the non-truth of many sentences or statements of PA (and PRA and CA) in those worlds,<sup>31</sup>

or

- (2) possible worlds with *non-standard arithmetics* of the natural numbers in them, e.g., a world in which the standard primitive recursive function of addition or “plus” is replaced by Kripke’s non-standard primitive recursive function of “quaddition” or “quus” – which would of course directly entail the non-truth of many sentences or statements of PA (and PRA and CA) in those worlds.<sup>32</sup>

If mathematical truths are necessarily true but not analytically necessary, then according to Kantian Structuralism the explanation for this striking fact is that the truth and meaningfulness of mathematical propositions presuppose the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, which is *not* itself a *purely analytically, conceptually, logically, or “weakly metaphysically” a priori necessary fact* that attaches to every logically possible world. On the contrary, the presence of either the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, or some other non-platonic, Kantian abstract structure isomorphic to the abstract formal structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, in a given possible world, is a *synthetically, non-conceptually, non-logically, or “strongly metaphysically” a priori necessary fact* that attaches to only a *restricted class* of logically possible worlds, i.e., to all and only the logically possible worlds in which the very same spacetime structure, causal-dynamic structure, and mathematical structure as that of our actual world, also exist. This is also the synthetically, non-conceptually, non-logically, or “strongly metaphysically” a priori necessary class of all and only the possible worlds in which rational human animal *consciousness* and *intentionality* are really possible, and thus both WCTI and *liberal or inclusive naturalism* – i.e., the thesis that fundamental mental properties are as basic in the intrinsic architecture of the natural world as fundamental physical properties, although such mental properties are *not* always and everywhere instantiated, for if they were, then that would entail *pan-experientialism*, which is an implausibly strong thesis – are vindicated by the very idea of the synthetic a priori, when it is embedded within the theoretical framework of Kantian Structuralism.<sup>33</sup>

On this view, possible worlds without denumerable objects in them are all time-structureless worlds, and all time-structureless worlds are possible worlds without denumerable objects in them. So if Kantian Structuralism is true, then the metaphysical explanation for *modal dualism* – which is the classical Kantian thesis that there are two essentially different kinds of necessary truth, namely

- (1) *analytic a priori necessary truth*, i.e., truth about the kind of necessity that flows from the nature of logic and concepts, which thereby includes logical truth and conceptual truth, and
- (2) *synthetic a priori necessary truth*, i.e., truth about the kind of necessity that flows from the nature of the immanent structures of things in the manifestly real world, via non-conceptual content, which thereby includes mathematical truth<sup>34</sup>

– comes along for free.

If Kantian Structuralism is true, then it fully explains how the elementary arithmetic of the natural numbers, i.e., PA, is true. What about the rest of mathematics? The general answer provided by Kantian Structuralism is that all of the rest of mathematics, *including* its most abstruse and ontologically rich parts – e.g., iterative set theory and CA – can be built up as conservative extensions from PA (and PRA), and the non-platonic, Kantian abstract structure of time as we directly and veridically cognize it in Kantian pure or a priori intuition, via non-conceptual content, *together with* all the formal concepts, classical logical constructions, and specific patterns of logical inference required by those other parts of mathematics, that are encoded in standard mathematical linguistic practices, insofar as mathematical language can be understood by rational human animals. I will have more to say about this crucial point in Section IX. It suffices to say, for now, that rational intuitions of the mathematical truths of the conservatively extended mathematical theories built up in this way will then be only fairly reliable or *constructed* mathematical rational intuitions, not essentially reliable or authoritative mathematical rational intuitions, whether basic or non-basic, which apply only to the restricted domain of Hilbert's basic objects of finitistic mathematical reasoning.

**Fifth**, this line of thinking indicates how Kantian Structuralism might also be able to offer a new solution to the classical *Problem of the Continuum*. Very simply put, The Problem of the Continuum is this: What is the correct characterization of the quantitative structure of the

spacetime world we consciously experience, i.e., the intuitively-given continuum? According to The Continuum Hypothesis – a.k.a. The CH – proposed by Cantor, the quantitative structure of the continuum has either the infinite denumerable cardinality of the natural numbers (= aleph null, i.e.,  $\aleph_0$ ) or the infinite non-denumerable cardinality of the real numbers (= 2 to the power of aleph null, i.e.,  $2^{\aleph_0}$ ) and there is no number applicable to the continuum with a cardinality that falls strictly between that of the naturals and that of the reals. What Kantian Structuralism proposes about the continuum is that

- (i) the continuum definitely has the infinite denumerable cardinality of the natural numbers,
- (ii) the continuum definitely has the infinite non-denumerable cardinality of the real numbers, and
- (iii) the continuum definitely has no other cardinality strictly between those two.

Kantian Structuralism is *able* to say this *precisely because*, according to Kantian Structuralism, the real number structure is logico-mathematically a priori *constructible* from the set of all consciously experienceable points and stretches in spacetime, together with the set of *all possible degrees of any consciously experienceable sensory quality, for each consciously experienceable point or stretch in spacetime*.

What I mean is that it is an a priori fact about the nature of human experience that any set of points or stretches of experienceable spacetime can instantiate any degree of some or another sense-experienceable quality. Building on that a priori fact, the Kantian Structuralist thesis is that for each distinct point or stretch in sense-experienceable spacetime, of which there is a denumerably infinite number, we can also find a denumerably infinite number of different degrees of some or another sense-experienceable quality. Then we can think of the latter cardinal number as an *exponent* of the former cardinal number in an operation that yields the former's *power set*, i.e., the set of all its subsets. The cardinality of the result of that power set operation is the same as the first transfinite number,  $\aleph_1$ , which in turn has the same cardinality as the real numbers, i.e.,  $2^{\aleph_0}$ . Putting the same point in specifically Kantian terminology, Kantian Structuralism says that the basic structure of the continuum is the non-empirical *extensive quantity* structure as described in The Axioms of Intuition insofar as it is also exponentiated, according to the power set operation, by the non-empirical *intensive quantity* structure as described in The Anticipations

of Perception. In this sense, the basic structure of the continuum is the Kantian *synthesis* of the extensive quantity structure and the intensive quantity structure. Not only that, but as Cantor later discovered, this Kantian synthesis of structures can also be authoritatively rationally intuited by means of a visuo-spatial *diagonalization proof array* – which shows that even representations of *non-denumerably infinite structures* can be mapped onto Hilbert’s basic objects of finitistic mathematical reasoning by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata.<sup>35</sup>

Therefore Kantian Structuralism says that The CH is synthetic a priori true – i.e., that The CH is determinately true in every humanly experienceable world, and a truth-value gap in every other logically possible world that lacks the spatiotemporal structure of human experience. The fundamental mathematical issue raised by The CH is whether there is any number structure with a cardinality strictly between the denumerable infinite cardinality of the natural numbers and the non-denumerable infinite cardinality of the real numbers. Kantian Structuralism says that synthetically a priori necessarily there is *no such intervening number structure*, precisely because *rational human experience is just so structured as to rule this out*, and precisely because – given WCTI – *necessarily the world is correspondingly just so structured that if rational human cognizers were to exist, then they would cognize that world directly and veridically both a priori and a posteriori, at least to some extent, including coming to know The CH as a synthetic a priori truth.*

But this is not some sort of pre-established harmony. Leopold Kronecker famously or notoriously said that God made the integers and everything else was done by humans.<sup>36</sup> Kantian Structuralism is even more radically anthropocentric than this, and explicitly excludes anything that is either *platonically abstract* or *noumenal* from the metaphysical foundations of mathematics, lest it fall inevitably into metaphysical confusion and logical paradox, or what Kant so aptly called “obscurity and contradictions” (*Dunkelheit und Widersprüche*) (CPR Avii). According to Kantian Structuralism, *the formal constitution of rational human animal nature made the natural numbers, and logico-conceptual construction by rational human animals, together with their innate capacity for logical and linguistic cognition, did all the rest.* So in that sense, mathematics is *all about us*. But this Kantian Structuralist account does *not* entail any sort of metaphysical anti-realism, psychologism, reductive formalism, or reductive finitism, which variously afflict the Brouwerian and

Hilbertian attempts to avoid the classical confusions and paradoxes, the wages of Logicism, in the foundations of logic and mathematics. On the contrary, assuming the truth of WCTI, then necessarily the manifestly real natural world inherently possesses the self-same mathematical structures that rational human animals are inherently capable of consciously detecting in that world. As a matter of logical necessity, the manifestly real natural world did not *have* to be that way. It just *is* necessarily that way. It is a *brute essential non-platonic, Kantian abstract structural fact* about nature. But on the working assumption that the manifestly real natural world, as it just so happens, really *is* that way, and also that it really is *necessarily* that way, precisely because it flows from its essence, then the fundamental formal coordination between rational human animal minds and the manifestly real natural world holds with synthetic a priori necessity. So Kantian Structuralism is just about as objectively realistic as it is metaphysically possible to be, since on the one hand non-naturalist platonic or noumenal realism about mathematical truth-makers is a metaphysical mystery, and since on the other hand naturalism about mathematical truth-makers explains only how mathematical truth is contingent a posteriori, not how mathematics is necessary a priori – i.e., since The GBD effectively rules out both of those non-Kantian alternatives. Or again: *objectivity has a human face, with rationality written all over it.*

Suppose, now, as a working hypothesis, that Kantian Structuralism is true. We still need to explain more precisely *how* mathematical a priori knowledge of objectively necessary mathematical truths is really possible. And that is where Kantian Intuitionism comes in.

# IX

## Kantian Intuitionism

The epistemologically pregnant sense of self-evidence (*Evidenz*) ... gives to an intention, e.g., the intention of judgment, the absolute fullness of content, the fullness of the object itself. The object is not merely meant, but in the strictest sense *given*, and given as it is meant, and made one with our meaning-reference.... It is said of every percept that it grasps its object directly, or grasps this object *itself*. But this direct grasping has a different sense and character according as we are concerned with a percept in the narrower or wider sense, or according as the directly grasped object is *sensible* or *categorical*. Or otherwise put, according as it is a *real* or *ideal* object.

– E. Husserl<sup>1</sup>

In Kant we find an old form of intuitionism, now almost completely abandoned, in which space and time are taken to be forms of conception inherent in human reason.... However weak the position of intuitionism seemed to be after [the discovery of non-Euclidean geometry], it has recovered by abandoning Kant's apriority of space but adhering the more resolutely to the apriority of time.

– L.E.J. Brouwer<sup>2</sup>

Self-evidence (*die Einleuchten*), of which Russell has said so much, can only be discarded in logic by language itself preventing every logical mistake. That logic *a priori* consists in the fact that we *cannot* think illogically.

– L. Wittgenstein<sup>3</sup>



## IX.1

As I formulated it in sub-section II.2, Kantian Intuitionism holds that (High-Bar) a priori knowledge in mathematics, by means of basic authoritative mathematical rational intuition, is the joint product of two rational human animal capacities operating in tandem:

- (1) a rational human animal's veridical sensible-form-in-Kantian-pure-or-a priori-intuition-via-the-productive-imagination-or-mental-model-or-mental-diagram-or-mental-picture-or-structural-imagery-or-schema-**constructing-and-manipulating** capacity, which is innately specified in her mind as a cognitive competence, and is also inherently present, as a necessary ingredient, in all rational human sense perception, and which also entails her self-conscious and self-reflective cognition of phenomenologically self-evident formal structures of rational human sense perception, together with
- (2) a rational human animal's *logic-and-language-constructing-and-manipulating* capacity, which is innately specified in her mind as a cognitive competence, and also is inherently present, as a necessary ingredient, in all rational human empirical conceptualizing and perceptual judgment, and which also entails her self-conscious and self-reflective cognition of phenomenologically self-evident formal conceptual contents and specific patterns of logical inference in classical or non-classical logics.

And as I also formulated it in sub-section II.2, the central idea behind Kantian Intuitionism is that basic authoritative mathematical rational intuition can be construed in such a way as to preserve both the non-platonic, Kantian abstractness and causal inertness of **the truth-makers** of mathematical statements and also the causal relevance of **the intentional targets** of mathematical rational intuition, as well as the causal efficacy of **the evidential verifiers** of mathematical beliefs. There I emphasized the point that truth-makers, intentional targets, and verifiers can be different sorts of things, even if they are essentially connected. What I gave as an example there is what I explicitly want to argue now, namely,

- (i) the truth-maker is a mathematical immanent non-platonic, Kantian abstract structure in the manifestly real natural world,
- (ii) the intentional target is a constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the

productive imagination, mental model, mental diagram, mental picture, structural image, or schema, of at least part of that very structure, and

- (iii) the evidential verifier is *a manifestly real natural worldly fact, picked out by direct, veridical sense perception*, via non-conceptual content, which *implements* the immanent non-platonic, Kantian abstract world-structure and thereby *satisfies* the non-platonic, Kantian abstract mathematical structure, and also strictly *conforms* to the constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition, mental model, mental diagram, mental picture, structural image, or schema.

## IX.2

The precise nature of the connection between (i) the truth-maker and (ii) the constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, mental model, mental diagram, mental picture, structural image, or schema – the Hilbert-style basic objects of finitistic mathematical reasoning – is particularly crucial to my overall account. As I have stressed, all rational intuitions, even the authoritative, hence essentially reliable and synthetically a priori infallible ones, are in one sense fallible, i.e., it is *not analytically, conceptually, logically, or “weakly metaphysically” necessary* that they be (necessarily) true. But analytic fallibilism is not skepticism, and it is also fully compatible with synthetic a priori infallibilism. Hence, as a matter of synthetic a priori necessity, basic authoritative rational intuitions are not only objectively a priori necessarily true, but also intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable, therefore sufficiently justified and absolutely skepticism-resistant, i.e., *High-Bar justified*, i.e., *High-Bar a priori knowledge*. And insofar as all this obtains, then these following further two conditions both hold:

1. LOCKED-ONTO: The constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, mental model, diagram, structural image, or schema, is *locked onto the necessary-truth-maker*, i.e., there is an intrinsic isomorphism between the representational form of the veridical sensible form in Kantian pure or a priori intuition, etc., and the worldly form of the necessary-truth-maker, such that they are *structurally identical*, i.e., there is a “bijective map” running homo-

morphically from the form of the constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, etc., to the form of the truth-maker, and also homomorphically from the form of the necessary-truth-maker to the form of the constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, etc.

2. STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC.: For every a priori rational intuition *RI* –

- (2.1) *Either* *RI*'s characteristic constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, etc., *is* locked onto a necessary-truth-maker, in which case *RI* is a case of basic authoritative a priori knowledge, i.e., High-Bar justified a priori belief in an objectively necessary a priori truth, *or else* its characteristic constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition via the productive imagination, etc., *is not* locked onto a necessary-truth-maker, in which case *RI* is either Low-Bar a priori knowledge or else not knowledge at all.
- (2.2) There is no common mental content or phenomenal character shared between a constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition, etc., and a constructed-and-manipulated *non*-veridical sensible form in Kantian pure or a priori intuition via the productive imagination, etc.
- (2.3) The only thing shared between constructed-and-manipulated veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., and constructed-and-manipulated *non*-veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., is the further extrinsic and relational fact that under some cognitive conditions, some or another rational human cognitive subject of *RI* actually fails to tell the difference between the two inherently distinct mental representations (veridical vs. non-veridical), although
- (2.4) necessarily, at least in principle, under appropriate cognitive conditions, every such rational human cognitive subject *could* correctly discriminate between the two.

Analytic fallibilism, as I have said, or at least have clearly implied, is the thesis that no act, state, or process of belief, even an authoritative rational intuition, analytically, conceptually, logically, or “weakly metaphysically necessarily” entails its own (necessary) truth. Hence every act, state, or process of belief, even a completely convincing, intrinsically compelling, or self-evident and essentially reliable one, can be false, as a matter of analytic, conceptual, or logical possibility. But if LOCKED-ONTO is satisfied, then the relation between the representational form of the constructed-and-manipulated veridical sensible form in Kantian pure or a priori intuition, etc., in an authoritative rational intuition, and the worldly form of the necessary-truth-maker of that belief, is inherent or intrinsic, hence non-accidental or necessary: the worldly form partially constitutes the authoritative rational intuition. The characteristic properties of that relation are therefore robustly necessary properties, i.e., synthetic a priori necessary properties. Hence although my being in that mental act or state of an authoritative rational intuition does not analytically, conceptually, logically, or “weakly metaphysically” necessitate the (necessary) truth or High-Bar justification of that rational intuition, nevertheless it does synthetically a priori, non-conceptually, non-logically, or “strongly metaphysically” necessitate the (necessary) truth and High-Bar justification of that rational intuition. Again, it is analytically fallible but also synthetic a priori infallible.

In this way, my categorical epistemology of authoritative rational intuition has a significant advantage over other recent or contemporary neo-rationalist doctrines that, as *neo-rationalist*, include fallibilism about a priori knowledge, but which have been unable to combine the reality of human fallibility with robust necessitation in the a priori knowledge-relation, precisely because, as versions of *modal monism*, according to which there is one and only one basic kind of necessary truth, i.e., analytic, conceptual, logical, or “weakly metaphysical” a priori necessary truth, they lack the very idea of synthetic, non-conceptual, non-logical, or “strong metaphysical” a priori necessity. This is true, e.g., of Bealer’s “strong modal tie to the truth” between idealized modal intuitions at the end of the relevant historical processes of communal inquiry, and their necessary-truth-makers. For Bealer, at the idealized end of communal inquiry, the real human fallibility of rational intuition mysteriously turns into an unreal, superhuman, godlike *analytic infallibility*.<sup>4</sup>

The historical-philosophical provenance of Kantian Intuitionism and its categorical epistemology has five primary sources:

- (1) Kant's theory of pure or a priori intuition and "productive imagination" in the *Critique of Pure Reason*,
- (2) Husserl's specifically *phenomenological* approach to the epistemology of necessary truth in *Logical Investigations*,
- (3) Wittgenstein's specifically *linguistic* approach to the epistemology of necessary truth in the *Tractatus*, and
- (4) Parsons's theory of Mathematical Structuralism and mathematical intuition in *Mathematical Thought and Its Objects*, which, in addition to being significantly influenced by Kant's intuitionism, is also significantly influenced by
- (5) Brouwer's intuitionism and Hilbert's finitism.<sup>5</sup>

In full view of these historical-philosophical influences flowing from Kant, Husserl, Wittgenstein, Parsons, Brouwer, and Hilbert, I will argue for Kantian Intuitionism in two stages.

**First**, in the rest of this section, I will spell out what I take to be the deep epistemological ideas lying behind Husserl's doctrine of "categorical intuition" and behind Wittgenstein's doctrine that "language itself prevent[s] every logical mistake" by virtue of the fact that "we *cannot* think illogically."

Then **second**, in Section X, I will briefly sketch and criticize Parsons's theory, and compare and contrast it with Kantian Structuralism and Kantian Intuitionism.

**Husserl and Wittgenstein.** For our purposes here, Husserl's deep epistemological idea is that the abstract formal structures characteristic of logic or mathematics are immediately represented in our non-conceptual, pre-reflective or first-order conscious awareness of the logico-syntactic and sortal-semantic structures of the meaningful sentences we use to frame true logical or mathematical judgments, and that the truth of those judgments is immediately verified in direct, veridical perceptual experience of the manifestly real and intrinsically spatio-temporal natural world. This immediate verification, in turn, is *phenomenological self-evidence*. So cognitive phenomenology is of *fundamental importance* for modal epistemology, by way of the evidential-phenomenological, or internalistic, partial criterion for authoritative rational intuition. Correspondingly, my proposal is that at least some phenomenologically self-evident mental acts, states, or processes, which Husserl calls "categorical intuitions," satisfy both LOCKED-ONTO and STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC., and that this threefold fact is also inherently characteristic of a certain

kind of competent rational human language use that expresses an underlying innately specified human cognitive capacity or competence.

To present the notions of phenomenological self-evidence and categorical intuition properly, I want to sketch the basic concepts of Husserl's early phenomenology, and also trace them back to some Kantian ideas.

Phenomenology, as Husserl understood it in 1900 in the first edition of the *Logical Investigations*, is an elaboration of "descriptive psychology" in Brentano's sense, as he worked it out in *Psychology from an Empirical Standpoint*, part I. More precisely, Husserlian phenomenology in 1900 is the first-person, introspective, non-reductive philosophical psychology of consciousness and intentionality, as opposed to the natural science of empirical psychology.<sup>6</sup> As a specifically *philosophical* psychology, its basic claims, if true, are non-logically or synthetically necessarily true and a priori.

As Husserl points out in Investigation V, consciousness (*Bewußtsein*) is a subject's capacity for "lived experience" or *Erlebnis*, i.e., phenomenal awareness, together with her capacity for *intentionality*. Intentionality, in turn, is the "aboutness" of the mind, the "of-ness" of the mind, or the *directedness of mind to objects*.<sup>7</sup> Here the notion of an "object" is very broadly construed so as to include existing or non-existing individuals, properties, relations, facts, temporal events, spatial locations, other minds, and also one's own mind (including one's own intentionality), as possible targets of intentionality; and acts, states, or processes of intentionality can include all sorts of cognitive or conative activities and psychological attitudes, e.g., perception, memory, thinking, apperception or self-consciousness, judgment, belief, knowledge, rational intuition, logical reasoning, desire, love, hate, fear, and so on.

The contemporary concept of intentionality, it is usually held, fundamentally derives from one or both of two philosophical sources: **first**, from the Aristotelian-Scholastic tradition,<sup>8</sup> and **second**, from the Phenomenological tradition, beginning with Brentano's *Psychology from an Empirical Standpoint*, and continuing on through Husserl, early Heidegger, Sartre, and Merleau-Ponty.<sup>9</sup> Intentionality is also a central theme in the Analytic tradition, starting with Frege's theory of sense-determined reference, both linguistic and perceptual,<sup>10</sup> and Russell's theory of acquaintance, singular reference, and singular thought,<sup>11</sup> and continuing on through Wittgenstein both early<sup>12</sup> and late,<sup>13</sup> Peter Geach,<sup>14</sup> Roderick Chisholm,<sup>15</sup> John Searle,<sup>16</sup> Daniel Dennett,<sup>17</sup> Jerry Fodor,<sup>18</sup> Fred Dretske,<sup>19</sup> and many others.

Now in my opinion, the theory of intentionality in the Phenomenological tradition to which Husserl centrally belongs in fact originally derives from *Kant's* theory of cognition or *Erkenntnis*, and not from Scholastic

philosophy, which is at most a remote influence on Brentano's concept of intentionality, even despite his explicit use of Scholastic terminology.<sup>20</sup> For Kant, cognition or *Erkenntnis* is conscious objective mental "representation" or *Vorstellung* (CPR A320/B376–377). In turn, he grounds his epistemology and his metaphysics alike on the theory of objective *Vorstellung*. This is explicitly stated in the famous letter to Marcus Herz in 1772 that I have already quoted in Section III above:

[I] was then making plans for a work that might perhaps have the title "The Limits of Sense and Reason." I planned to have it consist of two parts, a theoretical and a practical. The first part would have two sections, (1) general phenomenology and (2) metaphysics, but only with regard to its nature and method... As I thought through the theoretical part, considering its whole scope and the reciprocal relations of its parts, I noticed that I still lacked something essential, something that in my long metaphysical studies I, as well as others, had failed to pay attention to and that, in fact constitutes the key to the whole secret of hitherto still obscure metaphysics. I asked myself: What is the ground of the reference of that in us which we call "representation" ("*Vorstellung*") to the object? (PC 10: 129–130)

In the 19th century neo-Kantian tradition and the early Analytic tradition, Kant's *Erkenntnistheorie* was flattened out into *epistemology*, i.e., the theory of justified true belief and responses to skepticism.<sup>21</sup> But *Erkenntnistheorie*, or the theory of cognition, in Kant's *original sense* focuses basically on the nature of the various innately-specified capacities or *faculties*, *acts/states/processes*, *contents*, and *objects* of conscious objective mental representation, and tries to explain how mental representation in precisely this sense is *possible*. Now a theory of cognitive content is also a theory of *meaning*, i.e., a *semantics*. So Kant's *Erkenntnistheorie* is essentially a *cognitive semantics*.<sup>22</sup>

According to Kant, then, the central fact about the human mind is its capacity to represent, or *vorstellen*, which is to say that

- (i) the human mind has something *X* "to put before" (*stellen... vor*) it, and
- (ii) that which puts *X* before the human mind is a mental representation (*Vorstellung*).

Our mental representational capacity cannot be further explained – it is simply a primitive fact about us:

What representation (*Vorstellung*) is cannot really be explained. It is one of the simple concepts that we necessarily have. Every human being knows immediately what representation is. Cognitions (*Erkenntnisse*) and representations are of the same sort... Every representation is something in us, which, however, is related to something else, which is the object. Certain things represent something, but we represent things. (*BL* 24: 40)

Mental representations, in turn, can be either conscious or nonconscious (*CPR* A78/B103).<sup>23</sup> The primary cognitive role of consciousness (*Bewußtsein*) is to contribute subjective integrity, or a well-focused and uniquely egocentric organization, to a mental representation (*CPR* B139). A conscious mental representation is thus an “idea” in the broadest possible sense. *Subjective* conscious mental representations are internal or immanent to consciousness and lack fully determinate form or structure. *Objective* conscious mental representations, by contrast, are determinate ways of referring the mind to any sort of object (i.e., some topic or target of the mind – what the representation is *about* or *of* or *directed to*), including the self considered as an object, as in self-consciousness or “apperception.” Objects of conscious mental representation also include existent or non-existent objects, and actual or possible objects. In short, conscious objective mental representation in Kant’s sense is essentially what the Phenomenologists later call *intentionality*.

For Kant, every objective conscious mental representation has both

- (i) a “form” (*Form*),
- and
- (ii) a “matter” (*Materie*) or “content” (*Inhalt*) (*CPR* A6/B9) (*JL* 9:33).

The form of an objective conscious mental representation is its *intrinsic structure*. Correspondingly, Kant argues in the Transcendental Aesthetic (*CPR* A19–49/B33–73) that all sensory perceptions have intrinsic *spatial and temporal* form or structure, and he argues in the “Metaphysical Deduction” sections of the Transcendental Analytic (*CPR* A64–83/B89–116, and B159) that all judgments have intrinsic *logical* form or structure. *Materie* is qualitative sensory content. *Inhalt* by contrast is *representational content*: this is also what Kant calls the “sense” or *Sinn* of an objective conscious mental representation, and its “meaning” or *Bedeutung* (*CPR* A239–240/B298–299) as well. The content, sense, or meaning of an objective conscious mental representation is the *information* (*Kenntnis*) (*CPR* B ix) that the cognizing mind has about its objects.



Since the same object can be represented in different ways, there is a many-to-one relation between mental contents (senses, meanings) and their corresponding objects. This doctrine was later recapitulated and reworked by Frege, in an explicitly linguistic context, as the distinction between “sense” (*Sinn*) and “reference” (*Bedeutung*).<sup>24</sup>

Unfortunately, Kant also sometimes uses the term ‘form’ to refer to purely psychological components of our use or grasp of an objective conscious mental representation (*BL* 24: 40). The notion of “form” in this Kantian sense is somewhat similar to what Descartes called the “formal reality” of an idea. More precisely, however, the Kantian “form” of an objective conscious mental representation is what nowadays, with a terminological nod to the Phenomenological tradition, we would call *cognitive phenomenology*. Nevertheless, *the very idea* of cognitive phenomenology had already been discovered and significantly developed by Kant 100 years before Brentano. In any case, Kantian cognitive phenomenology includes

- (i) the difference between clarity and unclarity, and between distinctness and indistinctness,
- (ii) different subjective attitudes of all sorts, or what Locke called “postures of the mind,” including but not restricted to propositional attitudes, and
- (iii) our direct conscious awareness of, and ability to distinguish between and generalize over, types of mental acts or mental operations of all different sorts (e.g., analysis, synthesis, memory, imagination, thought, judgment, etc.), which Kant calls “reflection” (*Überlegung*) (*CPR* A260/B316), and which is somewhat similar to Locke’s “ideas of reflection.”

Conscious mental representations can be either subjective or objective, but in either case they are necessarily accompanied by “sensations” (*Empfindungen*). The “matter” or phenomenal content of sensations – or what we would now call “phenomenal characters” – are qualitative intrinsic properties of all conscious representations. More precisely, however, sensation is “the effect of an object on the capacity for representation, insofar as we are affected by it” (*CPR* A19–20/B34), or in other words, a sensation together with its content is nothing but the subject’s direct response to endogenously- or exogenously-caused changes in its own state. Endogenously-caused sensations are “subjective sensations” (*CPJ* 5:206) or feelings, and exogenously-caused sensations are “objective sensations,” such as the sensations that accompany the perception of external objects (*CPJ* 5: 206).

An objective conscious mental representation, as I have mentioned several times already, is also known as an *Erkenntnis*, and this Kantian usage is essentially equivalent with the use of the term “cognition” in contemporary cognitive psychology. But in the B edition of the first *Critique* (see, e.g., at CPR Bxxvi, n.) Kant also uses the notion of cognition or *Erkenntnis* in a narrower sense to mean an objective conscious cognition of an actual or possible object of rational human sense perception, an actual or possible empirical object, or empirical state-of-affairs: namely, to mean an empirically meaningful or objectively valid judgment.<sup>25</sup> This narrower notion of cognition or *Erkenntnis* then directly contrasts with the notion of mere *thinking* or *Denken*, which is a conscious conceptual mental representation of any sort of object whatsoever, whether or not it is an object of actual or possible rational human sense perception.

So according to Kant, and in relation to this narrow sense of ‘cognition’, there are two categorically or essentially different kinds of *intentional objects*:

- (1) *cognizable objects*, or “thick” objects,  
and
- (2) *merely thinkable objects*, or “thin” objects.

As to the merely thinkable or thin objects, Kant explicitly points out that

Once I have pure concepts of the understanding, I can also think up objects that are perhaps impossible, or that are perhaps possible in themselves but cannot be given in any experience since in the connection of their concepts something may be omitted that yet necessarily belongs to the condition of a possible experience (the concept of a spirit), or perhaps pure concepts of the understanding will be extended further than experience can grasp (the concept of God).  
(CPR A96)

It is crucial to understand what Kant means by saying that “I can also think up objects that are perhaps impossible.” This does *not* mean that I can think up objects that are *analytically, conceptually, or logically impossible*, since he explicitly says that analytic, conceptual, and logical consistency is a necessary condition of all thinkability and of all thinkable objects:

I can **think** whatever I like, as long as I do not contradict myself, i.e., as long as my concept is a possible thought, even if I cannot give any

assurance whether or not there is a corresponding object somewhere within the sum total of all possibilities. (CPR Bxxvi n.)

Therefore what Kant must mean when he says that “I can also think up objects that are perhaps impossible” is that it is possible to think *synthetically, non-conceptually, non-logically, or “strongly metaphysically” a priori impossible* objects, i.e., objects that are analytically, conceptually, logically, and “weakly metaphysically” a priori self-consistent, and thereby *merely thinkable*, and thereby conceivable, yet nevertheless also inherently *uncognizable*, because they cannot be given via any actual or possible sensible intuition, and thus are *humanly unintuitable*:

The transcendental use of a concept in any sort of principle consists in its being related to things **in general** and **in themselves**; its empirical use, however, in its being related merely to **appearances**; i.e., objects of a possible **experience**. But that it is only the latter that can ever take place is evident from the following. For every concept there is requisite, first, the logical form of a concept (of thinking) in general, and then, second, the possibility of giving it an object to which it is to be referred. Without this latter it has no sense (*Sinn*), and is entirely empty of content (*Inhalt*), even though it may contain the logical function for making a concept out of whatever sort of *data* there are. (CPR: A238–239/B298)

Kant’s fundamental distinction between cognizable or thick intentional objects on the one hand, and merely thinkable or thin intentional objects on the other, thus corresponds directly to his equally fundamental distinction between

- (1\*) sensory appearances or *phenomena*,
- and
- (2\*) things-in-themselves or “*noumena*, that only the pure understanding can think” (CPR A251), i.e., “possible things, which are not objects of our sense at all, and [are called] beings of the understanding (*Verstandeswesen*) (*noumena*)” (CPR 306).

Back now to Husserl. As Husserl points out in Investigation V, “consciousness” (*Bewusstsein*) is *subjective experience*, where the notion of “experience” includes both

- (i) *Erlebnis*, i.e., “lived experience” or *phenomenal awareness*,
- and

- (ii) *Erfahrung* in Kant's sense, i.e., "objective experience" or *intentionality* that is directed towards either cognizable objects (thick objects) or merely thinkable objects (thin objects).

In turn, for Husserl every conscious intentional mental state *M* has four individually necessary and jointly individuating features:

- (1) *M* is a mental *act* (*psychischerAkt*) with its own "immanent content" or "act-matter" and its own specific character (i.e., phenomenal character),<sup>26</sup>
- (2) *M*'s mental act falls under a specific intentional *act-type* or "act-quality," e.g., perceiving, imagining, remembering, asserting, doubting, etc.,<sup>27</sup>
- (3) *M*'s mental act has an intentional *target*, which at the very least has ontic status or "being" (*Sein*) and perhaps also actual existence or "reality" (*Wirklichkeit*), although this target *need not necessarily* have reality – hence intentional targets can include fictional objects, impossible objects, abstract objects, ideal objects, etc.,<sup>28</sup> and
- (4) *M*'s mental act has an intentional *meaning content* or "semantic essence" (*bedeutungsmässige Wesen*), which presents its object in a certain specific way, where this meaning content is either *propositional* or *referential*.<sup>29</sup>

It is crucial to note that this general phenomenological analysis holds *both* for the intentionality of judgment and belief, which presupposes pure formal logic and necessarily requires the existence of natural language and the intentional subject's linguistic competence, *and also* for the intentionality of perception and other modes of sensory cognition such as imagination and memory, which do not presuppose pure formal logic or necessarily require the existence of natural language or linguistic competence.

In Investigation VI, Husserl argues that truth (*Wahrheit*) is the structural and semantic intrinsic conformity of a judgment to the very fact that satisfies its propositional content, and also argues that (in my terminology) High-Bar knowing or "self-evidence" (*Evidenz*) – whether High-Bar a priori knowledge or High-Bar a posteriori knowledge – is the (in my terminology) High-Bar justified, intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable intentional recognition of necessary or contingent truth.<sup>30</sup> Self-evidence has its own characteristic cognitive phenomenology. The basic structure of the

cognitive phenomenology of self-evidence is the goal-directed advance from “empty” intentions to “filled” intentions, whereby

- (1) empty intentions are logico-linguistically structured propositional contents insofar as they are *conceptually understood* by an intentional subject to specify the very facts that *could or would* satisfy those contents and thereby *make* those propositions true,  
and
- (2) filled intentions are logico-linguistically structured propositional contents insofar as the very facts that could or would satisfy them are also *non-conceptually intuited* by an intentional subject as *actually satisfying* those contents and thereby *making* those propositions true.<sup>31</sup>

In other words, and now formulated in an explicitly Kantian way, for early Husserl the cognitive-phenomenological profile of (in my terminology) High-Bar knowledge or self-evidence is a systematic advance from conceptual “understanding” (*Verstand*) to non-conceptual “intuition” (*Anschaung*), and this holds whether the High-Bar knowledge is a priori or a posteriori, and whether the truth-making fact that is intuitively experienced in intentional fulfillment as satisfying the relevant propositional content is a non-empirical or ideal (necessary or possible) abstract fact, or an empirical or real (contingent) concrete or natural fact.

In the case of non-empirical or ideal facts, the non-conceptual intuition by which the fact is self-evidently known is a *categorial* intuition.<sup>32</sup> Categorial intuitions are intentional states containing phenomenal characters that intrinsically and specifically pick out the formal and structural elements of the very facts that are known via intentional fulfillment, either by means of formal elements of perceptual consciousness, or by means of formal elements of logico-linguistic consciousness. In other words, categorial intuitions are phenomenologically self-evident acts or states of belief that satisfy both LOCKED-ONTO and STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC., and are therefore High-Bar justified true beliefs. So categorial intuitions are inherently or intrinsically connected to the truth-makers of those beliefs, hence they are partially constituted by those truth-makers, and they thereby produce High-Bar, synthetic a priori infallible, absolutely skepticism-resistant a priori knowledge.

For my purposes here, two paradigmatic examples of categorial intuition would be –

- (i) the way in which aggregates of directly and veridically perceived objects (say, seven martinis) are non-conceptually and pre-reflectively or first-order consciously “subitized” into finite groups (say, groups of 3 or 4), e.g.,

Y Y Y Y Y Y Y

and

- (ii) the way in which an evidentially verifying state-of-affairs as described by a statement or judgment appears to have the very same grammatical form as the sentence used to describe it., e.g.,

The seven martinis are sitting on the table. Y Y Y Y Y Y Y

Correspondingly, when rational human animals use sentences of basic arithmetic like “ $3+4=7$ ” or “Three plus four equals seven” in making necessarily true statements like “ $3+4=7$ ” or “Three plus four equals seven,” we are thereby non-conceptually and pre-reflectively or first-order consciously aware of an intrinsically-structured *temporal* flow of mental images associated with our visual or auditory cognition of those inscriptions or utterances. Indeed, recent empirical research on memory strongly indicates that the non-conceptual, pre-reflective or first-order conscious phenomenal look and sound of language is processed separately from the propositional cognition of linguistic meaning.<sup>33</sup> For example, I can vividly recognize and remember the look or sound of certain German sentences and words – e.g.,

Die Welt ist alles, was der Fall ist

or

Wovon man nicht sprechen kann, darüber muss man schweigen

(as, perhaps, screeched by the brilliant Finnish absurdist composer and singer M.A. Numminen<sup>34</sup>) – without recognizing or remembering what they mean.

Thus the mathematical propositions or statements that we express by means of the self-conscious, reflective, intentional conceptual acts of cognizing the linguistic meanings of arithmetic sentences, are also directly combined with a non-conceptual, pre-reflective or first-order

conscious grasp of the formal structure of experiential or lived time that, in turn, essentially conforms to what Brouwer calls the “first act of intuitionism,” which is

completely separating mathematics from mathematical language and hence from the phenomena of language described by theoretical logic, recognizing that intuitionistic mathematics is an essentially languageless activity of the mind having its origin in the perception of a move of time. This perception of a move of time may be described as the falling apart of a life moment into two distinct things, one of which gives way to the other, but is retained by memory. If the twofold thus born is divested of all quality, it passes into the empty form of the common substratum of all twofolds. And it is this common substratum, this empty form, which is the basic intuition of mathematics.<sup>35</sup>

And then, whenever we directly perceive a configuration of manifestly real material objects in the natural world that partially confirms the necessarily true arithmetic propositions or statements that we express – say, we see the three martinis on the kitchen table sitting alongside the four other martinis, yielding the look of seven martinis sitting on the kitchen table, e.g.,



– then the non-conceptual and pre-reflective or first-order conscious direct, veridical sense perceptions of those manifestly real material objects, supplemented by the self-conscious, self-reflective epistemic perceptions based on those direct, veridical perceptions, when taken together with their perceptual, imaginational, and memory-based synthesis in time as we explicitly or implicitly count them up, collectively immediately deliver to us a phenomenological formal structure that is also intrinsically isomorphic to the standard addition operation over the natural numbers 3 and 4 in the system of PA, especially including PRA, and thus *also* based essentially on a non-conceptual and pre-reflective or first-order conscious, direct, veridical sense perception of Hilbert’s basic objects of finitistic mathematical reasoning. This non-conceptual and pre-reflective or first-order conscious, direct, veridical visual experience is a *categorical intuition* in Husserl’s sense, and it necessarily impresses itself upon us as *mathematically intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable*,

where this necessarily also includes the satisfaction of LOCKED-ONTO and also the satisfaction of STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC.<sup>36</sup> Or in other words, Husserl's phenomenological notion of a categorial intuition smoothly fuses Brouwer's temporal-representation-based *intuitionist epistemology* of mathematics with Hilbert's spatial-representation-based *finitist epistemology* of mathematics.

But as regards the *logico-semantic foundations* of mathematics, we need not suppose that either reductive intuitionism or reductive finitism is true, just as we need not suppose that either classical Logicism or Neo-Logicism is true. Indeed we can even suppose that they are all *false* as general theories of the nature of mathematics, and that instead Kantian Structuralism and Kantian Intuitionism are true.

In this way, as a rational human animal and conscious intentional subject, in categorially intuiting that  $3+4=7$ , you are rationally obligated to believe the propositional content associated with that non-conceptual and pre-reflective or first-order conscious, veridical, direct visual experience, precisely because it is self-evident and cognitively virtuous. But, furthermore, it is *also* essentially reliable, synthetic a priori infallible, objective a priori knowledge of necessary truth, precisely because (i) that constructed-and-manipulated sensible form in Kantian pure or a priori intuition via the productive imagination, etc., is *locked onto* its truth-maker, and (ii) *strong disjunctivism about constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, etc.*, is also true of it, and these two facts jointly yield High-Bar justified true belief. This updated Husserlian doctrine, in its Kantian Structuralist and Kantian Intuitionist context, and with its Brouwerian and Hilbertian epistemological background, I think, provides a robustly realistic phenomenological interpretation of the classical Cartesian idea of *clear, distinct, and indubitable rational intuition* that is also perfectly consistent with analytic fallibilism.

Correspondingly, as I see it, the Tractarian Wittgenstein's equally deep epistemological idea is that to have logical or mathematical a priori knowledge is just

- (i) to be a conscious rational human animal who possesses an innately specified cognitive capacity or cognitive competence for non-conceptually and pre-reflectively or first-order consciously constructing, understanding, and using natural languages:



Human beings possess the capacity of constructing languages, in which every sense can be expressed, without having an idea of how and what each word means – just as one speaks without knowing how the single sounds are produced. Ordinary language is a part of the human organism and is not less complicated than it,<sup>37</sup> and

- (ii) actually to apply the meaningful logical and mathematical sentences or statements of those natural languages – e.g., “ $3+4=7$ ” or “Three plus four equals seven” – according to the implicit categorically normative rules of logic and of those natural languages, to a world of directly and veridically sense-perceivable manifestly real material objects in the natural world, whose configurations inherently satisfy those sentences or statements.

So if, plausibly, we take early Wittgenstein’s remarks about cognizing language to be anticipations of a broadly *Chomskyan* theory of language,<sup>38</sup> then our non-conceptually, non-self-consciously, pre-reflectively or first-order consciously, and thus “tacitly” knowing the logical and mathematical *parts* of a natural language is just a sub-species of our non-conceptually, non-self-consciously, pre-reflectively or first-order consciously, and thus “tacitly” knowing *a natural language* more generally.

This is High-Bar objective a priori knowledge in the sense of knowing exactly, but also only non-conceptually and pre-reflectively or first-order consciously, *how* to construct and manipulate or use the language according to categorically normative rules of human rationality,<sup>39</sup> but not High-Bar objective a priori knowledge in the sense of self-consciously or reflectively knowing exactly *what* one is doing or *that* one is doing it, whenever one actually does it. Or in other words, Wittgenstein is adumbrating the notion of a conceptually-apt, but also non-conceptually-mediated and pre-reflective or first-order conscious *categorically normative a priori mathematical and logical linguistic competence*.

# X

## Parsons, Kantian Structuralism, and Kantian Intuitionism

The question is how it is possible for a priori intuition to be “of” objects that are not given a priori. Kant’s own solution to the puzzle ... appeals to the idea that a priori intuition contains only the form of our sensibility. This evidently removes the causal dependence of intuition on the object. It is a nice question what is left of the characterization of intuition that gives rise to the puzzle. Kant’s solution seems to allow the *phenomenological* presence of an object to be preserved, but it is a further question whether what one has is a representation of a physical object, not individually identified and not really present, or a representation of a mathematical object. The former is not ruled out by the a priori character of pure intuition, as the “presence” might be that characteristic of *imagination* rather than sense. In fact, a number of passages in Kant indicate that just that is his position. Kant’s puzzle may have force for us, but we are not likely to accept the position that pure intuition contains only the form of sensibility, a central part of Kant’s transcendental idealism, at least not as Kant understood it.

– C. Parsons<sup>1</sup>

### X.1

Now I want to look at the basic points of Parsons’s theory of Mathematical Structuralism and mathematical intuition in his excellent book *Mathematical Thought and Its Objects*, especially chapters 2–3, 5, and 9, and then formulate six constructive worries about it. My working hypothesis is that *although* Parsons’s theory has been explicitly and significantly influenced by Kant (and also by Brouwer and Hilbert), and

*although* this theory is highly philosophically suggestive for my purposes, *nevertheless* the underlying problem with it is that it is *insufficiently Kantian*. The worries are “constructive” in the sense that I will use them in order to elaborate and defend Kantian Structuralism and Kantian Intuitionism *conjointly* somewhat beyond what I have already done *severally* in Sections VIII and IX.

## X.2

**(Parsons 1)** According to Parsons, intuition in the specifically philosophical sense is of two different basic kinds:

- (i) *intuition-that* P (judgment-based intuition, a.k.a., “conceptual intuition” or “propositional intuition”)
  - and
- (ii) *intuition-of* X (object-directed intuition, a.k.a. “non-conceptual intuition” or “perceptual intuition”).

This distinction, in turn, maps quite closely onto the classical Russellian distinction between:

- (i) knowledge-by-description
  - and
- (ii) knowledge-by-acquaintance.<sup>2</sup>

It is relevant to note here that Russell’s knowledge-by-description vs. knowledge-by-acquaintance distinction is clearly an updated version of *Kant’s* distinction between conceptualization and intuition (*Anschauung*). Notice also, however, that Parsons’s intuition-of (i.e., knowledge-by-acquaintance) is at least *minimally non-conceptual* in the sense that it implies representational states that are not determined by conceptual or propositional capacities alone, that do not presuppose the possession of concepts, and that do not presuppose the application of concepts. Intuition-of can also be directed to *propositions* taken as objects, as in “By the way,  $3+4=7$ . I love *that* proposition.”

**(Parsons 2)** According to Parsons, *rationality* is any mental capacity, act, state, or process essentially related to the provision of reasons, justification, logical inference, and logical principles, including consistency and systematization. *Ideal* rationality, in turn, is rationality that *fully and successfully* conforms to and satisfies all the basic norms and principles of reason. *Nonideal* rationality, by contrast, is rationality that *tries to* conform

to and satisfy all the basic norms and principles, even if it does not always manage to do so fully or successfully. The crucial point here is that non-ideal rationality is *still* rational and *not* either irrational or arational. This, in turn, conforms to The 2D Conception of rational normativity that is built into categorical epistemology (see Section IV.2 above).

(Parsons 3) According to Parsons, rational intuition-that is *non-infallible* (defeasible, fallible) yet also *intrinsically compelling* (completely convincing, self-evident) – and this is said to be relevantly similar to Quine’s notion of the “obviousness” of basic logical truths.<sup>3</sup> It is important to notice in this connection that the distinction between intrinsic compellingness and infallibility teases apart two different senses of *indubitability*:

- (i) the indubitability of *evidence* (especially a priori evidence),  
and
- (ii) the indubitability of *truth* (especially necessary truth).

Obviously these are logically independent notions, although just as obviously, they are also mutually consistent.

(Parsons 4) According to Parsons, rational intuition-that is *non-inferential*, i.e., not needing to be derived by inference or from premises. In this sense, rational intuition is logically and justificationally *self-contained*, although nothing inherently rules out an auxiliary inferential justification of it, whether deductive, inductive, abductive, or transcendental. Both the intrinsic compellingness (complete convincingness, self-evidence) and also the non-inferentiality of rational intuition-that are basically the same as two of the main components of authoritative rational intuition in the sense spelled out by me in Section V, by Husserl via his phenomenological notion of *Evidenz*, and by Wittgenstein via his Tractarian linguistic transformation of Russell’s notion of “self-evidence” or *die Einleuchten*. But the three other main components of authoritative rational intuition in my sense – i.e., apriority, essential reliability, and objective truth (especially necessary truth) – must be explained independently, according to Parsons.

(Parsons 5) Parsons explicitly raises the question: What accounts for the intrinsic compellingness and non-inferentiality of rational intuition-that, and in particular, what accounts for the intrinsic compellingness and non-inferentiality of *mathematical* intuition-that? For example, what accounts for the intrinsic compellingness and non-inferentiality of the rational intuition-that  $3+4=7$  or any other truth of PRA? Kant’s two-part answer, also explicitly adopted by Parsons, is

- (i) that *mathematical intuition-of* accounts for the intrinsic compellingness and non-inferentiality of rational intuition-that and
- (b) that mathematical intuition-of is in some way or another linked fundamentally to human *sense perception*.

**(Parsons 6)** According to Parsons, much of mathematics is too abstract and complicated to be suitable for mathematical intuition-of, e.g., the more complex parts of number theory, analysis, set theory, or geometry.

**(Parsons 7)** According to Parsons, because of The (in my terminology) Original Benacerraf Dilemma, there is no good reason to think that numbers themselves, taken as *abstract objects in the classical platonistic sense*, can be the proper objects of mathematical intuition-of. Mathematical intuition has to be sense-perception-like.

**(Parsons 8)** What is the nature of numbers and other mathematical objects, according to Parsons? He rejects both platonism and nominalism, and asserts Mathematical Structuralism as I spelled it out in Section VIII above. And he is explicitly a Non-Eliminative Structuralist, but remains officially neutral on the question of *Ante Rem* vs. *In Rebus* Structuralism.

**(Parsons 9)** According to Parsons, as a Non-Eliminative Structuralist, mathematical intuition-of is directed specifically to mathematical objects that are something over and above their merely being positions or roles in structures. Moreover, he holds that if any part of mathematics is capable of being intuited, then it must belong to *elementary arithmetic*, i.e., PA.

Now, Parsons asks himself, what class of objects satisfies both of the following criteria:

- (i) they inherently belong to the relevant elementary/Peano arithmetic structure as positions/roles in the structure (i.e., the criterion of Mathematical Structuralism), and
- (ii) they are also something over and above the structure, i.e., they do not explanatorily and ontologically “disappear” into the structure, as in Eliminative Structuralism (i.e., the criterion of Non-Eliminative Structuralism)?

Parsons thinks that *Brouwer’s intuitionist epistemology*<sup>4</sup> and *Hilbert’s finitist epistemology*<sup>5</sup> each provide crucial clues. From Brouwer, he takes the idea that the intuitable part of mathematics is *constructible* in repeatable

acts of human sensory intuition aided by the imagination. And from Hilbert, he takes the idea that the domain of construction is the domain of *tokens* of simple linguistic *types*, e.g., visually perceivable strokes such as our old friends –

||||||

According to Parsons, linguistic types are *quasi-concrete* in the sense that they are fully repeatable (multiply instantiable, multiply realizable) like classical platonic universals, yet they repeat (instantiate, realize) only *in* space and time.

(Parsons 10) Granting (Parsons 9), then Parsons’s basic idea about mathematical intuition-of is that any calculation in elementary arithmetic or PA can be represented intuitively in terms of calculations using strokes, e.g.,

3+4=7

is intuitively representable in sense perception, e.g., via our other old friends

|||+||||=||||||

More generally, any natural number can be represented in terms of simple stroke calculations. We see this by using our capacity for non-conceptual *sense-perception* together with our capacity for *imagination* – both in the form of *memory* and also in the form of the ability to create what Kant calls “schemata.” The relevant stroke construction, as perceived or imagined (via memory or Kantian schemata) is itself a *model* in the mathematical sense of any corresponding mathematical proposition or structure that describes or inscribes PA or the natural numbers. Otherwise put, according to Parsons’s Non-Eliminative Structuralism and Mathematical Intuitionism, at least some mathematical objects are *perceivable and imaginable role players of the natural number roles*, i.e., all the actual and possible stroke-constructions, and *these are the objects of mathematical intuition-of*.

### X.3

So that is Parsons’s doctrine in a nutshell. For *me*, however, these stroke constructions count as *evidential verifiers* of mathematical beliefs, not

**truth-makers** of mathematical statements. If Kantian Structuralism is correct, then the truth-makers are *the mathematical non-platonic, Kantian abstract structures themselves, insofar as they are implemented in the manifestly real natural world of the spatiotemporal material objects of human experience*, as directly and veridically represented by formal non-conceptual content, a.k.a. Kantian pure or a priori intuition. With that leading caveat in front of us, I now turn to six constructive worries about Parsons's account.

**First**, I have a worry about Parsons's minimal Non-Conceptualism about sense perception. Many contemporary philosophers of cognition (e.g., McDowell) are defenders of *Conceptualism*, and as I have argued elsewhere,<sup>6</sup> there are some quite strong Conceptualist arguments against minimal or "state" Non-Conceptualism that Parsons has not addressed. In particular, *the content* of a minimally non-conceptual state could still be conceptual, even if the state itself is not determined by conceptual capacities and does not entail concept-possession or concept-application. Otherwise put, for all that Parsons has said, what I have called *Highly Refined Conceptualism* could still be correct.

**Second**, because Parsons is a Mathematical Structuralist, he still has to account for our knowledge of mathematical *structures*. A natural Kantian-Browerian-Hilbertian suggestion here is that mathematical structures are grasped by our innately specified cognitive capacity or cognitive competence for non-empirically generating formal non-conceptual contents in sense perception or memory, by means of constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata, together with our innately specified capacity for *conceptualization*, together with our innately specified capacity for *logical cognition*. But Parsons never explicitly says this.

**Third**, because Parsons remains officially neutral about the difference between *Ante Rem* Structuralism vs. *In Rebus* Structuralism, then if it turns out that he is ultimately an *ante rem* structuralist, he would still have a significant commitment to classical platonism, and would therefore correspondingly still have a significant problem with The OBD. Indeed, and I think revealingly, Parsons explicitly *avoids* facing up to The OBD in *Mathematical Thought and Its Objects*.

**Fourth**, one basic worry about allowing stroke-constructions as mathematical objects themselves is that they do not seem to be *precise* in the way that classical mathematical objects are. One possibility here is that the *productive* imagination in the Kantian sense (see, e.g., CPR B151–152) might be used as a precisifying representational capacity – e.g., you see

the martini, and then you turn away, and after some productive imaginal processing in episodic memory, you have generated a martini-like or martini-like sensible form in Kantian pure or a priori intuition via the productive imagination, etc. – but, again, Parsons never actually says this.

**Fifth**, in order to represent all the natural numbers using stroke constructions, the imagination must be an *infinitary* cognitive capacity, at least in the sense that the cognizing subject can *always imagine adding one more stroke to an existing stroke sequence*. But that is a significant cognitive power which appears to be *spontaneous* and also *a priori* in Kant's sense. Or in other words, the relevant cognitive capacity or competence for imagination must be *productive* and *innately specified*. But, yet again, Parsons never explicitly asserts this.

**Sixth**, even if infinitary stroke constructions are allowed, nevertheless the method of stroke construction does not verify *all* of even *elementary* arithmetic, i.e., PA. More specifically, Peano's *axiom (5)* is not verified by stroke constructions, and requires the ability to grasp *quantifications* over all the numbers. So it seems clear that at most *quantifier-free finitist* arithmetic, i.e., PRA, could be verified by mathematical intuition in Parsons's sense. This puts serious epistemic limits on our mathematical intuition. Perhaps that would not be a genuine problem if Parsons's view were simply the combined Kantian-Brouwerian-Hilbertian epistemological doctrine that *nothing will count as mathematical knowledge of any kind unless it presupposes our innately specified cognitive capacity or cognitive competence to know at least some of the finitary sub-structures of PRA by basic authoritative rational intuition, by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, etc.*, but yet again he does not actually say that.

Now it seems to me that I can respond to these six worries about Parsons's account just by helping myself to some (I think, independently defensible) Kantian ideas and also to some ideas of my own, and also that this conjunction yields the defensible two-part theory of Kantian Structuralism in conjunction with Kantian Intuitionism.

**Re problem 1:** I think that we should accept a *maximal* or *content* non-conceptualism, namely what I call *Kantian essentialist content Non-Conceptualism*, a.k.a. *Kantian Non-Conceptualism* for short, which, again as I have argued elsewhere,<sup>7</sup> says that

- (i) non-conceptual content is categorically or essentially different in structure and psychological function from conceptual content,



and

- (ii) there really exist mental acts, states, or processes that are defined by their inherent inclusion of autonomous (i.e., altogether concept-free) essentially non-conceptual content, hence there really exist some mental acts, states, or processes whose contents are *not* determined by our conceptual capacities, and which specifically also includes
- (iii) a Kantian theory of *formal* autonomous essentially non-conceptual content, or pure or a priori intuition, according to which we directly and veridically represent the formal structures of space and time via subjective a priori forms of our empirical sensibility in inner sense and outer sense.

**Re problem 2:** I think that we should accept the combined Kantian-Brouwerian-Hilbertian epistemological doctrine that mathematical structures are grasped by our innately specified spontaneous cognitive capacity or cognitive competence for non-empirically representing the formal structures of space and time, via formal autonomous essentially non-conceptual contents, by means of constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., *plus* our innately specified spontaneous cognitive capacity or cognitive competence for conceptualization, *plus* our innately specified spontaneous cognitive capacity or cognitive competence for logical cognition.

**Re problem 3:** I think that we should accept the specifically Kantian idea that mathematical structures are all *non-platonic*, *Kantian abstract* structures, and also *weakly or counterfactually transcendentally ideal*, that is, *necessarily conforming to* the pure or a priori non-conceptual intuitional mental representations of those structures. The Non-Eliminative Structuralism that we need must include a specifically *non-platonic*, Kantian conception of abstractness, and the version of TI that we should accept is specifically weak or counterfactual transcendental idealism, a.k.a. WCTI, *not* strong transcendental idealism, a.k.a. STI.

**Re problem 4:** I think that we should accept the specifically Kantian idea that the imagination can be used as a *precisifying* representational capacity – e.g., you see the martini, then you turn away, and then, via its veridical representation in minimal episodic memory, you generate an *empirical schema* of a martini. This effectively mediates between actual perception and Kantian formal autonomous essentially non-conceptual content, i.e., Kantian pure or a priori intuition.

**Re problem 5:** Following on directly from that, I think that we should also accept the specifically Kantian theory of the *productive* imagination, as an innately specified, spontaneous cognitive capacity or cognitive competence for constructing and manipulating sensible forms in Kantian pure or a priori intuition, etc.

**Re problem 6:** Finally, I think that we should accept the following Kantian-Brouwerian-Hilbertian epistemic principle, **The KBH**, as a *non-basic* authoritative philosophical intuition about the nature of mathematical knowledge:

**The KBH:** Nothing will count as mathematical knowledge of any kind unless it presupposes our innately specified rational human cognitive capacity or cognitive competence for knowing at least some of the finitary sub-structures of PRA by basic authoritative rational intuition, by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata.

In other words, all mathematical knowledge of any kind, no matter how abstruse, presupposes that all rational human animals have at the very least an innately specified *cognitive capacity* or *cognitive competence* for High-Bar a priori knowledge of at least some objectively necessarily true statements of PRA by means of constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata. It is hard to see how anyone could seriously deny **The KBH**, as Tait so crisply points out that it is well worth quoting him yet again:

[A]lthough we cannot speak of the absolute security of finitism, there is a sense in which we can speak of its *indubitability*. That is, any nontrivial reasoning about number will presuppose finitist methods, and there can be no preferred or even equally preferable method from which to launch a critique of finitism. In other words, it is simply pointless to doubt it.<sup>8</sup>

But in any case, even at the risk of philosophical overdetermination, here is an explicit reductio argument for **The KBH**. Suppose, e.g., that we conceive of someone – let us call her *The ZF Superstar* – who

by hypothesis has full knowledge of the basic principles of Zermelo-Fraenkel set theory. Now add to it the further postulate that The ZF Superstar has *no cognitive capacity or cognitive competence whatsoever for PRA*. But that is clearly and distinctly absurd. So **The KBH** is true.

Let me now elaborate that *reductio* argument a little further, in order to bring out some other important points that also lurk nearby. By a “cognitive capacity or cognitive competence for PRA” I mean *an innately specified, pre-reflectively conscious ability, grounded on formal autonomous essentially non-conceptual content*, for knowing PRA by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., as opposed to *an occurrent conceptual, reflective, and self-conscious grasp of that very intentional performance* that immediately yields a basic authoritative rational intuition of PRA, and thereby also immediately yields High-Bar objective a priori knowledge of it. For example, an ordinary young child who can already speak his own natural language somewhat can come to know that  $3+4=7$  by counting on an abacus, his fingers, or a Hilbert-style stroke diagram; but obviously he will fail to have an occurrent conceptual, reflective, and self-conscious grasp of the sentence or statement “ $3+4=7$ .” The ordinary young somewhat linguistic child thereby possesses a skill, or know-how, for generating and manipulating *a constructive procedure* by means of which it is possible to have an occurrent conceptual, reflective, and self-conscious grasp of the sentence or statement “ $3+4=7$ ,” yet without actually having either a dispositional or occurrent conceptual, reflective, and self-conscious grasp of that sentence or statement. By deploying that skill, or know-how, he does *not* High-Bar know objectively a priori that  $3+4=7$ , where High-Bar a priori knowledge is High-Bar justified objectively necessarily true a priori belief, i.e., authoritative rational intuition. But at the same time, he *does constructively prove* that  $3+4=7$ , and thus he has *Low-Bar* justified objectively necessarily true a priori belief, i.e., *Low-Bar* a priori knowledge, but not *High-Bar* a priori knowledge, that  $3+4=7$ . He does not know that  $3+4=7$  by means of a mental act, state, or process that is intrinsically compelling or self-evident, via a properly-functioning cognitive mechanism, and essentially reliable. Or otherwise put, the ordinary young somewhat linguistic child’s successful counting procedure, for all intents and purposes, is *just another Gettier-like example* which shows, yet again, that *Low-Bar* justified true belief is not *High-Bar* knowledge.

It does not seem at all impossible, then, that The ZF Superstar might lack an occurrent conceptual, self-conscious or reflective grasp of PRA. After all, the great Indian mathematician Ramanujan was able to have

Low-Bar justified objectively necessarily true a priori belief, i.e., Low-Bar a priori knowledge, about certain highly abstruse parts of prime number theory, without also having either a dispositional or occurrent conceptual, self-conscious or reflective grasp of elementary proof theory,<sup>9</sup> i.e., without having High-Bar justified objectively necessarily true a priori belief, i.e., High-Bar objective a priori knowledge, about those parts of prime number theory.

But that possibility is *not* what I am specifically postulating for the purposes of my thought-experiment. What I am specifically postulating is that The ZF Superstar lacks even *an innately specified, pre-reflectively conscious ability*, or cognitive competence, *grounded on formal autonomous essentially non-conceptual content*, for knowing PRA by means of constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, etc. So she does not even have Low-Bar justified objectively necessarily true a priori belief about PRA. In particular, The ZF Superstar cannot count up to 10, or 5, or 2, or even to 1 by using an abacus, her fingers, or a stroke diagram. And she has not the slightest skillful or reflective grasp of what *zero* is. She cannot add, subtract, multiply, or divide. And so on. In other words, The ZF Superstar cannot effectively enumerate the membership of even the smallest sets, or tell the difference between an empty set and a non-empty set, much less effectively perform any of the primitive recursive functions over the members of any sets. How then could she ever know *any* higher set theory?

The answer, of course, to echo Tweedledum and Tweedledee, is: *Nohow*. The very idea of a fully-knowledgeable mathematician of any highly sub-specialized area in mathematical theory who also lacks even a non-conceptually grounded, innately-specified, pre-reflectively conscious cognitive capacity or cognitive competence for knowing PRA by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., is absurd and unintelligible. In other words, The ZF Superstar, minus a non-conceptually grounded, innately-specified, pre-reflectively conscious cognitive capacity or cognitive competence for knowing PRA via basic authoritative rational intuition, is *not* the Ramanujan of set theory. The ZF Superstar, any other purported mathematical Superstar, or indeed any other ordinary *rational human animal*, minus a non-conceptually grounded, innately-specified, pre-reflectively conscious cognitive capacity or competence for knowing PRA by means of constructed-and-manipulated sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., is simply a *non-*

*mathematical animal*, i.e., in effect a mathematical *dunce*, no matter how rational she might be in the *other* parts of her human animal life. In short, my thought-experiment shows the absurdity and unintelligibility of the thought that one could know any mathematics *whatsoever* without at least a non-conceptually grounded, innately-specified, pre-reflectively conscious cognitive capacity or cognitive competence for knowing PRA by means of the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, etc.

We are now in a position to revisit, in a constructively critical Parsons-inflected way, my positive or anti-skeptical, innatist, intuition-based solution to The OBD in Section VIII. Let us start with step 6 in the original formulation of The OBD:

- (6) But on the other hand, given (4), and since all abstract objects are causally non-efficacious or inert, it then follows that all abstract mathematical objects are causally non-efficacious or inert.

Now let us modify (6), and then complete The OBD in the following way, according to Kantian Intuitionism:

- (6\*) The original step (6) assumes that causally inert abstract mathematical objects, the truth-makers of mathematical statements, are platonically abstract *things-in-themselves* or *noumenally real things*, i.e., non-spatiotemporal, non-natural, non-sensory, causally irrelevant, causally inert entities constituted by “real essences,” i.e., intrinsic non-relational properties. But that assumption is false, given the Kantian view that things-in-themselves/noumena are inherently unknowable by cognizers like us, and therefore we should reject it.
- (7\*) On the contrary, we should assume instead that mathematical objects, the truth-makers of mathematical statements, are just non-platonic, Kantian abstract and weakly or counterfactually transcendently ideal a priori immanent structures of manifestly real spatiotemporal material objects in nature (phenomena), knowable by means of formal autonomous essentially non-conceptual contents in sense perception, memory, or imagination, and more specifically by means of the cognitive construction and manipulation of veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata, according to the

thesis of weak or counterfactual transcendental idealism, a.k.a. WCTI, and also satisfying the High-Bar normative epistemic principles of LOCKED-ONTO and STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC.

- (8\*) Now since manifestly real spatiotemporal material objects in nature are causally efficacious, then the formal autonomous essentially non-conceptual contents that pick out their non-platonic, Kantian abstract and transcendently ideal a priori immanent structures, i.e., the veridical sensible forms constructed and manipulated in Kantian pure or a priori intuition via the productive imagination, etc., must be at least causally relevant.
- (9\*) Therefore, the causally inert non-platonic, Kantian abstract mathematical structures that are necessarily implemented in the manifestly real spatiotemporal material natural world, which are *the truth-makers* of mathematical statements, inherently correspond to the causally relevant constructed-and-manipulated veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., that pick out those immanent structures, which are *the intentional targets* of basic authoritative mathematical rational intuition, and in turn inherently correspond to directly and veridically sense-perceivable manifestly real spatiotemporal material objects in nature, which are the causally efficacious *evidential verifiers* of mathematical beliefs or judgments in PA, especially including PRA.
- (10\*) Therefore, High-Bar, or absolutely skepticism-resistant, synthetic a priori infallible objective a priori knowledge of at least some necessary and a priori mathematical truths, by means of basic authoritative mathematical rational intuition, is really possible.

This completion constitutes a positive or anti-skeptical, innatist, rational-intuition-based solution for The OBD. Here are two further elaborative comments on this solution.

First, it needs to be re-emphasized that according to Kantian Structuralism and Kantian Intuitionism, the infinitary mathematical non-platonic, Kantian abstract structures of PA, especially including the finitist sub-structures of PRA, are only *weakly or counterfactually transcendently ideal*, that is, necessarily *conformable* to our formal autonomous essentially non-conceptual non-empirical/a priori mental representations of space and time, precisely to the extent that these

spatiotemporal representations are *taken together with* our possession of innately specified formal a priori meta-logical concepts and our innately specified cognitive-linguistic capacity or cognitive competence for constructing all classical or non-classical logical systems.<sup>10</sup> Thus our formal autonomous essentially non-conceptual non-empirical or a priori representations of space and time do not in any way *exhaust* PA, especially including PRA, much less the rest of mathematics, especially including Cantorian Arithmetic, a.k.a. CA: nevertheless those representations are *presupposed by* PA, especially including PRA, and also by the rest of mathematics, especially including CA.

**Second**, I am interpreting the “causal-and-empirical anchorage” feature of mathematical knowledge that is required by any adequate positive or anti-skeptical solution to The OBD, in specifically WCTI-based and direct perceptual realist terms, as either a direct, veridical sense perception of Hilbert-style stroke-constructions, *or any minimal-episodic-memory-based and imaginatively precisifiable constructed-and-manipulated sensible form in Kantian pure or a priori intuition via the productive imagination, etc., whatsoever, provided it has a veridical manifestly real spatiotemporal material natural structural basis*. Thus direct, veridical sense perception of the manifestly real material natural world gets us the evidential verifiers of mathematical beliefs or judgments, and veridical minimal episodic memory together with the productive imagination smoothly mediates between actual direct, veridical sense perception and formal autonomous essentially non-conceptual content, i.e., Kantian pure or a priori intuition.

According to Kantian Intuitionism, then, our High-Bar a priori knowledge of mathematical truths by means of mathematical beliefs or judgments involves the very same sorts of pre-reflective or first-order conscious, and non-conceptually grounded, but also conceptually-driven cognitive activities as knowing factual truths by means of ordinary linguistic perceptual judgments, in accordance with what Kant calls *empirical realism*, and what others have called “direct perceptual realism,” or what I call *radically naïve realism*.<sup>11</sup> In this way, our innately specified self-conscious or reflective conceptual capacity or conceptual competence for constructing, understanding, and using the logical and mathematical parts of natural language, together with our non-conceptually-grounded, innately specified capacity for direct, veridical sense perception and pre-reflective consciousness, by means of the cognitive construction and manipulation of veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery,

or schemata, when conjointly triggered appropriately by the world of directly and veridically sense-perceivable manifestly real material spatio-temporal objects in nature, and when correctly conjointly implemented by us, just *is* basic authoritative rationally intuitive mathematical High-Bar, absolutely skepticism-resistant, synthetic a priori infallible objective a priori knowledge. That is, and more briefly: You can High-Bar know some necessary mathematical truths objectively a priori in basic authoritative rational intuition when you are *both* pre-reflectively or first-order consciously, via autonomous essentially non-conceptual content, and *also* self-consciously or reflectively, via conceptual content, thinking or talking about mathematics correctly, and *furthermore* the underlying mathematical non-platonic, Kantian abstract structures of the manifestly real natural world uniquely satisfy the mathematical statements generated in your language of thought or in your outer speech.

As I mentioned in sub-section VII.2, elementary or Peano arithmetic is defined by the following five axioms:

- (1) 0 is a number,
- (2) the successor of any number is a number,
- (3) no two numbers have the same successor,
- (4) 0 is not the successor of any number,
- (5) any property which belongs to 0, and also to the successor of every number which has the property, belongs to all numbers,

together with the primitive recursive functions (basic calculations or basic operations) over the natural numbers – the successor function, addition, multiplication, exponentiation, etc. But axiom (5) is not verifiable in an inherently *non-conceptual* way, and on the contrary requires the inherently *conceptual* and self-conscious or reflective ability to grasp denumerably infinitary quantifications over all the numbers. Nevertheless, given our basic or non-basic authoritative rational intuitive knowledge of all the true propositions or statements covered by the first *four* axioms, in the finitist sub-structure captured by PRA, by means of constructed-and-manipulated veridical sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata, then there is no need whatsoever for a further reply to epistemic skepticism, since High-Bar justified true belief has thereby been achieved. Therefore our knowledge of PRA, for Kantian, Husserlian, Wittgensteinian, Parsonsian, Brouwerian, and Hilbertian epistemological reasons, paradigmatically exemplifies basic or non-basic authoritative mathematical rational



intuition, and also paradigmatically exemplifies High-Bar, absolutely skepticism-resistant, synthetic a priori infallible objectively necessary a priori mathematical knowledge, precisely because all the rational human abilities required to grasp it are located in an innately specified pre-reflectively or first-order conscious cognitive capacity or cognitive competence, grounded on autonomous essentially non-conceptual content, for knowing PRA via the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, etc., and also insofar as we can also have an occurrent conceptual, self-conscious or reflective grasp of PRA.

Although I cannot argue for this right here and now, it seems to me there must *also* be precisely analogous paradigmatic exemplifications of basic or non-basic authoritative rational intuition and High-Bar, absolutely skepticism-resistant, objectively necessary a priori knowledge in elementary geometry, elementary set theory, and elementary logic – e.g., *minimal Euclidean* geometry (roughly, classical Euclidean geometry minus the parallel postulate), *basic* set theory (roughly, classical set theory minus the naïve comprehension axiom, plus a spatiotemporal, empirical grounding of the zero-level sets),<sup>12</sup> and *first-order monadic* logic (roughly, classical first-order predicate logic minus polyadic predication and multiple quantification).<sup>13</sup> If so, then minimal Euclidean geometry, basic set theory, and first-order monadic logic, along with PRA, are *the essential starting points* of any adequate general theory of rational intuition and High-Bar objectively necessary a priori knowledge.

It is crucial to note that the scope of *a priori knowledge as such* in mathematics and logic, not to mention a priori knowledge in philosophy, far exceeds the scope of basic or non-basic authoritative rational intuition, i.e., it far exceeds the scope of *High-Bar* a priori mathematical, logical, and philosophical knowledge. For example, a priori knowledge in non-Euclidean geometry and topology, Zermelo-Fraenkel set theory, and classical first-order polyadic logic, and a priori knowledge in *the philosophy of* non-Euclidean geometry, of Zermelo-Fraenkel set theory, and of classical first-order polyadic logic, not even to mention the more recondite kinds of mathematics, logic, and philosophy – are only *constructedly* rationally intuitive, and at best fairly reliable. But, given **The KBH**, all *non-authoritative* and at best *fairly* reliable mathematical, logical, and philosophical a priori knowledge nevertheless presupposes the basic *authoritatively* rationally intuitible and thus *essentially* reliable parts of mathematics, logic, and philosophy, and constantly explicitly or implicitly draws upon them as it carefully advances from the less easily challenged, virtually uncontested, and more epistemically secure domains, towards the more challengeable, more contested, and

less epistemically secure domains. This epistemic advance is beautifully symbolically mirrored in the situation of Adam and Eve as they leave Paradise at the end of *Paradise Lost*, with a hard-won awareness of what is and what is not really possible for rational animals like us, in our “human, all too human” condition:

They looking back, all the eastern side beheld  
Of Paradise, so late their happy seat,  
Waved over by that flaming brand, the gate  
With dreadful faces thronged a fiery arms.  
Some natural tears they dropped, but wiped them soon;  
The world was all before them, where to choose  
Their place of rest, and Providence their guide.  
They hand in hand with wandering steps and slow,  
Through Eden took their solitary way.<sup>14</sup>

We can now see, I think, that Kantian Intuitionism is logically consistent, coherent, theoretically elegant, and also fully vindicated by a philosophical inference-to-the-best-explanation. This can be shown in four steps. **First**, we take the innately specified cognitive capacities or cognitive competences included in ordinary human direct, veridical sense perception and ordinary human linguistic cognition, especially including episodic memory and the productive imagination, seriously. **Second**, we take contemporary mathematical science and natural science seriously. **Third**, we reject classical platonism and accept Kantian Structuralism, along with its non-platonic, Kantian conception of abstractness, and weak or counterfactual transcendental idealism, a.k.a. WCTI, and also reject strong transcendental idealism, a.k.a. STI. **Fourth** and finally, if Kantian Structuralism and WCTI are both true, then Kantian Intuitionism is also true, precisely because our actual world of directly, veridically sense-perceivable manifestly real material spatiotemporal objects intrinsically carries with it and necessarily implements the non-platonic, Kantian abstract denumerable infinitary structures of the system of PA, especially including the finitist sub-structures of PRA, and *also* the robust structural ontology of its conservative non-denumerably infinitary extensions such as CA, and thus directly and veridically perceptually presents, via formal autonomous essentially non-conceptual content, i.e., via Kantian pure or a priori intuition, the system of natural numbers, i.e., the intended model of PA, to any rational human animal who is also cognitively competent in the mathematical parts of her own natural language. Therefore, Kantian Intuitionism is the best overall explanation of mathematical knowledge.

# XI

## Why Logic Must Be Transcendental

[The logic of the general use of the understanding] contains the absolutely necessary rules of thinking, without which no use of the understanding takes place, and it therefore concerns these rules without regard to the difference of the objects to which it may be directed.... Now general logic is either pure or applied logic. In the former we abstract from all empirical conditions under which our understanding is exercised.... A **general** but **pure** logic therefore has to do with strictly *a priori* principles, and is a **canon of the understanding** and reason, but only in regard to what is formal in their use, be the content what it may.... A **general logic**, however, is called applied if it is directed to the rules of the use of the understanding under the subjective empirical conditions that psychology teaches us.... In general logic the part that is to constitute the pure doctrine of reason must therefore be entirely separated from that which constitutes applied (though still general) logic. The former alone is properly science.... In this therefore logicians must always have two rules in view. 1) As general logic it abstracts from all contents of the cognition of the understanding and of the difference of its objects, and has to do with nothing but the mere form of thinking. 2) As pure logic it has no empirical principles, and thus draws nothing from psychology.... It is a proven doctrine, and everything in it must be completely *a priori*.

(CPR A52–54/B76–78)

Logic is not a theory but a reflexion of the world. Logic is transcendental.

– L. Wittgenstein<sup>1</sup>

## XI.1

As Jerrold Katz very aptly pointed out, “the news that something works in the philosophy of mathematics ought to be good news for philosophy as a whole.”<sup>2</sup> In this section, I will spell out a positive or anti-skeptical, innatist, rational-intuition-based solution to The Extended Benacerraf Dilemma or The EBD, that closely parallels my solution to The Original Benacerraf Dilemma or The OBD. Along the way, it will also become even clearer

- (i) how the solutions to The OBD and The EBD jointly provide a general template for solving *The Generalized Benacerraf Dilemma*, a.k.a. The GBD,  
and
- (ii) how *philosophical* authoritative rational intuition is explained and vindicated by the very same lines of reasoning that solve The OBD, The EBD, and The GBD.

## XI.2

Both Kant and early Wittgenstein held the perhaps surprising thesis *that logic is transcendental*. I will call this *The L-is-T Thesis*. The L-is-T Thesis says:

Logic is objectively necessarily true, a priori, High-Bar knowable by means of basic or non-basic authoritative rational intuition, and also *transcendentally explains* (a.k.a. “is the condition of the possibility of”) all rational human cognition and thought.

Here, in turn, is the relevant notion of a *transcendental explanation*, via the preliminary notion of a *transcendental argument*.

An *argument* is a set of sentences or statements  $\Gamma$  (and possibly  $\Gamma =$  the null set of sentences or statements), i.e., the premises, such that a sentence or statement  $S$  (which may or may not be a member of  $\Gamma$ ), i.e., the conclusion, is held to follow validly or soundly from  $\Gamma$ . Then an argument is a *transcendental argument* if and only if

- (i) some version of transcendental idealism, whether strong transcendental idealism (STI) or weak or counterfactual transcendental idealism (WCTI), is assumed to be true,  
and

(ii) that argument advances from a sentence or statement  $S$ , taken as a single premise, to an a priori necessary presupposition  $APNP$  of  $S$  – i.e., “a condition of the possibility” of  $S$  – taken as a single conclusion, as follows:

- (1)  $S$ .
- (2)  $S$  presupposes  $APNP$ .
- (3) Therefore,  $APNP$ .

For example, let  $S$  = “There are 7 martinis sitting on the kitchen table” and let  $APNP$  = “ $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**, i.e., **At least some of the truths of PRA are actually known and repeatedly knowable a priori by basic authoritative rational intuitions, via Hilbert-style basic objects of finitistic mathematical reasoning, i.e., via our cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata.**”

(1) There are 7 martinis sitting on the kitchen table, e.g.,

Y Y Y Y Y Y Y

- (2) The sentence or statement that there are 7 martinis sitting on the kitchen table presupposes the a priori necessary truth that  $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**. For if it were *not* the case that  $3+4=7$  holds as a paradigmatic instance of PRA that is High-Bar known by basic authoritative rational intuition, that is, if it were *not* the case that the primitive recursive functions over the natural numbers, like addition, are known to hold by basic, intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable objectively necessarily true a priori rational intuitions, then it would be *neither* true that there are 7 martinis sitting on the kitchen table *nor* false that there are 7 martinis sitting on the kitchen table.
- (3) Therefore,  $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**. (From (1) and (2).)

An  $APNP$  can be either analytic a priori (indeed, trivially, every analytic truth is presupposed by every meaningful sentence or statement

whatsoever) or synthetic a priori, but in either case it is known by basic authoritative philosophical rational intuition.

In turn, an *explanation* is a set of sentences or statements  $\Gamma$  (and  $\Gamma$  cannot be the null set of statements) and another sentence or statement  $S$  (which cannot be a member of  $\Gamma$ , on pain of circularity), such that some sort of necessitation relation is held to obtain between  $\Gamma$  and  $S$ , i.e.,

$$\Box (\Gamma \rightarrow S)$$

Then an explanation is a *transcendental explanation* if and only if there is an a priori necessary presupposition *APNP* of a sentence or statement  $S$  such that *APNP*, when taken together with some or another set of true general and specific claims ( $C_1, C_2, C_3 \dots C_n$ ) derived from either direct, veridical sense perception or natural science, is also related to  $S$  in the following way:

$$\text{Syn Ap } \Box \{[APNP \ \& \ (C_1, C_2, C_3 \dots C_n)] \Box \rightarrow S\}$$

or in other words,

Synthetically a priori necessarily, if *APNP* and also some or another set of general and specific claims ( $C_1, C_2, C_3 \dots C_n$ ) derived from either direct, veridical sense perception or natural science all *were to be true*, then  $S$  *would be true*.

Thus a sound transcendental explanation demonstrates a synthetic a priori subjunctive conditional relation between an *APNP*, which is known by basic authoritative philosophical rational intuition, and an  $S$ , which is known by any other reliable method of knowledge, via some body of fundamental knowledge claims provided by either direct, veridical sense perception or natural science. Otherwise put, a sound transcendental explanation demonstrates that *APNP* is “*the condition of the possibility*” of  $S$ .

For example, let  $S$  = “There are 7 martinis sitting on the kitchen table,” let *ANPP* = “ $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic,**” and let “( $C_1, C_2, C_3 \dots C_n$ )” be a set of relevant general and specific claims taken from either direct, veridical sense perception or natural science about martinis, tables, their causal-dynamic relations, and the nature of the sitting-on relation. Then the following is a sound transcendental explanation:

- (1) There are 7 martinis sitting on the kitchen table, e.g.,



- (2) Synthetically a priori necessarily, if “ $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic**” and also a set of relevant general and specific claims derived from either direct, veridical sense perception or natural science about martinis, tables, their causal-dynamic relations, and the nature of the sitting-on relation, all *were to be true*, then it *would* be true that there are 7 martinis sitting on the kitchen table.
- (3) Therefore, the a priori necessary truth that  $3+4=7$  and **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic** is the condition of the possibility that there are 7 martinis sitting on the kitchen table, e.g.,



Now Kant held The L-is-T Thesis because he held that pure general logic is the strictly universal and a priori science of the laws of thought. Early Wittgenstein, by a significant contrast, held The L-is-T Thesis because he held that the classical second-order logic of Frege’s *Begriffsschrift*, and Russell and Whitehead’s *Principia Mathematica*, is built into the very nature of my language and also into the very nature of the world my language represents.

I fully agree with Kant and early Wittgenstein that The L-is-T Thesis is true. But two things about the The L-is-T Thesis are quite obscure in Kant’s and early Wittgenstein’s writings in philosophical logic:

- (1) Precisely which argument, or arguments, can adequately justify The L-is-T Thesis?  
and
- (2) Precisely what are the basic implications of The L-is-T Thesis?

In the next sub-section I will present five arguments for The L-is-T Thesis and also spell out their basic implications, which include Kantian Structuralism and Kantian Intuitionism about logic. In sub-section XI.4 I will show how The L-is-T Thesis solves The EBD. And then in sub-section XI.5 I will show how this solution to The EBD provides a general template for solving The GBD.

### XI.3

#### Argument 1: First-Order Monadic Logic and Pure General Logic Are Both Transcendental

The first argument is intended to show that both first-order monadic logic and pure general logic are, in addition to being objectively necessarily true, also a priori necessary presuppositions (*APNPs*) of all rational human cognition and thought, hence “transcendental” in the sense specified in sub-section XI.2 above.

It is both relevant and important to note that as early as C.I. Lewis’s seminal 1918 book *Survey of Symbolic Logic*, there was a fundamental distinction in the 20th century logical tradition between

- (i) *formal* or *symbolic* logic, which is essentially a rigorous development of Kant’s notion of pure general logic, and
- (ii) what Russell aptly called *mathematical* logic, which is *second-order* because it includes whatever logical or semantic machinery is needed to quantify over and talk about functions, predicates, and relations, and also other characteristically mathematical furniture like sets, numbers, and spaces.<sup>3</sup>

The reason that this distinction is philosophically important is that for Kant, it is also possible to have a pure or completely a priori logic that is topic *specific*, or systematically sensitive to special ontological commitments, which is what he calls *transcendental* logic (*CPR* A62/B87). Strikingly, early Wittgenstein seems to have had, in effect, the very same idea about transcendental logic in the *Tractatus*, as we saw in this section’s second epigraph:

Logic is not a theory but a reflexion of the world. Logic is transcendental.<sup>4</sup>

In this way, *mathematical logic* in Russell’s sense would count as a transcendental logic for both Kant and the Tractarian Wittgenstein.

Transcendental logic in Kant’s sense, however, also inherently contains *necessarily true synthetic a priori statements*, which would not have been allowed by Wittgenstein in his Tractarian period. Nevertheless, from a Kantian standpoint, it seems quite true that if early Wittgenstein had admitted necessarily true synthetic a priori statements into *his* tran-



scendental logic, then this would have made it possible for him to provide a coherent account for the logico-semantic status of the infamous Two Colors Proposition, a.k.a. The TCP. Here is what early Wittgenstein says explicitly about The TCP in the *Tractatus*:

For two colours...to be at one place in the visual field, is impossible, logically impossible, for it is excluded by the logical structure of colour.<sup>5</sup>

In this way, early Wittgenstein regards The TCP – i.e., “For two colours...to be at one place in the visual field, is impossible” – as a logical truth of elementary logic. But this forces him into the dilemma of *either* giving up the logical independence of atomic propositions – e.g., the logical independence of the atomic propositions

**(Red)** Point *P* in visual space is red all over,

and

**(Green)** Point *P* in visual space is green all over,

– *or else* devising some analysis of propositions like **(Red)** and **(Green)** which smoothly converts them and all their analogues into complex or molecular propositions, in order to be able to assert that the obvious mutual exclusion relation between **(Red)** and **(Green)** is a purely logical relation. But for early Wittgenstein, facing up to this dilemma also means giving up his account of the nature of logic and logical analysis in the *Tractatus*, which is precisely what the post-Tractarian Wittgenstein more or less explicitly does in 1929 in “Some Remarks on Logical Form,” by claiming that atomic propositions *can* be mutually logically contradictory,<sup>6</sup> and then by later observing to Waismann that this move in fact leads to absurdity:

Now suppose the statement “An object cannot be both red and green” were a synthetic judgment and the words “can not” meant logical impossibility. Since a proposition is the negation of its negation, there must also exist the proposition, “An object can be red and green.” This proposition must also be synthetic. As a synthetic proposition it has sense, and this means that the state of things represented by it *can obtain*. If “can not” means *logical* impossibility, we therefore reach the consequence that the impossible *is possible*.<sup>7</sup>

From a contemporary Kantian standpoint, however, it seems to me obvious that the correct way out of this dilemma is to allow for two *essentially different* kinds of necessity, namely,

- (1) analytic, conceptual, logical, or “weak metaphysical” a priori necessity, i.e., the necessity that flows from the nature of concepts, and
- (2) synthetic, essentially non-conceptual, non-logical, or “strong metaphysical” a priori necessity, i.e., the necessity that flows from the nature of the immanent structures of things in the manifestly real world, as represented by via formal autonomous essentially non-conceptual content,

which is the same as to hold the thesis of *Kantian modal dualism*. Given Kantian modal dualism, and given the fact that impossibility is definable in terms of necessity and negation, one can coherently hold that **(Red)** and **(Green)** are logically independent propositions and yet also non-logically mutually exclusive propositions, by holding that the mutual exclusion relation between them is one of *synthetic, essentially non-conceptual, non-logical, or “strong metaphysical” a priori impossibility*, not analytic, conceptual, logical, or “weak metaphysical” a priori impossibility.

In any case, as I have mentioned already, Kant holds that the truths of arithmetic and geometry are synthetic a priori, not analytic. One reason he does so is because he at least implicitly thinks that the representational content of mathematics rests on logic *plus* our a priori representations of the formal structures of asymmetrically directional time (for the purposes of representing Primitive Recursive Arithmetic or PRA, and its conservative extensions, including Peano Arithmetic or PA) or orientable 3-D Euclidean space (for the purposes of representing Euclidean geometry and its conservative extensions, including classical Non-Euclidean geometry<sup>8</sup>). But another, and ultimately equivalent, way of expressing the synthetic apriority of arithmetic and geometry is to point out that the logic which represents them must contain irreducibly *relational* predicates whose satisfaction conditions require the existence of at least one object in the actual world (e.g., in the case of identity) or otherwise the existence of at least two objects in the actual world, and in some cases (e.g., the case of the relational predicates needed to represent the standard Peano axioms for arithmetic) the existence in the actual world of at least a denumerably infinite number of objects. Thus all the logical truths of the first-

order, inherently polyadic, and multiply-quantified part of Frege's logic – i.e., classical first-order predicate logic with identity – in contemporary Kantian terms, are *synthetic a priori*, not analytic.

Frege's logic includes set theory, as well as an axiom, Rule V, that allows for the unrestricted formation of sets, nowadays called *the naïve comprehension axiom*, and of course it leads directly to Russell's Paradox about the logically explosive (a.k.a. "viciously impredicative") status of the set  $K$  of all sets that are not members of themselves, whose existence yields the unhappy paradoxical result that  $K$  is a member of itself if and only if it is not a member of itself. Russell's mathematical logic includes a principle – *the vicious circle principle* – which stipulatively rules out not only the "vicious impredicativity" of unconstrained iterative set theory that leads to Russell's Paradox, but also all the "benign impredicativity" of classical Cantorian Arithmetic, a.k.a. CA.<sup>9</sup> But Russell's mathematical logic also includes something called *the axiom of infinity*, which posits the existence of at least a denumerably infinite number of objects in the domain of discourse, and which is arguably not a purely logical principle. Moreover, and in any case, Russell's mathematical logic still threatens to allow for paradoxical or vicious impredicativity with respect to *functions, predicates, and relations*, even if it stipulatively rules out impredicative sets, unless one makes a further clearly non-logical assumption Russell calls *the axiom of reducibility*.<sup>10</sup>

In other words, the crucial issue here is whether the rational core of classical logic should be taken to be second-order logic in either the Fregean or Russellian sense, or instead is *elementary logic*: i.e., bivalent first-order polyadic predicate calculus with identity.<sup>11</sup>

Tarski, e.g., both emphatically and explicitly supported the thesis that elementary logic, not second-order logic, is the core classical logic:

The terms "logic" and "logical" are used [by most contemporary logicians] in a broad sense, which has become almost traditional in the last decades; logic is here assumed to comprehend the whole theory of classes and relations (i.e., the mathematical theory of sets). For many different reasons I am personally inclined to use the term "logic" in a much narrower sense, so as to apply it only to what is sometimes called "elementary logic," i.e., to the sentential calculus and the (restricted) predicate calculus.<sup>12</sup>

But even *elementary logic* contains some arguably non-logical factors. For example, since

(1)  $a=a$

is an instance of the law of identity and can be introduced into any line of a proof as a theorem of logic, and thus as depending on the empty set of premises, it follows immediately that

(2)  $(\exists x) x = x$

which says *that something exists*, is *also* a theorem of logic, which seems highly implausible. Why couldn't there be logically possible worlds with no individual objects in them (i.e., the empty domain of discourse); and furthermore, why couldn't there be logically possible worlds in which *nothing whatsoever* exists?<sup>13</sup>

Quine, significantly, holds that identity is indeed *part* of the rational core of classical logic, yet also *excludes* set theory from this core:

The upshot is, I feel, that identity theory has stronger affinities with its neighbors in logic than with its neighbors in mathematics. It belongs in logic.

We turn now from identity to set theory. Does it belong in logic? I shall conclude not.<sup>14</sup>

By sharp contrast, for contemporary Kantians, both Frege's logic and also Russell's mathematical logic, and indeed *any* logic that is an inherently relational or polyadic logic and also includes identity, hence elementary logic, and also any logic that includes set theory, and any logic that is a second-order logic more generally, will all count as synthetic a priori *transcendental* logics, not pure general logics, precisely because they all include special ontological commitments that take them significantly beyond the scope of pure general logic. To the same effect, in the specific case of set theory, Quine accurately and aptly points up the significant philosophical advantages of Kant's pure general logic over Frege's logic:

Altogether, the contrasts between elementary logic and set theory are so fundamental that one might well limit the word "logic" to the former... and speak of set theory as mathematics in a sense exclusive of logic. To adopt this course is merely to deprive "ε" of the status of a logical word. Frege's derivation of arithmetic would then cease to count as a derivation from logic; for he used set theory. At any rate we should be prepared to find that [Carnap's] linguistic doctrine of

logical truths holds for elementary logic and fails for set theory, or vice versa. Kant's readiness to see logic as analytic and arithmetic as synthetic, in particular, is not superseded by Frege's work (as Frege supposed), if "logic" be taken as elementary logic. And for Kant logic certainly did not include set theory.<sup>15</sup>

And basically the very same points could be made for the comparison and contrast between Kant's logic and Russell's mathematical logic, just by uniformly substituting "Russell" for "Frege" and "second-order logic" for "set theory" in that quotation from Quine.

This brings me to the heart of the matter. Kant thinks of *pure general logic* as the core classical logic because it is analytic, a priori, and strictly universal but also more fundamentally because it bears no burden of ontology and holds equally for empty domains of discourse and worlds with nothing whatsoever in them, as well as for occupied domains and worlds containing sets, functions, or relations. Now Kant's pure general logic, as it happens, is a *second-order intensional monadic logic*. It is second-order and intensional because it both includes and quantifies over fine-grained, decomposable concepts, as well as possible-worlds extensions.<sup>16</sup> By another sharp contrast, Quine's and Tarski's elementary logic is an extensional logic, and not an intensional logic; moreover, elementary logic is also inherently polyadic or relational, and it includes identity. Nevertheless, where Kant's pure general logic and elementary logic *fully overlap* is precisely in *first-order monadic logic*, which is bivalent truth-functional logic together with a restricted predicate logic employing quantification over individuals and into one-place predicates only.<sup>17</sup> In empty domains, or in completely empty possible worlds, *first-order monadic logic collapses into truth-functional logic*.

Therefore, if we zero in on first-order monadic logic and explicitly take into account how it collapses into truth-functional logic in empty domains and empty worlds, it follows that in first-order monadic logic we have before us an ultra-pasteurized version of Kant's pure general logic that is also the perfect candidate for being "sheer logic" in Quine's sense:

If sheer logic is not conclusive, what is? What higher tribunal could abrogate the logic of truth functions or of quantification?<sup>18</sup>

In part, this is because of the following highly significant historical intersection of doctrines in the philosophy of logic:

- (1) Kant implicitly accepts first-order monadic logic as belonging to the rational core of classical logic,
- (2) Frege implicitly accepts first-order monadic logic as belonging to the rational core of classical logic,
- (3) Russell implicitly accepts first-order monadic logic as belonging to the rational core of classical logic,
- (4) The Tractarian Wittgenstein implicitly accepts first-order monadic logic as belonging to the rational core of classical logic,
- (5) Tarski implicitly accepts first-order monadic logic as belonging to the rational core of classical logic, and
- (6) Quine implicitly accepts first-order monadic logic as belonging to the rational core of classical logic.

Furthermore, as Quine implicitly showed us, first-order monadic logic is also *the paradigm of logical analyticity*. Therefore first-order monadic logic, as being logic in a way about which Kant, Frege, Russell, early Wittgenstein, Tarski and Quine could all fully agree, is *pure general, paradigmatically analytic, core classical, "sheer" logic*. Indeed, when we realize that it was *precisely* the pure generality, paradigmatic analyticity, core classicality, and sheerness of first-order monadic logic that Kant implicitly had in mind when he wrote

That from the earliest times **logic** has traveled this secure course [of a science] can be seen from the fact that since the time of Aristotle it has not had to go a single step backwards... . What is further remarkable about logic is that until now it has also been unable to take a single step forward, and therefore seems to all appearances to be finished and complete. (*CPR* B xviii–xix),

then we can clearly see that Kant's notorious remark was entirely apt, arguably self-evidently true, and precisely the reverse of outrageous.

Following out Kant's deep thoughts about the nature of pure general logic and (implicitly) first-order monadic logic, then, let us call the pure logical properties of truthful consistency, soundness, completeness, decidability, and logical truth or analyticity *The Logical Perfections*. As in standard treatments of contemporary logic, consistency is the property of the formal non-contradictoriness of statements, or alternatively the property of there being at least one interpretation in which all members of a given set of statements are true (a.k.a. the set of statements "has a model"). Soundness is the property such that all provable sentences or theorems in a logical system are logically true or tautologous.

Completeness is the property such that all tautologies are theorems, or provable sentences. And decidability is the property such that there is a finite recursive procedure for determining tautologousness. By the perhaps slightly unfamiliar notion of the *truthful consistency* of given logical system  $\Sigma$ , moreover, I specifically mean that:

- (i)  $\Sigma$  never includes arguments that lead from true premises to false conclusions (= truth-preservation),  
and
- (ii)  $\Sigma$  never includes contradictions as theorems of logic (= non-dialetheism – i.e., no “truth-value gluts” or “true contradictions” allowed).

We can think of truthful consistency as the *Highest or Supreme Good* of logic, and we can also think of this systemic feature together with all the other Logical Perfections as proper parts of the *Complete Good* of logic.

The Logical Perfections collectively specify the standards of High-Bar rational normativity for logic. But it is also true that each of The Logical Perfections is not independently essential to logic. *Dialetheic paraconsistent* logical systems are possible,<sup>19</sup> in which contradictions can occur as true sentences or statements or even as theorems of logic (= dialetheism), and such systems are thereby not truthfully consistent, provided that the system also contains an axiom that prevents every sentence or statement whatsoever from being entailed by any given contradiction (= paraconsistency), a logical phenomenon that is called “Explosion.” For example, arguably both The Liar Sentence (which asserts its own falsity)<sup>20</sup> and The Gödel Sentence (which provably asserts its own unprovability)<sup>21</sup> are true contradictions, and these true contradictions can arguably be allowed into logical systems as true sentences or even theorems, provided that Explosion is ruled out.

Correspondingly, some logical systems are not sound, e.g., dialetheic paraconsistent systems. Some logical systems are sound but not complete, e.g., elementary logic plus the standard Peano axioms for arithmetic. And some logical systems are undecidable, e.g., elementary logic. As Gödel showed, undecidability and indeed also logical unprovability both apply to some individual true statements in any formal system rich enough to contain elementary logic plus (enough of) the standard Peano axioms for arithmetic, and such systems are consistent if and only if they are incomplete and have their ground of truth outside the system itself. Decidability on its own, however, can also apply to a formal system consisting entirely of what Kant would have regarded as irreducibly synthetic a priori truths, e.g., the truths of PRA.

More generally, it is only in the context of a logic of *analyticity* that decidability closes the tight High-Bar circle of all The Logical Perfections. Indeed, when we see that the tight circle of The Logical Perfections can actually be exemplified in at least two logics – i.e., either classical *truth-functional logic* or *first-order monadic logic*, both of which are truthfully consistent, sound, complete, decidable, and analytic – then we realize that each of these logics constitutes a maximal, ideal, or High-Bar normative standard of *rational systematicity*. This maximal, ideal, or High-Bar rational normative standard, as Kant points out, necessarily guides all rational and scientific inquiry in a *regulative* way. But this ideal must *not* also be regarded as *constitutive* in Kant's sense. For the tragically mistaken thesis that the maximal, ideal, or High-Bar rational normative standard realized by classical truth-functional logic or first-order monadic logic applies to any *other* set of statements or body of knowledge will inevitably lead to fundamental metaphysical errors and insoluble logical paradoxes and puzzles, as The Transcendental Dialectic clearly shows in great detail (CPR A293-A704/B349–732). For Kant, at least implicitly, the background logic of The Transcendental Dialectic is dialethic paraconsistent – dialethic because truth-value gluts occur as theorems, e.g., in The Antinomies of Pure Reason, but also paraconsistent, since invoking the distinction between appearances or phenomena and things-in-themselves or noumena automatically converts antinomous statements from dialethic contradictories into contraries that are consistently both false, and Explosion is thereby prevented.

In the Introduction to the *Jäsche Logic*, Kant himself uses the term “logical perfections” (*logische Vollkommenheiten*) in essentially the same way I have just used it (JL 9: 33–81). But Kant of course did not know about meta-logic. Now since Kant did not know about meta-logic, he also did not know that the first-order monadic logic that is embedded in his pure general logic is truthfully consistent, sound, complete, and decidable, although he did of course (at least implicitly) know that first-order monadic logic is analytic a priori, since (again, at least implicitly) he knew that second-order intensional monadic logic is analytic a priori. Strikingly, and by contrast, classical first-order predicate logic with polyadic predicates and multiple quantification is truthfully consistent, sound, and complete, but *not* decidable, and (as we have seen) *not* analytic.

What are we to make of the fact that first-order monadic logic – or logic in a sense that Kant, Frege, Russell, Tarski, and Quine all implicitly but fully affirm as belonging to the rational core of classical logic – is provably truthfully consistent, sound, complete, decidable, *and also* analytic a priori? One possibility is that first-order monadic



logic is the logic *which best captures our most unshakeable and therefore basic authoritative rational “obviousness”* <sup>22</sup> *intuitions about logical analyticity in natural language*. Indeed, even Quine himself implicitly admits this, which can be easily enough seen by recalling his initial definition of analyticity, adding one minor qualifier to his famous remark about “sheer logic,” and then juxtaposing these two seminal Quinean texts:

[Analytic statements] fall into two classes. Those of the first class, which may be called *logically true*, are typified by:

(1) No unmarried man is married.

The relevant feature of this example is that it not merely is true as it stands, but remains true under any and all reinterpretations of “man” and “married”. If we suppose a prior inventory of *logical* particles, comprising “no,” “un-,” “not,” “if,” “then,” “and,” etc., then in general a logical truth is a statement which is true and remains true under all reinterpretations of its components other than the logical particles.<sup>23</sup>

If sheer logic is not conclusive, what is? What higher tribunal could abrogate the logic of truth functions or of [monadic] quantification?<sup>24</sup>

Notice here that all analytic statements of the same form as “No unmarried man is married” involve first-order *monadic* quantification only. And not only the logic of truth functions but also the logic of first-order monadic quantification each counts as *conclusive, sheer* logic. But first-order monadic logic is the logic of truth functions plus the logic of first-order monadic quantification. So according to Quine, at least implicitly, first-order monadic logic must be the logic which best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about logical analyticity in natural language.

Now if first-order monadic logic is the logic which best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about logical analyticity in natural language, then it is arguable that pure general logic, insofar as it inherently contains first-order monadic logic, along with fine-grained, decomposable intensions and possible-worlds extensions, is the *Universal Natural Logic* of human natural languages insofar as it best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about *all kinds of analyticity* in natural language, just as Chomsky’s *Universal Grammar* best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about *all kinds of grammaticality* in natural languages.<sup>25</sup>

Here we need also to consider a distinct although, ultimately, closely related point. One of the great advances of 20th century logic was the discovery and development of non-classical logics. Non-classical logics are of two distinct kinds:

- (i) *extended logics*, which preserve all the tautologies, theorems, inference rules, syntactic rules, and semantic rules of classical logic, but add some new ones,  
and
- (ii) *deviant logics*, which reject some of the tautologies, theorems, inference rules, syntactic rules, or semantic rules of classical logic, and may also add some new ones.<sup>26</sup>

Extended non-classical logics are *conservative*, while deviant non-classical logics are *radical*. For example, second-order logic and classical modal logic are extended logics, whereas Intuitionist logic (which rejects the universal principle of excluded middle, or PEM) and dialethic paraconsistent logic (which as I mentioned above, rejects the universal principle of non-contradiction, or PNC, and accepts the existence of “truth-value gluts” or “true contradictions,” provided that it also contains an axiom that rules out the entailment of every statement whatsoever by any given contradiction, a.k.a. “Explosion”) are deviant logics.

Given the distinction between extended and deviant non-classical logics, and assuming the plausibility of my earlier claim that pure general logic, insofar as it inherently contains first-order monadic logic together with fine-grained, decomposable intensions and possible-worlds extensions, is the logic which best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about all kinds of analyticity in natural language, and is arguably the Universal Natural Logic of all natural languages, then I think that we can now also see that pure general logic plausibly arguably captures *the a priori essence of logic*, in the threefold sense that

- (i) synthetically a priori necessarily, if *anything* counts as a logic, then pure general logic, insofar as it inherently contains first-order monadic logic, will count as a logic,
- (ii) synthetically a priori necessarily, if *anything* is either an extended or a deviant logic, then it is nothing but either a conservative extension or a deviant of pure general logic, insofar as it inherently contains first-order monadic logic, and

- (iii) synthetically a priori necessarily, the conservative extension of first-order monadic logic to pure general logic captures the a priori essence of *logical analyticity*, since pure general logic is just second-order intensional monadic logic and best captures our most unshakeable and thus basic authoritative rational “obviousness” intuitions about all kinds of analyticity in natural language.

### **Argument 2: The Absolute Unrevisability Argument**

The second argument is intended to show that at least one logical principle, which is fully presupposed by first-order monadic logic and pure general logic alike, is itself absolutely unrevisable, and therefore, in addition to being objectively necessarily true, is also an a priori necessary presupposition (*APNP*) of all rational human cognition and thought, and thus is also “transcendental” in the sense specified in sub-section XI.2. That logical principle in its alethic and fully spelled-out version is what I call **Minimal Non-Contradiction**:

Not every sentence or statement in any or every language or logical system whatsoever is both true and false, i.e.,  $\sim (\forall S) (S \ \& \ \sim S)$ .

**Minimal Non-Contradiction** also has a deontic version formulated as a *logical categorical imperative*:

You categorically ought to accept as truths in any or every language or logical system only those sentences or statements which do not entail that it and all other sentences or statements in any or every language or logical system whatsoever are both true and false.

This logical categorical imperative version of **Minimal Non-Contradiction**, in turn, guarantees what I will call *minimal truthful consistency*. Truthful consistency, as such, means that you must accept as truths in a language or logical system only those sentences or statements which do not entail that *any* argument in that (or any) language or system leads from true premises to false conclusions. By contrast, *minimal truthful consistency* means that you must accept as truths in any language or logical system only those sentences or statements which do not entail that *every* argument in that (or any) language or system leads from true premises to false conclusions. This latter notion of course is consistent with holding that *some* arguments in that language or system lead from true premises to false conclusions, and indeed is also consistent

with holding that some arguments in the language or system lead from the *null* set of premises to *necessarily false* conclusions. If so, then some sentences or statements in that language or system are both true and false, hence are truth-value gluts or “true contradictions.” So minimal truthful consistency is consistent with dialethic paraconsistency.<sup>27</sup> In other words, then, **Minimal Non-Contradiction** essentially secures minimal truthful consistency, and rules out Explosion. It is not a strictly *truth-preserving* logical principle, and not even a strictly *consistency-preserving* logical principle, but it nevertheless strictly rules out *global inconsistency*, i.e., logical anarchy or chaos, which is the ultimate result of Explosion: If every sentence or statement whatsoever follows from a contradiction, then the negation of every sentence or statement whatsoever also follows from a contradiction, and therefore every sentence or statement whatsoever is a truth-value glut or true contradiction.<sup>28</sup>

In the 1980s, Hilary Putnam very plausibly argued that the negative version of this minimal logical meta-principle is the one absolutely indisputable a priori truth:

I shall consider the weakest possible version of the principle of [non-] contradiction, which I shall call the minimal principle of [non-] contradiction. This is simply the principle that *not every statement is both true and false...* [I]f, indeed, there are no circumstances in which it would be rational to give up our belief that *not every statement is both true and false*, then there is at least one *a priori truth*.<sup>29</sup>

Although the 1980s Putnam apparently holds a sharply different conception of apriority from mine – indeed, arguably, he holds a version of Quineanism, or Conception 5 in my catalogue of eleven conceptions of the a priori in sub-section IV.6, as opposed to Contemporary Kantian Neo-Rationalism, or Conception 11, which I take to be the correct theory of apriority – nevertheless our accounts do converge perfectly on the *transcendental* logico-semantic status of the statement that  $\sim (\forall S) (S \ \& \ \sim S)$ , i.e., on the transcendental logico-semantic status of **Minimal Non-Contradiction**.

### Argument 3: The Logocentric Predicament Argument

The third argument is intended to show that, if the first two arguments are sound and if I am correct that first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all “transcendental” in the sense specified in sub-section XI.2, then this compound “tran-

scendental fact” can be used to provide an adequate solution to the very hard philosophical problem of *The Logocentric Predicament*. So we can then conclude that logic is transcendental *by an inference to the best philosophical explanation*.

The Logocentric Predicament is this: How can logic ever be justified or explained if logic must be presupposed and used in order to justify or explain logic? As I mentioned in Section VII.2 above, this problem is essentially the same as the one that the Harvard logician Harry Sheffer – known best for his discovery of the Sheffer stroke function – called “the logocentric predicament” in a 1926 review of the second edition of *Principia Mathematica*:

The attempt to formulate the foundations of logic is rendered arduous by a... “logocentric” predicament. In order to give an account of logic, we must presuppose and employ logic.<sup>30</sup>

In 1895 Lewis Carroll had pointed up a closely related worry in “What the Tortoise Said to Achilles,” by arguing that the attempt to generate the total list of premises required to deduce validly the conclusion of an argument leads to a vicious regress.<sup>31</sup> Carroll’s argument was resuscitated in 1936 by Quine in “Truth by Convention,” where he pointed out that the attempt to define logical (or analytic) truth on the basis of syntactic meta-logical conventions alone is viciously circular in a Tortoise-like fashion, because pre-conventional logic is already required to generate the truths from the conventions.<sup>32</sup> And in 1976 Susan Haack raised what is in effect the same worry, but this time in the form of a worry about the very idea of a justification of logical deduction, by arguing as follows:

- (1) All justification is either non-deductive (e.g., inductive) or deductive.
- (2) On the one hand a non-deductive justification of deduction is too weak and on the other hand a deductive justification of deduction is circular.
- (3) Therefore, deduction cannot be justified.<sup>33</sup>

Philosophers of logic have attempted various solutions to The Logocentric Predicament, the Tortoise regress problem, and the problem of justifying deduction. I will not canvass these attempts here, although I do cover them and critically analyze them in detail in another place.<sup>34</sup> My intention here is just to suggest how we could use the notions of first-

order monadic logic and pure general logic to solve The Logocentric Predicament and its associated problems. Suppose that pure general logic really does capture the a priori essence of logic *just because*, insofar as it contains first-order monadic logic, and also falls under **Minimal Non-Contradiction**, it thereby adequately captures all The Logical Perfections – truthful consistency, soundness, completeness, decidability, and above all, analyticity – and it is also The Universal Natural Logic. Then since all rational theorizing, explanation, and justification whatsoever presuppose logic, it follows that pure general logic must also be the a priori essence of all rational theorizing, explanation, and justification whatsoever.

More explicitly, this line of transcendental argument solves The Logocentric Predicament by showing us that pure general logic is the explanatory and justificatory *unique rationally obligatory theoretical primitive*. Pure general logic is *the one and only science necessarily by virtue of which and in terms of which* every judgment, belief, claim, inference, science, or more generally any theoretical activity or product that is in any way justifiable or explicable by reasons *categorically ought to be explained or justified*. Pure general logic is then both adequately explained and justified when we learn that every explanation and justification *whatsoever*, including the explanation and justification of *every other logic*, both *has to* presuppose and use pure general logic, and has to presuppose and use it *alone*, and also *rightly does so*. Pure general logic – The Universal Natural Logic, the paradigm of logical analyticity – is that logic which, uniquely, we must and ought to presuppose and use in order to *construct* any other logic, in order to *construct* any rational explanation whatsoever, in order to *construct* any rational justification whatsoever, and in order to *construct* any rational theory whatsoever. Pure general logic is therefore adequately justified because it is absolutely indispensable to the pursuit of all our rational cognitive aims and projects. Hence the contemporary Kantian ethicist Onora O’Neill very aptly calls this line of argument “a constructivist vindication of formulas of logic.”<sup>35</sup>

The philosophical thesis of *Constructivism*, whether inside or outside of ethics, holds that human agents or the human mind play an active, basic role in determining and generating the content of all beliefs, truths, knowledge (especially including the knowledge of language), desires, volitions, act-intentions, and logical or moral principles. In this way, The Logocentric Predicament, the Tortoise regress problem, and the problem of justifying deduction are just ways of *showing us* pure general logic’s primitive and unique a priori status in any cognitive, scientific,

or more generally theoretical constructive activity or product, and in particular its absolutely unique a priori categorically normative status in *all* constructive theoretical explanation and justification whatsoever, including any attempt to construct theoretically an explanation or justification of logic itself. Pure general logic is *the one and only categorically normative a priori condition of the possibility* of all constructive theoretical explanation and justification whatsoever. Otherwise put, pure general logic *must be presupposed and used* in every constructive theoretical explanation and justification whatsoever. And *that* is why logic must be presupposed and used in any attempt to justify or explain logic. It is partially constitutive of our rational humanity and absolutely indispensable to the pursuit of all our rational cognitive aims and projects. In this sense, pure general logic is not only *transcendental*<sup>36</sup> but also our rational human logical *duty*.

As applied specifically to the problem of justifying deduction, my transcendentalist solution then looks like this:

- (1) All justification is either non-deductive (e.g., inductive) or deductive.
- (2) On the one hand, an inductive justification of deduction is too weak, and on the other hand, a deductive justification of deduction is circular.
- (3) But an appeal to categorically normative a priori principles of human rationality provides non-deductive (hence non-circular) justification that is neither inductive nor otherwise too weak.
- (4) Pure general logic is the one and only categorically normative a priori condition of the possibility of all constructive theoretical explanation and justification whatsoever.
- (5) Therefore, insofar as it conforms to pure general logic, deduction is justified.

#### **Argument 4: The Non-Supervenience Argument**

The fourth argument is intended to show, again, that first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all a priori in my specifically Kantian not-merely-epistemic modal or strict underdetermination conception of apriority (see sub-section IV.6 above), but also in a way that is interestingly distinct from that of **Argument 1**.

In Section IV.2 above, I argued that even if the *existence* of necessary truths logically strongly supervened on everything, it would not

follow that their *specific character* logically strongly supervenes too. For although all logically necessary truths in first-order monadic logic and pure general logic are necessarily equivalent, their *structural senses* are different in virtue of their inherently different logical forms. For example, “ $P \rightarrow P$ ” does not have the same structural sense as “ $P \vee \sim P$ ” because its logical form is inherently different. It is in virtue of *transformation* rules – e.g., De Morgan’s Equivalences – that we are able to move from one logical truth having a certain structural sense, to another logical truth having a distinct although necessarily equivalent structural sense. So their structural senses can vary independently of their being logically necessarily true, and this intensional fact is made manifest by the application of transformation rules. In turn, therefore, their structural senses do not logically strongly supervene on whatever it is that their existence logically supervenes on, under the supposition that their existence logically strongly supervenes on everything. And that is true in every logically possible world: logically necessary truths in first-order monadic logic and pure general logic with inherently different logical forms are all intensionally non-equivalent. So their specific character does not *logically* strongly supervene on *anything*, except of course on first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** themselves. Nor does their specific character *merely strongly* supervene on anything, except of course on first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** themselves. If their specific character does not either logically or merely strongly supervene on anything but first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** themselves, then since none of these is strongly supervenient on any and all empirical facts (= any and all sense experiences and/or contingent natural objects or facts), *they are all a priori*.

#### Argument 5: The Weak Transcendental Ideality Argument

Suppose that I am correct that first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all “transcendental” in the sense specified in sub-section XI.2. The fifth and final argument is intended to *explain* why this is so by showing that first-order logic, pure general logic, and **Minimal Non-Contradiction** are all *weakly or counterfactually transcendentally ideal*, or WC-ly TI, for short.

So now I am going to argue explicitly that first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all WC-ly TI.

1. First-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are either (i) physical, (ii) platonic, (iii) sense-experiential,



- (iv) conventional or social, or (v) transcendentally ideal, and there are no other relevantly distinct options. (Premise, justified by constructed philosophical rational intuition)
2. If either first-order monadic logic, pure general logic, or **Minimal Non-Contradiction** were physical, then they would be contingent. But first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all necessary. So first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are not physical. (Premise, justified by constructed philosophical rational intuition)
  3. If either first-order monadic logic, pure general logic, or **Minimal Non-Contradiction** were platonic, then they would be unknowable by Benacerraf's Dilemma considerations. But first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all High-Bar knowable a priori. So first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are not platonic. (Premise, justified by constructed philosophical rational intuition)
  4. If either first-order monadic logic, pure general logic, or **Minimal Non-Contradiction** were sense-experiential, then they would be a posteriori. But first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all a priori. So first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are not sense-experiential. (Premise, justified by constructed philosophical rational intuition)
  5. If either first-order monadic logic, pure general logic, or **Minimal Non-Contradiction** were conventional or social, then they would be either physical, sense-experiential, logically strongly supervenient on physical facts or sense-experiential facts, or merely strongly supervenient on physical facts or sense-experiential facts. But neither first-order monadic logic, nor pure general logic, nor **Minimal Non-Contradiction** is either physical, sense-experiential, logically strongly supervenient on physical facts or sense-experiential facts, or merely strongly supervenient on physical facts or sense-experiential facts. So neither first-order monadic logic, nor pure general logic, nor **Minimal Non-Contradiction** is conventional or social. (Premise, justified by constructed philosophical rational intuition)
  6. Therefore first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all transcendentally ideal. (From 1–5, and Disjunctive Syllogism)
  7. If something is transcendentally ideal, then it is either strongly TI or else WC-ly TI, and there are no other relevantly distinct options. (Premise, justified by constructed philosophical rational intuition)

8. Strong TI is false. (Premise, justified by constructed philosophical rational intuition)
9. Therefore first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all WC-ly TI. (From 7, 8, and Disjunctive Syllogism)

The argument I have just spelled out is clearly valid, since it is in the form of two simple disjunctive syllogisms in classical sentential logic. But at the same time, it is equally clear that its soundness rests on the seven premises, each justified by *constructed* philosophical rational intuition, involving some context-sensitive, contingent, and partially empirical, partially holistic, and partially inferential elements, whose rational support is therefore only *fairly* reliable, and does not flow from the highest kind of evidence, i.e., basic or non-basic authoritative rational intuition. Nevertheless, I do think it can still be truly said that this argument makes a *fairly plausible case* for the weak or counterfactual transcendental ideality of first-order monadic logic, pure general logic, and **Minimal Non-Contradiction**.

If the five arguments I have just spelled out are all in fact sound, then The L-is-T Thesis is true for first-order monadic logic, pure general logic, and **Minimal Non-Contradiction**. Now if first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all objectively necessary, a priori, and do not logically supervene on anything but themselves, then none of them logically supervenes on anything physical, contingent, sense-experiential, or conventional or social. This in turn entails that not everything logically supervenes on the physical world, the contingent natural world, the sense-experiential natural world, or the social world. So Scientific Naturalism is false, physicalism is false, and also Empiricism is false, including classical or Lockean-Humean Empiricism, radical or Quinean Empiricism, and Logical Empiricism. If first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all categorically normative for all rational human cognition and thought, then they are necessarily presupposed by, and also conditions of the possibility of, all rational human cognition and thought. Because first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all weakly or counterfactually transcendently ideal, and because *strong* transcendental idealism is false, it also follows that platonism about logic is false, and that logic is abstract in the non-platonic, Kantian sense *only*. And finally, because first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all transcendental in *all* senses of that

notion as I specified it in sub-section XI.2, it follows that actual human rationality, actual human cognition, actual human thought, first-order monadic logic, pure general logic, and **Minimal Non-Contradiction** are all essentially bound up with one another and stand or fall together. More precisely, the latter three (= first-order monadic logic, pure general logic, and The Minimal Principle of Non-Contradiction) *transcendentally explain* the former three (= actual human rationality, actual human cognition, actual human thought). As Kant and early Wittgenstein so brilliantly saw, philosophical logic bottoms out in Kantian epistemology and serious transcendental metaphysics.

#### XI.4

From here on in, I will assume that The L-is-T Thesis is true and explicitly deploy it in order to work out a solution to The Extended Benacerraf Dilemma, a.k.a. The EBD. Obviously, the heavy burden of proof for *any* adequate solution to The EBD is the threefold task of

- (i) clarifying the nature of abstract logical objects,
- (ii) providing an account of the cognitive mechanism of logical intuition, and then
- (iii) showing how these are internally related to one another in logical High-Bar a priori knowledge, i.e., High-Bar justified necessarily objectively true a priori belief.

In the rest of this sub-section, then, I will sketch a four-part *transcendental* theory of logical rational intuition that seems to do the job,<sup>37</sup> and also explicitly extends Kantian Structuralism and Kantian Intuitionism to logic. It also provides a general template for solving The GBD.

##### **Part One: Kantian Structuralism for Logic**

The first part of the theory is Kantian Structuralism as specifically applied to logic. According to *Non-Reductive* Structuralism, as I have already pointed out in sub-section VIII.2, abstract objects of some specific kind are not construed as independently existing entities but instead are taken to be, *essentially*, distinct roles, positions, or offices in a *structure*, that is, an abstract formal relational system consisting of a coherent set of interlinked patterns or configurations.<sup>38</sup> So the thesis of my non-reductive Logical Structuralism is that each logical system is an abstract formal relational totality consisting of a coherent set of logical patterns or configurations, and that logical objects are *nothing*

*more than and also nothing less than* distinct roles, positions, or offices in some such system.

According to my view, both logical objects and their constitutive logical structures are abstract in a strictly non-platonic, Kantian sense, according to which something is abstract if and only if it is not uniquely located in actual spacetime, whereas all and only concrete things are uniquely located in actual spacetime. This non-platonic, Kantian conception of abstractness not only takes on board Parsons's fruitful notion of "quasi-concreteness," and also Katz's similarly fruitful notion of "composite objects" that are both abstract and concrete,<sup>39</sup> but also and above all, allows for the causal relevance of abstracta. In this way, then, I can assert both non-reductive Logical Structuralism and the abstractness of logical structures while also not committing myself to the highly problematic thesis that logical objects and their constitutive logical structures are platonically abstract and therefore causally irrelevant, as well as being causally inert. On the contrary, if I am correct, then logical objects and their constitutive structures are *non-platonic*, Kantian abstract structures, and therefore causally relevant, even if not causally efficacious, precisely because they are all *weakly or counterfactually transcendentally ideal* and also cognitively constructed by rational human animals *in language*, whether in the language of thought or in a public language.<sup>40</sup> In this way, the non-platonic, Kantian abstractness of logic is the abstractness of a *weakly or counterfactually transcendentally ideal linguistic structure*, a formal relational system consisting of a coherent set of interlinked patterns of linguistic types that necessarily conforms to the innately-specified cognitive capacities of the rational human mind.

## **Part Two: Kantian Intuitionism for Logic**

This brings me to the second part of the theory: Kantian Intuitionism as specifically applied to logic. Assuming that logical objects and their constitutive structures are non-platonic, Kantian abstract precisely because they are weakly or counterfactually transcendentally ideal and also cognitively constructed by rational human animals in language, I am now also claiming that the primary cognitive mechanism of authoritative rational intuition in logic is *the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata*, and correspondingly, the phenomenal continuous isomorphism, spatial-structure-coincidence, or temporal-structure-coincidence that occurs in the specifi-

cally pattern-matching activities of rational human sense perception, minimal episodic memory, and/or the imagination. This, in turn, fully satisfies both LOCKED-ONTO and also STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC., and guarantees that authoritative rational intuitions in logic are High-Bar justified by virtue of being self-evident, cognitively virtuous, and inherently or intrinsically – hence non-accidentally or necessarily – connected to the logically necessary truth-makers of those beliefs, which partially constitute those rational intuitions, and thereby produce High-Bar objective a priori knowledge. This in turn yields Kantian Intuitionism for logic.

It seems to me, as it also seemed to Kant, that the primary cognitive mechanism for authoritative rational intuition, whether in mathematics, logic, or philosophy, is *the veridical productive or schematizing imagination* insofar as it builds on direct, veridical sense perception and minimal episodic memory, via formal autonomous essentially non-conceptual content, i.e., Kantian pure or a priori intuition, and not on sense perception *alone*:

We will call this formal and pure condition of the sensibility, to which the use of the concept of the understanding is restricted, the **schema** of this concept of the understanding...The schema is in itself always only a product of the imagination; but since the synthesis of the latter has as its aim no individual intuition but rather only the unity in the determination of sensibility, the schema is to be distinguished from the image. Thus, if I place five points in a row, ..., this is an image of the number five. On the contrary, if I only think a number in general, which could be five or a hundred, this thinking is more the representation of a method for representing a multitude (i.e., a thousand) in accordance with a certain concept than the image itself, which in this case I could survey and compare with the concept only with difficulty. Now this representation of a general procedure of the imagination for providing a concept with its image is what I call the schema for this concept.

In fact it is not images of objects but schemata that ground our pure sensible concepts....[T]he **image** (*Bild*) is a product of the empirical faculty of productive imagination, [but] the **schema** of sensible concepts (such as figures in space) is a product and as it were a monogram of pure a priori imagination, through which and in accordance with

which the images first become possible... The schema of a pure concept of the understanding... is something that can never be brought to an image at all, but rather is only the pure synthesis, in accord with a rule of unity according to concepts in general, which the category expresses, and is a transcendental product of the imagination, which concerns the determination of inner sense in general, in accordance with conditions of its form (time). (*CPR* A140–142/B180–181)

In turn, my Kant-inspired rationale for holding that the proper cognitive mechanism for authoritative rational intuition – whether in mathematics, logic, or philosophy – is the veridical productive or schematizing imagination insofar as it builds on direct, veridical sense perception and minimal episodic memory, via autonomous essentially non-conceptual content, i.e., Kantian pure or a priori intuition, and not on sense perception alone, is that the veridical productive or schematizing imagination has three basic features *not* also shared by sense perception on its own.<sup>41</sup>

**First**, I can veridically schematically imagine an object *O* even though *O* is not uniquely located in spacetime, whereas I cannot veridically sense-perceive *O* unless *O* is uniquely located in spacetime.

**Second**, to generate a veridical schematic mental image of an object *O* is thereby to generate a figural or spatiotemporal image, distinct from *O* itself, that is directly available to introspective scanning and manipulation (for example, image-rotation, zooming in, pulling back, etc.) whereas to perceive *O* veridically is not *thereby*<sup>42</sup> to generate anything figural or spatiotemporal, distinct from *O* itself, that is directly available to introspective scanning and manipulation.

And **third**, I can generate a veridical schematic image of an objectively real object *O<sub>r</sub>* (e.g., someone I know well) without its being the case that *O<sub>r</sub>* stands either in any efficacious causal relation or in an effective “tracking” relation to my conscious image of *O<sub>r</sub>* (such that I can locate *O<sub>r</sub>* in an egocentric phenomenal space relative to my body and also follow *O<sub>r</sub>*’s movements in this centered space over time), whereas it is plausible to think that I cannot veridically sense-perceive *O<sub>r</sub>* without either an efficacious causal relation or an effective tracking relation obtaining between *O<sub>r</sub>* and my conscious perceptual representation of *O<sub>r</sub>*.

These three features of the veridical productive or schematic imagination (i.e., that its objects can be abstract, that it generates figural or spatiotemporal images directly available to introspective scanning and manipulation, and that its veridicality-conditions are not based on either efficacious causation or effective tracking) all seem to me to be deeply relevant to authoritative rational intuition in logic.

It is obvious enough, I think, that authoritative rational intuition in logic will necessarily be such that its objects are abstract and that its veridicality-conditions are not *grounded on* either efficacious causation or effective tracking. That is what got us into The OBD and The EBD in the first place. But the other basic feature of the veridical productive or schematic imagination, i.e., its generation of figural or spatiotemporal images directly available to introspective scanning and manipulation, may not be so obviously relevant. What I want to claim, however, is that it is this second of the three basic features that actually clinches the case for the necessary cognitive connection between authoritative rational intuition in logic and the veridical productive or schematizing imagination.

This becomes clear when we ask ourselves about the conditions under which I generate a veridical schematic mental image of an objectively real object  $O_r$  or objectively real dynamic process  $DP_r$ . Here I am drawing directly on a body of classical 20th century work on mental imagery in cognitive psychology by Philip Johnson-Laird, Steven Kosslyn, and Roger Shepard.<sup>43</sup> According to these psychologists, the representation-relation between an image (Johnson-Laird regards images as paradigm examples of mental models) and a real object or real dynamic process is essentially *depictive or pictorial*, and not essentially *descriptive or propositional*. Here it should also be noted that I am taking sides in what was a very vigorous debate in mid-to-late 20th century cognitive science about the nature of mental imagery, with Johnson-Laird, Kosslyn, and Shepard on the depictivist side, and Zenon Pylyshyn and others on the descriptivist or propositionalist side.<sup>44</sup> I am not saying that this debate is actually over, or that it has been decisively resolved, but rather only that it seems to me that the case for two irreducibly distinct types of mental representation and representational content is at this point definitely *stronger* than the case for the thesis that all mental representations and representational content are at bottom descriptive or propositional. On the basis of that assumption, then, I will forge ahead.

Now a veridical depictive or pictorial relation is based on sharing the same configuration, figure, pattern, shape, or structure, and not based on satisfying some specific set of descriptive or propositional criteria. So a schematic image  $I$  veridically represents its corresponding real object  $O_r$  or dynamic process  $DP_r$  if and only if  $I$  is continuously isomorphic or spatiotemporal-structure-coincident with  $O_r$  or  $DP_r$ . When I form a veridical schematic mental image of some object or dynamic process, I consciously scan and manipulate my schematic mental image, mental model, mental diagram, or mental picture (or, in the case of a dynamic process, in effect a “mental movie”) until it apparently shares the same

phenomenal configuration, figure, pattern, shape, or structure as the real object or real dynamic process I have imaged. In other words, I *mentally simulate* the structure of the schematically imaged object or dynamic process.

But here is the crucial part. Whenever, during this procedure of veridical mental simulation, I have actually reached the point of what *seems to me* to be the precise or one-to-one matching of the relevant elements of the structure of my schematic mental image, mental model, mental diagram, or mental picture (or “mental movie”) with the corresponding elements of the structure of the schematically imaged object or dynamic process, as I have consciously represented it (whether via minimal episodic memory, direct, veridical sense perception, judgment, or inference), then I *thereby* induce in myself an intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable belief that the schematically imaged object or dynamic process really and truly *is* just as I have consciously represented it. That is because the criterion of veridicality for schematic images is exact continuous isomorphism or spatiotemporal-structure-coincidence with their objects or dynamic processes. So whenever my veridical schematic mental image is experienced from the inside, or phenomenologically, as having the very same configuration, figure, pattern, shape, or structure as what is specified by the content of my conscious representation of the object or dynamic process, then necessarily I am thereby fully convinced that the schematically imaged object or dynamic process is just as I have represented it to be.

Of course, not every schematic mental image is veridical. The world can be otherwise than I have imagistically represented it to be. But the crucial thing for my purposes here is that *in cases of veridical productive or schematic mental imaging*, the cognitive step from the consciously-experienced continuous isomorphism or spatiotemporal-structure-coincidence between my schematic mental image and what is specified by the content of my conscious representation of the schematically imaged object or dynamic process, *to* an intrinsically compelling or self-evident, cognitively virtuous, and essentially reliable belief that the schematically imaged object or dynamic process is precisely as I have represented it by means of my cognition is *synthetically necessary, modally or strictly underdetermined by sensory experiences and/or contingent facts, i.e., a priori, and self-contained*. Otherwise put, in veridical schematic mental imaging, the subjectively experienced “rightness of fit” between my schematic mental image and what is specified by the content of my conscious representation of the schematically imaged object or dynamic process is *cognitively optimal*. So I am thereby both *objectively and subjectively certain*



that the schematically imaged object or dynamic process is precisely as I have represented it to be. And in this way the phenomenal structure-matching activity of the veridical schematizing imagination, against the backdrop of WCTI and Kantian Structuralism, adequately explains the real possibility of authoritative rational intuition.

It is crucial to emphasize here how sharply different this schematic imaginal account of authoritative rational intuition is from classical *conceptual-linguistic analysis* accounts of how rational intuition occurs, all the way from Arthur Pap,<sup>45</sup> H.P. Grice, and Peter Strawson<sup>46</sup> in the 1950s, '60s, '70s, and '80s, to Chalmers and Jackson<sup>47</sup> in the 1990s and 2000s.<sup>48</sup> On conceptual-linguistic analysis accounts, the rational mental act, state, or process of fully understanding the meanings of the constituent concepts or words of a sentence or statement cognitively *suffices* for an authoritative rational intuition. But this is clearly mistaken, since even conceptual-linguistic analysts who fully understand the meanings of the very same sentences or statements can diametrically disagree about them *because they are being guided by very different fundamental philosophical "pictures" in the later Wittgenstein's sense of that term* – and they cannot *all* be right. But the real-world cognitive fact of diametric philosophical disagreement in conceptual-linguistic analysis, together with the full semantic understanding of all disagreeing parties, is perfectly consistent with the further fact that any or all of the disagreeing reasoners fail to have authoritative rational intuitions, *precisely because they have simply failed successfully to perform an intentional act of veridical productive or schematic mental imaging*. If so, then even over and above full semantic understanding, they have simply failed successfully to *depict* or *picture* the truth. Here we can also play an illuminatingly relevant riff on the early Wittgenstein's equally famous and notorious Tractarian distinction between "saying" (*sagen*) and "showing" (*zeigen*).<sup>49</sup> In order to have an authoritative rational intuition, it is not enough just to be able *to say it to yourself* – you have to be able *to show it to yourself* too. Authoritative rational intuition requires a further successful and rationally responsible intentional performance of veridical productive or schematic imaging *over and above* the mere act, state, or process of full conceptual-linguistic understanding.

### **Part Three: Explaining the Essential Reliability of Authoritative Logical Intuitions**

This brings me to the third part of the theory: explaining the essential reliability of authoritative logical rational intuitions. In Section IV.1, we saw that the objective reality of truth plays an essential role in the

categorical epistemology of knowledge, in that necessarily, High-Bar justified true belief includes an inherent or intrinsic, hence non-accidental or necessary, connection between the conscious-evidence-based reasons, yielded by properly-functioning cognitive mechanisms that provide sufficient epistemic justification for the rational human subject of cognition, and objective truth. In the special case of High-Bar a priori knowledge based on authoritative rational intuitions *in logic*, then, High-Bar justified true belief thereby includes an inherent or intrinsic connection between a priori sufficient justification and *logically necessary* objective truth. In turn, the satisfaction of LOCKED-ONTO and STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC., by means of the successful operations of the productive or schematizing imagination in logical cognition will guarantee that authoritative rational intuitions in logic are High-Bar justified, and also non-accidentally or necessarily connected to the logically necessary objective truth-makers of those beliefs, and thereby constitute High-Bar objective a priori knowledge.

This directly leads to another issue. We now know that in order for an authoritative rational intuition in logic to constitute High-Bar objective a priori knowledge, logical necessity must be objectively real and also weakly or counterfactually transcendently ideal. But what *is* logical necessity? And for that matter, what is *necessity*? Obviously I cannot even begin to address adequately, much less answer adequately, such a huge question at this point in the book. In a very general way, however, it seems clear enough that according to the Kantian Structuralist solution to The OBD, EBD, and GBD that I have been developing, necessity consists either

- (i) in the *identity* of various kinds of non-platonic, Kantian abstract and weakly transcendently ideal structures with one another, or
- (ii) in the *proper containment* of various kinds of non-platonic, Kantian abstract and weakly transcendently ideal *sub-structure* within various relevant kinds of *super-structure*, or
- (iii) in the *reciprocal involvement* of various kinds of non-platonic, Kantian abstract and weakly transcendently ideal structure with one another,

across unrestricted or restricted classes of logically possible worlds. So all necessity is grounded in identity, proper containment, or reciprocal

involvement relations between various kinds of non-platonic, Kantian abstract and weakly transcendently ideal structures, which yields a Kantian Structuralist interpretation of Kant's famous thesis that "every necessity has a transcendental condition as its ground" (*CPR* A106). Kant's thesis could then be updated to the following Kantian Structuralist slogan:

Every necessity has a *weakly* transcendently ideal *structural* condition as its ground.

Moreover, since in the course of Part 2 I have already frequently deployed the concept of necessity, I should also at least very briefly re-summarize the general modal framework I have been developing, defending, and using.<sup>50</sup>

For me, necessity is the truth of an interpreted sentence or statement in every member of a set of possible worlds, together with its non-falsity in every other possible world. A possible world is nothing more and nothing less than a maximally consistent set of different conceivable ways the actual world might have been: that is, a possible world is the largest distinct set of mutually consistent concepts such that the addition of one more concept to that set would yield an inconsistency. Logical possibility, more generally, is the consistency of a sentence or statement with the laws of some classical or non-classical logic. Logical necessity is the truth of an interpreted sentence or statement in virtue of logical laws or intrinsic conceptual connections (of conceptual identity, conceptual proper containment, or conceptual reciprocal involvement) alone, hence the truth of a sentence or statement in all logically possible worlds. Put in traditional terms, logical necessity is *conceptual necessity* or *analyticity*.<sup>51</sup>

Logical, conceptual, or analytic necessity is usually contrasted with physical or nomological necessity, that is, the truth of an interpreted sentence or statement in all logically possible worlds governed by our actual laws of nature; correspondingly, physical or nomological possibility is the joint consistency of a sentence with the laws of logic *and* our actual laws of nature. Physical or nomological necessity is also a form of "hypothetical" or "relative" necessity. More precisely, an interpreted sentence or statement *S* is hypothetically or relatively necessary if and only if it is logically necessary that  $\Gamma \rightarrow S$ , where  $\Gamma$  is some set of special axioms or postulates, e.g., our actual laws of nature. Thus hypothetical or relative necessity is parasitic on logical necessity, conceptual necessity, or analyticity.

In addition to logical, conceptual, or analytic necessity and physical or nomological necessity, there is also metaphysical necessity. Metaphysical necessity is either

- (i) necessity as defined over the set of all logically possible worlds (in which case it is also logical necessity, conceptual necessity, analytic necessity, or “weak metaphysical” necessity),  
or
- (ii) necessity as defined over a set of possible worlds that is definitely smaller than the set of all logically possible worlds and determined by the inherently non-logical structural constraints that constitute the underlying essence or nature of the manifestly real actual world (in which case it is non-logical necessity, non-conceptual necessity, synthetic necessity, or “strong metaphysical” necessity).

More precisely, an interpreted sentence or statement *S* is non-logically, essentially non-conceptually, synthetically, or “strongly metaphysically” necessary if and only if

- (i) *S* is true in every member of a set *K* of logically possible worlds;
- (ii) *K* is smaller than the set of all logically possible worlds;
- (iii) *K* is larger than the set of all physically possible worlds;
- (iv) *K* includes the class of physically possible worlds;
- (v) *K* is the class of logically possible worlds consistent with the underlying inherently non-logical essence or nature of the manifestly real actual world, including its basic spatiotemporal structure, its basic dynamical structure, and its basic mathematical structure; and
- (vi) *S* takes no truth-value – i.e., *S* is a *truth-value gap* – in every logically possible world not belonging to *K*.

Put in traditional Kantian terms, non-logical, essentially non-conceptual, synthetic, or “strong metaphysical” necessity is *synthetic a priori* necessity.<sup>52</sup>

Needless to say, the distinction between analytic necessity and synthetic a priori necessity is highly philosophically controversial. It is not my specific aim in this part of the book either to defend the analytic-synthetic distinction or to demonstrate the existence of the synthetic a priori – although I have, of course, been *using* the notions of the analytic-synthetic distinction and the synthetic a priori pretty liberally as explanatory notions: and here I am, doing it again. I do indeed attempt

to defend the analytic-synthetic distinction and the very idea of the synthetic a priori, and also to demonstrate its existence, elsewhere.<sup>53</sup> My appeal to it in this particular context is intended only to indicate that

- (i) I take the notion of necessity to extend beyond the notion of logical, conceptual, analytic, or “weak metaphysical” a priori necessity, hence my modal framework is *modally dualistic*,  
and
- (ii) the modally dualistic possible worlds framework I have adopted is directly and ultimately based on weak or counterfactual transcendental idealism, i.e., WCTI, via The L-is-T Thesis.

The crucial take-away for my purposes here, then, is that the essential reliability of authoritative logical rational intuition consists in the intrinsic connection between the rational cognitive subject’s conscious-evidence-based reasons for holding that logical belief and *the objectively real and also weakly or counterfactually transcendently ideal logical, conceptual, analytic, or “weakly metaphysical” a priori necessity of that belief*.

#### **Part Four: The Cognitive Phenomenology of Self-Evidence in Authoritative Logical Intuition**

Now for the fourth and final part of the theory: the cognitive phenomenology of logical self-evidence. I have proposed that logical objects are, essentially but also irreducibly, distinct roles, positions, or offices in *logical structures*, i.e., logics construed as non-platonic, Kantian abstract and weakly or counterfactually ideal formal relational systems consisting of coherent sets of interlinked patterns of linguistic types. I have also proposed that the primary cognitive mechanism of logical intuition is the capacity for consciously scanning and manipulating linguistic schematic mental images. And I have also proposed that the objective reality and weak transcendental ideality of logical necessity is an essential part of logical knowledge, construed as High-Bar justified logically necessarily true a priori belief. Given the conceptions of a priori knowledge and authoritative rational intuition I developed in Sections IV and V above, then my claim is that I have High-Bar a priori logical knowledge via my logical rational intuition that *S* if and only if

- (1) I intrinsically compellingly, or self-evidently logically rationally intuit that *S*, via a properly-functioning cognitive mechanism  
and

- (2) it is an objectively real, non-platonic, Kantian abstract, and weakly counterfactually transcendently ideal fact that logically necessarily *S*.

More precisely now with respect to (1), I intrinsically compellingly, or self-evidently logically rationally intuit that *S*, via a properly-functioning cognitive mechanism if and only if

- (1.1) I rationally intuit that *S*, hence  
(1.2) I take it to be logically necessary and a priori that *S*, and  
(1.3) I consciously scan and manipulate my linguistic schematic mental image “*S*” of the sentence or statement *S* to the point of phenomenal continuous isomorphism or spatial-structure-coincidence with what is specified by the semantic content of my rational intuition that (logically necessarily and a priori) *S*.

So, most explicitly, my claim is that I have High-Bar a priori logical knowledge that *S* if and only if

- (1.1) I rationally intuit that *S*, hence  
(1.2) I take it to be logically necessary and a priori that *S*,  
(1.3) I consciously scan and manipulate my linguistic schematic mental image “*S*” of the sentence or statement *S* to the point of phenomenal continuous isomorphism or spatial-structure-coincidence with what is specified by the semantic content of my rational intuition that (logically necessarily and a priori) *S*, and

- (2) it is an objectively real, non-platonic, Kantian abstract, and weakly or counterfactually transcendently ideal fact that logically necessarily *S*.

Let me now try to make this more phenomenologically vivid with a simplified<sup>54</sup> example. Consider the following:

(\*) Either Barack Obama is a two-term president of the USA in January 2013 or I’m the man in the moon. I’m not the man in the moon. Therefore Barack Obama is a two-term president of the USA in January 2013.

Now, assuming my knowledge of English and of classical sentential logic, this text is read and understood by me as a simple disjunctive

sylogism, in the form of a single sentence or statement: “Either Barack Obama is a two-term president of the USA in January 2013 or I’m the man in the moon, and I’m not the man in the moon, therefore Barack Obama is a two-term president of the USA in January 2013.” But not only do I read and fully understand this argument in the form of a single sentence or statement: I also rationally cannot help believing it to be both valid and sound. This is because insofar as I formulate (\*) to myself, thereby representing a logical object (in this case an argument in the form of a single sentence), I also generate a visual mental image that looks more or less like this:

$$P \vee Q, \sim Q \vdash P$$

Let us call this symbolic sequence “(#)”. In turn, I will label the visual schematic mental image of the symbolic sequence (#), “*I* (#).” (#) is of course a straightforward translation of (\*) into the fairly standard symbolism I learned for classical propositional logic as an undergraduate. Then *I* (#) is used by me to intuit the argument expressed by (\*) as a valid and sound argument carried out according to the rules for classical negation, disjunction, and disjunctive syllogism. This in turn happens precisely insofar as I use *I* (#) as a linguistic schematic image of what is semantically represented by (\*), which is a logical fact, and then consciously scan and manipulate *I* (#) so as to bring it into a phenomenal continuous isomorphism or spatiotemporal-structure-coincidence with that fact, which in turn is specified by the semantic content of (\*). Finally, this logical rational intuition counts as *High-Bar logical a priori knowledge* or synthetic a priori infallible logical authoritative rational intuition, precisely because not only is this logical rational intuition intrinsically compelling or self-evident, via a properly-functioning cognitive mechanism, it is also the case that (\*) veridically represents an *objectively real, non-platonic, Kantian abstract, and weakly or counterfactually transcendentally ideal* logically necessary fact, namely a genuinely valid and sound argument in classical propositional logic in the form of a single interpreted sentence or statement.

## XI.5

This completes my positive or anti-skeptical solution to The EBD. I have accepted the standard uniform semantics of logical truth (“Truth is uniform and broadly Tarskian”), and also the causal-and-empirical anchoring of all human cognition and knowledge, including logical cognition

and knowledge (“All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts”), as well as the High-Bar a priori human knowability of objectively real, non-platonic, Kantian abstract, and weakly or counterfactually transcendently ideal abstract logical objects, construed as linguistic objects of a special humanly-cognizable kind. I have asserted the thesis of Kantian Structuralism for logic, and also the thesis that logical objects and their constitutive structures are non-platonic, Kantian abstract, and weakly or counterfactually transcendently ideal (i.e., The L-is-T Thesis), and therefore causally relevant. But I have denied that rational human cognizers need to stand in an efficacious causal relation to these objectively real, non-platonic, Kantian abstract, and weakly or counterfactually transcendently ideal logical abstract objects or their constitutive structures in order to High-Bar know them a priori, because I have denied that authoritative rational intuition in logic should be cognitively *grounded on* sense perception, even if, necessarily, all human cognition whatsoever is *anchored in* causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts. Instead, I have proposed that the primary properly-functioning cognitive mechanism for authoritative rational intuition in logic is the veridical productive or schematizing imagination and not direct, veridical sense perception alone, and also that linguistic veridical schematic mental images (whether of ordinary natural language inscriptions or of formal-logical symbols) are the mental vehicles of this special kind of authoritative rational intuition. Now a veridical schematic mental image need not stand in any sort of efficacious causal relation to its corresponding object or real dynamic process in order to be veridical. Instead, it need only be continuously isomorphic or spatio-temporal-structure-coincident with its object in order to be veridical. Hence my successful intentional act of authoritative rational intuition in logic can adequately represent its logical object by virtue of the fact that its mental vehicle, a linguistic veridical schematic mental image, is continuously isomorphic or structure-coincident with the schematically-represented objectively real, non-platonic, Kantian abstract, and weakly or counterfactually transcendently ideal object of my logical intuition. Furthermore, the veridical schematic imaginal cognitive mechanism of authoritative rational intuition in logic is a process of phenomenal spatiotemporal-structure-matching between

- (i) the linguistic mental model, mental diagram, mental picture, structural image, or schema of a single (perhaps fairly long and



complex) sentence or statement that I use to express my logical rational intuition  
and

- (ii) what is specified by the semantic content of that logical rational intuition, which in turn represents logical objects and their constitutive structures, which in turn take the very same form of (perhaps fairly long and complex) sentences or statements in some classical or non-classical logical system.

So the thesis that authoritative rational intuition in logic is a special type of veridical productive or schematic imaginational cognition squares perfectly with Kantian Structuralism for logic. And in recognizing this point, I have also thereby extended Kantian Structuralism *and* Kantian Intuitionism to logic.

For all these reasons, then, I think that we now *philosophically* know a priori, via constructed rational intuition, and therefore in a fairly reliable way, why logic *must be* transcendental.

We now also have in hand a general template for solving The GBD. The GBD, we will recall, generalizes The OBD and The EBD to any kind of a priori knowledge whatsoever, by pointing up the logical, semantic, metaphysical, and epistemological clash between two basic authoritative philosophical rational intuitions about the need to rule out the possibility of cognitive-semantic luck on the one hand, and the fact that the truth-makers of knowledge are either non-natural or natural on the other hand. Having worked out a four-part transcendental theory for solving The EBD, based on our initial solution to The OBD, we can now solve The GBD by simply generalizing the four-part transcendental theory in the following way:

**For a priori knowledge of any kind K whatsoever –**

- (1) adopt Kantian Structuralism for K,
- (2) adopt Kantian Intuitionism for K,
- (3) explain the sufficient justification (including, especially, the essential reliability) of K-type authoritative rational intuition in terms of Kantian Structuralism and Kantian Intuitionism, and, correspondingly,
- (4) work out the cognitive phenomenology of self-evidence for K-type authoritative rational intuition.

To be sure, *the specific details* of carrying out this four-part transcendental theory for, say, moral a priori knowledge, axiological a priori

knowledge, linguistic a priori knowledge, semantic a priori knowledge, etc., are going to be somewhat complex. But in each case, working out those specific details really is just a *high-powered philosophical engineering problem*, for which the general template remains the same. So I think we can reasonably conclude that The GBD has, essentially, been solved. And by solving The OBD, The EBD, and The GBD in this way, we have also thereby adequately explained the nature of *philosophical* a priori knowledge by means of rational intuition, as *transcendental* knowledge, via basic or non-basic authoritative rational intuition and constructed rational intuition – i.e., via *transcendental argument* and *transcendental explanation*, as defined in sub-section XI.2 above.

# XII

## Conclusion

How do we High-Bar know objectively a priori that  $3+4=7$ , and more generally, how do we High-Bar know any mathematical truths objectively a priori? The answer I have proposed in Part 2 is that we can High-Bar know the truths of Primitive Recursive Arithmetic, a.k.a. PRA, objectively a priori – including of course the simple objectively necessary arithmetical truth that  $3+4=7$  – by means of *authoritative mathematical rational intuition, via Hilbert’s basic objects of finitistic mathematical reasoning*, i.e., by cognitively constructing and manipulating sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata, and then matching self-evident phenomenological patterns with corresponding truth-making parts of naturally realized mathematical structures, in such a way that LOCKING-ONTO and STRONG DISJUNCTIVISM ABOUT THE COGNITIVE CONSTRUCTION AND MANIPULATION OF VERIDICAL SENSIBLE FORMS IN KANTIAN PURE OR A PRIORI INTUITION VIA THE PRODUCTIVE IMAGINATION, ETC. are both satisfied, which in turn yields High-Bar or sufficient justification. Then we know the rest of elementary or Peano arithmetic, especially including its infinitary, denumerable, and universally quantified part, as well as all the other parts of mathematics, including Cantorian arithmetic, a.k.a. CA, *constructively* and/or *inferentially*, with as much justification as can be provided by conceptual and logical reasoning that is necessarily grounded on the High-Bar objectively a priori knowable and mathematically authoritatively intuitable finitary, denumerable primitive recursive arithmetic base. All this, in turn, jointly vindicates two respectively basic and non-basic authoritative *philosophical* rational intuitions, **The Essential Reliability of Basic Authoritative Rational Intuitions in Basic Arithmetic** –

at least some of the truths of PRA are actually known and also repeatedly knowable a priori by basic authoritative rational intuitions, via Hilbert-style basic objects of finitistic mathematical reasoning, i.e., via our cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata,

and the Kantian-Brouwerian-Hilbertian epistemic principle, a.k.a. **The KBH** –

**The KBH:** Nothing will count as mathematical knowledge of any kind unless it presupposes our innately specified rational human cognitive capacity or cognitive competence for knowing at least some of the finitary sub-structures of PRA by basic authoritative rational intuition, via the cognitive construction and manipulation of sensible forms in Kantian pure or a priori intuition via the productive imagination, mental models, mental diagrams, mental pictures, structural imagery, or schemata.

Finally, that brings us back again to the three Benacerraf Dilemmas – The OBD, The EBD, and The GBD. If Kantian Structuralism and Kantian Intuitionism are true, then both of Benacerraf’s preliminary philosophical assumptions about (1) a “standard, uniform” natural-language semantics of truth and (2) a “reasonable epistemology” of cognizing true statements – i.e.,

- (I) Truth is uniform and broadly Tarskian,  
and
- (II) All human knowledge begins in causally-triggered, direct, non-conceptual, non-inferential sense perception of contingent natural objects or facts,

– are themselves objectively necessarily true and also express basic authoritative philosophical rational intuitions, and the other four steps of The OBD are also objectively true under plausible interpretations of them, but the unacceptably skeptical conclusion does *not* follow. Mathematical objective (High-Bar) a priori knowledge in the classical sense still *is* really possible, at the very least with respect to the theorems of PRA or basic arithmetic like our old friend “ $3+4=7$ ,” but in other fundamental parts of mathematics too. Kantian Structuralism and Kantian

Intuitionism *also* jointly solve the classical application problem for mathematics. They *also* solve Benacerraf's other problem about what the numbers could not be. They *also* explain why classical Logicism failed. They *also* account for the synthetic necessity of mathematical truth. And finally, they *also* provide a possible new solution to the classical Problem of the Continuum. All of these very important individual theoretical virtues then seem to me to add up very naturally to a single big sufficient reason for accepting my positive innatist rational-intuition-based solution to The OBD.

And that is not all. As I argued in Sections III and XI, The OBD can also be extended to logic (The EBD), fully generalized over all a priori knowledge of any kind whatsoever (The GBD), and then adequately solved in essentially the same way.

Given Kantian Structuralism and Kantian Intuitionism about mathematics and logic, what is required for both mathematical and logical objective necessary truth and High-Bar a priori knowledge of them is just a linguistically competent, healthy, developmentally normal, and (relatively) mature rational human animal, who can grasp both the autonomous essentially non-conceptual content of perception and also the conceptual and propositional content of statements or judgments, who has also learned the basics of basic arithmetic or PRA, who has also learned the basics of basic logic or pure general logic, and who is thus primed and ready for speaking her own natural language, and for non-conceptually and pre-reflectively or first-order consciously but also conceptually and self-consciously intaking her manifestly real world through direct, veridical sense perception. And that is *all* that is required. For she is thereby capable of performing High-Bar justified objectively necessarily true basic authoritative rational intuitions in mathematics and logic, and thus capable of achieving High-Bar objective a priori knowledge according to the highest and categorically normative principles of theoretical and practical rationality.

In this way, by plausibly rejecting *both* platonism *and* post-Bencerrafian skepticism about mathematical truth and knowledge, by plausibly *also* rejecting the more or less radical skepticism of Experimental Philosophy, a.k.a. X-Phi, and then by *decisively* adopting a non-platonic, Kantian conception of abstractness, and also the thesis that objectivity is the same as synthetically a priori necessary counterfactual universal rational human intersubjectivity (= weak or counterfactual transcendental idealism, a.k.a. WCTI), *together with* a contemporary Kantian philosophy of mathematics and logic, we *thereby also* vindicate the full

metaphysical and epistemic force of basic authoritative rational intuitions in *philosophy*, and find

Eden raised in the waste wilderness.

So mathematics, just like logic, and, just like philosophy itself, is an *objective science*, and yet also inherently a *human science*. They are, all of them, robustly normative objective rational Moral Sciences.

Or in other words: If my overall argument in Part 2 of this book is sound, then classical platonism about either mathematics, logic, or philosophy itself is false, Mathematical Psychologism is false, Scientific Naturalism is false, Radical Skepticism about Rational Intuitions (RSARI) and Radical Skepticism about Philosophical Rational Intuitions Only (RSAPRIO) are both false, X-Phi is not only essentially irrelevant to the modal epistemology of rational intuitions, but also false – even despite X-Phi’s always being relevant to the philosophy of mind and knowledge, interesting, and illuminating in its own right – Preservationism about Rational Intuitions (PARI) and Preservationism about Philosophical Rational Intuitions Specifically (PAPRIS) are both true, WCTI is true, Kantian Structuralism about mathematics and logic and also Kantian Intuitionism about mathematics and logic are both true, *and* this double result plausibly generalizes to all a priori knowledge whatsoever, so we have solved The Generalized Benacerraf Dilemma *as well*, thereby achieving the blessedly happy philosophical condition of *rationalism regained*, even while still fully acknowledging our natural cognitive finitude and our inevitable cognitive predicament as “human, all too human” knowers.

So now let us go forth and multiply. And of course also add, subtract, divide, and correctly perform the other primitive recursive functions over the natural numbers too.<sup>1</sup>

# Notes

## Introduction

1. See Bourget and Chalmers, “Philosophical Papers Survey 2009.”
2. For more details on the distinction between platonic and non-platonic abstractness, and the contemporary Kantian neo-rationalist analysis of abstractness, see Part 2, Sections I and VIII below.
3. See, e.g., Cappelen, *Philosophy without Intuitions*; and Williamson, *The Philosophy of Philosophy*.
4. See, e.g., Hume, *Enquiry Concerning Human Understanding*; and Hume, *Treatise of Human Nature*.
5. See, e.g., Quine, “Carnap and Logical Truth”; Quine, “Truth by Convention”; and Quine, “Two Dogmas of Empiricism.”
6. See, e.g., Bealer, “The Incoherence of Empiricism”; Bealer, “Intuition and the Autonomy of Philosophy”; Bealer, “A Theory of the A Priori”; Bealer, “Modal Epistemology and the Rationalist Renaissance”; Boghossian and Peacocke (eds.), *New Essays on the A Priori*; Bonjour, “In Defense of the A Priori”; Bonjour, *In Defense of Pure Reason*; Casullo, *A Priori Justification*; Casullo (ed.), *Essays on A Priori Knowledge and Justification*; Casullo and Thurow (eds.), *The A Priori in Philosophy*; Hanson and Hunter (eds.), *The Return of the A Priori*; Huemer, *Ethical Intuitionism*; Katz, *Realistic Rationalism*; Lynch, *In Praise of Reason*; and Moser (ed.), *A Priori Knowledge*.
7. For useful surveys of recent and contemporary work on intuitions, see Graper Hernandez (ed.), *The New Intuitionism*; Grundmann, “The Nature of Rational Intuitions and a Fresh Look at the Explanationist Objection”; Nagel, “Epistemic Intuitions”; Pust, “Intuition”; Sosa, *Intuitions: Oxford Bibliographies Online Survey Guide*; and Stratton-Lake (ed.), *Ethical Intuitionism*.

## 1.1 The Self-Imposition of Authoritative Rational Intuition

1. See Chapter 1.2, and Part 2, Section V below for critical surveys of contemporary philosophical uses of the term “intuition.”
2. It will be already obvious that shot-from-the-hip responses to so-called “philosophical intuition pumps” are not *rational intuitions* in the sense relevant to me here.
3. See Chapter 1.2, and also Part 2, Sections VI to VII, below for detailed critical discussions of X-Phi. For my present purposes, X-Phi can be characterized as the contemporary version of either classical (Lockean-Humean) or radical (Quinean) Empiricism that takes natural-scientific methods (e.g., doing experiments, conducting surveys, etc.) to be part of philosophy itself, and is especially interested in criticizing philosophers’ appeals to and uses of (rational) intuitions.
4. Kant, *Critique of Pure Reason*, B2–3, emphasis in original.

5. See, e.g., Hanna, *Kant and the Foundations of Analytic Philosophy*, esp. chs. 1, 2 and 5.
6. For more on this contemporary Kantian conception of the a priori, see Part 2, Section IV below.
7. Perhaps this claim should be modally stronger: *must*. I won't here investigate or defend this claim.
8. I am understanding *knowledge* here in what Hanna calls its specifically *High-Bar* sense. See Part 2, Section IV below. The evidential-phenomenological, or *internalistic*, partial criterion of High-Bar knowledge is its intrinsic compellingness or self-evidence, and the anti-luck, or *externalistic*, partial criterion of High-Bar knowledge is its essential reliability. There is also a *cognitive virtues* partial criterion on High-Bar knowledge, namely that the evidence be delivered to belief by a properly-functioning cognitive mechanism.
9. Whether it is actually possible for apriority to be challenged by aposteriority is a matter of some debate. Further, whether X-Phi is a fruitful project, or even properly classed as "philosophy," is a matter of even more debate. These debates are hereby noted. My present goal is merely to report on widely held beliefs.
10. I borrow the label "cognitive-semantic luck" from Hanna; see Part 2, Section III below.
11. See, e.g., Habermas, "Discourse Ethics: Notes on a Program of Philosophical Justification." There are several very interesting foundational similarities between what Hanna calls "postmodernist anti-rational nihilist skepticism, a.k.a. PARNS" (see Part 2, Section I below) and anti-apriorism more generally, which I suspect are somewhere near the root of the fact that performative contradiction-style arguments seem to work against both the postmodernist and the anti-apriorist. Unfortunately, I don't have room here to explicate or argue for these similarities.
12. See Grice, *Studies in the Way of Words*, part I.
13. See Bonjour, *In Defense of Pure Reason*, esp. chs. 1 and 3–5.
14. See Huemer, *Skepticism and the Veil of Perception*.
15. Huemer, *Skepticism and the Veil of Perception*, p. 105
16. This is a sort-of inverse version of begging the question.
17. See, e.g., Ayer, *Language, Truth, and Logic*, pp. 5–16.
18. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 6.54, p. 189.
19. Bealer, "The Incoherence of Empiricism," p. 99.
20. See also Part 2, Section IV below for a defense of a modest version of transcendental idealism.
21. Of course, Kant thinks that not only do humanly meaningful metaphysics and categorically/non-instrumentally normative moral philosophy require transcendental idealism, but also that we cannot opt out of being rational human animals. Most transcendental arguments, however, are not claimed to be this strong.
22. See, e.g., Stroud, "Transcendental Arguments."
23. See, e.g., Brandom, *Articulating Reasons*, and Brandom, *Making It Explicit*, for a systematic treatment of the claim that rational holdings-responsible generate not only personal, and not only inter-personal, but universal and objective categorical rational normativity. While it is almost certainly the case that Brandom's project relies on a Hegelian metaphysics that most



contemporary philosophers would be even more decidedly and self-professedly against than they are against transcendental idealism, his project is ingenious nonetheless.

24. See Kant, *Groundwork of the Metaphysics of Morals*, 4: 397–398.
25. See, e.g., Hume, *A Treatise of Human Nature*; Kant, *Groundwork of the Metaphysics of Morals*; and Mackie, *Ethics: Inventing Right and Wrong*, and of course many others.

## 1.2 Beyond Experimentalism

1. If philosophy in fact relies on the use of intuitions at all, which is contested in Cappelen, *Philosophy without Intuitions*. Here I will assume that philosophy does indeed rely on the use of intuitions.
2. These are also the intuitions taken seriously in classical philosophy, from Plato to Descartes to Kant to Russell. For a positive contemporary Kantian theory of them, see Part 2.
3. “Non-inferential” here does not mean that the seeming cannot play any inferential role in reasoning, but that it cannot be represented as the conclusion of some chain of reasoning.
4. See, e.g., Bealer, “Intuition and the Autonomy of Philosophy”; and Bealer, “A Theory of the A Priori.”
5. By a “modal tie to the truth” I mean a *non-accidental*, or *necessary*, link or connection between my intuition and the truth-makers of my intuition. Such a link is needed in order to rule out the skeptical possibility of what Hanna calls *cognitive-semantic luck*. See Part 2, Section III below.
6. See, e.g., Williamson, *The Philosophy of Philosophy*.
7. See, e.g., Pust, “Intuition.”
8. See, e.g., Pritchard, “Anti-Luck Virtue Epistemology”; and Part 2, Section IV below.
9. Descartes, *Meditations on First Philosophy*.
10. Bealer, “The Incoherence of Empiricism.”
11. See, e.g., Noë, *Action in Perception*.
12. Only in the sense that the data are delivered in a similar fashion. He otherwise suggests that the two faculties are dissimilar. See Bealer, “The Incoherence of Empiricism.”
13. This, of course, is Rawlsian reflective equilibrium.
14. See, e.g., Cappelen, *Philosophy without Intuitions*.
15. Cummins, “Reflections on Reflective Equilibrium.”
16. I will assume that necessity and apriority are necessarily equivalent, and will not offer an argument against, e.g., Kripke’s conceptions of the contingent a priori and necessary a posteriori. But for arguments against them, see Hanna, *Cognition, Content, and the A Priori*, ch. 4.
17. In the literature on justification, the prospect of a self-calibrating faculty is referred to as “bootstrapping” and “easy knowledge,” and many take it to be a problem for process-reliabilism. See, e.g., Cohen, “Basic Knowledge and the Problem of Easy Knowledge”; and Vogel, “Reliabilism Leveled.”
18. That is, some check-point that either does not itself need to be calibrated, or which is already calibrated.

19. Talbot, "The Dilemma of Calibrating Intuitions."
20. Assuming this is possible. According to Hanna and Maiese in *Embodied Minds in Action*, ch. 2, The Deep Consciousness Thesis, or The DCT, which says that necessarily, all mental states are conscious to some salient degree, even if not occurrently self-consciously represented as such, would rule out this possibility since The DCT entails that there are no absolutely unconscious mental states or processes.
21. As opposed to what Bealer calls a "physical intuition." See Bealer, "The Incoherence of Empiricism."
22. Again, this is Hanna's term. See Part 2, Section IV below.
23. But see Part 2, Section IV below for such a weighing-in.
24. For a detailed discussion of the nature of apriority, see also Part 2, Section IV below.
25. Balaguer, *Free Will as an Open Scientific Problem*.
26. See, e.g., Alexander, *Experimental Philosophy: An Introduction*; Appiah, *Experiments in Ethics*; DePaul and Ramsey (eds.), *Rethinking Intuition: The Psychology of Intuition and Its Role in Philosophical Inquiry*; Gendler, *Intuition, Imagination, and Philosophical Methodology*; Horvath and Grundmann (eds.), *Experimental Philosophy and its Critics*; and Knobe and Nichols (eds.), *Experimental Philosophy*.
27. See Cummins, "Reflections on Reflective Equilibrium."
28. See, e.g., Talbot, "Psychology and the Use of Intuitions in Philosophy."
29. See, e.g., Fodor, *The Modularity of Mind: An Essay on Faculty Psychology*.
30. See, e.g., Griffiths, Kemp, and Tenenbaum, "Bayesian Models of Cognition."
31. See, e.g., Godfrey-Smith, "The Strategy of Model-Based Science."
32. As opposed, of course, to a dedicated cognitive mechanism, which would presumably be more effective in addressing these concerns.
33. See, e.g., Weinberg, Gonnerman, Buckner, and Alexander, "Are Philosophers Expert Intuiters?"
34. In Part 2, Section IV, Hanna presents and defends what he calls *categorical epistemology*, centered on the fundamental distinction between High-Bar knowledge and Low-Bar knowledge. For my purposes here, what is important is just that High-Bar a priori knowledge fully satisfies the internalistic, externalistic, and cognitive virtues conditions on sufficiently justified true a priori belief, i.e., on authentic a priori knowledge.
35. See, e.g., Wason, "Reasoning." See also Hanna, *Rationality and Logic*, ch. 5.
36. Cummins, "Reflections on Reflective Equilibrium," p. 125.
37. Stich, "Experimental Philosophy and the Bankruptcy of the Great Tradition."
38. See, e.g., Nahmias, Morris, Nadelhoffer, and Turner, "Is Incompatibilism Intuitive?"
39. Hanna calls such mere or non-knowledge-yielding, defeasible/fairly unreliable rational intuitions *prima facie* rational intuitions. See Part 2, Section V below.
40. See, e.g., Machery, Mallon, Nichols, and Stich, "Semantics, Cross-Cultural Style."
41. See Chapter 1.3 below.
42. See, e.g., Bealer, "Intuitions and the Autonomy of Philosophy"; and Huemer, *Ethical Intuitionism*.

43. Many thanks to Michael Sechman for formulating this objection in conversation.

### 1.3 Rational Intuitions and Analytic Metaphysics

1. This chapter does not provide a full-scale vindication of metaphysics; obviously, there are objections to metaphysics that I cannot consider here. In particular, there is a popular class of objections according to which the questions of metaphysics are *semantically* defective. Objections of this sort purport to show that (at least some) metaphysical disputes are meaningless or non-substantive, and are defended by Hume, Kant, the logical positivists, and in the works of many contemporary philosophers: e.g., Putnam's *Reason, Truth, and History* and *The Many Faces of Realism*; Chalmers's "Ontological Anti-realism"; and Hirsch's "Ontology and Alternative Languages." (See also Eklund's "Carnap and Ontological Pluralism," Hawthorne's "Superficialism in Ontology," Sider's "Ontological Realism," and van Inwagen's "Being, Existence, and Ontological Commitment" for some recent responses to these objections.) I'll assume without argument that at least some metaphysical questions can meet whatever semantic criteria we accept, and therefore avoid these objections.
2. See, e.g., Bonjour's *In Defense of Pure Reason*, Bealer's "Intuition and the Autonomy of Philosophy" and "A Theory of The A Priori," and Huemer's *Skepticism and the Veil of Perception* for good discussions of these four other features.
3. This is an implication of the fact that rational intuitions are subject to intersubjective disagreement. It is also implied by the fact that some rationally intuitive statements lead to paradox – for example, the naive comprehension axiom leads to Russell's paradox.
4. Due to Cummins in his "Reflections on Reflective Equilibrium."
5. The underlying assumption here is that there is some underlying epistemological or semantic distinction between analytic and synthetic propositions in virtue of which the former are less objectionable than the latter. Though it is difficult to articulate this distinction in a precise manner, I believe that it is quite popular among those who are critical of the synthetic a priori. Of course there are sharply different and competing conceptions of the analytic-synthetic distinction: see, e.g., Juhl and Loomis, *Analyticity*; Hanna, *Kant and the Foundations of Analytic Philosophy*, chs. 3–5; and Hanna, *Cognition, Content, and the A Priori*, ch. 4. But my basic point here is neutral as between the different, competing conceptions.
6. See, e.g., Cummins's well-known claim: "Philosophical intuition is epistemologically useless, since it can be calibrated only when it is not needed" ("Reflections on Reflective Equilibrium," p. 125).
7. See ch. 2 of Bonjour's *In Defense of Pure Reason* for a careful defense of the indispensability of synthetic a priori rational intuitions.
8. See, e.g., Hanna, *Rationality and Logic*, ch. 2.
9. Pace Field's *Science Without Numbers*. All that matters for my claim is that the world conforms to the theorems of mathematics; whether that requires a rejection of nominalism is an open question – for which an answer is not

required if one merely wishes to practice science – and one to be settled by the metaphysician.

10. It is also discussed in Chapter 1.1 above, and Part 2, Section VI below.
11. Synthetic a priori rational intuitions are not, strictly speaking, required for a mere or minimal skepticism concerning synthetic a priori rational intuitions, but Cummins's style of argument defends a stronger thesis than minimal skepticism.
12. There are exceptions. Huemer (personal correspondence) gives the following example of an empirical defeater: you learn that your opponent has been under the influence of a special drug known to generate unreliable rational intuitions.
13. This type of project is carried out in rather different ways by Bealer's "Intuition and the Autonomy of Philosophy" and "A Theory of the A Priori," Huemer's *Skepticism and the Veil of Perception*, and by Hanna in Part 2 of this book. Of course, Descartes's position in the *Meditations* – that a priori reasoning involves clear and distinct perceptions – constitutes a narrow definition of "rational intuition" according to which all rational intuitions are sufficiently justified, and thus constitutes this same style of response.
14. In ch. 1 of *Every Thing Must Go*, Ladyman, Ross, Spurrett, and Collier provide more examples. Though some worry that they overstate metaphysicians' reliance on intuitions (see, e.g., Dorr, "Review of *Every Thing Must Go: Metaphysics Naturalized*"), their summary is sufficiently broad that it provides prima facie reason to think that the resolution of traditional metaphysical disputes requires appeals to synthetic a priori rational intuitions.
15. Kripke is unapologetic about these appeals: "Of course, some philosophers think that something's having [rational] intuitive content is very inconclusive evidence in favor of it. I think it 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." (*Naming and Necessity*, p. 42)
16. See Sider's "Ontological Realism," p. 385, for a related statement of CQM.
17. One who does not think that science requires synthetic a priori rational intuitions might suggest that the predictive success of science constitutes independent calibration of the intuitions – e.g., concerning simplicity – employed by scientists.
18. Ney, "Neo-Positivist Metaphysics," section 7.
19. Strictly speaking, we do not need to frame the challenge in terms of CQM. However, CQM is so broad that almost any method of inquiry may be described in such a way that it satisfies CQM.
20. Or, if you prefer, we can determine the *likelihood* of a theory given some observation just by looking at what the theory says. This will often give us clues for how to determine the relevant probability, which is a function of the priors.
21. See Mellor's *Probability: A Philosophical Introduction* and Howson and Urbach's *Scientific Reasoning*, ch. 2, for accessible introductions to the probability calculus.
22. Note that the antecedent is doing a lot of work here. This condition would be obviously false without it. For example, some might worry that this is not

a sufficient condition on the grounds that a theory needs to have a certain prior probability in order to be worthy of consideration. This worry does not apply here, since the prior probabilities are explicitly accounted for by this version of Bayes' s theorem.

23. See Duhem, *The Aim and Structure of Physical Theory*; and Quine, "Two Dogmas of Empiricism."
24. This is not to say that such reasoning must be explicitly probabilistic.
25. Fales, *Causation and Universals*, pp. 103–104.
26. Sider, *Writing the Book of the World*, pp. 36–37.
27. Or so I think, though I am told that some subjective Bayesians are optimistic that, in the long run, posterior probabilities will converge regardless of the priors assigned. If this is so, that would provide further vindication of my method. If subjectivism suffices for scientific realism, it will suffice for realism about metaphysics (at least in accordance with the method I'll present).
28. I am talking about epistemic possibilities because our concern is with *epistemic probabilities*, which measure the degree to which evidence confirms or disconfirms hypotheses about the world. See Mellor's *Probability: A Philosophical Introduction* for a nice overview of different kinds of probability.
29. Ultimately, I am hopeful that such principles can be restricted in such a way that, with some auxiliary assumptions about the nature of the set of state descriptions in question, this approach can avoid the well-known Bertrand paradoxes. See Huemer's "Explanationist Aid for the Theory of Inductive Logic" for a partial defense of the principle of indifference and its application to the problem of induction.
30. Huemer, "Explanationist Aid for the Theory of Inductive Logic," p. 349.
31. A heuristic for those unfamiliar with conditionalization: If instead we think of the principles as conditionals, then the final step is a straightforward application of modus ponens. The antecedent is an observation (or set of observations), and the consequent is a proposition expressing the probability that a certain metaphysical theory is true. The application of modus ponens leaves us with a justified belief concerning the probability that the metaphysical theory is true.
32. See Ramsey's "Theories," Carnap's *Philosophical Foundations of Physics*, and Lewis's "How to Define Theoretical Terms" for explanations of the method. See Tooley's *Causation*, pp. 13–25 for a defense of a realist interpretation of the theoretical terms defined by the method.
33. I provide a more careful application of the method to this problem elsewhere.
34. Humeanism is accepted in one form or another by van Fraassen (*Laws and Symmetry*), Lewis (*Counterfactuals* and "Humean Supervenience Debugged"), Earman and Roberts ("Contact With The Nomic" parts I and II), Beebe ("The Non-governing Conception of Laws of Nature"), Schaffer ("Causation and Laws of Nature"), and Loewer ("Humean Supervenience").
35. Governing Laws is accepted in one form or another by Armstrong (*What Is a Law of Nature?*), Carroll (*Laws of Nature*), Dretske ("Laws of Nature"), Maudlin (*The Metaphysics Within Physics*), and Tooley ("The Nature of Laws" and *Causation*).

36. Essentialism is accepted by Bird (*Nature's Metaphysics*), Mumford (*Laws in Nature*), and perhaps Swoyer ("The Nature of Natural Laws"), Fales (*Causation and Universals*), and Ellis (*Scientific Essentialism*). Whether it is accepted by the latter three depends on whether they are interpreted as treating laws as supervening on the structure or as existing independently of the structure.
37. See my papers, "Can Bare Dispositions Explain Categorical Regularities?" and "Can Primitive Laws Explain?" for two important examples.
38. See Armstrong's *What Is a Law of Nature?* (pp. 52–59, 103–106); Fales's *Causation and Universals*, ch. 4; and Foster's "Induction, Explanation, and Natural Necessity" for arguments in (partial) support of this thesis.
39. Of course, I also worry about our ability to define metaphysical theories in the first place, though a discussion of that issue depends on our semantic assumptions, and I have tried to remain as neutral as possible with respect to that issue.

## 1.4 Towards a Defense of Rational Intuitions

1. For a fully-worked out theory, and defense, of the analytic-synthetic (A-S) distinction as the distinction between (i) conceptually true a priori propositions and (ii) non-conceptually true propositions, whether (iia) non-conceptually necessarily true (synthetic a priori) propositions or (iib) non-conceptually contingently true (synthetic a posteriori) propositions, see Hanna, *Kant and the Foundations of Analytic Philosophy*, and *Cognition, Content, and the A Priori*, ch. 4. In this chapter, I will not attempt to discuss either the much-contested A-S distinction or the equally contested a priori – a posteriori distinction, but will simply assume that *some* conceptually necessary a priori truths, a.k.a. analytic truths, really exist.
2. Alexander and Weinberg, "Analytic Epistemology and Experimental Philosophy."
3. Cappelen, *Philosophy without Intuitions*.
4. On, e.g., epistemic intuitions, see Weinberg, Nichols, and Stich, "Normativity and Epistemic Intuitions." On semantic intuitions, see Machery, Mallon, Nichols, and Stich, "Semantics, Cross-Cultural Style." And on gender, see Zamzow and Nichols, "Variations in Ethical Intuitions"; Stich and Buckwalter, "Gender and the Philosophy Club"; and Buckwalter and Stich, "Gender and Philosophical Intuition."
5. See, e.g., Knobe, "Intentional Action and Side Effects in Ordinary Language," on intuitions regarding intentional action; and Nichols and Knobe, "Moral Responsibility and Determinism: The Cognitive Science of Folk Intuitions," on compatibilist and incompatibilist intuitions.
6. See, e.g., Swain, Alexander, and Weinberg, "The Instability of Philosophical Intuitions: Running Hot and Cold on Truetemp."
7. See, e.g., Cummins, "Reflections on Reflective Equilibrium"; and Weinberg, "How to Challenge Intuitions Empirically Without Risking Skepticism." Several of these experimental attacks on intuitions, along with a defense claiming that such attacks incorrectly assume that prompted answers express intuitions, are discussed in Bengson, "Experimental Attacks on Intuitions and Answers." For a recent overview of the debates attending the X-Phi movement, see Alexander, *Experimental Philosophy: An Introduction*.

8. Bealer, "The Incoherence of Empiricism."
9. Cf. Cappelen, *Philosophy without Intuitions*, p. 13, on the distinction between on the one hand, intuitions as evidence and on the other, intuitions as sources of evidence: "On the first view it is *A has the intuition that p* that serves as evidence. On the second view, *p* is the evidence and the source of that evidence is *that A has an intuition that p*." Goldman, in "Philosophical Naturalism and Intuitional Methodology," p. 123, helpfully distinguishes the first from the second view as follows, in the context of challenges posed by skeptics of experimental philosophers: "Experimental philosophers should be understood to be presenting *second-order evidence* in support of the proposition that intuitions, or intuitive judgments, lack *first-order* evidential status." My task is to offer an account of Cappelen's second conception of intuition as a source of evidence and thus to answer experimental philosophers' skeptical challenge regarding the second-order evidentiary status of intuitions. I do so directly in Section III.
10. "We have a physical intuition that, when a house is undermined, it will fall. This does not count as an a priori intuition, for it does not present itself as necessary: it does not seem that a house undermined must fall; plainly it is possible for a house undermined to remain in its original position or, indeed, to rise up. By contrast, when we have an a priori intuition, say that if *P* then not not *P*, this presents itself as necessary: it does not seem to us that things could be otherwise; it must be that if *P* then not not *P*" (Bealer, "The Incoherence of Empiricism," p. 102).
11. Frege, "The Thought," pp. 327–328.
12. Frege, "The Thought," p. 342.
13. Frege, *Basic Laws of Arithmetic*, p. 12.
14. Philosophers disagree about whether introspection, imagination and "offline" simulation should be considered experience. See, e.g., BonJour, "In Defence of the A Priori"; and Williamson, *The Philosophy of Philosophy*.
15. Cf. what Boghossian and Peacocke say in this connection: "If we adopt the most permissive reading of 'independent of experience,' according to which a priori knowledge just is non-empirical knowledge, then, as noted above, we seem to have intuitively clear instances of a priori knowledge of the principles of logic, arithmetic, geometry, probability, of the principles of color incompatibility and implication, of some definitions, perhaps of some truths of philosophy itself" (Boghossian and Peacocke, *New Essays on the A Priori*, "Introduction," p. 8).
16. Williamson (*The Philosophy of Philosophy*, pp. 165–169) notes that an individual's acquired *skill* in applying a concept occupies a middle ground between a priori and a posteriori justification that he calls *armchair knowledge*. The experiences through which one learned a (variable across individuals) skill in applying a concept (say, a unit of measure) do not play any strict evidential role in knowledge, but such Wittgensteinian "techniques" can affect one's conceptual competence. I believe we could loosen up the "a priori" feature of my characterization of rational intuitions to acknowledge the variable effects of skill or technique in concept acquisition and still run the overall argument presented in this chapter.
17. Weinberg, "How to Challenge Intuitions Empirically Without Risking Skepticism," p. 320. Weinberg's formulation comes from Pryor, "The Skeptic

- and the Dogmatist,” and also Pryor, “Is There Immediate Justification?” By contrast, Cappelen (*Philosophy without Intuitions*, p. 112) speaks of an intuitive judgment’s “default justificatory status.” Examples of non-inferentially justified beliefs that are not rational intuitions (at least as commonly understood) include the following: (i) beliefs grounded in sensations (“I’m tired”) and (ii) teleological action explanations/intentions for action (“I’m crossing the road to get to the other side”).
18. Cappelen, *Philosophy without Intuitions*.
  19. Goldman and Pust, “Philosophical Theory and Intuitional Evidence,” p. 179.
  20. See, e.g., BonJour *In Defense of Pure Reason*; and Casullo, *A Priori Justification*, ch. 3. For discussion of the philosophical significance of intuitions in light of their fallibility, see Weatherston, “What Good Are Counterexamples?,” pp. 2–6, for a wide array of examples of erroneous rational intuitions. For a rare contrary view, viz., that rationally intuitive judgments are infallible, see Ludwig, “The Epistemology of Thought Experiments: First Person versus Third Person Approaches.”
  21. On Gödel and Penrose as “immoderate rationalists,” see Peacocke, “Explaining the A Priori: The Programme of Moderate Rationalism”; on Gödel’s view of such “perception” of conceptual truths, see Parsons, “Platonism and Mathematical Intuition in Kurt Gödel’s Thought.” In his critical reply to Williamson’s *The Philosophy of Philosophy*, Boghossian, in “Williamson on the A Priori and the Analytic,” surprisingly appeals to “rational insight” and also suggests it is a special faculty or capacity. BonJour, in *In Defense of Pure Reason*, p. 109, explicitly abjures any special faculty of rational insight (thereby echoing Kitcher’s *The Nature of Mathematical Knowledge*), but he also characterizes “rational insight” quasi-perceptually as the ability such that “when I carefully and reflectively consider the proposition (or inference) in question, I am able simply to see or grasp or apprehend that the proposition is *necessary*, that it must be true in any possible world or situation (or alternatively that the conclusion of the inference must be true if the premises are true)” (p. 106). Russell, in *The Problems of Philosophy*, ch. XI, distinguishes two kinds of “self-evidence,” one of which is infallible.
  22. See, e.g., Bealer, “On the Possibility of Philosophical Knowledge”; Bealer, “Intuition and the Autonomy of Philosophy”; and Bealer, “A Theory of the A Priori.”
  23. See, e.g., Sosa, “Intuitions: Their Nature and Epistemic Efficacy.”
  24. Pust, *Intuitions as Evidence*, p. 46.
  25. See, e.g., BonJour, *In Defense of Pure Reason*, p. 114, n.23; and Casullo, *A Priori Justification*, pp. 15–16. Hanna calls this *Low-Bar a priori knowledge*, see Part 2, Sections IV, IX, and X below.
  26. See, e.g., Kripke, *Naming and Necessity*; and Evans, “Reference and Contingency.” For related discussion, see also Lynch, “Trusting Intuitions,” pp. 229–230; and Ludwig, “The Epistemology of Thought Experiments: First Person versus Third Person Approaches,” pp. 433–434. Hanna, by contrast, argues for the classical Kantian equivalence thesis that necessity biconditionally necessitates apriority, hence there is no such thing as the contingent a priori. See Hanna, *Cognition, Content, and the A Priori*, ch. 4.
  27. Bealer, “Intuition and the Autonomy of Philosophy,” p. 207.



28. See, e.g., Bealer, "The Incoherence of Empiricism," p. 5: "... when you first consider one of De Morgan's laws, often it neither seems to be true nor seems to be false. After a moment's reflection, however, something happens: it now seems true; you suddenly 'just see' that it is true."
29. Peacocke, *A Study of Concepts*.
30. Sosa, "Intuitions: Their Nature and Epistemic Efficacy," p. 54; cf. also Sosa, "Intuitions and Truth."
31. Sosa, *A Virtue Epistemology*, pp. 60–61.
32. So too does Plantinga, who claims that a priori justification is provided by an intellectual, non-sensuous, non-perceptual "seeing" with a distinctive cognitive phenomenology: "that peculiar form of phenomenology with which we are all well acquainted, but which I can't describe in any way other than as the phenomenology that goes with seeing that such a proposition is true" (Plantinga, *Warrant and Proper Function*, pp. 105–106).
33. Williamson, *The Philosophy of Philosophy*, p. 217.
34. Seconded by Cappelen, *Philosophy without Intuitions*, pp. 80 and 117–118. Lynch, in "Trusting Intuitions," pp. 228–229 denies any felt attraction: "When I look inward I don't find any conscious attraction to believe this proposition [that two and two are four], pulling me, as it were, towards its truth. Rather, what I find is simply that I believe that two and two are four." So too Goldman, in "Philosophical Naturalism and Intuitional Methodology," pp. 139–140, doubts the existence of any single distinctive cognitive phenomenology for intuitions: "If one weren't a rationalist philosopher with prior theoretical commitment to such a distinctive phenomenological unity, what are the chances that one would expect to find such a common thread across precisely these domains: mathematics, classification judgment, etc.? I regard the phenomenological unity thesis as a piece of highly 'creative' speculation." Weinberg, in "How to Challenge Intuitions Empirically Without Risking Skepticism," pp. 319–320, claims the existence of only a phenomenological difference that is coarse-grained enough to distinguish intuition from other epistemic sources: "a sort of intellectual seeming, phenomenologically distinct from perception (including proprioception and the like), explicit inference, and apparent memory traces. But this construal includes a rather large and motley class of cognitions."
35. See Chapters 1.1 and 1.2 above and Part 2, Section V below.
36. By "judge" I mean to indicate, as stated above, that it is a taking things to be thus and so, in keeping with Frege's view that "a thought is already to the effect that things are thus and so. It does not acquire its bearing on the world when someone affirms it inwardly in judgment or outwardly in assertion...Judging, in Frege's account, is advancing from a thought to the truth-value true. Such advance is correctly undertaken if the thought is true, incorrectly if not" (McDowell, "Evans's Frege," pp. 177–178 and 180).
37. See, e.g., Bealer, "Intuition and the Autonomy of Philosophy," p. 207. This is endorsed by Pust in *Intuitions as Evidence*, pp. 32–33; by Huemer in *Skepticism and the Veil of Perception*, pp. 99–100; and by Sosa in "Intuitions and Truth."
38. Chisholm, *Theory of Knowledge*, pp. 20–22.
39. "Now the suggestion I wish to make is, in its simplest terms, that the statement 'X looks green to Jones' differs from 'Jones sees that x is green' in

that whereas the latter both ascribes a propositional claim to Jones' experience *and endorses it*, the former ascribes the claim but does not endorse it" (Sellars, *Empiricism and the Philosophy of Mind*, pp. 39–40).

40. Sellars, *Empiricism and the Philosophy of Mind*, p. 76.
41. Sellars, *Empiricism and the Philosophy of Mind*, p. 43.
42. This is a description of the "gap" between a psychological state (an "intellectual seeming") or psychological proposition ("it seems to me that P") on the one hand, and a philosophical fact or non-psychological proposition ("that P") on the other, that I discuss in Section IV, and the epistemic bridging of which is often subject to debate between negative and positive advocates of X-Phi. On "intuitive" and "it seems that P" as different kinds of hedge, i.e. "an expression that functions, at least in part, to weaken the speaker's commitment to the embedded sentence," see Cappelen, *Philosophy without Intuitions*, pp. 36–38, 42–47 and *passim*. Compare Chisholm: "'It seems to me that I see light,' when uttered on any ordinary occasion, might be taken to be performing one or the other of two quite different functions. (1) The expression might be used simply to report one's belief; in such a case, 'It seems to me that I see light' could be replaced by, 'I believe that I see the light.' Taken in this way, the 'seems' statement expresses what is self-presenting, but since it is equivalent to a belief-statement it does not add anything to the cases we have already considered. (2) 'It seems to me' – or better, 'It seems to *me*' – may be used not only to report a belief, but also to provide the speaker with a way out, a kind of hedge, in case the statement prefixed by, 'It seems to me,' should turn out to be false. This function of, 'It seems,' is thus the contrary of the performative use of, 'I know,' to which J. L. Austin had called attention. In saying, 'I know,' I give my hearers a kind of guarantee and, as Austin said, stake my reputation, but in saying 'It seems to *me*,' I play it safe, indicating that what I say carries no guarantee at all, and that anyone choosing to believe what I say does so at his or her own risk" (Chisholm, *Theory of Knowledge*, p. 21).
43. See Weatherson, "What Good Are Counterexamples?," who argues that in some cases of conflict between settled theory and contradictory intuitions, the intuitions should be abandoned.
44. Notice that this conception of justification, which I borrow from Pryor, "Is There Immediate Justification?," does not require the justifier to be a proposition.
45. See also Chapter 1.1 above.
46. Boghossian, in "Inference and Insight," p. 639, deploys these arguments against BonJour, who accepts the conclusion that a priori "rational insights" are not "propositional in form.... Instead, I suggest, the relevant logical insight must be construed as non-propositional in character, as a direct grasping of the way in which the conclusion is related to the premises and validly flows from them. And once the need for this non-propositional conception of a priori insight is appreciated in the context of deductive inference, it seems to me in fact plausible to extend it to many other cases as well" (BonJour, "In Defense of the *A Priori*," p. 100). In my view BonJour's response merely restates the problem rather than articulating an explanatory account of such insight.

47. For *epistemological* accounts of analyticity, see Boghossian, “Analyticity”; and Boghossian, “Knowledge of Logic.” See also Williamson, who defines such a notion of analyticity as “a privileged status in respect of knowledge or justification which a sentence or thought has in virtue of the conditions for understanding its constituent words or possessing its constituent concepts” (*The Philosophy of Philosophy*, p. 52), as opposed to either (i) *metaphysical* analyticity, defined as an analytic sentence’s being true in virtue of meaning, and not in virtue of a combination of meaning and fact, or (ii) *cognitive-semantic* analyticity, defined as a statement’s or proposition’s being necessarily true and a priori in virtue of its conceptual content. It should also be noted that my account of conceptual capacities does not preclude the possibility that the exercise of rational human cognitive capacities can also involve essentially non-conceptual content. See also Hanna, *Cognition, Content, and the A Priori*, esp. chs. 2 and 4.
48. Cappelen, in *Philosophy without Intuitions*, pp. 124–126, invokes the contemporary disagreement in the philosophical community regarding conceptual justification and levies demands upon anyone who would offer an account of intuitive judgments anchoring them in conceptual competencies: “... what we should expect from [such a person] A is that she tells us what she thinks concepts are, what she means by ‘conceptual competence,’ how she construes the relevant kind of justification [viz., by appeal to intuition as conceptual competence], and that she then goes on to show that [the intuitive judgment that] *p* satisfies these various conditions. We would also expect that in doing so, A would tell us how she has convinced herself that the various excellent arguments against analyticity can be overcome (she doesn’t need to spell out the arguments, but she should at least reference her favorite reply to those arguments),” and in his review of seminal case studies the authors of which supposedly avail themselves of intuitive judgments he often (e.g., pp. 166, 168) criticizes those authors for failing to satisfy the demands he listed earlier. But this objection seems unfair, given the focus of the respective case studies (all of which are articles, not treatises on concept theory, analyticity, and so on). Lastly, Cappelen’s “deflationary interpretation” of the case studies, according to which what one might take to be intuitive judgments (applying or failing to apply concepts to hypothetical scenarios or their proper generalization) are instead interpreted as “pre-theoretic common ground” between the author and his readers, is fully compatible with taking such common ground to be the result of basic conceptual competence. In any case, the present chapter constitutes an attempt to discharge some of the burdens of proof Cappelen imposes, especially in answering Williamson’s chief argument against epistemological analyticity, an argument that Cappelen endorses: “Suffice it to say that I am one of the many who find those objections [to epistemic analyticity, by Williamson] very convincing and I have nothing original to add to them. Those who intend to seriously defend the activity of conceptual analysis owe the philosophical community a convincing reply to Williamson” (p. 211).
49. For simplicity’s sake I assume that such rules can be equivalently expressed as an axiom schema (viz., “ $(A \ \& \ B) \rightarrow A$ ”) or metalogically as an inference rule (viz., “From ‘A and B’ one can infer ‘A.’”). These constitutive rules do

not need to be consciously known as propositions, nor does their adherence need to be a deliberate choice; it is sufficient that one complies with them involuntarily and unreflectively as epistemic norms. A useful analogy is practical skills such as turning a doorknob clockwise as constitutive of *opening a door* or pushing a button as constitutive of *taking an elevator*. However, it is possible in principle to raise these norms to self-consciousness and treat them as reasons (in inferences, in actions).

50. See, e.g., Peacocke, *The Realm of Reason*, p. 172, and also the discussion in Boghossian, "Knowledge of Logic."
51. Williamson, *The Philosophy of Philosophy*, p. 97.
52. Williamson, *The Philosophy of Philosophy*, p. 125.
53. Williamson, *The Philosophy of Philosophy*, p. 125.
54. The features and forms of judgment that Thompson discusses hold for biological life-form (first nature) as well as for Wittgensteinian "form of life" (second nature): "Among other things, I think of the agent as the bearer of a *practice*, a 'form' of a different sort, but nevertheless something that is potentially present in other agents, something that acts as a measure of good and bad in what bears it, and something that can account for what is reckoned good according to that measure. One turn of the categorical framework gives us the concept of a life-form or a living nature; the other gives us the concept of 'form of life' or a 'second nature'" (*Life and Action*, p. 208). My suggestion is that another deployment of the categorical framework is *reasoning*, so that a disposition to accept modus ponens (as Boghossian understands epistemological analyticity) is the obverse of the practice of reasoning as a specific form of life in Wittgenstein's sense. That is, a generic judgment for our form of life is that "we conclude q from p and (if p, then q)."
55. Thompson, *Life and Action*, pp. 158–160; cf. also p. 174.
56. "Not every individual action that falls under a concept through which a practice or disposition is described and has an appropriate subject can be said to *fall under* that practice or *manifest* that disposition. ... However we are to understand them, the propositions 'She keeps her promises' and 'Her disposition is to keep her promises' are plainly consistent with the claims that she often hasn't, in the future sometimes won't, and even now is failing to keep some promise. Similarly, the attribution of a practice of promise-making and promise-keeping to a population is consistent with the claim that many members of the population have never kept very many of their promises" (Thompson, *Life and Action*, pp. 165–166).
57. Thompson, *Life and Action*, p. 188.
58. Thompson in *Life and Action*, pp. 185–188, provides an illustration derived from Putnam. Imagine a linguistic community in which the word "gold" appeared to name a kind of stuff covering both gold and fool's gold, whereas our linguistic community uses "gold" as a "natural kind term," solely to name gold. "It was a favorite suspicion of a certain line of thought that it is mere prostration before the facts to insist that it belongs to the (linguistic) practice of this second community to apply the word 'gold' equally to gold and to the other stuff. A more likely story is that the practice of employing the word 'gold' should receive the same description in *either* community: it

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is just that in the second community there is widespread error about fake gold, a frequent mistake with no bearing on the internal description of the practice itself.”

59. Rawls, “Two Concepts of Rules,” p. 37.
60. Williamson, *The Philosophy of Philosophy*, p. 125.
61. Thompson, *Life and Action*, p. 191.
62. Frege, *Basic Laws of Arithmetic*, p. 14.
63. Bealer, “Intuition and the Autonomy of Philosophy,” p. 227.
64. Ludwig, “Intuitions and Relativity,” p. 437.
65. Ludwig, “Intuitions and Relativity,” p. 438.
66. Bealer, “Intuition and the Autonomy of Philosophy,” p. 224.
67. Peacocke, “Explaining the A Priori: The Programme of Moderate Rationalism,” p. 276.
68. Peacocke, *Truly Understood*, pp. 31–32 and 122.
69. Thus Peacocke acknowledges (*Truly Understood*, p. 137) that his view is compatible with the *empirical* type of conceptual analysis advocated by Goldman (in, e.g., “Philosophical Intuitions: Their Target, Their Source and Their Epistemic Status” and “Philosophical Naturalism and Intuitional Methodology”) and by Goldman and Pust in “Philosophical Theory and Intuitional Evidence,” who hold that concepts are real psychological entities that – like perception – in general reliably generate intuitive judgments which constitute basic sources of evidence for philosophical argument. Empirical study of the psychological states underlying concept formation and application might well include implicit or unconscious psychological mechanisms. Such empirical reliabilist accounts of intuitional knowledge and externalist justification in general seem liable to the same objection, viz. that these accounts explain away the possibility of a priori justification. A further consequence of tacit-knowledge and externalist accounts’ ignoring self-consciousness is that they leave no place for *responsibility* in their account of a thinker’s thought. Williamson, in *The Philosophy of Philosophy*, pp. 99–112, raises a further objection to the tacit-knowledge account, drawing on Evans’s “Semantic Theory and Tacit Knowledge”: tacit semantic knowledge is “inferentially immune” to reflective self-consciousness as conceptual, and logical knowledge is not.
70. Cappelen (*Philosophy without Intuitions*, pp. 212–217) offers what he calls an “expansion challenge” to the defender of the epistemological analyticity of logic: even if analytic conceptual truths for logical constants and inference rules, etc., are granted, “someone who wants to justify the appeal of conceptual analysis in philosophy needs to expand from the paradigmatic cases to a range of *interesting and substantive philosophical claims*” (his emphasis). But this badly misconstrues the upshot of epistemological analyticity vindicated from Williamson’s objection: such conceptual truths of logic and reasoning provide a “core” (Williamson, *The Philosophy of Philosophy*, p. 50) of a priori justified *reasoning capacities* that are actuated throughout philosophy as well as *other rational activities*. If the justification for the legitimate use of those reasoning capacities is provided by conceptual analysis, then such conceptual analysis – or better, its results – is/are presupposed by those rational activities like philosophy.

71. Williamson, *The Philosophy of Philosophy*, p. 211.
72. See Brown, "Thought Experiments, Intuitions and Philosophical Evidence."
73. See Huemer, *Skepticism and the Veil of Perception*, pp. 98–115; and Huemer, "Compassionate Phenomenal Conservatism."
74. Chudnoff, "The Nature of Intuitive Justification," pp. 322–323.
75. I owe the formulation of the notion of a "highest common factor" to McDowell, in the context of perceptual experiences: "The skepticism I am considering purports to acknowledge that experiences have objective purport, but nevertheless supposes that appearances as such are mere appearances, in the sense that any experience leaves it an open possibility that things are not as they appear. That is to conceive the epistemic significance of experience as a highest common factor of what we have in cases in which, as common sense would put it, we perceive that things are thus and so and what we have in cases in which that merely seems to be so – so never higher than what we have in the second kind of case" (McDowell, "The Disjunctive Conception of Experience as Material for a Transcendental Argument," p. 231).
76. Huemer, "Compassionate Phenomenal Conservatism," p. 36.
77. White, in "Problems for Dogmatism," argues for this conclusion using confirmation-theoretical principles. Here is a quick overview of White's criticism of dogmatism, as applied to the case of intuition (see also Brown, "Thought Experiments, Intuitions and Philosophical Evidence," p. 507, n.18). Confirmation theory holds that evidence E confirms hypothesis H if and only if the conditional probability of H on E is greater than the prior probability of H, that is, if and only if  $P(H/E) > P(H)$ . And according to probability theory, if H entails E, then E confirms H, and therefore if H entails E, then E disconfirms not-H. According to dogmatism, the experience of its appearing that P is evidence for the hypothesis that the appearance is veridical. Now consider the hypothesis H\* that the appearance that P is illusory, i.e., not veridical. H\* entails that it appears to one that P. Therefore its appearing to one that P *disconfirms* the hypothesis that the appearance is veridical. On the assumption that evidence which disconfirms a hypothesis cannot justify it, it follows that having the experience of its appearing to one that P cannot justify the hypothesis that the appearance is veridical, i.e., that P. White thus rejects dogmatism and instead endorses the entitlement or "default justification" view.
78. See, e.g., Burge, "Content Preservation"; and Burge, "Perceptual Entitlement."
79. See, e.g., Wright, "Intuition, Entitlement and the Epistemology of Logical Laws"; and Wright, "Warrant for Nothing (and Foundations for Free?)."
80. Enoch and Schechter, "How Are Belief-Forming Methods Justified?"
81. For this formulation of an "accidental" epistemic relation I am indebted to Kern's "Knowledge as a Fallible Capacity."
82. Wright, "Warrant for Nothing (and Foundations for Free?)," pp. 163, n. 5 and 164.
83. Wright, "Warrant for Nothing (and Foundations for Free?)," p. 165. Wright also rejects the classical account of a faculty of intuition because "rational insight seems to hold out no prospect of integration within the broad body

of scientifically accountable knowledge – accountability within the explanatory resources of a broad scientific naturalism” (pp. 156–157). But requiring this particular type of externalist, empiricist explanation seems to doom any self-conscious a priori non-inferential exercise of rational competencies (intuition, introspection, practical intention) by stipulation.

84. Wright, “Warrant for Nothing (and Foundations for Free?),” p. 166.
85. See, e.g., Goldman and Pust, “Philosophical Theory and Intuitional Evidence”; Goldman, “Philosophical Naturalism and Intuitional Methodology”; and Brown, “Thought Experiments, Intuitions and Philosophical Evidence.”
86. Brown, “Thought Experiments, Intuitions and Philosophical Evidence,” p. 513.
87. Goldman, “Philosophical Naturalism and Intuitional Methodology,” p. 20.
88. See McDowell, *Perception as a Capacity for Knowledge*, p. 38, against Burge’s entitlement view in the case of perceptual judgment: “When we acknowledge that a capacity is fallible, we acknowledge that there can be exercises of it that are defective, in that they fail to be cases of what the capacity is specified as a capacity to do. That does not preclude us from holding that in non-defective exercises of a perceptual capacity subjects get into perceptual states that provide *indefeasible* warrant for perceptual beliefs.” Cf. also McDowell, “Tyler Burge on Disjunctivism,” p. 245, and Kern, “Knowledge as a Fallible Capacity.”
89. Note that this conception of the logical relationships between a fallible capacity and its exercise, and the reliability of the capacity’s non-defective exercise, distinguishes my account from neo-rationalist accounts such as Bealer’s and Ludwig’s (discussed in Section III above) that overlook these relationships and therefore conclude that determinate understanding of a concept (Bealer) or concept-mastery (Ludwig) entails the infallibly correct application of the concept in question.
90. See, e.g., Nancy Cartwright’s claim that the central idea of a capacity is that “If the capacity is triggered properly and *is not interfered with*, then the canonical manifestation will result” (Cartwright, “What Makes a Capacity a Disposition?,” p. 10).
91. Weinberg, “How to Challenge Intuitions Empirically Without Risking Skepticism,” pp. 325.
92. Weinberg concedes that “logic and mathematics are excellent examples of domains with hopeful intuitions” due to “the successful integration of mathematics and logic into other ongoing scientific concerns” (“How to Challenge Intuitions Empirically Without Risking Skepticism,” p. 339), but one would like more discussion here. A glaring example is the fate of Euclidean geometry in relation to Kant’s rationalism, and one might argue that international courts and human rights indicate a certain amount of “integration” of moral and metaphysical intuitions. Moreover, the criterion of internal coherence may be invoked to appraise rational intuitions, and likewise detectability of margins, in that more recondite and fantastical hypothetical scenarios are more apt to result in divergent concept applications. Lastly, accounts of the possibility and reliability of a priori knowledge aspire to provide the theoretical illumination that Weinberg desires.
93. An a priori, non-inferential rational-intuitive judgment is similar to an a posteriori, non-inferential perceptual judgment, in that both judg-

ments occur “in the space of reasons,” such that those judgments stand in inferential relations to other judgments answerable to norms of rationality. See, e.g., Sellars, *Empiricism and the Philosophy of Mind*, p. 76: “in characterizing an episode or a state as that of *knowing*, we are not giving an empirical description of that episode or state; we are placing it in the logical space of reasons, of justifying and being able to justify what one says” (section 36).

94. See McGee, “A Counterexample to Modus Ponens.”
95. See Kahneman, Slovic, and Tversky, *Judgment under Uncertainty: Heuristics and Biases*.

## I Introduction

1. For convenience, throughout Part 2 I refer to Kant’s works infratextually in parentheses. The citations include both an abbreviation of the English title and the corresponding volume and page numbers in the standard “Akademie” edition of Kant’s works: *Kants gesammelte Schriften*, edited by the Königlich Preussischen (now Deutschen) Akademie der Wissenschaften (Berlin: G. Reimer [now de Gruyter], 1902-). For references to the first *Critique*, I follow the common practice of giving page numbers from the A (1781) and B (1787) German editions only. For references to Kant’s *Reflexionen*, i.e., entries in *Kants handschriftlicher Nachlaß* – which I abbreviate as “R” – I give the entry number in addition to the Akademie volume and page numbers. The translations from the *Reflexionen* are my own. I generally follow the standard English translations of Kant’s works, but have occasionally modified them where appropriate. Here is a list of the abbreviations and English translations of the works cited:

*BL* “The Blomberg Logic.” In *Immanuel Kant: Lectures on Logic*. Trans. J.M. Young. Cambridge: Cambridge Univ. Press, 1992. pp. 5–246.

*CPJ* *Critique of the Power of Judgment*. Trans. P. Guyer and E. Matthews. Cambridge: Cambridge Univ. Press, 2000.

*CPR* *Critique of Pure Reason*. Trans. P. Guyer and A. Wood. Cambridge: Cambridge Univ. Press, 1997.

*GMM* *Groundwork of the Metaphysics of Morals*. Trans. M. Gregor. In *Immanuel Kant: Practical Philosophy*. Cambridge: Cambridge Univ. Press, 1996. pp. 37–108.

*JL* “The Jäsche Logic.” In *Immanuel Kant: Lectures on Logic*. pp. 519–640.

*PC* *Immanuel Kant: Philosophical Correspondence, 1759–99*. Trans. A. Zweig. Chicago: Univ. of Chicago Press, 1967.

*Prp* *Prolegomena to any Future Metaphysics*. Trans. J. Ellington. Indianapolis, IN: Hackett, 1977.

2. Wittgenstein, *Philosophical Investigations*, section 81, p. 38<sup>e</sup>.
3. Pap, *Semantics and Necessary Truth*, p. 422.
4. Kripke, *Naming and Necessity*, p. 42.
5. Tait, “Finitism,” p. 546.
6. Parsons, *Mathematical Thought and Its Objects*, p. 166.



7. The notion of objectivity covers both (i) knowledge, belief, or perception, and also (ii) what is known, believed, or perceived: so in Part 2 I will sometimes let “objectively” qualify acts or states of knowing, believing, or perceiving, and sometimes let it qualify propositions, statements, states-of-affairs, perceptual or ordinary manifestly real material objects, or other intentional targets of knowing, believing, or perceiving.
8. See also Descartes, *Rules for the Direction of the Mind*; and Descartes, *Meditations on First Philosophy* and “Objections and Replies,” pp. 24 and 103–105. Significantly, in the *Rules*, Descartes closely associates clear and distinct intuition and its indubitability with *imaginative visualization*. See Gaukroger, *Descartes: An Intellectual Biography*, pp. 115–124 and 158–181.
9. Hilbert, “On the Infinite,” p. 376.
10. Later, in sub-section V.2, I will argue that some non-basic rational intuitions are also authoritative. But that refinement is not necessary for the point I am making right here.
11. See, e.g., Johnson-Laird, *Mental Models*.
12. I will explain what I mean by “broadly Tarskian,” as opposed to “speciously Tarskian,” in sub-section II.1 below.
13. Sellars, “Philosophy and the Scientific Image of Man,” p. 1.
14. See Mackie, *Ethics: Inventing Right and Wrong*.

## II Rationalism Lost: The Original Benacerraf Dilemma

1. Milton, “Paradise Regained,” p. 495, book I, lines 1–7.
2. Benacerraf, “Mathematical Truth,” pp. 672–673.
3. See Tarski, “The Concept of Truth in Formalized Languages”; and Tarski, “The Semantic Conception of Truth and the Foundations of Semantics.”
4. Tarski, “The Concept of Truth in Formalized Languages,” pp. 156–157.
5. For a good general survey of this debate, see Maddy, *Second Philosophy: A Naturalistic Method*, part II.
6. Tarski, “The Concept of Truth in Formalized Languages,” p. 155.
7. See Parsons, “Kant’s Philosophy of Arithmetic”; Hanna, “Mathematics for Humans: Kant’s Philosophy of Arithmetic Revisited”; and Hanna, *Kant, Science, and Human Nature*, ch. 6.
8. See Hanna, “Kant and Nonconceptual Content”; Hanna, “Kantian Non-Conceptualism”; Hanna, “Kant’s Non-Conceptualism, Rogue Objects, and the Gap in the B Deduction”; Hanna, “Beyond the Myth of the Myth: A Kantian Theory of Non-Conceptual Content”; Hanna, *Cognition, Content, and the A Priori*, ch. 2; and Hanna and Chadha, “Non-Conceptualism and the Problem of Perceptual Self-Knowledge.”
9. It is sometimes claimed that The OBD fails from the get-go simply because it is impossible for cognizers to stand in causally efficacious, contact-involving or efficient, directly referential, non-conceptual, non-inferential, sensory and inherently spatiotemporal relations to *past, distant, or future objects*. But on the contrary, these sorts of cognitive relations are perfectly possible, given an appropriately developed and adequately extended cognitive semantics of direct reference. See, e.g., Hanna, “Direct Reference, Direct Perception, and the Cognitive Theory of Demonstratives”; and Hanna, “Extending Direct Reference.” So I do think that The OBD stands up well under that worry.

10. For a compelling argument against accepting a multiform semantics of truth, see Williamson, *The Philosophy of Philosophy*, ch. 3.
11. See, e.g., Katz, "What Mathematical Knowledge Could Be."
12. See, e.g., Divers and Miller, "Arithmetical Platonism: Reliability and Judgment-Dependence"; and Hale and Wright, "Benacerraf's Dilemma Revisited."
13. See, e.g., Sosa, "Reliability and the A Priori." In *Kant, Science, and Human Nature*, chs. 6–7, I work out Kant's idea that mathematical knowledge is grounded on reflective self-consciousness together with the imagination.
14. One way of doing this would be via "plenitudinous platonism": For every consistently imaginable mathematical statement, there is a corresponding mathematical object. See, e.g., Balaguer, *Platonism and Anti-Platonism in Mathematics*. This construes imaginability as conceivability. But there are other ways of thinking about the imagination, e.g., Kant's conception of the productive imagination as a "schematizing" (i.e., mental modelling) capacity (CPR A84–147/B116–187, and esp. A120 n.). In *Rationality and Logic*, ch. 6, I extended The OBD to logical knowledge, and then developed a strategy for solving the The EBD that starts with the thesis that a reasonable epistemology should be modelled on the imagination, not on perception. So by the classification scheme described here, strictly speaking, that earlier solution counts as a pre-emptive negative or skeptical solution. But to the extent that the present solution postulates the innate specification of mental modelling capacities in sense perception, it also postulates the innate specification of *imaginational* capacities within the innately specified capacity for sense perception. So in *that* sense, the present positive or anti-skeptical solution is really only an extension and refinement of the earlier solution.
15. See, e.g., Shapiro, *Thinking about Mathematics*, chs. 6, 7, and 9.
16. See, e.g., Bonjour, *In Defense of Pure Reason*, ch. 6.
17. See, e.g., Brandom, *Articulating Reasons: An Introduction to Inferentialism*.
18. Many thanks to Catherine Legg for pushing me critically on this point.

### III The Benacerraf Dilemma Extended and Generalized

1. Wittgenstein, *Philosophical Investigations*, section 89, p. 42<sup>e</sup>.
2. See also, e.g., Field, "Recent Debates About the A Priori"; Bedke, "Intuitive Non-Naturalism Meets Cosmic Coincidence"; and Thurow, "The Defeater Version of Benacerraf's Problem for A Priori Knowledge." In "Grasping the Third Realm," John Bengson correctly notes that any adequate solution to the problem must provide an "explanation of non-accidentally correct [rational] intuitions, given a realist view of the nature or character of what they are about" (p. 5). And by way of a solution, Bengson proposes an explanatory appeal to the existence of a *non-causal constitution-relation* between abstract truth-makers and rational intuitions. A similar proposal, to the effect that intuitional experiences are partially constituted by *the abstract objects* intentionally-targeted by those experiences, is made by Elijah Chudnoff in "Awareness of Abstract Objects," although not explicitly in the context of The OBD, EBD, or GBD. In any case, I do think that Bengson's and Chudnoff's "constitutionalist" proposals are both definitely on the right track, and also that Bengson's particular formulation of the problem

appropriately fuses The GBD with the classical “explanatory problem” about rational intuitions (see the Introduction, Section I, above). My critical worries about their proposals, however, are (i) that they simply avoid the *causal* dimension of The OBD without adequate philosophical motivation, and (ii) that they leave open a new explanatory gap about what metaphysically accounts for the *constitution-relation* in this connection. As will become clear in the rest of Part 2, my formulation of and proposed solution to The GBD (i) specifically emphasize the fundamental need for an *essentially* reliable connection between rational intuitions and their abstract truth-makers (or abstract objects), in order to solve The OBD, The EBD, and The GBD, (ii) clearly demonstrate the Kantian provenance of every version of The BD, (iii) clearly demonstrate that transcendental idealism is a leading candidate for an adequate solution to every version of The BD, (iv) adequately preserve the causal component in every version of The BD, and (v) also yield, as a direct consequence of the appeal to transcendental idealism, a synthetic a priori constitution-relation between abstract truth-makers and rational intuitions.

3. See also Bonjour, *In Defense of Pure Reason*, pp. 156–161.
4. This premise is equivalent to what Thurow calls the “defeater” premise in his generalized version of The OBD – see Thurow, “The Defeater Version of Benacerraf’s Problem for A Priori Knowledge.”
5. As it turns out, however, this prima facie plausible thesis that causal reliability will somehow provide a non-accidental, global-skepticism-resistant connection between rational human knowers and the known truth-making objects ultimately fails, given the conceivable possibility of a “new evil demon.” See, e.g., Cohen, “Justification and Truth.” This of course is just another version of the problem of cognitive-semantic luck.

#### IV What Is A Priori Knowledge?

1. For the locus classicus, see Gettier, “Is Justified True Belief Knowledge?” More generally, see Shope, *The Analysis of Knowing*; and Steup, “The Analysis of Knowledge.”
2. See, e.g., Pritchard, “Anti-Luck Virtue Epistemology.”
3. See Hanna, *Cognition, Content, and the A Priori*, ch. 3.
4. See, e.g., Cohen, “Justification and Truth.”
5. Lehrer, *Theory of Knowledge*, pp. 163–164.
6. Williamson, *Knowledge and Its Limits*, p. v.
7. See also Hanna, *Cognition, Content, and the A Priori*, Introduction, ch. 3, and ch. 5.
8. See, e.g., Brady and Pritchard (eds.), *Moral and Epistemic Virtues*; Fairweather and Zagzebski (eds.), *Virtue Epistemology*; and Sosa, *A Virtue Epistemology*.
9. See, e.g., Stanley, *Knowledge and Practical Interests*.
10. See, e.g., Korsgaard, *Self-Constitution: Agency, Identity, and Integrity*.
11. Dostoyevsky, *The Brothers Karamazov*, vol. 2, p. 743.
12. See Sosa, *A Virtue Epistemology*; Sosa, *Reflective Knowledge*; and Sosa, “Human Knowledge, Animal and Reflective.”
13. See, e.g., Steup, “Epistemology.”

14. See Sellars, "Empiricism and the Philosophy of Mind," p. 169, and more generally, section 17 and section 36.
15. See, e.g., Cohen, "Justification and Truth."
16. See, e.g., Bayne and Montague (eds.), *Cognitive Phenomenology*.
17. See, e.g., Kim, *Supervenience and Mind*, esp. part 1; Chalmers, *The Conscious Mind*, chs. 2–3; and Horgan, "From Supervenience to Superdupervenience: Meeting the Demands of a Material World."
18. Many thanks to Lloyd Humberstone for raising this objection in conversation.
19. The philosophical trick is to show how the necessary and the a priori are necessarily equivalent without also conflating them. For two different ways of doing this, see Hanna, *Kant and the Foundations of Analytic Philosophy*, section 5.2; and Stang, "Did Kant Conflate the Necessary and the A Priori?"
20. See Bourget and Chalmers, "Philosophical Papers Survey 2009."
21. See, e.g., Bonjour, *In Defense of Pure Reason*; Tidman, "The Justification of A Priori Intuitions"; Bealer, "A Theory of the A Priori"; Casullo, *A Priori Justification*; Wright, "Intuition, Entitlement and the Epistemology of Logical Laws"; Wright, "Warrant for Nothing (and Foundations for Free)?"; Jenkins, *Grounding Concepts*; Chalmers, "Revisability and Conceptual Change in 'Two Dogmas of Empiricism'"; and Casullo, *Essays on A Priori Knowledge and Justification*, esp. ch. 14 ("Articulating the A Priori-A Posteriori Distinction").
22. See, e.g., Williamson, *The Philosophy of Philosophy*; and Williamson, "How Deep Is the Distinction Between A Priori and A Posteriori Knowledge?"
23. I borrow the useful distinction between cognitively "enabling" and cognitively "evidential" functions of empirical facts from Williamson, "How Deep is the Distinction Between A Priori and A Posteriori Knowledge?"
24. See, e.g., Plato, "Meno," "Parmenides," and "Letter VII"; Descartes, "Meditations on First Philosophy"; and Leibniz, "Meditations on Knowledge, Truth, and Ideas," "Discourse on Metaphysics," and "The Principles of Philosophy, or the Monadology."
25. The notion of "rational assertion" here and in some of the following formulations is a fairly weak and permissive one that allows takings-for-true on the basis of any cognitive or non-cognitive reason, and does not necessarily imply rational reflection, self-consciousness, or inferential support. What it rules out are assertions that are merely caused, externally compelled, pathologically forced, or randomly generated.
26. See Williamson, "Is Knowing a State of Mind?"
27. On the two-way necessary connection between intentionality (including cognition) and consciousness, see Hanna and Maiese, *Embodied Minds in Action*, chs. 1–2.
28. See Locke, *Essay Concerning Human Understanding*; Hume, *An Enquiry Concerning Human Understanding*; and Hume, *Treatise of Human Nature*.
29. See Frege, "Thoughts"; Frege, "Logic [1897]"; Russell, *The Problems of Philosophy*, esp. chs. V and VII–XI; and Russell, "Knowledge by Acquaintance and Knowledge by Description."
30. See note 7, Section II above; and Tait, "Gödel on Intuition and on Hilbert's Finitism."
31. See Benacerraf, "Frege: The Last Logician."
32. See Benacerraf, "What Numbers Could Not Be."

33. See, e.g., Ayer, *Language, Truth, and Logic*; Carnap, "The Elimination of Metaphysics through Logical Analysis of Language"; Carnap, *Meaning and Necessity*; Lewis, "A Pragmatic Conception of the A Priori"; Lewis, *Mind and the World Order*; and Lewis, "The Modes of Meaning."
34. See Quine, "Truth by Convention."
35. See Menkin, "Stop Alien Abductions."
36. See, e.g., Carnap, "Empiricism, Semantics, and Ontology."
37. See Hanna, *Kant and the Foundations of Analytic Philosophy*, chs. 3–5; and Hanna, *Cognition, Content, and the A Priori*, ch. 5.
38. See, e.g., Quine, "Carnap and Logical Truth"; Quine, "Epistemology Naturalized"; Quine, *Philosophy of Logic*; Quine, "Truth by Convention"; Quine, "Two Dogmas of Empiricism"; and Quine, *Word and Object*.
39. Quine, "Two Dogmas of Empiricism," p. 44.
40. Grice and Strawson, "In Defense of a Dogma"; and Chalmers, "Revisability and Conceptual Change in 'Two Dogmas of Empiricism'."
41. See Hanna, *Rationality and Logic*, ch. 1.
42. See, e.g., Kripke, "Identity and Necessity"; Kripke, *Naming and Necessity*; Putnam, "Analyticity and Apriority: Beyond Wittgenstein and Quine"; Putnam, "The Meaning of 'Meaning'"; and Putnam, "There Is at Least One A Priori Truth."
43. See Williamson, *The Philosophy of Philosophy*, pp. 165–169; and Williamson, "How Deep Is the Distinction Between A Priori and A Posteriori Knowledge?"
44. See, e.g., Casullo, "Kripke on the A Priori and the Necessary"; and Casullo, *A Priori Justification*, ch. 7.
45. See, e.g., Hanna, "A Kantian Critique of Scientific Essentialism"; Hanna, "Why Gold Is Necessarily a Yellow Metal"; and Hanna, *Cognition, Content, and the A Priori*, ch. 5.
46. See, e.g., Kitcher, "A Priori Knowledge"; Kitcher, *The Nature of Mathematical Knowledge*; and Kitcher, "A Priori Knowledge Revisited."
47. Field, "The Apriority of Logic"; Field, "Epistemological Non-Factualism and the Apriority of Logic"; Field, "Apriority as an Evaluative Notion"; and Yablo, "Apriority and Existence."
48. See, e.g., Boghossian, "Knowledge of Logic"; Brandom, *Articulating Reasons*; and Peacocke, "Explaining the A Priori: The Programme of Moderate Rationalism."
49. Jenkins's *Grounding Concepts* is an interesting fusion of C2, C7, and C9, in that it is at once empiricist, post-Quinean naturalist, factualist, and conceptualist. But from a critical standpoint, this means only that it inherits all the problems of C2, C7, and C9 conjoined.
50. See, e.g., Horwich, "Stipulation, Meaning, and Apriority," esp. pp. 163–165.
51. See Hanna, "Kant's Non-Conceptualism, Rogue Objects, and the Gap in the B Deduction"; and Williamson, *The Philosophy of Philosophy*, pp. 16–17.
52. See note 8, Section II above.
53. See Hanna, *Rationality and Logic*, ch. 6; and Williamson, *The Philosophy of Philosophy*, ch. 4.
54. See Bealer, "The Incoherence of Empiricism"; Bealer, "A Priori Knowledge and the Scope of Philosophy"; Bealer, "Intuition and the Autonomy of Philosophy"; Bealer, "Modal Epistemology and the Rationalist

- Renaissance”; and Bealer, “A Theory of the A Priori”; Bonjour, *In Defense of Pure Reason*; Bonjour, “A Rationalist Manifesto”; and Katz, *Realistic Rationalism*. To simplify my presentation of C10, I have focused only on Bealer’s version.
55. See, e.g., Hanna, *Kant, Science, and Human Nature*, ch. 7; and Hanna, *Cognition, Content, and the A Priori*.
  56. I borrow the apt distinction between a statement’s *specific modal status* and its *general modal status* from Casullo, “Kripke on the A Priori and the Necessary.”
  57. See, e.g., Wright, “Intuition, Entitlement and the Epistemology of Logical Laws”; Wright, “Warrant for Nothing (and Foundations for Free)?”; and Casullo, “Articulating the A Priori-A Posteriori Distinction.”
  58. Katz claims that “however Kant’s transcendental idealism is understood, it locates the ground of [real] facts within ourselves in at least the minimal sense that it entails that such facts could not have existed if we (or other intelligent beings) had not existed” (*Realistic Rationalism*, p. 9). Although this claim is true of STI, it is false of WCTI.
  59. See, e.g., Wikipedia, “Pike’s Peak.” I visited the summit of Pike’s Peak during summer 2010, and confirmed this claim by direct, veridical sense perception.
  60. See Hanna, “The Inner and the Outer: Kant’s ‘Refutation’ Reconstructed”; and Hanna, *Kant, Science, and Human Nature*, ch. 1.

## V What Are Intuitions?

1. Williamson, *The Philosophy of Philosophy*, pp. 2–3.
2. Sosa, “Minimal Intuition,” p. 268.
3. See note 8, Section II above.
4. See, e.g., Russell and Hanna, “A Minimalist Approach to the Development of Episodic Memory.”
5. See note 7, Section II above.
6. Hintikka, “The Emperor’s New Intuitions,” p. 127.
7. See note 54, Section IV above. See also Huemer, *Ethical Intuitionism*, esp. the Introduction and part II. For interesting spins on the “intellectual seemings” view, see Bengson, “The Intellectual Given”; Chudnoff, “What Intuitions are Like”; Chudnoff, “The Nature of Intuitive Justification”; and Chudnoff, “Intuitive Knowledge.”
8. See, e.g., Williamson, *The Philosophy of Philosophy*, esp. chs. 1, 2, and 7. For a persuasive critique of Williamson’s view, see Malmgren, “Rationalism and the Content of Intuitive Judgments.”
9. See, e.g., Sosa, “Minimal Intuition,” p. 259.
10. See, e.g., Cappelen, *Philosophy without Intuitions*; and Williamson, *The Philosophy of Philosophy*.
11. I am indebted to Toni Kannisto for the basic idea that transcendental arguments and transcendental explanations are based on subjunctive conditionals (a.k.a. “counterfactuals”). See Kannisto, *From Thinking to Being: Kant’s Modal Critique of Metaphysics*, esp. ch. IX.
12. See also Hoffmann, “Two Kinds of A Priori Infallibility.”

## VI Rational Intuitions and the Irrelevance of Experimental Philosophy

1. Cummins, "Reflections on Reflective Equilibrium," p. 125.
2. Weinberg, "How to Challenge Intuitions Empirically Without Risking Skepticism," p. 340.
3. See Stich, "Experimental Philosophy and the Bankruptcy of the Great Tradition."
4. Williamson, "Review of Joshua Alexander, *Experimental Philosophy*."
5. See Hume, *Treatise of Human Nature*; Sellars, "Empiricism and the Philosophy of Mind"; and Quine, "Epistemology Naturalized."
6. See, e.g., Appiah, *Experiments in Ethics*; Knobe and Nichols, "An Experimental Philosophy Manifesto"; and Prinz, "Empirical Philosophy and Experimental Philosophy."
7. In addition to Cummins's and Weinberg's papers (see notes 1 and 2 above), see also: Alexander, *Experimental Philosophy: An Introduction*; Appiah, *Experiments in Ethics*; Gendler, *Intuition, Imagination, and Philosophical Methodology*; Goldman and Pust, "Philosophical Theory and Intuitional Evidence"; Goldman, "Philosophical Naturalism and Intuitional Methodology"; Horvath and Grundmann (eds.), *Experimental Philosophy and its Critics*; Knobe and Nichols (eds.), *Experimental Philosophy*; Stich, *The Fragmentation of Reason*; and Stich, "Reflective Equilibrium, Analytic Epistemology, and the Problem of Cognitive Diversity."
8. See Hanna, *Rationality and Logic*, ch. 5.
9. The qualifications are crucially important. Putative counter-examples involving torturing non-innocent people, etc., in a relatively non-Nazi-like way, etc., in order to save thousands or even millions of people, etc., or for some other good reason, etc., are all irrelevant to the truth of this moral principle. If someone were then to object that **Against Wanton Torture** is question-beggingly formulated in such a way as to be clear, distinct, and indubitable, then I would reply that by the same token, the clarity, distinctness, and indubitability of " $3+4=7$ " and " $\sim (\forall S) (S \& \sim S)$ ," i.e., **Minimal Non-Contradiction**, would also be question-begging. You cannot make basic authoritative rational intuitions go away just by calling their self-evidence "question-begging."
10. See also Chapter 1.2 above; and Brian Talbot's interesting paper-in-progress, "The Dilemma of Calibrating Intuitions."
11. This particular assumption is skeptically deployed by Hales in "The Problem of Intuition."
12. See Sellars, "Empiricism and the Philosophy of Mind."

## VII Philosophical Intuitions, Scientific Naturalism, and The Mathematico-Centric Predicament

1. Maddy, *Second Philosophy*, p. 367.
2. Sellars, "Empiricism and the Philosophy of Mind," p. 173.
3. See, e.g., Maddy, *Second Philosophy*, part IV.
4. Begley, "West Brain, East Brain: What a Difference Culture Makes."

5. In this case, Rob Rupert. Many thanks to him for formulating this application of Mathematical Psychologism in e-mail correspondence.
6. See Skolem, "The Foundations of Elementary Arithmetic Established by Means of the Recursive Mode of Thought, without the Use of Apparent Variables Ranging over Infinite Domains"; Parsons, *Mathematical Thought and Its Objects*, chs. 5 and 7; Tait, "Finitism"; Tait, "Gödel on Intuition and on Hilbert's Finitism,"; Tait, "Remarks on Finitism"; and Troelstra and van Dalen, *Constructivism in Mathematics: An Introduction*, vol. 1, pp. 120–126.
7. See, Gödel, "On Formally Undecidable Propositions of *Principia Mathematica* and Related Systems."
8. Tait, "Finitism," p. 546.
9. Sheffer, "Review of *Principia Mathematica*, Volume I, second edition," p. 228.
10. See Hanna, *Rationality and Logic*, ch. 3.
11. See, e.g., Colyvan, "Indispensability Arguments in the Philosophy of Mathematics"; Putnam, *Philosophy of Logic*, ch. 5; and Shapiro, *Thinking about Mathematics*, pp. 212–220.
12. See, e.g., Boolos and Jeffrey, *Computability and Logic*, chs. 1–8.

## VIII Kantian Structuralism

1. Parsons, "Kant's Philosophy of Arithmetic," p. 140.
2. See Hanna, *Kant, Science, and Human Nature*, esp. chs. 1–4, 6, and 8.
3. Benacerraf, "What Numbers Could Not Be."
4. Resnick, *Mathematics as a Science of Patterns*.
5. See Shapiro, *Philosophy of Mathematics: Structure and Ontology*; and Shapiro, *Thinking about Mathematics*, ch. 10.
6. See Parsons, *Mathematical Thought and Its Objects*, esp. chs. 3, 5–6, and 9.
7. See, e.g., Armstrong, *A Materialist Theory of the Mind*; Block, "Troubles with Functionalism"; Braddon-Mitchell and Jackson, *Philosophy of Mind and Cognition*, esp. chs. 3, 5, 7, and 15; Kim, *Philosophy of Mind*, chs. 5–6; Lewis, "An Argument for the Identity Theory"; Lewis, "Psychophysical and Theoretical Identifications"; and Lewis, "Reduction of Mind."
8. See Block, "Troubles with Functionalism"; see also Searle, *Minds, Brains, and Science*.
9. See, e.g., Jackson, "Mental Causation."
10. This is not to say that I am a Functionalist about the mind – I'm not – although I do also defend a version of non-reductive Functionalism about *the body*. See Hanna and Maiese, *Embodied Minds in Action*, ch. 8. But if I *were* a Functionalist about the mind, then I *would* also adopt an interpretation of it that equally emphasizes functional roles and role-players.
11. This is also not to say that I think that qualia exist – I don't, and in fact I am a qualia eliminativist – although I do also defend the existence of intrinsic structural *phenomenal characters*. See Hanna and Maiese, *Embodied Minds in Action*, chs. 1–2.
12. The standard responses to the epiphenomenalism problem are Causal Overdeterminationism and Reductionism. I reject both of these, and defend



- a non-reductive *jointly sufficient cause* solution to the problem of mental causation. See Hanna and Maiese, *Embodied Minds in Action*, chs. 6–7.
13. See, e.g., Hanna, “Logic, Mathematics, and the Mind: A Critical Study of Richard Tieszen’s *Phenomenology, Logic, and the Philosophy of Mathematics*.”
  14. Parsons, *Mathematical Thought and Its Objects*, pp. 100–116.
  15. See Tait, “Finitism”; and also Tait, “Remarks on Finitism.”
  16. See, e.g., Field, *Science without Numbers: A Defense of Nominalism*; and Field, *Realism, Mathematics, and Modality*.
  17. See, e.g., Maddy, *Second Philosophy*, part IV. Maddy’s philosophy of logic is, in effect, the reversed image of Kantian Structuralism. Her thesis is that rational human minds cognitively conform to the logical structures of the non-microphysical or manifest parts of natural “Kant-Frege” worlds (*Second Philosophy*, part III). By contrast, my thesis is that there are no such things as natural Kant-Frege worlds unless rational human animals are really possible. More precisely, a necessary condition of the existence and specific character of any natural Kant-Frege world is that if some rational human animals *were* to exist in that world, then they *would* be able to perceive it veridically, judge it truly, and believe true propositions about it with sufficient justification (i.e., know it), at least to some extent. Hence all K-F worlds manifestly and necessarily conform to the mental structures of the innately specified cognitive capacities of rational human animals, whether or not any rational human animals, or any other minded beings, happen to exist at any given time, or ever exist at all. Or in other words, WCTI is true.
  18. Parsons, *Mathematical Thought and Its Objects*, pp. 80–100.
  19. See, e.g., Wittgenstein, *Remarks on the Foundations of Mathematics*.
  20. See, e.g., Hanna, “Mathematics for Humans: Kant’s Philosophy of Arithmetic Revisited”; and Hanna, *Kant, Science, and Human Nature*, ch. 6.
  21. Hacking, “What Is Logic?,” p. 316.
  22. Tait, “Finitism,” p. 530.
  23. See, e.g., Hunter, *Metalogic*, pp. 189–190 and 201–208.
  24. See, e.g., Potter, *Reason’s Nearest Kin*.
  25. Wittgenstein, *Philosophical Investigations*, sections 112–115, pp. 47<sup>e</sup>–48<sup>e</sup>.
  26. See Benacerraf, “What Numbers Could Not Be.” This problem, in turn, is closely connected to Frege’s “Caesar” problem. See Frege, *Foundations of Arithmetic*, p. 68.
  27. Parsons, *Mathematical Thought and Its Objects*, p. 48.
  28. See, e.g., Parsons, *Mathematical Thought and Its Objects*, pp. 272–293.
  29. Benacerraf, “What Mathematical Truth Could Not Be—I.”
  30. See Wright, *Frege’s Conception of Numbers as Objects*; Hale, *Abstract Objects*; and Hale and Wright, *The Reason’s Proper Study*.
  31. See Parsons, “Kant’s Philosophy of Arithmetic,” p. 131; and Shapiro, “Induction and Indefinite Extensibility: The Gödel Sentence Is True, But Did Someone Change the Subject?,” p. 604.
  32. See, e.g., Kripke, *Wittgenstein on Rules and Private Language*.
  33. See Hanna and Maiese, *Embodied Minds in Action*, esp. chs. 1–2 and 6–8.
  34. See also Hanna, *Kant and the Foundations of Analytic Philosophy*, chs. 3–5; and Hanna, *Cognition, Content, and the A Priori*, ch. 4.
  35. See, e.g., Giaquinto, *Visual Thinking in Mathematics*, ch. 11.
  36. See, e.g., Struik, *A Concise History of Mathematics*, p. 160.

## IX Kantian Intuitionism

1. Husserl, *Logical Investigations*, vol. 2, pp. 765 and 787, texts combined.
2. Brouwer, "Intuitionism and Formalism," pp. 56–57.
3. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 5.4731, p. 129.
4. Bealer, "Intuition and the Autonomy of Philosophy," esp. pp. 205–206, and 218–221.
5. See also Parsons, "Arithmetic and the Categories"; Parsons, "Intuition and Number"; Parsons, "Kant's Philosophy of Arithmetic"; Parsons, "Mathematical Intuition"; and Parsons, "Reason and Intuition."
6. Husserl, *Logical Investigations* V, section 7.
7. See, e.g., Jacob, "Intentionality."
8. See, e.g., Pasnau, *Theories of Cognition in the Later Middle Ages*.
9. See, e.g., Moran, *Introduction to Phenomenology*.
10. See, e.g., Dummett, *Origins of Analytical Philosophy*, esp. chs. 2–4 and 9–10.
11. See Russell, *The Problems of Philosophy*, ch. IV; and Russell, "Knowledge by Acquaintance and Knowledge by Description."
12. See Wittgenstein, *Tractatus Logico-Philosophicus*, props. 2.0123–2.01231, 3.5, and 4.002, pp. 33, 61, and 61–63.
13. See Wittgenstein, *Philosophical Investigations*, esp. part II; and Wittgenstein, *Remarks on the Philosophy of Psychology*.
14. See Geach, *Mental Acts: Their Content and Their Objects*.
15. See Chisholm, *Perceiving*; Chisholm, *The First Person: An Essay on Reference and Intentionality*; and Chisholm and Sellars, "Chisholm-Sellars Correspondence on Intentionality."
16. See Searle, *Intentionality*.
17. See Dennett, *Content and Consciousness*; and Dennett, *The Intentional Stance*.
18. Fodor, *The Language of Thought*; and Fodor, *RePresentations*, esp. chs. 4 and 7–9.
19. Dretske, "The Intentionality of Cognitive States"; and Dretske, *Naturalizing the Mind*.
20. See Hanna, "Transcendental Idealism, Phenomenology, and the Metaphysics of Intentionality."
21. See, e.g., Köhnke, *The Rise of Neo-Kantianism*.
22. For a full development of this interpretation, see Hanna, *Kant and the Foundations of Analytic Philosophy*.
23. I think that Kant was mistaken in thinking that mental representations can be nonconscious, and I want to hold that on the contrary, necessarily all mental representations are at least pre-reflectively conscious in some salient way. See Hanna and Maiese, *Embodied Minds in Action*, pp. 28–34. It is also possible that when Kant writes here that "synthesis in general is... the mere effect of the imagination, of a blind though indispensable function of the soul, without which we would have no cognition at all, but of which we are seldom even conscious" he is confusing consciousness with self-consciousness or apperception.
24. Frege, "On Sense and Reference."
25. See also Hanna, "Kant's Theory of Judgment."
26. Husserl, *Logical Investigations*, sections 11, 14, 20.

27. Husserl, *Logical Investigations* V, section 20.
28. Husserl, *Logical Investigations* V, sections 11, 17, 20.
29. Husserl, *Logical Investigations* V, sections 21, 31–16.
30. Husserl, *Logical Investigations* VI, sections 6–12, 20, 28.
31. See also Hopp, “How to Think about Nonconceptual Content.”
32. Husserl, *Logical Investigations* VI, sections 40–58).
33. See Schacter, “Perceptual Representation Systems and Implicit Memory: Towards a Resolution of the Multiple Memory Systems Debate.”
34. See (and hear) Numminen, “Wovon Man Nicht Sprechen Kann, Darüber Muss Man Schweigen.”
35. Brouwer, *Brouwer’s Cambridge Lectures on Intuitionism*, pp. 4–5.
36. See also Giaquinto, *Visual Thinking in Mathematics*. Giaquinto’s theory of a priori knowledge is, however, at odds with that of Contemporary Kantian Neo-Rationalism (C11), and is in fact an instance of Conceptualist Neo-Rationalism (C9).
37. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 4.002, pp. 61–63, translation slightly modified.
38. See, e.g., Chomsky, *Knowledge of Language*.
39. See Hanna, *Rationality and Logic*, esp. chs. 4–7. In “Nonconceptual Mental Content,” section 4.2, Bermúdez and Cahen correctly note that this psycholinguistic variety of non-conceptual content is different in certain important respects from perceptual non-conceptual content. Nevertheless, like all the other varieties of non-conceptual content, it presupposes, and is cognitively constructed upon, the non-conceptual content of perception. And that, in a nutshell, is why the fact or notion of non-conceptual content is *unitary*. For a similar view about the essentially embodied perceptual and non-conceptual basis of all linguistic cognition, see Merleau-Ponty, *Phenomenology of Perception*, part 1, ch. 6.

## X Parsons, Kantian Structuralism, and Kantian Intuitionism

1. Parsons, *Mathematical Thought and Its Objects*, p. 150.
2. See note 10, Chapter IX above.
3. See, e.g., Quine, *Philosophy of Logic*, p. 82.
4. See, e.g., van Stigt, *Brouwer’s Intuitionism*, esp. ch. 4.
5. See, e.g., Tait, “Finitism”; and Zach, *Hilbert’s Finitism: Historical, Philosophical, and Meta-Mathematical Perspectives*, esp. ch. 4. Zach makes an apt distinction between “bottom-up” and “top-down” approaches to finitism: the bottom-up approach attempts to show that finitist methods of proof are generally sufficient for infinitary mathematics, whereas the top-down approach claims only that finitism yields “that area of mathematical reasoning which is basic to all exercise of mathematical thought” (p. 133), i.e., that finitism yields the thesis that primitive finitistic basic authoritative rational intuition in PRA is presupposed by and necessary for any other kind of mathematical reasoning. According to my Kantian appropriation of Hilbert-style finitism, only the top-down approach is defensible.

6. See note 8, Section II above.
7. See note 8, Section II above.
8. Tait, "Finitism," p. 546.
9. See, e.g., Kanigel, *The Man Who Knew Infinity*.
10. See Hanna, *Rationality and Logic*, esp. chs. 2–4 and 6.
11. See Hanna, *Cognition, Content, and the A Priori*, ch. 3.
12. See, e.g., Potter, *Sets: An Introduction*, ch. 3; and Potter, *Set Theory and Its Philosophy*.
13. See, e.g., Boolos and Jeffrey, *Computability and Logic*, ch. 25. In Section XI.3, **Argument 1**, I work out an argument for what is, in effect, the analogue of **The KBH** with respect to first-order monadic logic.
14. Milton, "Paradise Lost," p. 487, book XII, lines 641–649.

## XI Why Logic Must Be Transcendental

1. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 6.13, p. 169.
2. Katz, *Realistic Rationalism*, p. xxxiv, and see also chs. 1–5.
3. See, e.g., Lewis, *Survey of Symbolic Logic*, pp. 1–2; and Russell, *Introduction to Mathematical Philosophy*.
4. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 6.13, p. 169.
5. Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 6.3751, p. 181.
6. Wittgenstein, "Some Remarks on Logical Form."
7. Waismann, *Wittgenstein and the Vienna Circle*, pp. 67–68.
8. I am counting non-Euclidean geometry as a conservative extension of Euclidean geometry, on the two-part ground that (i) the parallel postulate is logically independent of the basic Euclidean postulates and (ii) substituting either of the classical Riemannian or Lobachevskian alternatives for the parallel postulate does not entail the denial of any other Euclidean postulates.
9. See, e.g., Russell, "Mathematical Logic as Based on the Theory of Types," p. 63.
10. See, e.g., Potter, *Reason's Nearest Kin*, ch. 5.
11. See, e.g., Mates, *Elementary Logic*.
12. Tarski, "The Semantic Conception of Truth and the Foundations of Semantics," p. 371.
13. See also, e.g., Parsons, "Kant's Philosophy of Arithmetic," p. 131; and Shapiro, "Induction and Indefinite Extensibility: The Gödel Sentence Is True, But Did Someone Change the Subject?," p. 604.
14. Quine, *Philosophy of Logic*, p. 64.
15. Quine, "Carnap and Logical Truth," p. 111.
16. See also Denyer, "Pure Second-Order Logic"; and Paseau, "Pure Second-Order Logic with Second-Order Identity." Pure second-order logic is second-order monadic logic without any functional or first-order variables, i.e., with systematic insensitivity as to whether domains are empty or non-empty. In this respect it is formally very similar to Kant's pure general logic, although pure general logic does contain first-order variables ranging over comprehensions (*Umfangen*) of actual and possible individuals.
17. See, e.g., Boolos and Jeffrey, *Computability and Logic*, chs. 10, 22, and 25, and esp. pp. 250–255.
18. Quine, *Philosophy of Logic*, p. 81.

19. See Priest, *In Contradiction*; and Priest, "What Is So Bad About Contradictions?"
20. See, e.g., Tarski, "The Semantic Conception of Truth and the Foundations of Semantics."
21. See, e.g., Gödel, "On Formally Undecidable Propositions of *Principia Mathematica* and Related Systems."
22. Quine, *Philosophy of Logic*, p. 82.
23. Quine, "Two Dogmas of Empiricism," pp. 22–23.
24. Quine, *Philosophy of Logic*, p. 81.
25. See, e.g., Chomsky, *Knowledge of Language*; and Hanna, *Rationality and Logic*. Ironically, Chomsky's appeal to intuitions was widely misunderstood, and this in turn led to an equally widespread misunderstanding about the nature of intuitions in philosophy. See Hintikka, "The Emperor's New Intuitions," and sub-section V.2 above.
26. See, e.g., Haack, *Deviant Logic*; and Priest, *An Introduction to Non-Classical Logic*.
27. See note 19 above.
28. In *Rationality and Logic*, ch. 3 – see esp. p. 45 – I did not adequately recognize the crucial difference between **Minimal Non-Contradiction** on the one hand, and other weak principles of classical logic on the other. Only **Minimal Non-Contradiction** is obeyed by *every possible* non-classical logic, e.g., by dialethic paraconsistent logics. The other weak principles of classical logic, by contrast, are undermined by logics that are either not truth-preserving or not consistency-preserving. Many thanks to Richard Grandy and Jeffrey Rowlands for pointing this out to me.
29. Putnam, "There Is At Least One A Priori Truth," pp. 100–101.
30. Sheffer, "Review of *Principia Mathematica*, Volume I, second edition," p. 228.
31. Carroll, "What the Tortoise Said to Achilles."
32. Quine, "Truth by Convention," p. 104.
33. Haack, "The Justification of Deduction."
34. See Hanna, *Rationality and Logic*, ch. 3.
35. O'Neill, "Vindicating Reason," p. 305.
36. This is not, however, to say that pure general logic is a "transcendental logic" in Kant's technical sense of that term.
37. This sub-section draws on Hanna, *Rationality and Logic*, section 6.6.
38. See, e.g., Shapiro, *Philosophy of Mathematics: Structure and Ontology*, chs. 3–5. For an extension of structuralism to logic, see e.g., Koslow, *A Structuralist Theory of Logic*.
39. Katz, *Realistic Rationalism*, ch. 5.
40. See Hanna, *Rationality and Logic*, chs. 4–5.
41. See also Parsons, "Mathematical Intuition."
42. Of course in perceiving an object we often generate an image of it too. But this is not, I think, absolutely necessary. Otherwise it would have to be the case that absolutely everything I perceive, I can in principle remember. But surely there is some sort of "representational paring-down" that occurs in the transition from perceptual content to memory content.
43. See Johnson-Laird, *Mental Models*; Kosslyn, *Image and Mind*; Kosslyn, *Image and Brain*; Shepard, "The Mental Image"; Shepard and Chipman, "Second Order Isomorphisms of Internal Representations: Shapes of States"; Shepard

- and Cooper, *Mental Images and Their Transformations*; and Shepard and Metzler, "Mental Rotation of Three-Dimensional Objects."
44. See, e.g., Block (ed.), *Imagery*; Block (ed.), *Readings in the Philosophy of Psychology*, vol. 2, part 2; and Block, "The Photographic Fallacy in the Debate about Mental Imagery."
  45. See Pap, *Semantics and Necessary Truth*; and Pap, *Elements of Analytic Philosophy*.
  46. See, e.g., Grice, *Studies in the Way of Words*; Grice and Strawson, "In Defense of a Dogma"; and Strawson, *Analysis and Metaphysics*.
  47. See, e.g., Chalmers, "Foundations of Two-Dimensional Semantics"; Chalmers and Jackson, "Conceptual Analysis and Reductive Explanation"; and Jackson, *From Metaphysics to Ethics: A Defense of Conceptual Analysis*.
  48. Many thanks to Kevin White for urging me to make this contrast more explicit.
  49. See, e.g., Wittgenstein, *Tractatus Logico-Philosophicus*, prop. 4.022, p. 67.
  50. This modal framework is somewhat similar (with a few important differences, such as the general gloss on the notion of necessity and the positive inclusion of synthetic, essentially non-conceptual, non-logical, or "strong metaphysical" necessity) as that used by Chalmers in *The Conscious Mind*, pp. 52–71 and 136–138. See also Kripke, "Semantical Considerations on Modal Logic"; Montague, "Logical Necessity, Physical Necessity, Ethics, and Quantifiers"; and Smiley, "Relative Necessity." For a closely related historical discussion of the analytic-synthetic distinction, see Hanna, *Kant and the Foundations of Analytic Philosophy*, chs. 3–5.
  51. Chalmers's conception of logical or "weak metaphysical" necessity is also "two-dimensional," a conception based mainly on earlier work by Kripke, David Kaplan, Robert Stalnaker, Gareth Evans, Martin Davies, and Lloyd Humberstone. See Chalmers, "The Foundations of Two-Dimensional Semantics." The basic idea behind two-dimensionality is that there are two distinct types of semantic functions from worlds to extensions, depending on the type of concept or intension one uses: (1) the "primary" intension (a function from subject-centered worlds considered as actual, to extensions) and (2) the "secondary" intension (a function from worlds considered as counterfactual variants on the indexically fixed actual world, to extensions). To each function or intension corresponds a different type of logical necessity. Analytic necessity corresponds to the primary intension; and a posteriori necessity corresponds to the secondary intension. For the notion of a posteriori necessity, see Kripke, *Naming and Necessity*. Of course two-dimensional modal semantics is controversial. The crucial point here for my purposes is that logical, conceptual, analytic, or "weak metaphysical" necessity in my sense will, in Chalmers's framework, count as logical necessity according to the primary intension.
  52. In *The Conscious Mind*, pp. 136–138, Chalmers objects to "strong metaphysical" necessity on the following three grounds: (a) that it is an ad hoc addition to the roster of modalities, (b) that it is brute and inexplicable, and (c) that the defenders of strong metaphysical necessity fail to provide an account of how humans get epistemic access to this modality. All of these objections may apply to conceptions of strong metaphysical necessity that take it to be a form of a posteriori necessity, and in particular identify it

with physical necessity. But none of them apply to, e.g., my contemporary Kantian conception of “strong metaphysical” necessity as non-logical, essentially non-conceptual, or synthetic a priori necessity; see Hanna, *Kant and the Foundations of Analytic Philosophy*, ch. 5; and also Hanna and Maiese, *Embodied Minds in Action*, section 7.4. Leaving aside whatever worries one might have about my Kantian metaphysics of WCTI, the crucial point here is simply that Chalmers’s objections do not *generalize*. Indeed, it is even arguable that “strong metaphysical” necessity as I construe it is more basic than logical necessity, since in the modal framework I have sketched there are going to be logical possibilities that are not *real* possibilities. For a similar idea, see Shalkowski, “Logic and Absolute Necessity.”

53. See, e.g., Hanna, *Kant and the Foundations of Analytic Philosophy*, chs. 3–5; and Hanna, *Cognition, Content, and the A Priori*, ch. 4.
54. The simplification consists in separating the linguistic mental image I use in my rational intuition (in the example, *I* (#)) from the linguistic text (in the example, (\*) *I*) I use to represent the logical object. In most cases, the shape of the linguistic image and the shape of the linguistic text used to represent the logical object would be the same. Nevertheless the simplification is justified by psychological research strongly indicating that linguistic mental imagery is processed separately from the processing of either syntax or semantic content. See Schacter, “Perceptual Representation Systems and Implicit Memory: Toward a Resolution of the Multiple Memory Systems Debate.”

## XII Conclusion

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## Index

- Absolute Unrevisability Argument,  
The, 332
- absolutely skepticism-resistant, 42,  
142–143, 243, 283, 295, 311,  
313–314  
*see also* reliability, essential
- abstract objects, 144, 155, 160, 197,  
199, 204, 209–211, 271, 293,  
302, 310, 340, 353, 379–380n.2  
in the *non-platonic*, *Kantian* sense,  
144, 211, 271, 353  
truth-making abstract objects, 2
- acquaintance, 170, 198, 200, 287, 300  
“acquaintance” or *kennen*, 170, 223
- Against Wanton Torture, 238, 384  
VI n.9
- alien thought screen helmets, 201
- “all our cognition commences *with*  
*experience*”, 140, 191–192  
defined, 192  
*see also* apriority  
*see also* empiricism, minimal
- analysis, 3, 33, 290, 322  
conceptual-cognitive, 374n.68  
conceptual-linguistic, 3, 93, 179,  
346, 372n.48, 374n.69  
logical, 76, 78–79, 93  
and synthesis, 33, 290
- analytic, 291, 297, 319, 323–324,  
326–327, 329–333  
and a priori, 319, 329  
logic as, 326–327, 329–330, 332  
necessity, *see* necessity, analytic  
truth, *see* truth, analytic  
*see also* analytic-synthetic  
distinction, the, a.k.a. the A-S  
distinction
- analytic calibration, 75–76  
*see also* Calibration Dilemma, The,  
a.k.a. The CD
- Analytic metaphysics, 5, 73–87, 90
- Analytic philosophy, 103, 138, 197,  
220
- analytic-synthetic distinction, the,  
a.k.a. the A-S distinction,  
348–350
- analyticity, 329–332, 335, 348–349  
cognitive-semantic notion of,  
113  
epistemological notion of, 113  
logical, 329–330, 332  
in natural language, 330–331  
“animal knowledge”, 188  
*see also* Sosa, E.  
*see also* proto-knowledge
- Anscombe, G.E.M., 93
- Anticipations of Perception, The,  
278–279
- anti-empiricism, 178–219
- anti-naturalism, 246–254
- anti-realism, 31, 160, 279  
*see also* realism
- application problem, the, 269, 272–  
273, 358
- APNP, *see* a priori necessary  
presupposition, a.k.a. APNP
- Aposteriority, 12–13, 146, 159, 194–  
196, 230, 205, 210, 212, 361n.9  
*see also* apriority
- a priori – a posteriori distinction, the,  
191–219  
eleven different varieties of,  
197–219  
*see also* a priori knowledge  
*see also* Aposteriority
- a priori knowledge, 1–2, 4–5, 9–10,  
1215, 40, 44, 48, 53, 64–65, 69,  
79, 103, 106–107, 109, 113–115,  
120, 124, 131–132, 140–143,  
145–146, 156, 158, 163, 165–  
166, 169, 176–177, 178–219,  
222–223, 232, 243–244, 261,  
264, 280, 282–285, 293, 295,  
297–298, 308–309, 311–314,  
340, 342, 347, 350, 352, 354–  
355, 357–359, 363 ch. 1.2n.34,

- a priori knowledge – *continued*  
 368n. 15, 369n.25, 376n.91,  
 388n.32  
 authentic, 1, 40, 48, 65, 69, 103,  
 109, 1401–42, 185, 363n.43  
 authoritative, 143, 284  
 basic authoritative, 142–143, 284  
 basic vs. non-basic, 143  
 High-Bar, 64, 109, 141, 191, 212,  
 244, 282–283, 293, 308, 312,  
 340, 347, 357–358, 363n.43  
 High-Bar vs. Low-Bar, 190  
 Low-Bar, 190, 284, 308–309,  
 369n.25  
*see also* a priori – a posteriori  
 distinction, the  
*see also* knowledge
- a priori necessary presupposition,  
 a.k.a. APNP, 318–319,  
 321, 332
- apriority, 191–196  
 and necessity, 193, 256, 362n.16  
*see also* aposteriority  
*see also* empiricism, minimal
- arguments  
 anti-apriorist, 19  
 apriorist, taxonomy of, 9, 14–24  
 Chomskyan “poverty-of-the-  
 stimulus-style”, 19  
 dialectically adequate, a.k.a.  
 dialectically persuasive, 15,  
 19, 24  
 dialectically adequate vs. rationally  
 adequate, 15  
 direct a priorist, 14–15  
 inconsistency, 15, 18–19  
 indirect a priorist, 15–24  
 moral progress, 13  
 performative contradiction, 15–18;  
*see also* Habermas, J.  
 rationally adequate, a.k.a. rationally  
 persuasive arguments, 15  
 self-imposition, 21–40  
 transcendental, 212, 317–318, 335,  
 355, 361 ch. 1.1, n.21, 383n.11;  
*see also* idealism
- Aristotle, 123, 221, 225, 327  
 Armstrong, D., 93, 336n.35,  
 367n.38
- A-S distinction, the, *see* analytic-  
 synthetic distinction, the,  
 a.k.a. the A-S distinction
- assertive judgments, *see* judgment
- astronomers, as investigators, 28–29
- attacks on rationalism, 2–4
- Audi, R., 221
- axiom of infinity, the, 324  
*see also* Russell, B.  
*see also* Logicism
- axiom of reducibility, the, 324  
*see also* Russell, B.  
*see also* Logicism
- Axioms of Intuition, The, 278
- background theory, 30–3, 37, 133  
 defined, 30
- Balaguer, M., 53–54
- Bayesianism about intuitions, 59–62
- Bayesianism about probability, 88–95,  
 366n.22  
 objective vs. subjective, 88, 366n.27  
*see also* Bayes’s theorem
- Bayes’s theorem, 95  
*see also* Bayesianism about  
 probability
- BD, The, *see* Benacerraf Dilemma,  
 The, a.k.a. The BD
- Bealer, G., 3–4, 18, 42, 45–47, 49,  
 75, 103–104, 106–111, 114,  
 121–124, 209, 221, 241, 285,  
 363n.21, 376n.88, 383n.54
- Begriffsschrift*, 320  
*see also* Frege, G.
- belief/s, 1–2, 4, 12–13, 34, 40, 43, 45,  
 47, 50, 55, 65, 74, 76–81, 83–85,  
 88, 90–92, 109–110, 125–126,  
 128, 132, 142, 145–146, 148,  
 156, 176, 183, 190, 198–199,  
 226–228, 244, 282, 294, 303,  
 311–312, 335, 342, 347, 361n.9,  
 369n.17
- a priori 169; *see also* a priori-a  
 posteriori distinction
- beliefs and their truth-makers,  
 145–146, 176
- evidential verifiers of, 156
- factive, 142
- introspective, 125–126

- belief/s – *continued*  
 justified true belief is knowledge,  
 179–191  
 modally grounded, 142  
 “belief B contains empirical content,”  
 defined, 197  
 Benacerraf, P., 143, 145, 151, 273–274  
 Benacerraf Dilemma, The, a.k.a. The  
 BD, 146–147, 151–177, 255–315,  
 316–359  
*see also* Benacerraf, P.  
*see also* Extended Benacerraf  
 Dilemma, The, a.k.a. The EBD  
*see also* Generalized Benacerraf  
 Dilemma, The, a.k.a. The GBD  
*see also* Original Benacerraf  
 Dilemma, The, a.k.a. The OBD  
 Benacerraf’s other problem, 273–274  
 Bengson, J., 367n.7, 379–380n.2  
 Bennett, K., 86–87  
 Block’s Chinese Nation argument, 259  
*see also* Searle’s Chinese Room  
 argument  
 Boghossian, P., 113–114, 208,  
 368n.15, 369n.21, 371n.46,  
 372n.47, 373n.53  
 Bolzano, B., 221, 225  
 Bonjour, L., 3, 16, 106, 125, 209,  
 221, 364n.7, 368n.14, 369n.20,  
 369n.21, 369n.25, 371n.46  
 Bandom, R., 208, 361n.23  
 Brentano, F., 221, 225, 287–288, 290  
 Brouwer, L.E.J., 160, 221, 223, 225,  
 275, 281, 296–297, 299, 302,  
 305–307  
 Brouwer’s intuitionist epistemology,  
 160, 296–297, 302, 305–307, 357  
*see also* Kantian-Brouwerian-  
 Hilbertian epistemic principle,  
 The, a.k.a. The KBH  
 Brown, J., 125, 128, 375n.76  
*see also* “gap objection,” the  
 Burge, T., 126, 376n.87  
 CA, *see* Cantorian Arithmetic,  
 a.k.a. CA  
 Caesar Problem, The, a.k.a. The  
 Identification Problem, 200,  
 273, 386n.26  
 Calibration Dilemma, The, a.k.a. The  
 CD, 41–42, 49–51, 239–245  
*see also* Cummins, R.  
*see also* Dilemma of Calibrating  
 Intuitions, The, a.k.a. The DCI  
*see also* “Reflections on Reflective  
 Equilibrium”  
*see also* Reverse Calibration  
 Dilemma, The, a.k.a. The RCD  
 Cantor, G., 267, 278–279, 312, 324,  
 356  
 Cantorian Arithmetic, a.k.a. CA,  
 267–269, 312, 324, 356  
 “standard” model of, 267–269  
*see also* Cantor, G.  
 Carnap, R., 78, 93, 97, 160, 200, 325,  
 366n.32  
 Carroll, J., 366n.35  
 Carroll, L., 113, 334  
 Cartesian 1, 147, 157, 170–171, 176–  
 177, 205, 210, 225, 297  
 Casullo, A., 212, 221, 369n.20,  
 369n.25, 381n.21, 383n.56  
 categorial intuition, *see* rational  
 intuitions, and Husserl’s notion  
 of categorial intuition  
*see also* cognitive phenomenology  
*see also* Husserl, E.  
 categorial epistemology, *see*  
 epistemology, categorial  
 Categorical Imperative, the, 185, 332  
*Causality and Determination*, 93  
*see also* Anscombe, G.E.M.  
 causal  
 efficacy vs. inertness, 156, 160, 259,  
 271–273, 282  
 relevance vs. irrelevance, 144, 156,  
 160, 257, 259, 282, 341  
 causal inertness of *the truth-makers* of  
 mathematical statements, 156  
 causal relevance of *the intentional*  
*targets* of mathematical rational  
 intuition, 156  
 causal efficacy of *the evidential verifiers*  
 of mathematical beliefs or  
 judgments, 156  
 causation, 52, 68, 93, 97–101, 153,  
 160, 343–344, 366n.34–36,  
 366n.38

- causation – *continued*  
 counterfactual theory of, 160  
 mental causation, 385–386n.12  
 probability-raising theory of, 160  
*Causation and Universals*, 93, 367n.36,  
 367n.38  
*see also* Fales, E.
- CD, The, *see* Calibration Dilemma,  
 The, a.k.a. The CD
- CH, The, *see* Continuum Hypothesis,  
 The, a.k.a. The CH
- Chalmers, D., 195, 204, 346, 364n.1,  
 391n.50, 391n.51–52
- Chisholm, R., 109, 287, 371n.42
- Chomsky, N., 19–20, 224–225, 227,  
 298, 330, 390n.25
- Chomskyan theory of language, 298  
*see also* Chomsky, N.
- Chudnoff, E., 125–126, 379n.2
- Church-Turing Thesis, The, 254
- clarity, 139, 152, 270–27, 384n.9  
 defined, 139
- Classical Empiricism  
 criticized 199  
 defined 198–199  
*see also* Locke, J.  
*see also* Hume, D.
- Classical Rationalism, a.k.a. the old  
 rationalism, 2, 55–56, 69,  
 105–106
- criticized, 198  
 defined, 197–198  
*see also* Descartes, R.  
*see also* Leibniz, G.W.  
*see also* Plato
- “clear, distinct, and indubitable”  
 rational intuition, 139
- “cognition” or *Erkenntnis*,  
 287–289, 291
- cognitive capacities, 1, 19, 69, 142,  
 150, 168, 179, 181, 184–185,  
 213–215, 221, 223, 227, 228,  
 232, 244, 248, 315, 341,  
 372n.47, 386n.17
- cognitive faculties, *see* cognitive  
 capacities
- cognitive phenomenology, 35–36,  
 108–109, 190, 286, 290, 294,  
 350, 354, 370n.32, 370n.34  
*see also* phenomenological  
 discriminability  
*see also* phenomenological  
 salience
- cognitive-semantic luck, 145–147,  
 166–177, 205, 354, 361n.10,  
 362n.5, 380n.5
- Cognitive-Semantic Luck, The  
 Problem of, 166–177
- cognitively virtuous *see* properly-  
 functioning cognitive  
 mechanism
- cognizable or “thick” objects vs.  
 merely thinkable or “thin”  
 objects 291–292
- “Composition, Colocation, and  
 Metaontology”, 86  
*see also* Bennett, K.
- conceptual analysis, *see* analysis,  
 conceptual-cognitive *and*  
 analysis, conceptual-linguistic
- conceptual capacities, 5, 102–104,  
 106, 109, 111–133, 304, 306,  
 372n. 47
- conceptual competence, 113, 120,  
 123, 159, 209–210, 220, 312,  
 368n.16, 372n.48
- conceptual-role semantics 160
- Conceptualist Neo-Rationalism  
 criticized, 208–209  
 defined, 208  
*see also* Boghossian, P.  
*see also* Brandom, R.  
*see also* Peacocke, C.
- “Concerning the Ultimate Ground  
 of the Differentiation of  
 Directions in Space”, 168  
*see also* Kant, I.
- confirmation, 87–90, 95–97, 201,  
 203–204, 375n.76
- Conformity Thesis, The, 168,  
 174–175, 214
- “conscious act, state, or process”,  
 179, 198  
 defined, 179
- “conscious-evidence-based reason”,  
 179–181  
 defined, 179
- constructivism, 335–336

- Contemporary Kantian Neo-Rationalism, 2, 211, 333, 388n.29
- contemporary Quinean metaphysics, a.k.a. CQM, 83–85, 87, 365n.16, 365n.19  
*see also* metaphysics  
*see also* Quine, W.V.O.
- contextualism 189  
*see also* epistemology  
*see also* knowledge
- “contingently reliable cognitive mechanism”, 188  
*see also* reliability, context-sensitive causal
- Continuum Hypothesis, The, a.k.a. The CH, 278–279  
*see also* Cantor, G.
- conventionalism, 160  
*see also* Carnap, R.
- counterfactual cognizability thesis, the, 215–216
- Cummins, R. 41–42, 49–51, 53, 72, 233, 237, 239–240, 245, 364n.4, 364n.6, 365n.10, 367n.7  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- DCI, *see* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- Dennett, D., 287
- Descartes  
*see also* cartesian
- Descartes’s “true and immutable natures”, 2, 69
- Dilemma of Calibrating Intuitions, The, a.k.a. The DCI, 239–245
- distinctness, 139, 270, 290, 384n.9  
*see also* clarity  
*see also* indubitability
- “dogmatism”, 125, 127, 130, 375n.76,  
*see also* Huemer, M.  
*see also* Principle of Phenomenal Conservatism, the
- doxology, 64, 245
- doxology is not epistemology, 64, 245  
*see also* epistemology  
*see also* Experimental Philosophy, a.k.a. X-Phi
- Dretske, F., 287, 366n.35
- Duhem-Quine problem, the, 89–91, 94–95  
*see also* Quine, W.V.O.
- EBD, The, *see* Extended Benacerraf Dilemma, The
- “elusive” or “rogue” objects, 209–210
- Empiricism, 3–4, 6, 18–19, 44, 55–56, 66, 69–70, 72, 93, 116, 162, 176–177, 194, 198, 200–201, 203, 214, 227, 236, 239, 245–246, 248, 339, 360n.3
- “Empiricism, Semantics, and Ontology”, 78  
*see also* Carnap, R.
- epiphenomenal, 259–260, 385n.12
- enabling empirical conditions for belief vs. evidential empirical conditions for belief, 105, 318n.23  
*see also* Williamson, T.
- Enoch, D., 126
- Enquiry Concerning Human Understanding*, 167  
*see also* Hume, D.
- “entitlement” view, the, 126  
*see also* Burge, T.
- epistemic recalcitrance, 109, 111, 133  
*see also* Bealer, G.
- epistemology, 5, 19, 35, 55, 64–65, 126, 141–142, 146, 151–154, 158–159, 165–166, 179, 184–185, 188–191, 215, 225, 230, 236, 238, 240, 244–245, 258, 260–261, 272, 285–286, 288, 297, 301–302, 340, 347, 357, 359, 363n.34, 379n.14  
*see also* contextualism  
*see also* virtue epistemology
- Equator, the, as an abstract object, 257
- Erkenntnistheorie* as cognitive semantics, 288
- “error-theory”, 254
- essential reliability, *see* reliability, essential

- Essential Reliability of Basic  
 Authoritative Rational  
 Intuitions in Basic Arithmetic,  
 The, 250–253, 318–320, 356
- Evans, G., 107, 369n.26, 374n.68,  
 391n.51
- “every necessity has a weakly  
 transcendently ideal  
 structural condition as its  
 ground”, 348  
*see also* necessity, nature of
- evidential empirical conditions  
 for belief *vs.* enabling  
 empirical conditions for  
 belief *see* enabling empirical  
 conditions for belief  
*vs.* evidential empirical  
 conditions for belief  
*see also* Williamson, T.
- evidential verifiers of beliefs, *see*  
 beliefs, evidential verifiers of
- evil demon, Cartesian, 112, 170, 210,  
 225, 241, 380n.5
- existential thesis, the 216
- Experimental Philosophy, a.k.a.  
 X-Phi5, 10, 13–14, 41–72,  
 233–254, 358–359, 360n.2,  
 361n.8, 367n.7, 317n.42
- explanation, 4, 60–61, 84, 86, 104,  
 114, 120, 123, 171, 184, 201,  
 212, 228, 244, 249–251, 277,  
 315, 317, 319–320, 334–336,  
 355, 369n.17, 376 n. 82, 379 n.  
 2, 383 n.11
- explanation problem about rational  
 intuitions, the, 139
- Explosion, *see* logic, dialethic  
 paraconsistent
- Extended Benacerraf Dilemma, The,  
 a.k.a. The EBD, 146–147,  
 164–177, 316–355  
*see also* Benacerraf, P.  
*see also* Benacerraf Dilemma, The,  
 a.k.a. The BD  
*see also* Generalized Benacerraf  
 Dilemma, The, a.k.a. The  
 GBD  
*see also* Original Bencerraf  
 Dilemma, The, a.k.a. The OBD
- Factualist Neo-Quineanism  
 criticized, 206–207  
 defined, 206  
*see also* Kitcher, Philip
- fallibilism, 232, 283, 285, 297  
*vs.* infallibilism, 55, 232, 283
- fallibility  
 hopeful *vs.* hopeless  
*see also* Weinberg, J.
- Fales, E., 91, 93, 367n.36
- Falsificationism, 90–92
- fate of neo-rationalism and the future  
 of philosophy, the 6  
*see also* neo-rationalism or the new  
 rationalism
- factionalism, 160
- Field, H., 207, 263, 265, 364n.9,  
 379n.2
- Finitism, 138, 251, 279, 286, 297, 307,  
 388n.5  
*see also* Hilbert, D.  
*see also* Tate, W.
- First-Order Monadic Logic and  
 Pure General Logic are both  
 Transcendental, 321–332
- Fodor, J., 287
- Formalism, 160, 279  
*see also* Hilbert, D.
- Founderentist assumption, the,  
 240, 244  
*see also* Dilemma of Calibrating  
 Intuitions, The, a.k.a. The DCI
- Frege, G., 33, 80, 104–105, 121, 127,  
 130–131, 199–200, 287, 290,  
 320, 324–327, 329, 370n.36,  
 386n.17, 386n.26
- Fregean theory of names, *see* names,  
 Fregean theory of
- Fregean thoughts, 105, 108, 111, 127,  
 130–131
- Frege’s “psychological logician”, 121  
*see also* psychologism, logical
- future of philosophy, the, 6
- Forms, the, 1, 2, 69, 169, 198, 256  
*see also* Plato  
*see also* platonism
- Four Dimensionalism*, 82  
*see also* Sider, T.
- functionalism, 259–260, 385n.10

- fusion, 82–83  
 every class has a, 82–83  
 not every class has a, 83
- “gap objection,” the ,125–126  
*see also* Brown, J.
- Geach, P., 287
- GBD, The, *see* Generalized Benacerraf  
 Dilemma, The
- Gendler, T., 237
- Generalized Benacerraf Dilemma,  
 The, a.k.a. The GBD, 146–147,  
 164–177, 352–359  
*see also* Benacerraf, P.  
*see also* Benacerraf Dilemma, The,  
 a.k.a. The BD  
*see also* Extended Benacerraf  
 Dilemma, The, a.k.a. The EBD  
*see also* Original Bencerraf  
 Dilemma, The, a.k.a. The OBD
- geologists, as rational investigators,  
 28–29
- geometrical pluralism, 79
- geometry, 79, 106, 108, 220, 281, 302,  
 314, 323, 368n.15, 376n.91,  
 389n.8
- Gettier-cases in epistemology, 104,  
 108, 113, 125, 176, 179–180,  
 183, 189–190, 308, 380
- God, 1, 97, 170, 172, 186–187, 231,  
 256–257, 279, 291  
 omniscient, omnipotent, and  
 omnibenevolent, a.k.a. 3-O,  
 170, 231
- Gödel, K. 82, 162, 200, 221, 225, 228,  
 250, 275, 328
- “Gödel,” the name, 82
- Gödel Sentence, The, 328
- Gödel’s incompleteness theorems,  
 162, 200, 250, 275, 328,  
 369n.21
- Goldman, A., 128, 237, 368n.9,  
 370n.34, 374n.68
- Grand Central Terminal, NYC, circa  
 1930, 6
- Grice, P., 16, 204, 346
- Haack, S., 334
- Habermas, J., 16, 361n.11
- HBK, *see* knowledge, High-Bar, a.k.a.  
 HBK
- Hegelian metaphysics, 361n.23
- Hegelian-Peircean convergence at the  
 end of inquiry, 122
- Heidegger, M., 287
- Hilbert, D., 140–141, 144, 153–154,  
 160, 221–223, 225, 242–243,  
 250, 253, 265, 277, 279–280,  
 283, 286, 296–297, 299,  
 302–303, 304–308, 312–313,  
 318, 356–357, 388n.2
- Hilbert’s finitist epistemology,  
 140–141, 144, 153–154, 160,  
 221–223, 225, 242–243, 250,  
 253, 265, 277, 279–280, 283,  
 286, 296–297, 302, 304–308,  
 312–313, 318, 356–357,  
 388 n.2
- Hilbert-style stroke diagrams, 153,  
 222, 242, 253, 303, 308, 312
- Hintikka, J., 224
- Hockey, 260
- Huemer, M., 3, 16, 42, 45, 94,  
 125–126, 130 221, 241, 364n.2,  
 365n. 12–13, 366n.29, 370n.37,  
 383n.7
- Hume, David, 3, 19, 39, 66, 93,  
 147, 167–168, 170–171,  
 176–177, 194, 198, 227, 236,  
 246, 248, 274–275, 339, 360n.2,  
 364n.1
- Humeanism about causal laws,  
 97–100, 366n.34  
 vs. non-Humeanism about causal  
 laws 98–100
- Humean empiricism, 3, 19, 66, 70, 93,  
 147, 167–168, 170–171, 176–177,  
 194, 198, 227, 236, 246, 248,  
 339, 360n.2  
 vs. a non-Humean method for  
 practicing metaphysics, 74, 80
- Hume’s Principle, 274–275  
 as putatively analytic but arguably  
 synthetic a priori, 274–275  
*see also* neo-Logicism
- Husserl, E., 154, 221, 223, 225, 227,  
 281, 286–287, 292–294,  
 296–297, 301, 313



- Idealism, 19–21, 24, 70, 149, 160, 168, 175, 177, 179, 208–211, 213–215, 217, 261, 299, 306, 311, 315, 317, 339, 350, 358, 361n.20–21, 362n.23, 380n.2, 383n.58
- Identification Problem, The, *see* Caesar Problem, The, a.k.a. The Identification Problem
- imagination, 144–145, 155–157, 159, 179, 221, 223, 243–244, 251, 265, 279, 282–284, 286, 290, 293–294, 296–297, 299, 303–318, 341–344, 346–347, 353–354, 356–357, 368n.14, 379n.13–14, 387n.22
- “implicit conceptions”, 122–123  
*see also* Peacocke, C.
- impredicativity, 324
- indispensability arguments, 205, 253  
*see also* Putnam, H.  
*see also* platonism, mathematical  
*see also* Quine, W.V.O.
- indubitability, 138–139, 231, 251, 301, 307, 378n.8, 384n.9
- induction, 3, 68, 79–81, 89, 99, 155, 178, 191, 267–268, 366n.29
- inference, 49, 60, 74, 104–105, 108, 112–115, 117–120, 123, 129, 140, 155–156, 159, 171, 175, 179, 228, 244, 267, 268, 277, 282, 300–301, 315, 311, 334–335, 345, 369n.21, 370n.34, 371n.46, 372–373n.49, 374n.69
- inferentialism, 160, 208–209
- innate 1, 12, 19, 69, 150, 156, 168–169, 174–176, 213–215, 221, 227, 232, 243–244, 248–249, 264–265, 270, 279, 282, 287–288, 292, 304–310, 312, 314–315, 341, 357, 379n.14, 386n.17
- “insight” or *Einsicht*, 223
- Intentionality, 55, 223, 260, 276, 287–289, 293, 381 n. 27
- intrinsically compelling, 9, 12–14, 40, 42, 44–45, 54–55, 79, 135, 141–143, 181–182, 184, 189–190, 211, 228, 232, 235, 243, 269, 283, 285, 293, 297, 301, 308, 318, 345, 350–352  
*see also* “self-evidence”
- intuition/s  
as *Anschauungen*, 10, 223  
authoritative, *see* rational intuitions, authoritative  
basic, *see* rational intuitions, basic  
constructive, *see* rational intuitions, constructive  
of grammaticality, 224, 330  
the doxastic account vs. the sui generis account vs. the neo-rationalist account, 41–72, 102–134, 220–254  
indispensability of, 73, 77, 88, 91, 101–102, 138, 364 n. 7  
intuition-of vs. intuition-that, 222, 264, 300, 302–303  
logical, 316–355  
mathematical, 281–315  
modelling, 56–66, 159  
moral, 238  
philosophical, 73–101, 246–254, 317, 352–355  
“physical intuitions”, 10, 75–76, 79, 105  
prima facie, *see* rational intuitions, prima facie  
as rational, *see* rational intuitions  
*see also* “shot-from-the-hip”
- intuitionism, 154, 156, 160, 166, 219, 258, 272, 280–315, 359  
*see also* Brouwer, L.E.J.
- Intuitions in Philosophy Research Group, The, a.k.a. The IPRG, 5
- intuition-skeptical empiricism, 3–4, 6, 44, 55, 66, 69–70, 72
- “investigation,” defined, 24
- IPRG, The, *see* Intuitions in Philosophy Research Group, The
- isomorphism-without-type-identity thesis, the, 215
- Jackson, F., 346
- Jäsche Logic*, 329  
*see also* Kant, I.
- Johnson-Laird, P., 144, 344

- justification, 4, 7–40, 102–133,  
138–140, 145, 167, 176,  
180–181, 184–185, 188–189,  
192–194, 211–212, 231–232,  
243, 251, 285, 300–301,  
334–336, 347, 354, 356,  
362n.17, 368n.16, 368–369n.17,  
369n.25, 370n.32, 371n.44,  
372n.47, 372n.48, 374n.68–69,  
375n.76, 380n.5, 386n.17
- justification problem about rational  
intuitions, the, 4, 139
- Kahneman, Slovic, and Tversky, 133
- Kamm, F., 221
- Kant, I., 164–177, 211–219, 255–354
- Kantian-Brouwerian-Hilbertian  
epistemic principle, The, a.k.a.  
The KBH, 307–308, 314, 357,  
389n.13
- Kantian Intuitionism, 156, 166, 215,  
258, 272, 280–315, 320,  
340–342, 354, 357–359
- Kantian Structuralism, 166,  
255–280, 286, 297, 299–300,  
304–305, 31, 315, 320, 340,  
346, 353–354, 357–359,  
386n.17
- Kant’s “Copernican revolution” in  
metaphysics, 214  
*see also* Conformity Thesis, The
- Kant’s distinction between acting  
merely in accordance with  
a rule and as inherently  
governed by a rule, 37
- Kant’s Insight, 266–267
- Katz, J., 209, 221, 317, 341,  
382–383n.54, 383n.58
- KBH, The, *see* Kantian-Brouwerian-  
Hilbertian epistemic principle,  
The, a.k.a. The KBH
- Knobe, J., 237
- knowledge, 1–6, 9–10, 12–15, 20–21,  
24, 28, 36–40, 43–44, 48,  
53–55, 64–65, 67, 69, 79,  
102–134, 135–177, 178–233,  
281–298, 341–359, 361n.8,  
362n.17, 363n.34, 363 n. 39,  
368n.15–16, 371n.42, 374n.78,  
375n.82, 376n.91, 378n.7,  
379n.13–14, 388n.29
- Knowledge and its Limits*, 184  
*see also* Williamson, T.
- Kosslyn, S., 344
- Kripke, S., 82, 85, 107, 138, 204, 206,  
211, 221, 276, 362n.16, 365n.15,  
391n.50–51  
addition vs. “quaddition” puzzle,  
276
- Kripke-Putnamism, defined, 204–205  
*see also* Kripke, S.  
*see also* Putnam, H.
- Kronecker, L., 279
- Ladyman, J., 86, 87, 90, 365n.14
- laws of nature, 74, 97, 173, 204, 348,  
366n.34–35
- “laws of thought”, 105, 121, 320
- Lehrer, K., 183
- Leibniz, G.W., 166–167, 169–171,  
176–177, 197, 221, 225
- Lewis, C.I., 200, 321
- Lewis, D., 97, 366n.32, 366n.34
- Liar Sentence, The, 328
- Life and Action*, 117, 373n.53, 373n.55,  
373n.57  
*see also* Thompson, M.
- Locke, J., 19, 66, 70, 93, 170–171,  
176–177, 194, 198, 227, 236,  
246, 248, 290, 339, 360n.3
- LOCKED-ONTO, 283, 285–286, 294,  
297, 311, 342, 347
- logic 73–101, 316–355
- Logic of Discovery, The*, 89  
*see also* Popper, K.
- Logical Empiricism, 19, 93,  
200–202, 339  
*see also* Ayer, A.J.  
*see also* Carnap, R.  
*see also* Lewis, C.I.
- Logical Foundations of Probability,*  
*The*, 93  
*see also* Carnap, R.
- Logical Investigations*, 154, 221,  
286–287  
*see also* Husserl, E.
- “logical perfections” or *logische*  
*Vollkommenheiten*, 329

- Logical Positivism, *see* Logical Empiricism
- logical space of reasons, the, 110, 189, 377n.92  
*see also* Sellars, W.
- logicians, as investigators, 24, 28, 84, 143, 226–227, 316, 324
- Logicism, 78, 106, 200, 274–275, 280, 297, 358,  
*see also* neo-Logicism
- Logocentric Predicament, The, 252  
*see also* Sheffer, H.
- Logocentric Predicament Argument, The, 333–336
- Löwenheim-Skolem theorem, 267  
vs. the Upward Löwenheim-Skolem theorem, 267  
*see also* Tarski, A.
- luck, 12, 14, 40, 43–44, 54, 65, 108, 127, 145–147, 166, 169–171, 175–177, 179, 201, 205, 354, 361n.8, 361n.10, 362n.5, 380n.5  
*see also* Gettier-cases in epistemology
- Ludwig, K., 121–124, 369n.20, 369n.26, 376n.88
- lumen natural*, 6  
*see also* “natural light” of human reason, the
- Maddy, P., 246, 248, 263, 265, 378n.5, 386n.17
- manifesto, contemporary Kantian neo-rationalist, 142
- Marcus Herz, Kant’s letter to, 171, 288
- Martinis, 194, 200, 295–297, 318–320
- Mathematical Thought and its Objects*, 154, 286, 299, 304  
*see also* Parsons, C.
- mathematicians, as rational investigators, 24, 28, 85, 143, 226–227
- Mathematico-Centric Predicament, The, 246–254
- McDowell, J., 304, 370n.36, 375n.74, 376n.87
- McGee, V., 133
- Meditations on First Philosophy*, 1, 221, 378n.8  
*see also* Descartes, R.
- Meno*1  
*see also* Plato
- Merleau-Ponty, M., 287, 388n.32
- mental models, mental diagrams, mental pictures, structural imagery, or schemata, 145, 251, 265, 279, 304, 307, 310, 313, 318, 341, 356–357
- metaphysics, 73–101  
“Metaphysics as Modeling”, 85  
*see also* Paul, L.A.
- metaphysicians, as rational investigators, 82–85, 87, 101, 221, 365n.14
- “methodological propositions,” defined, 31
- methodological eliminativism about things-in-themselves/noumena, 215
- Millian theory of names, *see* names, Millian theory of
- Milton, J., 15, 157
- modal epistemology, 141–142, 236, 238, 245, 258, 286, 359
- modal dualism, 277, 323  
*see also* analytic – synthetic distinction, the, a.k.a. the A-S distinction
- “modal tie to the truth”, 42, 285, 362n.5  
*see also* Bealer, G.
- “moderate rationalism”, *see* neo-rationalism
- modularity, 58–59, 240, 243
- modularity assumption, the, 240  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- Moore, G.E., 221, 225
- moral sciencesor Geisteswissenschaften, 141
- names  
Fregean theory of, 33  
Millian theory of, 33  
rigid designation theory of

- naïve comprehension axiom, Frege's, 80, 364n.3, 106, 109, 111, 133, 314, 324  
*see also* Frege, G.
- Naming and Necessity*, 82, 365n.14, 369n.26, 391n.51  
*see also* Kripke, S.
- natural language competence, 19–20, 297–298, 315
- “natural light” of human reason, 6
- natural scientism assumption, the, 66  
*see also* Calibration Dilemma, The, a.k.a. The CD
- naturalism, 55–56, 66, 70, 147, 176, 204, 236, 240, 243, 246–254, 276, 280, 339, 359, 376n.82
- naturalistic assumption, the, 240, 242–243  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- necessity, *see* truth, necessary
- “Neo-Positivist Metaphysics”, 86  
*see also* Ney, A.
- Neo-Classical Rationalism  
 criticized, 199–200  
 defined, 199  
*see also* Frege, G.  
*see also* Russell, B.
- neo-Logicism, 275, 297  
*see also* Hume's Principle
- neo-rationalism, a.k.a. the new rationalism, 1–6, 55–56, 69, 106, 208–213, 333, 388n.29
- Newsweek article about arithmetic and brains, 248
- Ney, A., 86–87
- Nichols, S., 237, 367n.4–5, 384 n. 7
- nihilism, 13, 71, 143, 361n.11  
 moral 13  
 post-modern anti-rationalist, a.k.a. PARNS, 71, 143, 361n.11
- no-fault-naturalism assumption, the, 240, 243  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- no-meta-calibration assumption, the, 240, 243  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- no-reflexive-calibration assumption, the, 240, 243  
*see also* Dilemma of Calibrating Intuitions, The, a.k.a. The DCI
- no self-calibration assumption, the, 66  
*see also* Calibration Dilemma, The, a.k.a. The CD
- nominalism, 160, 259, 302, 364n.9
- non-conceptualism, Kantian, 305
- non-conceptual content, 155–156, 215–217, 262, 266–268, 271, 273–274, 276–277, 283, 304–306, 308–315, 323, 343, 358, 372n.47, 388n.32
- non-contradiction, law of, 147, 163, 204–205, 207–208, 212, 222, 232, 242, 331–333, 335–340, 384n.9, 390n.28
- Non-Factualist/Fictionalist Neo-Quineanism  
 criticized, 207–208  
 defined, 207  
*see also* Field, H.  
*see also* Yablo, S.
- non-Humeanism about laws of nature, 98–100
- non-inferential, 42, 45, 74, 103, 105–106, 112–113, 124, 146, 153, 158, 160, 162, 165–168, 192–193, 197–198, 205, 208, 211–212, 222, 225, 227–228, 230, 232, 237, 239, 243, 245, 272, 301–302, 353, 357, 362n.3, 369n.17, 376n.82, 376n.92, 378n.9
- Non-Supervenience Argument, The, 336–337  
*see also* supervenience
- normativity, *see* rational normativity
- noumena, *see* “things-in-themselves” (*Dinge an sich*) or noumena
- number, concept of, 255, 265–269
- Numminen, M.A., 295
- OBD, The, *see* Original Bencerraf Dilemma, The
- “objective experience” or *Erfahrung*, 293

- objectivity, the problem of, 148–150  
 “objectivity has a human face, with rationality written all over it”, 150, 280
- Ockham’s Razor, 68, 249–250  
 “*On the Form and Principles of the Sensible and Intelligible World*” 168  
*see also* Kant, I.
- one kind only assumption, the, 66, 231  
*see also* Calibration Dilemma, The, a.k.a The CD
- one way only assumption, the, 66–68  
*see also* Calibration Dilemma, The, a.k.a The CD
- Original Bencerraf Dilemma, The, a.k.a. The OBD, 146–147, 151–163, 255–315, 355–359  
 negative or skeptical solutions to, 158–161  
 concessive, 159–160  
 pre-emptive, 159  
 positive or anti-skeptical solutions to, 162–163, 255–315, 355–359  
*see also* Benacerraf, P.  
*see also* Extended Benacerraf Dilemma, The, a.k.a. The EBD  
*see also* Generalized Benacerraf Dilemma, The, a.k.a. The GBD
- Origin of the Knowledge of Right and Wrong*, 221  
*see also* Brentano, F.
- overriding solution to The Calibration Dilemma, the, 42  
*see also* Calibration Dilemma, The, a.k.a The CD  
*see also* Cummins, R.
- PA, *see* Peano Arithmetic, a.k.a. PA
- Pap, A., 138, 221, 346
- PAPRIS, *see* Preservationism about Philosophical Rational Intuitions Specifically, a.k.a. PAPERIS
- Paradise Lost*, 157, 315  
 analogy with classical mathematical Platonism, 157  
*see also* Milton, J.
- Paradise Regained*, 157  
 analogy with Kantian mathematical neo-rationalism, 157  
*see also* Milton, J.
- Parfit, D., 104, 221
- PARI, *see* Preservationism about Rational Intuitions, a.k.a. PARI
- PARNS, *see* postmodern anti-rational nihilist skepticism, a.k.a. PARNS
- Parsons, C., 138, 154–155, 221, 253, 255, 258, 262–263, 265, 268, 272–273, 286, 299–315, 341, 369n.21
- Peacocke, C., 106–108, 114, 122, 124, 208, 368n.15, 369n.21, 374n.68
- Peano Arithmetic, a.k.a. PA, 212, 250, 274–275, 302, 313, 323, 356
- philosophers, as investigators, 7–40  
*Philosophical Papers*, a.k.a. *PhilPapers* survey 2009, 1, 195  
 “philosophical intuitions are epistemologically useless”, 66, 237  
*see also* Calibration Dilemma, The, a.k.a The CD
- philosophical pictures, 271
- “Philosophy and the Scientific Image of Man”, 148  
*see also* Sellars, W.
- Philosophy of Philosophy*, The, 114, 368n.14, 368n.16, 369n.21, 372n. 47, 374n.68–69  
*see also* Williamson, T.
- Pike’s Peak, 217, 383n.59
- PK, *see* proto-knowledge, a.k.a. PK
- Plato, 2, 43, 69, 169, 172, 197, 225, 227, 234, 362n.2
- platonic theory of abstractness, the, 2, 256–257, 261, 360n.2
- platonism, 55, 153, 157, 176–177, 253, 256, 258–259, 302, 304, 315, 339, 358–359, 379n.14
- Popper, K., 89, 95
- postmodern anti-rational nihilist skepticism, a.k.a. PARNS, 71, 143, 361n.11

- pre-established harmony, 170, 176, 198, 279
- Preservationism about Philosophical Rational Intuitions Specifically, a.k.a. PAPRIS, 235, 245, 254, 359
- Preservationism about Rational Intuitions, a.k.a. PARI, 235, 245, 254
- PRA, *see* Primitive Recursive Arithmetic, a.k.a. PRA
- Primitive Recursive Arithmetic, a.k.a. PRA, 155, 200, 202, 212, 243, 250, 323, 356
- primitive recursive functions, 250, 253–254, 266–267, 309, 313, 318, 359
- Principia Ethica*, 221  
*see also* Moore, G.E.
- Principia Mathematica*, 106, 320, 334  
*see also* Russell/Whitehead
- principle of indifference, the, 94, 366n.29
- Principle of Phenomenal Conservatism, the, 16, 125
- Pritchard, D., 179
- Probability, 60, 88–100, 128, 130, 160, 238, 365n.19, 365n.21, 366n.22, 366n.28, 366n.31, 368n.15, 375n.76
- problem of the continuum, the, 277–279, 358  
*see also* Continuum Hypothesis, the  
*see also* Cantor, G.
- problem of disagreement, the, 71
- problem of the epistemic status of rational intuitions, the 146–148
- Problems of Philosophy*, 221, 369n.21  
*see also* Russell, B.
- “productive imagination” or *produktive Einbildungskraft*, 144, 223
- properly-functioning cognitive mechanism, 13, 54–55, 79, 135, 141–142, 144–147, 153, 184, 211, 232, 235, 243, 269, 283, 293, 318, 342, 345
- proposition-differentiation, 30–33
- proto-knowledge, a.k.a. PK, 186, 188
- psychologism, 204, 206, 246–254, 279, 359, 385n.5
- psychologists, as investigators, 28
- Psychology from an Empirical Standpoint*, 287  
*see also* Brentano, F.
- “pure general logic is the explanatory and justificatory unique rationally obligatory theoretical primitive”, 335
- Pust, J., 107, 128, 360n.7, 370n.37, 374n.68
- Putnam, H., 133, 204, 253, 333, 364, 373n.57
- Putnam’s division of linguistic labor, 133  
*see also* Putnam, H.
- Pylyshyn, Z., 344
- Quine, W.V.O., 3, 77, 89–91, 94–95, 101, 194, 201–204, 236, 246, 253, 325–327, 329–330, 334
- Quinean Empiricism, *see* Radical Empiricism, a.k.a. Quineanism
- Quinean holism, 85
- Quinean metaphysics, *see* contemporary Quinean metaphysics, a.k.a. CQM
- Quine’s notion of the “obviousness” of basic logical truths, 301
- radical agnosticism, 144, 215, 257
- Radical Empiricism, a.k.a. Quineanism, 176, 194, 245  
criticized, 203–204  
defined, 203  
*see also* Quine, W.V.O.
- Radical Skepticism about Philosophical Rational Intuitions Only, a.k.a. RSAPRIO, 235–237, 239, 245, 251–252, 254, 359
- Radical Skepticism about Rational Intuitions, a.k.a. RSARI, 235–237, 239, 245, 251–252, 254, 359
- Ramanujan, 308–309
- Ramsey, F., 97, 137, 366n.32

- rational intuition/s, 220–254,  
281–314, 340–355  
defined, 232
- rational normativity, 22, 24–27, 30,  
33, 35, 37–38, 44, 148, 185–189,  
301, 328, 361n.23
- Rationalism, *see* Classical  
Rationalism, a.k.a. the old  
rationalism; neo-rationalism,  
a.k.a. the new rationalism
- “rationalist renaissance”, 4  
*see also* Bealer, G.
- rationality, 3–4, 17, 22, 116, 120,  
142–143, 148, 150, 185–187,  
239, 244, 264, 280, 298,  
300–301, 336, 340, 258,  
377n.92
- Rawls, J., 67, 120, 221, 362n.13
- realism, 13, 28, 31, 87, 90–92, 101,  
160, 210, 217, 249, 279–280,  
312, 366n.27  
*see also* anti-realism
- Realistic Neo-Rationalism  
criticized, 210  
defined, 209  
*see also* Bealer, G.  
*see also* Bonjour, L.  
*see also* Katz, J.
- “reasonable epistemology”, 151–153,  
158–159, 165–166, 260–261,  
272, 357, 379n.14  
*see also* Benacerraf Dilemma, The,  
a.k.a. The BD  
*see also* Original Bencerraf  
Dilemma, The, a.k.a. The OBD
- “Reflections on Reflective  
Equilibrium”, 41, 364n.6,  
367n.7  
*see also* Cummins, R.
- Reflexionen*, 168  
*see also* Kant, I.
- reliabilism/reliability, 4, 41–42, 44,  
49–52, 56, 64, 67, 72, 102, 104,  
111, 128–131, 147–148, 182,  
188, 190, 206, 210, 220, 226,  
234, 236, 239, 241, 250–253,  
301, 318–320, 346, 350, 354,  
356, 361n.8, 362n.17, 374n.68,  
376n.88, 376n.91, 380n.5
- “representation” or *Vorstellung*, Kant’s  
notion of, 288
- “research project”, 29, 37  
definition of, 29
- Resnick, M., 258
- responsibility, 28, 46–47, 106,  
186–187, 225, 241, 245,  
374n.68,
- “restrictionists”, 102
- Reverse Calibration Dilemma, The,  
a.k.a. The RCD, 70–71  
*see also* Calibration Dilemma, The  
*The Right and the Good*, 221  
*see also* Ross, W.D.
- Ross, D., 365n.14
- Ross, W.D., 221, 225
- RSAPRIO, *see* Radical Skepticism  
about Philosophical Rational  
Intuitions Only, a.k.a. RSAPRIO
- RSARI, *see* Radical Skepticism about  
Rational Intuitions, a.k.a.  
RSARI
- Russell, B., 43, 80, 106, 109, 199–200,  
221, 223, 225, 228, 281, 287,  
300–301, 320–321, 324–327,  
329, 362 n.2, 364n.3, 369n.21
- Russell’s knowledge-by-description  
vs. knowledge-by-acquaintance  
distinction, 287, 300
- Russell’s paradox, 109, 200, 324,  
364n.3
- Russell/Whitehead, 106
- Sartre, J-P., 287
- “saying” or *sagen* vs. “showing” or  
*zeigen*, 346  
*see also* Wittgenstein, L.
- Searle, J., 259, 287
- Searle’s Chinese Room argument, 259  
*see also* Block’s Chinese Nation  
argument
- Schechter, J., 26
- “Science, Metaphysics, and Method”,  
86, 90  
*see also* Ladyman, J.
- Scientific Naturalism, 55–56, 66, 70,  
147, 204, 206, 236, 246–248,  
250–252, 254, 339, 359,  
376n.82

- Scientism, 6, 13, 66, 68  
 “seeing essences” or Wesensschau, 223  
   *see also* Husserl, E.  
 “seeming-qua-evidence” assumption,  
   the, 126–128  
 self-calibration, 55, 68–69, 243–244  
 self-evident *see* intrinsically  
   compelling  
 “self-evidence”  
   *die Einleuchten*, 281, 301  
   *Evidenz*, 281, 293, 301  
   *see also* Husserl, E.  
   *see also* Wittgenstein, L.  
 self-imposition arguments, *see*  
   arguments, self-imposition  
 Sellars, W., 377n.92, 110, 148, 236,  
   244, 246–247  
*Semantics and Necessary Truth*, 221  
   *see also* Pap, A.  
 sensible form or *Gestalt*, 137, 144  
 set theory, 277, 302, 308–309, 314,  
   324–326  
 Shapiro, S., 258, 263, 265  
 Sheffer, H., 252, 334  
 Sheffer stroke function, 252, 334  
   *see also* Sheffer, H.  
 Shepard, R., 344  
 skepticism, 40, 55, 71, 76, 125,  
   130–131, 142–143, 176–177,  
   179, 190, 232, 235, 237, 241,  
   243, 256, 283, 288, 295,  
   313–314, 358–359, 361 n.11,  
   365n.11, 375n.74, 380n.5  
 “shooting from the hip”, 62  
   *see also* intuitions, the doxastic  
   account *vs.* the sui generis  
   account *vs.* the neo-rationalist  
   account  
 Sider, T., 82–83, 85–86, 92  
 single kind assumption, the, 240–241  
   *see also* Dilemma of Calibrating  
   Intuitions, The, a.k.a. The DCI  
 single method assumption, the,  
   240, 242  
   *see also* Dilemma of Calibrating  
   Intuitions, The, a.k.a. The DCI  
 Simon the deviant logician,  
   Williamson’s story of,  
   115–119, 123  
 Smerdyakov in *The Brothers*  
   *Karamazov*, 187  
 snake in the Garden of Eden, the, 256  
 Spinoza, B., 221, 257  
 Socratic demand for self-knowledge, 21  
 “Some Remarks on Logical Form”, 322  
   *see also* Wittgenstein, L.  
 Sosa, E., 107–108, 188, 221, 234, 241,  
   360n.7, 370n.37, 379n.13  
 spontaneous in the Kantian sense,  
   106, 112, 114, 116, 124, 129,  
   195, 213–215, 305–307  
 standard justificatory procedure,  
   the, 103  
   *see also* Bealer, G.  
 STI, a.k.a. strong transcendental  
   idealism, *see* idealism  
 Stich, S., 67, 234, 237  
 Strawson, P., 204, 346  
 STRONG DISJUNCTIVISM  
   ABOUT THE COGNITIVE  
   CONSTRUCTION AND  
   MANIPULATION OF  
   VERIDICAL SENSIBLE FORMS  
   IN KANTIAN PURE ORA  
   PRIORI INTUITION VIA THE  
   PRODUCTIVE IMAGINATION,  
   ETC., 284, 286, 294, 297, 311,  
   347, 356  
 strong transcendental idealism, a.k.a.  
   STI, *see* idealism  
 structuralism, 144–145, 154, 156, 166,  
   255–280, 286, 297, 299–315,  
   320, 340–341, 346, 353–354,  
   357–359, 386n.17, 390n.38  
 structural senses of logical  
   connectives, 194–195, 337  
 superficiality problem, the, 196  
   *see also* a priori–a posteriori  
   distinction, the  
 supervenience, 174, 192–194, 232,  
   261, 272, 336–337  
   *vs.* non-supervenience, 336–337  
*Survey of Symbolic Logic*, 321  
   *see also* Lewis, C.I.  
 synthesis<sup>33</sup>, 106, 255, 265, 279, 290,  
   296, 342–343, 387n.22  
 synthetic a posteriori, 76, 78–79, 201,  
   367n.1



- synthetic a priori, *see* necessity,  
synthetic a priori
- Tarski, A., 17, 146, 152–154, 158–159,  
162, 165, 199, 202, 204, 243,  
267, 271, 324, 326–327, 329,  
352, 357, 378n.12
- TCP, The, *see* Two Colors Proposition,  
The, a.k.a. The TCP
- Theory of Science*, 221  
*see also* Bolzano, B.
- “things-in-themselves”(Dinge an sich)  
or noumena, 170, 213, 216,  
256, 310, 329
- Thompson, M., 117–120, 373n.53,  
373n.55, 373n.57
- Thomson, J.J., 221
- three Bs, the, 72
- transcendental, 15, 19–21, 23, 213,  
228, 292, 316–355, 361n.21,  
383n.11, 390n.36  
*see also* arguments, transcendental  
*see also* idealism
- transcendental arguments, *see*  
arguments, transcendental
- Transcendental Dialectic, The, 329
- transcendental explanation, *see*  
explanation
- transcendental idealism, *see* idealism
- transformation rules, logical,  
194–195, 337
- Treatise of Human Nature*, 167  
*see also* Hume, D.
- Trolley Problem, The, 60–61
- “true and immutable natures,”  
Descartes’s, 2, 69
- “Truetemp” thought-experiment, 183  
*see also* Lehrer, K.
- truth  
analytic, 78, 94, 103–105, 124, 200,  
212, 319, 334, 367n.1  
broadly Tarskian semantics of, 153,  
159; *see also* Tarski, A.  
mathematical, 151–152, 154, 156,  
158–159, 198, 205, 261, 264–  
265, 271–272, 275–277, 280,  
311–313, 356, 358  
necessary, 1–3, 12, 14, 43, 48,  
69, 113, 139, 141–145, 158,  
165, 169, 193–195, 197–213,  
222–223, 227–228, 231, 239,  
243, 255–256, 274–275, 277,  
283–286, 297, 30, 318, 320,  
336–337, 342, 358  
logical, 28, 146, 155, 166, 195, 198,  
200–201, 205, 212, 231, 275,  
277, 301, 322, 324, 326–327,  
330, 337, 352  
synthetic a priori, 5, 20, 104, 212,  
279, 328  
“Truth by Convention”, 77, 334  
*see also* Quine, W.V.O.
- truth-makers, 12., 14, 43, 48, 139,  
142, 145–147, 156, 176, 181,  
198–202, 204–205, 207, 228,  
243, 256, 280, 282, 285, 294,  
295, 304, 310–311, 342, 347,  
354, 362n.5, 379–380n.2
- T-schema, 152–153, 162  
*see also* Tarski, A.
- Turing-computability, 254
- Two Colors Proposition, The, a.k.a.  
The TCP, 322
- undercutting solution to The  
Calibration Dilemma, the,  
54–56  
*see also* Calibration Dilemma, The,  
a.k.a The CD  
*see also* Cummins, R.
- undergraduate philosophers, 13, 34,  
61–62, 226, 352
- “understanding-assent”, 114, 116,  
121–122, 124  
*see also* Williamson, T.
- University of Colorado at Boulder, 5
- Verifiability criterion of meaning,  
the, 201–202  
*vs.* the revised verifiability criterion  
of meaning, 202  
*see also* Logical Empiricism
- vicious circle principle, the, 324  
*see also* Russell, B.  
*see also* Russell’s Paradox
- virtue epistemology, 179, 185, 189  
*see also* epistemology  
*see also* knowledge

- Wason card selection task,  
the, 65
- WCTI, *see* weak or counterfactual  
transcendental idealism, a.k.a.  
WCTI
- weak or counterfactual  
transcendental idealism, a.k.a.  
WCTI, 149, 175, 211–213,  
215–219, 261, 262, 264,  
279–280, 306, 311–312,  
315, 317, 346, 350, 358–359,  
383n.58, 386n.17, 391n.52  
*see also* idealism
- Weak Transcendental Ideality  
Argument, The, 337–339
- Weinberg, J., 106, 131–132, 234–237,  
367n.4, 367n.7, 367n.17,  
370n.34, 376n.91
- What is a Law of Nature?*, 193,  
366n.35, 367n.38  
*see also* Armstrong, D.
- “What the Tortoise Said to Achilles”,  
113, 334  
*see also* Carroll, L.
- willing of investigation, 28–30
- Williamson, T., 104, 108, 114–124,  
125–126, 128, 132, 184–185,  
196, 205, 210, 220, 234,  
368n.14, 368n.16, 369n.21,  
372n.47–48, 374n.68–69,  
379n.10, 383n.8
- Wittgenstein, L., 17, 31, 112, 137, 154,  
164, 263–264, 270–271, 281,  
286–287, 297–298, 301, 313,  
316–317, 320–322, 327, 340,  
346, 368n.16, 373n.53  
and the *Philosophical Investigations*,  
164–165, 270–271, 346  
and ordinary epistemic discursive  
practices, 112  
and self-evidence, 28, 301  
and the *Tractatus Logico-Philosophicus*,  
17, 154, 286,  
297–298, 301, 316–317,  
320–322, 327, 340, 346
- Wolff, C., 166–167
- Wright, C., 126–127, 129, 212,  
375n.82
- Writing the Book of the World, 85  
*see also* Sider, T.
- X-Phi, *see* Experimental Philosophy
- X-Phi surveys, *see* Experimental  
Philosophy, use of surveys
- Yablo, S., 207
- Zermelo-Fraenkel set theory, a.k.a. ZF,  
307–309, 314
- ZF, *see* Zermelo-Fraenkel set theory,  
a.k.a. ZF
- ZF Superstar, The, 307–309



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**In Defense of Intuitions**  
Andrew Chapman, Addison Ellis, Robert Hanna, Tyler Hildebrand and Henry W. Pickford

Most contemporary philosophers (71.1%, according to a recent survey) believe that a priori knowledge is really possible. Indeed, since the late 1980s there has been a renewed and steadily growing interest in rationalism and the a priori; and gradually what George Bealer has dubbed a *rationalist renaissance* has emerged onto the contemporary philosophical scene. At the same time, however, even despite this renaissance, the core notion of *rational intuition* has not been either adequately defended or fully developed, especially as regards solving its two core problems:

- (1) *how rational intuitions can sufficiently justify beliefs, and*
- (2) *how to explain the real possibility of rational intuitions.*

Given that unstable dialectical situation, this book is an attempt to respond critically, directly, and decisively to the most important contemporary skeptical anti-rationalist attacks on intuitions and a priori knowledge in philosophy, and to defend *neo-rationalism* from a contemporary Kantian standpoint, with a special focus on the theory of rational intuitions and on solving its two core problems.

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