

Kripke, Ross, and the Immaterial Aspects of Thought

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Abstract. James Ross developed a simple and powerful argument for the immateriality of the intellect, an argument rooted in the Aristotelian-Scholastic tradition while drawing on ideas from analytic philosophers Saul Kripke, W. V. Quine, and Nelson Goodman. This paper provides a detailed exposition and defense of the argument, filling out aspects that Ross left sketchy. In particular, it elucidates the argument's relationship to its Aristotelian-Scholastic and analytic antecedents, and to Kripke's work especially; and it responds to objections or potential objections to be found in the work of contemporary writers like Peter Dillard, Robert Pasnau, Brian Leftow, and Paul Churchland.

I.

I*ntroduction.* The late James Ross formulated a simple and powerful argument for the immateriality of our intellectual operations.¹ The gist of the argument is that: "Some thinking (judgment) is determinate in a way no physical process can be. Consequently, such thinking cannot be (wholly) a physical process."² Or as he puts it in a slightly less pithy summary:

In a word: our thinking, in a single case, can be of a definite abstract form (e.g., $N \times N = N^2$), and not indeterminate among impossible equally most particular forms. . . . No physical process can be that definite in its form in a single case. Adding physical instances even to infinity will not exclude impossible equally most particular forms (cf. Saul Kripke's "plus/quus" examples). So, no physical process can exclude impossible functions from being equally well (or badly) satisfied. . . . Thus, no physical process can *be* the whole of such thinking. The same holds for functions among physical states.³

¹The argument was first presented in his article "Immaterial Aspects of Thought," *Journal of Philosophy* 89 (1992): 136–50. It was restated in chapter 6 of Ross's book *Thought and World: The Hidden Necessities* (Notre Dame, IN: University of Notre Dame Press, 2008).

²Ross, "Immaterial Aspects of Thought," 137.

³Ross, *Thought and World*, 116–7.

To this contrast between the determinacy of thought and the indeterminacy of the physical, Ross added several related but distinct considerations in favor of the immateriality of thought, such as the contrast between the universality of thought and the particularity of physical processes.

Readers acquainted with ancient and medieval philosophy might perceive a family resemblance between Ross's argument on the one hand, and Plato's affinity argument⁴ and Aquinas's argument from the universality of thought⁵ on the other. But as the reference to Kripke indicates, whatever its classical antecedents, Ross's argument is one whose force he took to be evident from premises even contemporary philosophers should accept. Indeed, he regarded it as implicit in several of "the jewels of analytic philosophy," as he called them:⁶ the "quus" argument of Kripke's book *Wittgenstein on Rules and Private Language*; the "gavagai" argument of W. V. Quine's *Word and Object*; and the "grue" paradox of Nelson Goodman's *Fact, Fiction, and Forecast*.⁷ These famous indeterminacy results establish in Ross's view the indeterminacy of all *material* phenomena in particular. That our determinate thought processes are therefore *immaterial* is, he argues, a conclusion that can be avoided only at the cost of an outlandish and indeed self-defeating eliminativism.

Peter Dillard has recently criticized Ross's argument, and his use of Kripke in particular.⁸ Dillard is, I think, correct to put special emphasis on the role Kripke plays in the argument, and as his critique shows, Ross's use of Kripke raises important questions that those who sympathize with the argument need to answer (questions that are not raised by Ross's use of Quine and Goodman). Still, I maintain that Dillard's objections ultimately fail, and that Ross's argument emerges stronger once its relationship to Kripke's views is clarified.

What follows is an exposition and defense of Ross's argument, a defense against not only Dillard's objections but also other objections that might be raised against it. In the next section I lay some groundwork by explaining the difference between intellectual activity or thought in the strict sense and other aspects of the mind, which more commonly feature in the contemporary debate over materialism. We will see that Ross (like his ancient and medieval predecessors,

⁴*Phaedo* 78 b 4–80 e 1.

⁵*Quaestiones disputatae de veritate* X.8. Cf. *Summa theologiae* I, q. 75, a. 5, and *De ente et essentia* 4.

⁶Ross, "Immaterial Aspects of Thought," 137.

⁷Saul A. Kripke, *Wittgenstein on Rules and Private Language* (Cambridge, MA: Harvard University Press, 1982); Willard van Orman Quine, *Word and Object* (Cambridge, MA: The MIT Press, 1960); Nelson Goodman, *Fact, Fiction, and Forecast*, 4th ed. (Cambridge, MA: Harvard University Press, 1983).

⁸Peter Dillard, "Two Unsuccessful Arguments for Immaterialism," *American Catholic Philosophical Quarterly* 85 (2011): 269–86.

and unlike modern critics of materialism) is *not* arguing for the immateriality of qualia or even of intentionality, as that is typically understood today. This will be crucial to understanding both why Ross's argument might seem to conflict with a key aspect of Kripke's position, and why it does not in fact do so. In the third section of the paper I provide a more detailed exposition of Ross's argument and its use of ideas drawn from Quine, Goodman, and (especially) Kripke. In the fourth section I address Dillard's objections, an objection raised by Brian Leftow, and an objection raised by Robert Pasnau against arguments similar to Ross's. In the fifth section I explain how Ross's position is perfectly compatible with what we know from modern neuroscience, and address a potential objection implicit in some recent work by Paul Churchland.

II.

Intellectual and Other Mental Phenomena. The materialist philosopher of mind Jerry Fodor sums up the challenge mental phenomena pose to materialism as follows:

[S]ome of the most pervasive properties of minds seem so mysterious as to raise the Kantian-sounding question how a materialistic psychology is *even possible*. Lots of mental states are *conscious*, lots of mental states are *intentional*, and lots of mental processes are *rational*, and the question does rather suggest itself how anything that is material could be any of these.⁹

For Fodor, then, the difficulty facing the materialist is really a cluster of three problems: the problem of *consciousness*, the problem of *intentionality*, and the problem of *rationality*.

The first of these problems is generally understood within contemporary philosophy of mind to be a matter of explaining *qualia* in materialist terms. Qualia are the subjective, first-person features of a conscious experience, in virtue of which there is "something it is like" to have the experience. Examples would be the way heat and cold feel, the way red looks, the way a rose smells, the way a note sounds, and the way coffee tastes. The problem for the materialist is that there seems to be an unbridgeable logical and metaphysical gap between facts about brain chemistry, the wiring of neurons, and the like on the one hand, and facts about qualia on the other. Hence, according to Frank Jackson's "knowledge argument," we could know all the facts of the former sort that there are to know, and still not know the facts about qualia;¹⁰ and according to David Chalmers's

⁹In his eponymously titled article "Jerry A. Fodor," in *A Companion to the Philosophy of Mind*, ed. Samuel Guttenplan (Oxford: Blackwell, 1994), 292–300, at 292; emphasis in the original.

¹⁰For Jackson's original essays on the argument as well as a variety of critical responses to it, see *There's Something About Mary: Essays on Phenomenal Consciousness and Frank Jackson's*

“zombie argument,” all facts of the former sort could obtain in the absence of any of the facts about qualia obtaining.¹¹ Hence facts about qualia seem to be non-physical facts, facts additional to all the facts about the material world.

Intentionality, as typically understood within contemporary philosophy, is the “aboutness” of a thought, its “directedness” onto an object. Here too the problem is that it seems that the neurophysiological and other physical facts could in principle be just as they are in the absence of any intentionality, so that no appeal to facts of that sort can suffice to explain intentionality.¹²

Arguments like these have tended to dominate the anti-materialist literature in modern philosophy, but they are not the sorts of arguments one finds in ancient and medieval critics of materialism like Plato, Aristotle, and Aquinas. In fact they presuppose a conception of the material world that was developed in opposition to the Aristotelian conception endorsed by Aquinas and other Scholastics. According to the “Mechanical Philosophy” put forward by Descartes, Hobbes, Locke, and other early modern philosophers (which was essentially a revival of the Greek atomist view of nature that had been criticized by Aristotle), the material world is comprised of nothing more than colorless, odorless, soundless, tasteless particles in motion, governed entirely by efficient causes and devoid of any inherent teleology or final causality. Color, sound, heat, cold, and the like, at least as common sense understands them, are on this view to be regarded as mere projections of the mind, existing in our perceptual experience of the world rather than in the world itself. What correspond in objective physical reality to such qualities are only those features definable in terms of a purely “mechanical” picture of nature—surface reflectance properties of objects, compression waves, molecular motion, and the like. Hence when we say, for example, that a certain rose is red, if we mean by this that there is something in the rose that resembles the redness we perceive when we look at it, then what we are saying is false; but if we mean instead that, given its surface reflectance properties, light from the rose affects our senses in such a way that we will perceive it as having that redness, then what we are saying is true.

If one accepts this picture of matter, then qualia and intentionality naturally come to seem immaterial. In particular, if the matter that makes up a rose has nothing like the redness or fragrance that I experience it as having, but is red and fragrant only in the sense that it has, by virtue of its physical properties, the

Knowledge Argument, ed. Peter Ludlow, Yujin Nagasawa, and Daniel Stoljar (Cambridge, MA: The MIT Press, 2004).

¹¹See David J. Chalmers, *The Conscious Mind: In Search of a Fundamental Theory* (Oxford: Oxford University Press, 1997).

¹²For a useful overview of the contemporary debate over intentionality, see Tim Crane, *The Mechanical Mind: A Philosophical Introduction to Minds, Machines, and Mental Representation*, 2nd ed. (London: Routledge, 2003), esp. chaps. 1 and 5.

power to generate in me an experience with that qualitative character, then the matter that makes up my brain cannot plausibly be said to have these features either. Reddish and fragrant qualia must therefore be immaterial. Similarly, if matter is devoid of any inherent final causality or teleology, so that nothing in the material world is inherently “directed at” or “points to” anything beyond itself, then it is hard to see how the matter that makes up the brain can inherently be “directed at” or “point to” anything beyond itself, as it would have to do if it possessed intentionality. Intentionality too must therefore be a non-physical feature of the brain.

Now an Aristotelian who takes the redness we see really to exist in the rose, and who regards material processes to be inherently directed toward ends beyond themselves insofar as they are teleological, is not going to find such arguments compelling if intended as a completely general critique of materialism. What such arguments show is at most only that qualia and intentionality cannot be material *given the “mechanistic” conception of matter* the early moderns inherited from the Greek atomists. But the arguments do not show that these features cannot be material given some *other* conception of matter—and indeed, they *are* material on an Aristotelian conception of matter.

To be sure, the status of the so-called “secondary qualities” is a matter of controversy even among Aristotelians.¹³ But those modern Aristotelians willing to allow that the redness we see in a rose is as subjective as a pain or a tickle would still regard the sensation of redness, like the pain and tickle, as a bodily feature of an organism. It is also true that the Aristotelian, unlike the materialist, takes sentient organisms to differ in kind and not merely degree from non-sentient forms of life, just as he regards organic phenomena to differ in kind and not merely degree from inorganic phenomena. But for the Aristotelian these are distinctions within the material world, and do not mark a difference between material and immaterial phenomena.¹⁴

Similarly, the “directedness” in terms of which modern philosophers characterize intentionality does not for the Aristotelian mark a difference between the material and the immaterial. For instance, the phosphorus in the head of a match is entirely material, but given its chemical properties it is inherently “directed toward” or “points to” the generation of flame and heat; and in general, causal powers are for the Aristotelian “directed toward” or “point to” the

¹³For a brief discussion of the different opinions Neo-Scholastic writers held on this subject, see chapter XII of Celestine N. Bittle, *Reality and the Mind: Epistemology* (Milwaukee: Bruce Publishing Company, 1936).

¹⁴To be sure, the story is more complicated than this. As an anonymous referee rightly emphasizes, there is a sense in which, for Aquinas, sensation involves the reception of forms without matter. But Aquinas still regards sensation as involving material organs in a way that (for reasons of the sort we’ll be examining) he thinks strictly intellectual activity does not.

manifestation of their typical effect or effects as toward an end or goal. Biology provides even more obvious examples of phenomena that Aristotelian regards as inherently directed toward ends or goals. And intentionality, at least as typically understood by contemporary philosophers—again, as a matter of something’s being “directed” onto an object, or “pointing” beyond itself—is just a special case of this more general phenomenon of teleology or finality in nature. Indeed, the contemporary analytic philosopher George Molnar characterizes the causal powers even of inorganic phenomena as possessing “physical intentionality” insofar as these powers point to their typical effects, while another analytic philosopher, John Heil, speaks of the “natural intentionality” by virtue of which dispositional properties (such as the brittleness of a glass) point to their manifestations (such as the shattering of the glass).¹⁵ And the biologist J. Scott Turner characterizes unconscious organic developmental processes as manifesting “intentionality” insofar as they point beyond themselves to a certain end state.¹⁶ All of these phenomena are, for the Aristotelian no less than for the materialist, entirely material.

Of course, writers like Aristotle and Aquinas did regard certain aspects of intellectual activity as immaterial, and intellectual activity is certainly an instance of intentionality. Indeed, contemporary philosophers typically regard beliefs as the paradigm instances of intentionality. But for Aristotle and Aquinas, that a belief is “directed toward” or “points to” its object is not what makes it immaterial; indeed, non-human animals have internal states that are “directed toward” objects—for example, a dog’s desire for food is “directed toward” the food—but they do not have beliefs, certainly not in the sense we have them. The reason is that they do not have *concepts*; and it is the ability to form concepts, to combine them together into judgments, and to go from one judgment to another in accordance with the principles of logic, that not only marks the difference between human and non-human animals, but also the difference between a truly *immaterial* faculty and the purely material, sensory capacities we share with the lower animals.¹⁷ Hence it is what Fodor calls the problem of *rationality*,

¹⁵George Molnar, *Powers: A Study in Metaphysics* (Oxford: Oxford University Press, 2003); John Heil, *From an Ontological Point of View* (Oxford: Oxford University Press, 2003).

¹⁶J. Scott Turner, *The Tinkerer’s Accomplice: How Design Emerges from Life Itself* (Cambridge, MA: Harvard University Press, 2007).

¹⁷Tim Crane argues, plausibly enough, that in addition to “directedness” on to an object, what (following John Searle) he calls “aspectual shape” must also be regarded as essential to intentionality. For example, when you think about a certain object, you do not simply think about it full stop, but think about it *as an apple* (say), or *as a snack*. Your thought always has *this* “aspectual shape” rather than *that* one (see Crane, “The Intentional Structure of Consciousness,” in *Consciousness: New Philosophical Perspectives*, ed. Quentin Smith and Aleksandar Jokic [Oxford: Clarendon Press, 2003]; and John R. Searle, *The Rediscovery of the Mind* (Cambridge, MA: The MIT Press, 1992), 155). But it doesn’t follow that “aspectual shape” must always involve the application of concepts. Indeed, Crane argues that pains and other bodily sensations are intentional and thus have aspectual

rather than the so-called problems of consciousness and intentionality, that for Aristotelians and other classical and medieval philosophers poses the decisive challenge to materialism.

Unlike modern empiricists (though like modern rationalists) the Platonic and Aristotelian traditions insist on a rigid distinction between sensation and imagination on the one hand, and truly intellectual activity on the other. The concepts that are the constituents of intellectual activity are irreducible to sensations, to mental images or “phantasms,” and for that matter to “mental representations” of the sort posited by contemporary cognitive science (whether these are characterized as “sentences” encoded in the brain, as “distributed representations,” or what have you). For concepts have features none of these things can have.

The feature most emphasized by writers in the Aristotelian-Scholastic tradition is the *abstract and universal* nature of concepts, as contrasted with the *concrete and particular* character of images or phantasms. As G. H. Joyce writes:

A Concept is equally representative of all objects of the same character. Thus if I see a circle drawn on a black-board, the concept which I form of that geometrical figure will express not merely the individual circle before me, but all circles. The figure I see is of a definite size, and is in a particular place. But my mind by an act of abstraction omits these individual characteristics, and forms the concept of a circle as it is enunciated in Euclid's definition. This concept is applicable to every circle that ever was drawn. When however I form the phantasm of a circle, my phantasm must necessarily represent a figure of particular dimensions. In other words the concept of the circle is universal: the phantasm is singular. Similarly, if I form a concept of 'man,' my concept is applicable to all men. But a phantasm of a man must represent him as possessed of a certain height, with certain features, with hair of a definite colour, etc.¹⁸

shape. Yet non-human animals have pains and other sensations, even though (as already noted) they lack concepts. (I ignore the controversy over whether certain apes possess language, though I do not for a moment believe they do; that there are obviously *some* non-human animals that experience pain and other sensations yet lack concepts suffices to make the point.) Furthermore, Molnar argues that causal powers are “directed toward” their typical effects in a way that involves something like the referential opacity and “partial consideration” characteristic of the intentionality of the mental (Molnar, *Powers*, 62–6). Yet inorganic causes certainly do not possess concepts.

¹⁸George Hayward Joyce, *Principles of Logic*, 3rd ed. (London: Longmans, Green, and Co., 1949), 16–7. Cf. P. Coffey, *The Science of Logic*, vol. I (London: Longmans, Green, and Co., 1918), 2–5; Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, and Co., 1933), 235–8; Celestine N. Bittle, *The Science of Correct Thinking: Logic*, rev. ed. (Milwaukee: Bruce Publishing Company, 1951), 24–8; and Raymond J. McCall, *Basic Logic*, 2nd ed. (New York: Barnes and Noble, 1967), 3–6.

Another crucial feature is the *clarity and distinctness* of many concepts as contrasted with the *vagueness and indistinctness* of their corresponding images or phantasms. Celestine Bittle provides an example:

We can readily form a phantasm of five trees in a row. But to imagine fifty (not forty-nine or fifty-one) trees in a row will be for most people an impossible task. To imagine five thousand (not more or less) trees in a row is an utter impossibility. But my idea of five thousand or five million trees is just as clear to my intellect as five or ten; I have no more difficulty in *understanding* the number 5,000,000 trees than I have in understanding the number 4,999,999 or 5,000,001.¹⁹

We might also think of Descartes's examples in the Sixth Meditation of the chiliagon (a polygon having 1,000 sides) and a myriagon (which has 10,000 sides). The intellect clearly and distinctly understands the difference between these figures, and the difference between them and either a circle or a figure having 1,002 sides. But we cannot form distinct mental images of these various figures. To the imagination they all appear vaguely the same.

Bittle goes on to suggest that a third difference between concepts and mental images is that "there are many things of which we have a very clear *idea*, but of which *no reasonable phantasm can be formed*," and gives examples like law, economics, soul, God, knowledge, ignorance, inference, conclusion, certainty, consistency, etc.²⁰ This is potentially misleading, since Aristotelian-Scholastic writers hold that while intellectual activity cannot be identified with or reduced to images or phantasms, it is always associated with them (a point to which we will have reason to return). Thus, while it is true that we cannot form a mental image of law or of certainty the way we can form a mental image of a circle or a man, we nevertheless can and do form mental images of *some* sort when we entertain these concepts—for instance, visual or auditory images of *words* like "law" and "certainty." Still, Bittle's point is well-taken insofar as the connection between these words and the corresponding concepts is entirely *arbitrary and conventional*, whereas the connection between the concepts of (say) a man or a circle and the corresponding mental images or phantasms is not arbitrary or merely conventional. A mental image of a man resembles a man in a way the word "man" does not; a mental image of a circle resembles a circle, and may even be said to instantiate circularity, while the word "circle" does neither. Words like "law" and "certainty," given their lack of any such natural or inherent connection to the concepts they name, are connected to their corresponding concepts only as a matter of contingent linguistic circumstance, and mental images of

¹⁹Bittle, *The Science of Correct Thinking*, 26.

²⁰*Ibid.*, 27; emphasis in the original.

these words inherit this contingency. Given only their inherent properties, such images could have stood instead for anything at all.

Bittle's point, then, is related to his earlier point that phantasms are vague or indistinct in a way concepts are not. In both cases the problem is one of *indeterminacy*: In the one case (illustrated by the examples of the trees and the chiliagon) there is a relationship of *instantiation* between the image and the universal named by the concept, but the instantiation is too imperfect for the image *determinately* to instantiate the number of trees conceived of (in the one example) or to instantiate *being a chiliagon* as opposed to *being a myriagon* or *being a circle* (in the other example). In the case of Bittle's other point (illustrated by examples like the concept *law*), the connection between the image and the concept is even looser, since a mental image of the word "law" does not resemble law, does not instantiate the universal *law*, and indeed does not of itself have any determinate significance at all. The corresponding concepts themselves, by contrast, are entirely determinate. When I am thinking about a chiliagon, there is no question that that is what I am thinking about, even if the mental image I entertain at the same time could in principle be taken for a mental image of a circle or a myriagon (say, by someone who used a helmet similar to the one in the movie *Brainstorm* to gain quasi-introspective access to my mental imagery);²¹ and when I am thinking about law, there is no question that that is what I am thinking about, even if the visual or auditory image of the word "law" that I form while doing so could have been conventionally associated with some other concept.²²

Now these points about indeterminacy, and the earlier point about the particularity of phantasms (as contrasted with the universality of concepts), apply to any material symbols cognitive scientists would purport to find in the brain no less than to images or phantasms. Suppose it turned out that when we thought about circles, the associated neural activity traced out a literally circular pattern in the brain. Just as with a circle drawn in ink on paper, this pattern would be merely one particular instantiation of circularity among others, with a size, spatial location, and material constitution it did not share with every other possible circle; and it would therefore lack the universality that the concept of a circle has. Like the circle drawn in ink on paper, it would also be less than perfectly circular and in other ways indeterminate; for instance, it would, given its physical properties alone, be indeterminate between an instance of *being circular* and an instance of *being oval* or an instance of *being a chiliagon*. Accordingly, it could not be identified with the concept of a circle, which is determinate.

²¹I borrow the example from Daniel C. Dennett, "Quining Qualia," in *Readings in Philosophy and Cognitive Science*, ed. Alvin I. Goldman (Cambridge, MA: The MIT Press, 1993).

²²For useful summaries of contemporary discussion of the indeterminacy of imagery, see Crane, *The Mechanical Mind*, 13–21, and Michael Tye, *The Imagery Debate* (Cambridge, MA: The MIT Press, 1991).

Of course, the symbols posited by cognitive scientists are not typically of such a crude pictorial sort. They are instead sometimes modeled on maps,²³ or on linguistic symbols, as in Fodor's theory that thought is mediated by sentences encoded in the brain.²⁴ Indeed, whether even mental images themselves are best thought of as pictorial is a matter of dispute; some philosophers and cognitive scientists would argue that they are better thought of in linguistic terms, on the model of descriptions.²⁵ But in all these cases the indeterminacy is even more obvious. As with words like "law" and "certainty," the postulated linguistic symbols would bear no relation of resemblance or instantiation that might give them a natural connection to the concepts they are claimed to correspond to; and maps too differ from pictures precisely in less clearly or determinately resembling (much less instantiating) that which they are maps of, even if their difference from pictorial representations is not as great as that of linguistic symbols.

The materialist might suggest that the symbols in question are given a determinate content by virtue of their efficient causal relations to aspects of the external world. Thus, such-and-such a symbol encoded in the brain will signify *triangle* if and only if tokens of the symbol are typically caused by the presence of triangles; while another symbol will have a different content because of the different causal relations it bears to the external world. But there are many problems with causal theories of content, one of which is that they cannot account for the difference between concepts having exactly the *same* extension, as (for example) *triangle* and *trilateral* do. As the analytical Thomist philosopher John Haldane argues:

Every triangle is a trilateral and vice versa, and in some manner possession of the one property necessitates possession of the other. Yet triangularity and trilaterality are not the same attribute, and it takes geometrical reasoning to show that these properties are necessarily co-instantiated. . . . To the extent that he can even concede that there are distinct properties the naturalist will want to insist that the causal powers . . . of trilaterals and triangulars are identical. Thus he cannot explain the difference between the concepts by invoking causal differences between the members of their extensions (as one might *seem* to be able to account for the difference between the concepts *square* and *circle*).²⁶

²³David Braddon-Mitchell and Frank Jackson, *Philosophy of Mind and Cognition* (Oxford: Blackwell, 1996).

²⁴Jerry A. Fodor, *The Language of Thought* (Cambridge, MA: Harvard University Press, 1975).

²⁵For an overview of the debate between "pictorialist" and "descriptonalist" theories of imagery, see *Imagery*, ed. Ned Block (Cambridge, MA: The MIT Press, 1981), and Tye, *The Imagery Debate*.

²⁶J. C. Smart and J. J. Haldane, *Atheism and Theism*, 2nd ed. (Oxford: Blackwell, 2003), 106–7. I discuss various problems with causal theories of content in chapter 7 of *Philosophy of Mind* (Oxford: Oneworld, 2005), and in "Hayek, Popper, and the Causal Theory of the Mind,"

As Haldane notes, the problem is completely general:

For any naturally individuated object or property there are indefinitely many non-equivalent ways of thinking about it. That is to say, the structure of the conceptual order, which is expressed in judgments and actions, is richer and more abstract than that of the natural order, and the character of this difference makes it difficult to see how the materialist could explain the former as arising out of the latter.²⁷

In short, any set of material facts, including facts about the efficient causal relations between material elements, is indeterminate between the different determinate ways in which we might conceptualize them; hence the former cannot suffice to account for the latter.

Now Ross too is concerned to argue that material processes are indeterminate in a way that thought or intellectual activity is not (or at least in a way that certain *aspects* of thought or intellectual activity is not, a qualification to which we will return); and as I have also noted, he takes the universality of thought to be a further feature which differentiates it from material processes. As this indicates, Ross's approach to the critique of materialism is classical rather than modern, and in particular it is in line with the Aristotelian-Scholastic tradition rather than the Cartesian tradition. He is not concerned to argue for the immateriality of either qualia or intentionality (at least as the latter is typically understood in contemporary philosophy), but rather for the immateriality of our rational powers—our capacity to grasp concepts, combine them into judgments, and reason from one judgment to another in accordance with logical principles.²⁸ Qualia and the “directedness” contemporary philosophers regard as the core of intentionality are, after all, features of mental images or phantasms no less than of perceptual experiences. There is “something it is like” to have a mental image, and an image is “directed at” or “points to” that which it represents. But it is indeterminate for all that, and lacks the universality that concepts have. There is nothing in Ross's

in *Hayek in Mind: Hayek's Philosophical Psychology*, ed. Leslie Marsh, special issue of *Advances in Austrian Economics*, vol. 15 (2011).

²⁷Smart and Haldane, *Atheism and Theism*, 107.

²⁸We are now in a position to note, however, how the term “intentional” is used by Scholastics in discussions of cognition in a sense crucially different from, though not entirely unrelated to, that which is typical in contemporary philosophy of mind. On Scholastic usage, when we draw a circle on paper (for example) the form of circularity can be said to exist in the natural order; whereas when we conceptualize the object so drawn as a circle, the same form can be said to exist in the intentional order. But to say that it exists in the intentional order is not *merely* to say that we are in a state that is “directed at” or “points to” circularity. Also in view is the distinctively *conceptual* aspect of the mental act (which is not present in a dog that sees or imagines the circle, even though the dog might perceive it as a dog food bowl and thereby be in a state which “points to” it as an end to be pursued).

position that commits him to holding otherwise, and as we will see, this point is crucial for a proper understanding of his use of Kripke's "quus" example.

III.

Exposition of Ross's Argument. As Dillard notes, the basic structure of Ross's argument is as follows:

All formal thinking is determinate.

No physical process is determinate.

Thus, no formal thinking is a physical process.²⁹

The bulk of Ross's discussion is devoted to defending each of the premises. With regard to the first premise, it is important to note that Ross is quite clear that he takes *all* thinking to have a determinate and thus immaterial aspect, and not merely the kind we typically characterize as formal (viz., logic and mathematics).³⁰ But the determinacy is much easier to demonstrate in the case of logical and mathematical examples, and so they are the focus of his argument.

We'll return to the first premise. Ross's defense of the second is, as I have indicated, related to the points Scholastic writers often make about the indeterminacy of mental images. Evincing the Platonic origins of the type of critique of materialism that we are examining, such authors call attention to (say) the vagueness and particularity of mental images of geometrical figures as contrasted with the perfect determinacy and universality of the figures themselves, and therefore of our concepts of them.³¹ It would follow that since anything material is as indeterminate and particular as mental images are, concepts can no more be identified with anything material than they can be identified with images. Similarly, Ross argues that "just as rectangular doors can approximate Euclidean rectangularity, so physical change can simulate pure functions but cannot realize them."³² But it is indeed functions and the like that Ross focuses on, rather than geometrical figures, numbers, or the other sorts of examples the Scholastic writers cited earlier emphasize. This may reflect an intention directly to counter the functionalism dominant in contemporary materialist philosophy of mind, according to (one version of) which mental states are to be modeled on the functional states of a computer. It also reflects the centrality of Kripke's "quus" example to Ross's argument.

²⁹Dillard, "Two Unsuccessful Arguments for Immaterialism," 270.

³⁰Ross, "Immaterial Aspects of Thought," 149–50. Cf. Ross, *Thought and World*, 123. As Ross indicates, even in the case of non-logical and non-mathematical examples, the determinacy of thought has to do with its form.

³¹Some readers might question the validity of the "therefore." But the inference is valid. I'll address this issue in the next section.

³²Ross, "Immaterial Aspects of Thought," 141.

Now, Kripke was putting forward an interpretation of what he took to be the central argument of Wittgenstein's *Philosophical Investigations*, and his interpretation is famously controversial. But like many other commentators, Ross ignores questions of Wittgenstein exegesis and considers Kripke's ideas for their own intrinsic significance and interest. The line from Wittgenstein that forms the takeoff point for Kripke's discussion is the following:

This was our paradox: no course of action could be determined by a rule, because every course of action can be made out to accord with the rule.³³

So, suppose you had never computed any numbers as high as 57, but are asked to compute "68 + 57." You answer "125," confident not only that this is the arithmetically correct answer, but also that it is correct in the sense that it accords with the way you have always used "plus," viz., to denote the addition function, which, when applied to the numbers you call "68" and "57," yields 125. But now, Kripke says, imagine that a bizarre skeptic asks how you can be certain that this is really what you meant in the past, and therefore how you can be certain that "125" is really the correct answer. Perhaps, he suggests, the function you really meant in the past by "plus" and "+" was not addition, but rather what Kripke calls the "quus" function, which can be defined as follows:

x quus $y = x + y$, if $x, y < 57$;
= 5 otherwise.

Hence, perhaps you have always been carrying out "quaddition" rather than addition, since quadding and adding numbers will always yield the same result when the numbers are smaller than 57. That means that now that you are computing "68 + 57," the correct answer should be "5" rather than "125"; and perhaps you think otherwise because you are now misinterpreting all your previous usages of "plus." Obviously, this seems absurd. But how do you know the skeptic is wrong?³⁴

Kripke argues that any evidence you could appeal to in order to prove that you meant addition is evidence that is consistent with your really having meant quaddition. For instance, it is no good to appeal to the fact that you have always *said* "Two plus two equals four" and never "Two quus two equals four," because what is at issue is what you *meant* by "plus." It could be, the skeptic says, that every time you said "plus" you meant "quus," and every time you said "addition" you meant "quaddition." But neither will it help to appeal to your memories of what was going on in your mind when you said things like "Two

³³Ludwig Wittgenstein, *Philosophical Investigations*, 3rd ed., trans. G. E. M. Anscombe (New York: Macmillan, 1968), sec. 201.

³⁴Kripke, *Wittgenstein on Rules and Private Language*, 7–9.

plus two equals four.” Even if the words “I mean *plus* by ‘plus,’ and not *quus!*” had passed through your mind, that would only raise the question of what you meant by *that*. So, Kripke’s skeptic concludes, there is nothing that can possibly determine that it was indeed addition rather than quaddition that you had in mind when you used “plus” in the past. And in that case there really is no fact of the matter at all about what you meant.

Notice that it is irrelevant that most of us have in fact computed numbers higher than 57; for any given person there is always *some* number, even if extremely large, equal to or higher than which he has never calculated, and Kripke’s skeptic can run the argument using that number instead. Notice also the skeptic’s point can be made about what you mean *now* by “plus”; for all of your current linguistic behavior and what is now running through your mind, the skeptic can ask whether you mean by it addition or quaddition. Indeed, a similar point can be made about what you have meant in the past, and what you mean now, by *any* term, for a parallel skeptical scenario can be constructed for any term. It is always possible in principle that we are and always have really been following some rule for using a word other than the one we say we are following. But then there is no fact of the matter about what we mean by any word. The very notion of meaning seems to disintegrate.

In the next section we’ll consider the solutions to this paradox that Kripke considers and rejects, and the skeptical solution he attributes to Wittgenstein. For the moment let’s briefly consider the related arguments put forward by Quine and Goodman. The latter’s “grue” paradox might not at first glance seem directly relevant to the issues Ross is concerned with, but Kripke’s discussion of Goodman (which no doubt influenced Ross) shows how it is relevant. Goodman asks us to consider the predicate “grue,” which applies to any thing before some time *t* just in case it is green, and to every other thing just in case it is blue. Any evidence we have prior to *t* that a thing is green is also evidence that it is grue.³⁵ Now Goodman’s interest in this predicate has to do with the puzzle it raises about induction, which indeed is not something we are concerned with here. But as Kripke notes, the “grue” example provides an illustration of how what we mean when using color words is open to the same sort of skeptical doubt raised in the “quus” example. For just as all the evidence is (so the skeptic argues) compatible with the supposition that I have always meant quus when using “plus,” so too is it compatible with the supposition that I have always meant grue when using “green.”³⁶

Quine’s thought experiment involves a field linguist attempting to translate a native’s utterance of “gavagai” in the presence of a rabbit. He could take the correct translation to be “Lo, a rabbit!” and might construct a manual of

³⁵Goodman, *Fact, Fiction, and Forecast*, 74.

³⁶Kripke, *Wittgenstein on Rules and Private Language*, 20 and 58–9.

translation of the native's entire language that is consistent with this translation. But in principle he might replace "rabbit" with either "undetached rabbit part" or "temporal stage of a rabbit," and construct alternate manuals of translation each consistent with one of these possible translations.³⁷ Quine argues that there is nothing in the native's linguistic behavior that can determine which of these three alternative translation schemes is correct. But there is, in Quine's view, no evidence to go on other than the behavioral evidence. Hence there is *no fact of the matter* about which translation is correct, and the meaning of the utterance is indeterminate. The example is exotic, but the point applies equally well to the translation of anyone's speech. Indeed, as John Searle has emphasized, given Quine's behaviorist assumptions, there is no difference in principle between Quine's example and the first-person case in which one considers what one means by one's *own* words.³⁸ There will be alternative interpretations of one's own use of "rabbit" that are all equally compatible with one's behavioral dispositions. And in that case there is no fact of the matter about what one means.

Now as Kripke points out, a non-behaviorist could take this to be merely a *reductio ad absurdum* of Quine's behaviorist approach to language (as, indeed, Searle does).³⁹ By contrast, the upshot of the argument Kripke attributes to Wittgenstein, Kripke tells us, is that even an appeal to the introspection of one's mental states won't solve the problem raised by Quine.⁴⁰ For the evidence available from the "first-person" point of view, which Searle thinks suffices to refute Quine, is as indeterminate as the "third-person" behavioral evidence. In this way Kripke's indeterminacy results, being grounded in less controversial assumptions than those of Quine and more directly relevant to the subject at hand than those of Goodman, is more crucial to Ross's case. As I have said, Dillard, when criticizing Ross, is right to put special emphasis on the relevance of Kripke, and Ross could have been more careful in his use of all of these writers. Indeed, it might seem that Kripke's example *undermines* rather than supports Ross's argument. For again, Kripke emphasizes that the indeterminacy his skeptic wants to call our attention to applies to the *mental* realm no less than to our linguistic behavior. And doesn't Ross's entire case rest on the claim that the mental is determinate in a way the physical is not?

But Ross's argument is not so easily undermined, though Ross himself could have been clearer about the reason why. Wittgenstein, and Kripke in interpreting him, is especially keen to emphasize the irrelevance of *private sensations* to

³⁷Quine, *Word and Object*, 51f.

³⁸John R. Searle, "Indeterminacy, Empiricism, and the First Person," in *Consciousness and Language* (Cambridge: Cambridge University Press, 2002), 226–50. Cf. W. V. Quine, *Ontological Relativity and Other Essays* (New York: Columbia University Press, 1969), 47–8.

³⁹Kripke, *Wittgenstein on Rules and Private Language*, 57.

⁴⁰*Ibid.*, 14–5 and 55–7.

the determination of linguistic meaning. For example, an appeal to a subjective sensation or mental image of green is not going to suffice to determine that it is indeed *green* rather than *grue* that one meant when using the expression “green.” Now as Warren Goldfarb points out, this sort of point cuts no ice against an account of meaning like the one put forward by Gottlob Frege.⁴¹ Frege emphasized that the sense of an expression is not a private psychological entity such as a sensation or mental image, any more than it is something material.⁴² Thus he would hardly take an argument to the effect that meaning cannot be fixed either by sensations and mental images or by bodily behavior to establish that there is no determinate meaning at all. Now Frege conceived of the sense of an expression in Platonist terms, while Ross’s position is Aristotelian. But he would no doubt say something similar in response. I noted above that Scholastic Aristotelian writers distinguished intellectual activity or thought in the strict sense from sensation and mental imagery, and that they regarded the latter as bodily. Ross, who is writing in the same tradition, would surely agree, and would thus be untroubled by Kripke’s point that sensations and mental images do not suffice to fix the meaning of our thoughts and utterances. For they are not among the aspects of thought that he is arguing must be immaterial.

To be sure, Kripke also says some things intended to cast doubt on the suggestion that mental activity of some other kind might determine meaning. We’ll come to that in the next section. To reinforce the claim that *material* processes cannot in any case determine meaning, Ross, again following Kripke, notes that there are no physical features of an adding machine, calculator, or computer that can determine whether it is carrying out addition or quaddition, no matter how far we extend its outputs.⁴³ As Kripke emphasized, appealing to the intentions of the programmer will not solve the problem, because that just raises the question of whether the programmer really had addition or quaddition in mind, as in the original paradox. But Kripke makes a deeper point. No matter what the past behavior of a machine has been, we can always suppose that its *next* output—“5,” say, when calculating numbers larger than any it has calculated before—might show that it is carrying out something like quaddition rather than addition. Now it might be said in response that if this happens, that would just show that the machine was *malfunctioning* rather than performing quaddition. But Kripke points out that whether some output counts as a malfunction depends on what program the machine is running, and whether the machine is

⁴¹Warren Goldfarb, “Kripke on Wittgenstein on Rules,” *Journal of Philosophy* 82 (1985): 471–88. Cf. the discussion of Wittgenstein and Kripke in Jerrold J. Katz, *The Metaphysics of Meaning* (Cambridge, MA: The MIT Press, 1990), esp. 158–61 and 164.

⁴²Gottlob Frege, “The Thought: A Logical Inquiry,” *Mind* 65 (1956): 289–311.

⁴³Ross, “Immaterial Aspects of Thought,” 141–4; Kripke, *Wittgenstein on Rules and Private Language*, 32–7.

running the program for addition rather than quaddition is precisely what is in question. We might find out by asking the programmer, but there is nothing in *the physical properties of the machine itself* that can tell us.⁴⁴

Let's turn now to Ross's defense of the first premise of his basic argument, viz., the claim that *all formal thinking is determinate*. Adding, squaring, inferring via *modus ponens*, syllogistic reasoning, and the like are some of the examples of formal thinking Ross appeals to. Anyone who agrees that material processes are indeterminate in the way Kripke's and Quine's arguments imply but who wants to avoid the conclusion that thought is immaterial will have to deny that any of our thoughts is ever determinate in its content; and writers like Bernard Williams and Daniel Dennett essentially do deny this.⁴⁵ But then they will also have to deny that our thoughts are ever really determinately of any of the forms just cited. They will have to maintain that we only ever *approximate* adding, squaring, inferring via *modus ponens*, etc. "Now that," Ross says, "is expensive. In fact, the cost of saying we only simulate the pure functions is astronomical."⁴⁶

In particular, Ross identifies four problems with the suggestion that we only ever approximate adding, squaring, *modus ponens*, etc. (Some of these are only hinted at, but what I will have to say in developing them is, I think, faithful to Ross's intentions.) The first is that it is just *prima facie* wildly implausible to suggest that whenever we have taken ourselves to add, square, draw a *modus ponens* inference, etc., we have been mistaken and have not really done so at all. Of course, Ross's critic might just dig in his heels and insist that we have to bite this particular bullet, but this would be plausible only if the considerations in favor of his bizarre position were more obviously correct than is our common sense conviction that we do indeed often add, square, apply *modus ponens*, etc. And why should we believe that?

Second, it isn't just common sense that the critic's view conflicts with. The claim that we never really add, apply *modus ponens*, etc. is hard to square with the existence of the vast body of knowledge that comprises the disciplines of mathematics and logic. Nor is it just that mathematics and logic constitute genuine

⁴⁴Kripke extended this line of argument into a critique of functionalism, though the critique was only developed in some unpublished lectures and is merely hinted at in *Wittgenstein on Rules and Private Language* (36–7). For a useful discussion of this unpublished material, see Jeff Buechner, "Not Even Computing Machines Can Follow Rules: Kripke's Critique of Functionalism," in *Saul Kripke*, ed. Alan Berger (Cambridge: Cambridge University Press, 2011).

⁴⁵See Bernard Williams, *Descartes: The Project of Pure Inquiry* (London: Penguin Books, 1978), 300; and Daniel C. Dennett, "Evolution, Error, and Intentionality," in Dennett's *The Intentional Stance* (Cambridge, MA: The MIT Press, 1989). Cf. Dennett's *Darwin's Dangerous Idea* (New York: Simon and Schuster, 1995), chap. 14. In addition to Quine, Dennett identifies Paul and Patricia Churchland, Donald Davidson, John Haugeland, Ruth Millikan, Richard Rorty, Wilfrid Sellars, and Robert Stalnaker as philosophers who essentially take the same position.

⁴⁶Ross, "Immaterial Aspects of Thought," 145–6.

bodies of knowledge in their own right; they are also presupposed by the natural sciences. Now it is in the name of natural science that philosophers like Quine and Dennett draw the extreme conclusions about the indeterminacy of meaning that they do. But if natural science presupposes mathematics and logic, and mathematics and logic presuppose that we do indeed have determinate thought processes, it is hard to see how they can consistently draw this conclusion.⁴⁷

A third and related problem is that if we never really apply *modus ponens* or any other valid argument form, but at best only approximate them, then *none of our arguments is ever really valid*. That includes the arguments of those, like Quine and Dennett, who say that none of our thoughts is really determinate in content. Hence the view is self-defeating. Even if it were true, we could never be rationally justified in believing that it is true, because we couldn't be rationally justified in believing *anything*.

Fourth, the claim that we never really add, square, apply *modus ponens*, etc., is self-defeating in an even more direct and fatal way. For coherently to deny that we ever really do these things presupposes that we have a grasp of what it would be to do them. And that means having thoughts of a form as determinate as those the critic says we do not have. In particular, to deny that we ever really add requires that we determinately grasp what it is to add and then go on to deny that we really ever do it; to deny that we ever really apply *modus ponens* requires that we determinately grasp what it is to reason via *modus ponens* and then go on to deny that we ever really do that; and so forth. Yet the whole point of denying that we ever really add, apply *modus ponens*, etc., was to avoid having to admit that we at least sometimes have determinate thought processes. So, to deny that we have them presupposes that we have them. It cannot coherently be done.

And so we have Ross's argument: Material processes cannot be determinate, as many materialists themselves acknowledge on the basis of arguments like those of Quine and Kripke; but, at least some thought processes are determinate, as is evidenced by the fact that the very act of denying that they are commits us implicitly to affirming that they are; therefore, such thought processes are immaterial.

IV.

The Objections of Pasnau, Leftow, and Dillard. Robert Pasnau has raised an objection to one of Aquinas's arguments for the immortality of the human soul which might seem applicable to Ross's argument as well.⁴⁸ Aquinas writes:

⁴⁷Cf. Maher, *Psychology: Empirical and Rational*, 238.

⁴⁸Robert Pasnau, "Aquinas and the Content Fallacy," *The Modern Schoolman* 75 (1998): 293–314; Cf. Pasnau, *Thomas Aquinas on Human Nature* (Cambridge: Cambridge University Press, 2002), 315–6.

It is also evident that an intellectual principle of this sort is not a thing composed of matter and form, because the species of things are received in it in an absolutely immaterial way, as is shown by the fact that the intellect knows universals, which are considered in abstraction from matter and from material conditions. The sole conclusion to be drawn from all this, then, is that the intellectual principle, by which man understands, is a form having its act of existing in itself. Therefore this principle must be incorruptible.⁴⁹

Pasnau claims that this passage commits what he calls the “content fallacy,” which involves “conflating two kinds of facts: facts about the content of our thoughts, and facts about what shape or form our thoughts take in our mind.”⁵⁰ A crude example of such a conflation would be reasoning from *Bob is thinking about a red sports car* to the conclusion that *Bob’s thought is red*. In the passage at hand, Pasnau says, Aquinas’s “conclusion pertains to intellect’s intrinsic qualities: being immaterial and hence incorruptible,” and this is “inferred from intellect’s intentional qualities: being ‘concerned with universals.’”⁵¹ In other words, Aquinas (so Pasnau seems to be claiming) is fallaciously inferring from the premise that *The intellect grasps universals, which are immaterial and incorruptible* to the conclusion that *The intellect is immaterial and incorruptible*. Now Ross might seem to be committing a similar fallacy. In particular, it might seem that he is reasoning from a premise like *Formal thought processes are about determinate functions like adding, modus ponens, etc., which are immaterial* to the conclusion that *Formal thought processes are immaterial*.⁵²

But Ross is committing no such fallacy, and neither is Aquinas for that matter. Certainly there is a more charitable way to read them. I would suggest that they are both reasoning in something like the following way:

The objects of thought have property X, which entails that they are immaterial.

But thought itself also has property X.

So thought must also be immaterial.

And this argument form is valid. For Aquinas, the X in question is *universality*, and for Ross the X is *determinacy*. Aquinas can be read as saying that, just as the universal *circle* applies to every circle without exception, so too do the *thoughts*

⁴⁹*Quaestiones disputatae de anima* XIV, in *The Soul: A Translation of St. Thomas Aquinas’s De Anima*, trans. John Patrick Rowan (St. Louis: B. Herder, 1949), 182.

⁵⁰Pasnau, “Aquinas and the Content Fallacy,” 293.

⁵¹*Ibid.*, 304.

⁵²To be sure, Pasnau does not accuse Ross of committing this fallacy. Indeed, a passing reference to Ross’s argument in Pasnau’s book *Thomas Aquinas on Human Nature* is positive, if noncommittal (411). But when I have cited Ross’s argument in other contexts, Pasnau’s “content fallacy” objection has sometimes been raised against it.

we have about circles (when doing geometry, say) apply to every circle without exception; and just as the former could not do so if it were material, neither could the latter. Ross can be read as saying that, just as the abstract form of inference *modus ponens* as studied in logic is determinate, so too do we have thoughts that are determinately of that form; and, just as the former could not be determinate if it were material, neither could the latter.⁵³

Brian Leftow cites Ross's argument explicitly in the course of discussing Aquinas, and tentatively suggests a possible difficulty.⁵⁴ Quinean considerations of the sort raised by Ross do indeed imply, Leftow allows, that the content of our thoughts cannot be determined by physical processes in the brain. But a materialist who endorses an externalist theory of content could accept this as consistent with maintaining his materialism: "Information not present in the brain could be present in a physical sum, the brain plus its physical environment."⁵⁵ One problem with this objection is that it fails to see that Quine himself has already addressed it insofar as he notes that a native's utterance of "gavagai" is indeterminate between alternative translations *even given* the facts about his environment that the field linguist has to go on. Scholastic writers of the sort considered earlier might point out in addition that even if we consider material reality as a whole, we will never find within it a perfect instantiation of triangularity, or all possible instantiations of triangularity, or a symbol or set of symbols with a unique causal relationship to triangularity as opposed to trilaterality. Hence we will never find within it anything with the determinacy and universality of our concept *triangularity*.

A response to Leftow closer to Ross's own manner of arguing is suggested by Kripke's point about adding machines. For any such machine, we can always ask whether a given output is a malfunction. Perhaps what we take to be an output consistent with the machine's adding is really a malfunction in a machine that is "quadding" instead. Nothing in the physical aspects of the machine itself can tell us, and this will be true no matter how large or complex the machine is. But then, if we think of an individual's brain and the various parts of his environment as related like the parts of the machine, then even if that environment includes the entire physical universe, there will be nothing in the collection of these physical facts *itself* to tell us whether the individual's next utterance really

⁵³For somewhat different defenses of Aquinas against Pasnau's objection, see John Haldane, "The Metaphysics of Intellect(ion)," *Proceedings of the American Catholic Philosophical Association* 80 (2006): 39–55, at 51–3; and Gyula Klima, "Aquinas on the Materiality of the Human Soul and the Immateriality of the Human Intellect," *Philosophical Investigations* 32 (2009): 163–82, at 175–6.

⁵⁴Brian Leftow, "Soul, Mind, and Brain," in *The Waning of Materialism*, ed. Robert C. Koons and George Bealer (Oxford: Oxford University Press, 2010), 395–416.

⁵⁵*Ibid.*, 410.

is an expression of addition rather a malfunction in a system that is really carrying out quaddition.⁵⁶

Now Peter Dillard, as I have said, takes issue with Ross's use of Kripke, specifically. And as we have seen, there are aspects of Kripke's discussion whose relationship to Ross's argument could have been more directly and carefully addressed by Ross. But Dillard himself does not seem to have read Kripke, or Ross for that matter, as carefully as *he* could have. For instance, taking an example from computer science, Dillard says that there is a determinate difference between an and-gate, an or-gate, and other logic gates, which falsifies Ross's claim that physical phenomena are inherently indeterminate.⁵⁷ But this simply ignores Kripke's point that whether a machine has certain computational properties—in this case, whether a given electrical circuit really instantiates an and-gate or is instead malfunctioning—is not something that can be read off from the physical properties of the circuit itself, but depends on the intentions of the designer.⁵⁸ It also ignores the related Aristotelian point that a computer is an artifact, whose functional features are imposed from outside and not intrinsic to it in the way the teleological features of a natural substance are intrinsic to it. Dillard, who elsewhere calls attention to Ross's Aristotelian commitments, should have realized that such a reply is open to Ross.

Dillard also suggests that Kripke's point is epistemological rather than metaphysical—that his argument shows at most only that the claim that someone is thinking in accordance with a certain function (such as addition) is underdetermined by the physical evidence, and not that the physical facts are themselves indeterminate.⁵⁹ This is odd given that both Kripke and Ross explicitly insist that the points they are respectively making are metaphysical rather than merely epistemological.⁶⁰ Indeed, Kripke says that “not even what an omniscient God

⁵⁶Of course, an Aristotelian will not regard either the brain or a human being of which the brain is an organ as in every relevant respect comparable to a computer, since the latter is an artifact whose parts do not have the kind of organic relationship to one another that the parts of a living thing do. But we are not here comparing the brain or a human being to a computer, but rather the brain or human being *together with the various aspects of its physical environment* to a computer. And those aspects of the environment are not related to an individual human being or his brain in the organic way that the parts of a living thing are related to one another.

⁵⁷Dillard, “Two Unsuccessful Arguments for Immaterialism,” 274–5.

⁵⁸Cf. John Searle's point that computational properties are not intrinsic to the physics of a system but are imposed on the physics from outside by designers and users. See John R. Searle, “Is the Brain a Digital Computer?” in *Philosophy in a New Century: Selected Essays* (Cambridge: Cambridge University Press, 2008), 86–106; and chapter 9 of Searle's *The Rediscovery of the Mind* (Cambridge, MA: The MIT Press, 1992).

⁵⁹Dillard, “Two Unsuccessful Arguments for Immaterialism,” 273.

⁶⁰Kripke, *Wittgenstein on Rules and Private Language*, 21 and 39; Ross, *Thought and World*, 119–20. In fairness to Dillard, it should be noted that he makes no reference to Ross's *Thought and World* and relies entirely on Ross's earlier discussion in “Immaterial Aspects of Thought.”

would know . . . could establish whether I meant plus or quus,”⁶¹ because for the reasons given above, everything about my past behavior, sensations, and the like is compatible (not just compatible *as far as we know*, but compatible *full stop*) with my meaning either plus or quus. Nor does Dillard say anything to show otherwise.

A more interesting objection raised by Dillard is the suggestion that Ross’s commitment to the Aristotelian-Scholastic view that causal powers as “directed toward” the generation of their typical effects (a view we had reason to discuss above) is inconsistent with his claim that physical processes are inherently indeterminate. For isn’t (say) a match’s tendency to produce flame and heat, specifically, an instance of a determinate physical process?⁶² But the objection fails, in part for reasons Ross himself indicates. For the Aristotelian, a thing has the causal powers it has only because of its form. But forms don’t exist in the material world as pristine Platonic universals; they are, for the Aristotelian, always individualized, with all the limitations and imperfections that that entails, and what is universal is only the form as abstracted by an intellect. And the same holds for pure functions, whether the sort we have already called attention to (adding, squaring, *modus ponens*, etc.) or the sort enshrined in the equations of the physicist. Ross writes:

Physical phenomena often come close to our mathematizations that, of course, are invented to represent them. But those mathematizations are *idealizations*. . . .⁶³

[N]ature is rich in intelligible, active structures for which humans have a natural abstractive aptitude. [But] such structures are materialized and not pure functions. Humans can find pure functions that many such processes *approximate*.⁶⁴

Consequently, the causal powers a material thing possesses by virtue of instantiating a certain form or pure function are also approximations to an idealization, and thus indeterminate.

Dillard misses this point because, as with his remarks about Kripke, he fails to see that it is metaphysics rather than epistemology that is at issue, and insists that all that Ross can claim is that scientific theory is underdetermined by evidence.⁶⁵ But when your geometry teacher notes that perfect circularity

⁶¹Kripke, *Wittgenstein on Rules and Private Language*, 21.

⁶²Dillard, “Two Unsuccessful Arguments for Immaterialism,” 275.

⁶³Ross, *Thought and World*, 199 n. 20; emphasis added.

⁶⁴*Ibid.*, 198 n. 16; emphasis added. Cf. 121.

⁶⁵Dillard, “Two Unsuccessful Arguments for Immaterialism,” 273–4. In fairness to Dillard, Ross’s reference in “Immaterial Aspects of Thought” to “underdetermination arguments” in the

does not exist in the material world, it would be absurd to suggest that the point is *epistemological*—that while the evidence underdetermines the thesis that there is such a thing as perfect circularity in the material world, perhaps it does exist there somewhere after all. Similarly, when Kripke points out that there is nothing in the physical properties of an adding machine that can tell us whether it is adding or quadding, and that we must appeal to the intentions of the programmer to find out, it would be absurd to suggest that *this* point is merely epistemological, a matter of underdetermination of theory by evidence rather than of indeterminacy. Ross's point about the relationship between concrete physical processes and the idealized pure functions they approximate is in the same way a metaphysical rather than epistemological point. As he says of the Kripkean argument about adding machines, "that's the same sort of reasoning that Plato used to argue that spatiotemporal things can only imitate, imperfectly copy, the ideal Forms."⁶⁶ Of course, the position Ross ends up with is Aristotelian rather than Platonic, but the point is that forms as idealized universals, whether conceived of as existing in a Platonic third realm or only as abstracted by an intellect, are determinate in a way concrete particular things are not. While the point has epistemological implications, it is not itself merely epistemological.

Another problem with Dillard's attempt to use the Aristotelian-Scholastic view of causal powers against Ross is one that Dillard himself inadvertently hints at when he alludes to the distinction between natural powers and rational powers.⁶⁷ For the Scholastic, a dog and a human being both looking at the same food are each in a perceptual state that is "directed at" the food. But there is a *conceptual* element to the human being's perceptual experience of the food that isn't present in the case of the dog. The dog's causal powers, however complex relative to those of non-sentient material substances, are nevertheless sub-rational. To borrow an example from Hilary Putnam, suppose it is suggested that a certain neural "data structure" evolved in dogs to facilitate their getting meat, and that

context of discussing the idealized character of equations (145) facilitates this misunderstanding, since "underdetermination" is usually used in epistemological contexts to connote a failure of evidence to support one theory to the exclusion of others. And Ross admittedly doesn't always make it sufficiently explicit how underdetermination of the sort he is interested in entails indeterminacy. But it is worth comparing the passage in "Immaterial Aspects of Thought" that exercises Dillard (which is at 144–5 of Ross's article) with the later parallel passage in *Thought and World* (120–1). In the former, Ross does give the impression that it is underdetermination *rather than* the idealized nature of the physicist's equations that is relevant to his point. But this implication is absent in the latter, where the idealized character of the physicist's equations is clearly presented in support of Ross's argument. And, as indicated above, Ross makes it clear that his point is "not just an epistemic claim" (*Thought and World*, 119).

⁶⁶Ross, *Thought and World*, 120.

⁶⁷Dillard, "Two Unsuccessful Arguments for Immaterialism," 275 n. 17.

this justifies us in attributing to them a concept or “proto-concept” of meat.⁶⁸ As Putnam points out, the dog will be satisfied and nourished whether it is given fresh meat, canned meat, or some textured vegetable protein that looks, smells, and tastes exactly like meat. For that reason, there is no fact of the matter about whether its putative “proto-concept” represents any one of these in particular, and thus no sense to be made of the question of whether the dog has a true belief about what it is eating when it eats the vegetable protein rather than meat. “Evolution didn’t ‘design’ dogs’ ideas to be true or false, it designed them to be successful or unsuccessful.”⁶⁹ But in that case the suggestion that the dog really *has* a “proto-concept” of meat in the first place is groundless:

[T]he whole idea that a unique correspondence between the data structure and meat is involved in this bit of natural selection is an illusion, an artifact of the way we described the situation. We could just as well have said that the data structure was selected for because its action normally signals the presence of something which has a certain smell and taste and appearance and is edible.⁷⁰

In short, there is nothing in the situation described that entails that anything in the dog’s brain corresponds to *meat* specifically, and thus there is nothing in the situation that entails that the dog has a *concept* (or “proto-concept”) of meat. The point is completely general, applying to *any* concept. What a dog’s neural wiring and corresponding perceptual experiences facilitate is survival, not truth or falsity. Hence we are not going to read off true or false beliefs from a dog’s neural-cum-perceptual states, and neither will we read off from them the *concepts* that true or false beliefs presuppose. It follows that, contra Dillard, the existence in purely material substances of causal powers which are directed toward certain outcomes does not suffice for the kind of determinacy characteristic of concepts.⁷¹

Now the solution to his “quus” paradox that Kripke himself takes the most seriously is the one he (controversially) attributes to Wittgenstein, the so-called “sceptical solution.” This solution concedes that there is no fact of the matter about what we mean by “plus,” and thus no way to give *truth-conditions* for the claim that by “plus” one means addition. It is then suggested that we can nevertheless give *assertibility-conditions* for this claim, and that these conditions are to

⁶⁸Hilary Putnam, *Renewing Philosophy* (Cambridge, MA: Harvard University Press, 1992), 27–33.

⁶⁹Ibid., 31

⁷⁰Ibid.

⁷¹That directedness does not entail determinacy should be obvious enough from the existence of vague and ambiguous expressions. Such expressions “point” to a certain possible range of meanings—a large range in the case of vague expressions, a smaller one in the case of ambiguous ones—but not determinately to any particular meaning within the range.

be found in what a linguistic community actually agrees upon. That you mean addition rather than quaddition by “plus” is just a matter of your using “plus” in a way that the linguistic community counts as addition.⁷² Dillard suggests that Ross’s argument might be resisted simply by denying his first premise—that formal thinking is determinate—and embracing instead Kripke’s “sceptical solution,” or the related Quinean view that to count a speaker’s usage of “plus” as addition is just to note that his usage does not elicit “bizarreness reactions” in his fellow language users.⁷³

Now as we have already seen, Ross argues that it is simply self-defeating to deny that our formal thought processes are determinate. Dillard offers no response to this other than the insinuation that by biting the bullet, the Kripkean or Quinean can stalemate Ross. But the views are *not* thereby left at a stalemate, for that would require that each view is at least internally consistent and thus as coherent as its rival, and neither Kripke’s skeptical solution nor Quine’s position *is* coherent. For one thing, and as John Searle has emphasized, both Kripke and Quine have implicitly to presuppose precisely what they deny. Even to get his “gavagai” scenario off the ground, Quine has to presuppose that we can understand the difference between meaning *rabbit* by “rabbit” and meaning *undetached rabbit part* by “rabbit,” at least in our own case.⁷⁴ Something similar could be said about the difference between adding and quadding in Kripke’s example. Indeed, Kripke himself insists that “the sceptical problem indicates no vagueness in the *concept* of addition . . . or in the word ‘plus’, *granting* its usual meaning” and that, again, granting this meaning, “the word ‘plus’ denotes a function whose determination is *completely* precise.”⁷⁵ (This is obviously related to Ross’s point that we have to have a determinate grasp of what addition, *modus ponens*, etc., are even to deny that we have such a grasp.) And as Searle points out, Kripke’s skeptical solution presupposes that I can know what I mean by “agreement” with the community (though given the skeptical paradox, *how* do I know that by “agreement” I really do mean *agreement* rather than *quagreement*?).⁷⁶

For another thing, as Ross points out, to deny that our thoughts are ever determinate is to deny that we ever really reason validly. Now, both Kripke and Quine are eminent logicians, and paradigmatic analytic philosophers who would not be caught dead putting forward a bold philosophical thesis without

⁷²Kripke, *Wittgenstein on Rules and Private Language*, chap. 3.

⁷³Dillard, “Two Unsuccessful Arguments for Immaterialism,” 277–8.

⁷⁴Searle, “Indeterminacy, Empiricism, and the First Person,” 234.

⁷⁵Kripke, *Wittgenstein on Rules and Private Language*, 82.

⁷⁶John R. Searle, “Skepticism About Rules and Intentionality,” in Searle’s *Consciousness and Language* (Cambridge, MA: Cambridge University Press, 2002), 260. Thomas Nagel makes a similar point about “fact,” “word,” “mean,” and other terms needed even to state the skeptical paradox and its solution. See *The Last Word* (Oxford: Oxford University Press, 1997), 44.

claiming to be able to give a solid argument for it. And yet their position entails that there are no solid arguments for any philosophical position, including their own. How can it seriously be maintained that such a position stalemates Ross's?

As Thomas Nagel has argued, what Kripke's argument really amounts to is a *reductio ad absurdum* of the reductionist assumption that meaning must somehow be explicable in terms of something else—behavior, physiology, mental imagery, dispositions, or what have you.⁷⁷ Now Kripke has a response to the suggestion that meaning something by a word is *sui generis* and not to be assimilated to sensations, dispositions, or the like, and it is a response Dillard seems to think effectively rebuts Ross's argument:

Such a move may in a sense be irrefutable . . . [b]ut it seems desperate: it leaves the nature of this postulated primitive state—the primitive state of 'meaning addition by "plus"'—completely mysterious. . . . Such a state would have to be a finite object, contained in our finite minds. . . . Can we conceive of a finite state which *could* not be interpreted in a quus-like way? How could that be?⁷⁸

Glossing Kripke's objection, G. W. Fitch characterizes the suggestion that meaning is *sui generis* as an appeal to a "brute fact."⁷⁹ Arif Ahmed suggests that Kripke's objections to explaining meaning by reference to sensations or mental images would apply to any appeal to a *sui generis* state as well.⁸⁰

But all of this simply begs the question against the view that meaning is *sui generis*. Fitch's and Ahmed's claims presuppose that the *sui generis* state in question is one that could at least in principle come apart from meaning addition. They presuppose that there are *two* things in question here—the state itself and a certain content, where it is a "brute fact" that the two are conjoined in a particular case, and where we can imagine a case where the state exists with some different content instead. But that is precisely what the *sui generis* view denies. It holds that we should *not* think of meaning something by a word as an otherwise content-free mental state which has somehow been fitted with a detachable content. Similarly, when Kripke alleges that the view is "mysterious," he seems to assume that a *non*-mysterious view would be one that reduces meaning to something else—again, to behavior, sensations, dispositions, or what have you. And that too is just what the view of meaning as *sui generis* denies. Kripke and his commentators Fitch and Ahmed really offer no *argument* against

⁷⁷Nagel, *The Last Word*, 41–7.

⁷⁸Kripke, *Wittgenstein on Rules and Private Language*, 51–2. Cf. Dillard, "Two Unsuccessful Arguments for Immaterialism," 276 n. 20 and 279.

⁷⁹G. W. Fitch, *Saul Kripke* (Montreal and Kingston: McGill-Queen's University Press, 2004), 153.

⁸⁰Arif Ahmed, *Saul Kripke* (London: Continuum, 2007), 122.

the *sui generis* view. They merely express an undefended prejudice in favor of a reductionist approach, and pretend that it constitutes an objection.

It is, in any event, quite rich for someone who says that our thoughts never have any determinate content—and therefore implies that we never really add, square, reason in accordance with *modus ponens*, etc., but only seem to—to accuse the other side of mystery-mongering! The retort open to Ross is obvious: We *know* that there must be such a thing as a *sui generis* state of meaning addition by “plus” (or of meaning something else by another word), because arguments like Kripke’s show that denying that there is reduces to absurdity. Even if we are left with a sense of mystery about the nature of meaning, mystery is different from, and far better than, the self-defeating incoherence that Ross’s critic is forced into.

That there is nothing arbitrary or ad hoc about the *sui generis* response to arguments like Kripke’s and Quine’s is evidenced by the fact that Scholastic philosophers took something like that view, on independent grounds, long before the arguments in question came on the scene. For instance, following the *Ars Logica* of John of St. Thomas, Francis Parker and Henry Veatch distinguish between *material* (or *instrumental*) signs and *formal* signs.⁸¹ A material sign is “double-natured”; that is to say, it “is a sign and also something else, namely, an entity in its own right.”⁸² The smoke that we take to be a sign of fire, the red and white striped pole that functions as a sign of a barber shop, and written and spoken words are all material signs in that they can be characterized entirely apart from their status as signs—in terms of their chemical composition, say, or texture, or shape. Formal signs, by contrast,

do not have traits which must be known before their significance is known. They are not *means*—things which *have* meaning. They are themselves meanings; they are signs and nothing but signs. . . . [They] have no nature other than their signifying nature.⁸³

Examples would be concepts and propositions. Neither a concept nor a proposition has any nature other than being about whatever it is about. It makes sense to suppose that a material sign might not have been about anything. But it makes no sense to suppose that a concept or proposition might not have been about anything. These are signs that are *nothing but* signs.

Notice that this a perfectly natural distinction to draw, and one which has been drawn for centuries, just given what we know pre-theoretically about the difference between words, material symbols, and the like on the one hand and

⁸¹Francis H. Parker and Henry B. Veatch, *Logic as a Human Instrument* (New York: Harper and Brothers, 1959), 16–22.

⁸²*Ibid.*, 16–7.

⁸³*Ibid.*, 18.

concepts and propositions on the other. There is also, if there were really any doubt about whether there are any formal signs, a fairly intuitive argument for their existence, one suggested by Parker and Veatch.⁸⁴ Precisely because material signs and their content are separable, we cannot read off the content from the nature they have apart from their status as signs, and have to determine their meaning by reference to other signs (as we do when we check a dictionary to see how one word is defined by reference to other words). But if every sign were a material sign, we would be led into a vicious regress. Hence there must be signs which *just are* their meanings, and which therefore need not be known by reference to other signs and can serve as the terminus of explanation of those signs that do need to be explained by reference to others.

Now this notion of a formal sign corresponds more or less exactly to what Kripke calls a *sui generis* conception of meaning, a conception in which there is simply no gap between a sign and its content of the sort Kripke's skeptic needs in order to get his skepticism off the ground. Whatever one thinks of the notion, it is motivated independently of the desire ("desperate" or otherwise) to find a response to arguments like Kripke's. And its very existence obviously bolsters Ross's case. Not only can he argue that the *sui generis* conception of meaning is unavoidable if we want to avoid the self-defeating incoherence of Ross's critic; he can argue that there is in the notion of formal signs a preexisting, independently-motivated account of meaning that corresponds to the *sui generis* conception, already waiting there "on the shelf," as it were, rather than being concocted ad hoc. We had good reason to accept it even apart from the arguments of Quine, Kripke, and company. Their arguments show it to be not merely worthy of consideration, but unavoidable on pain of incoherence.

V.

Churchland, Neuroscience, and the Rational Soul. Dillard will still object that Ross's position opens up "an apparently unbridgeable gulf between thought and behavior."⁸⁵ And materialists will insist that it does not sit well with what we know from modern neuroscience. In response it must, first of all, be reiterated that the Aristotelian-Scholastic tradition Ross represents does not deny that in the normal case material processes are *necessary* for thought, but only that they are *sufficient* for it.

To see how a human thought has, in the normal case, material aspects as well as the immaterial aspects we have been considering so far, consider *sentences*. The English sentence "Snow is white" conveys the same proposition whatever mate-

⁸⁴Ibid., 19–20. What follows is my paraphrase of their argument.

⁸⁵Dillard, "Two Unsuccessful Arguments for Immaterialism," 279.

rial form it takes, whether spoken, written, or typed into a word processor. The spoken, written, or typed German sentence “Schnee ist weiss” also conveys the very same proposition, and that proposition could be conveyed too not only in some other natural language but in even more exotic ways—through Esperanto, say, or encoded in some computer language. So, the propositional content of a sentence cannot be reduced to any of its material or linguistic properties. All the same, we typically convey and entertain a proposition via the *medium* of a sentence. As Frege put it: “The thought, in itself immaterial, clothes itself in the material garment of a sentence and thereby becomes comprehensible to us. We say a sentence expresses a thought.”⁸⁶ We do not “see” propositions “naked,” as it were; they rarely if ever leave the house except in sentential garb. Thus while what we grasp when we grasp the proposition that snow is white is not *identical* with the English sentence “Snow is white,” what we grasp is nevertheless grasped *through* that English sentence (or through the German sentence “Schnee ist weiss” or a sentence of some other language).⁸⁷

Now when the sentence is spoken, written, or typed, the material medium will be compression waves in the air, ink marks, pixels, or the like. When it is entertained mentally, the medium will be a phantasm or mental image (whether visual or auditory), and the Aristotelian-Scholastic tradition regards that as something material. The conveying or entertaining of concepts without putting them together into complete thoughts will not involve the use of sentences, but it will still involve the use of either individual words, or pictures, symbols, or the like, whether written, spoken, drawn, or imagined. In this way our intellectual activity, though it cannot in principle be entirely material, is nevertheless always conducted through material media. As Aquinas writes:

Although the intellect abstracts from the phantasms, it does not understand actually without turning to the phantasms.⁸⁸

[I]t is clear that for the intellect to understand actually, not only when it acquires fresh knowledge, but also when it applies knowledge already acquired, there is need for the act of the imagination and of the other powers. For when the act of the imagination is hindered by a lesion of the corporeal

⁸⁶Frege, “The Thought: A Logical Inquiry,” 292.

⁸⁷This is not to say that the mental imagery involved in entertaining propositions *must specifically* involve auditory or visual imagery of words or sentences. As David Clemenson has pointed out to me, that claim would require further argumentation. For present purposes, we need not rule out the possibility that propositions could be entertained via other sorts of imagery. The point is just that the conscious entertaining of a sentence provides a vivid illustration of the way in which a thought has both immaterial and material aspects.

⁸⁸*Summa theologiae* I, q. 85, a. 5, in St. Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province (Notre Dame, IN: Christian Classics, 1981).

organ, for instance in a case of frenzy; or when the act of the memory is hindered, as in the case of lethargy, we see that a man is hindered from actually understanding things of which he had a previous knowledge.⁸⁹

[I]n the present state of life whatever we understand, we know by comparison to natural sensible things. Consequently it is not possible for our intellect to form a perfect judgment, while the senses are suspended, through which sensible things are known to us.⁹⁰

From an Aristotelian-Scholastic point of view, then, it is hardly surprising that modern neuroscience has uncovered intimate correlations between neural activity and mental activity, or that damage to the brain can severely impair thought—any more than it is surprising that if we physically damage a sentence, its ability to convey its propositional content is diminished or destroyed despite that content's being irreducible to the sentence's physical properties. For the Aristotelian or Thomist to acknowledge that there is a physiological component to thought is not to make a desperate concession to modern scientific advances. On the contrary, it is merely to reaffirm something that Aristotle and Aquinas themselves already recognized.

It must also be kept in mind that for the Aristotelian-Scholastic tradition, human beings and their operations are, like other natural substances and processes, to be analyzed in terms of formal, material, efficient, and final causes, which together form an irreducible unity. In the case of a thought (such as the thought that snow is white), the neural processes associated with the relevant phantasms might be regarded as the material cause of a single event of which the intellectual activity of the rational soul is the formal cause. To be sure, the analysis of human thought and action in terms of the Aristotelian four-causal explanatory framework is a more complicated business than that suggests. But it is only if that framework is rejected that to acknowledge that there are immaterial aspects of thought can seem to open up what Dillard calls “an apparently unbridgeable gulf between thought and behavior.” And to reject it without argument would simply be to beg the question against the Aristotelian-Scholastic view.⁹¹

Having said all that, an implicit neuroscientific refutation of the main argument of this paper might nevertheless seem to be suggested by the subtitle of Paul M. Churchland's recent book, *Plato's Camera: How the Physical Brain Captures a Landscape of Abstract Universals*.⁹² Can it be that neuroscience has after all finally shown that something with the determinacy and strict universality of a

⁸⁹*Summa theologiae* I, q 84, a. 7.

⁹⁰*Summa theologiae* I, q. 84, a. 8.

⁹¹I provide an exposition and defense of the Aristotelian four-causal explanatory framework in *Aquinas* (Oxford: Oneworld Publications, 2009).

⁹²Paul M. Churchland, *Plato's Camera* (Cambridge, MA: The MIT Press, 2012).

concept could be embodied in “muscle-manipulating *trajectories* of . . . collective neuronal activities” and the like?⁹³

No, it cannot be, and Churchland does not actually try to show otherwise. Rather, what he does is to change the subject. He tells us that, contrary to what philosophers have supposed historically, the “fundamental unit of cognition” is not the judgment, with its susceptibility of truth or falsity and its logical relationships to other judgments, but rather “the *activation pattern* across a proprietary *population* of neurons.”⁹⁴ Nor does “theoretical understanding” consist primarily in the grasp of sentences or propositions, but rather in “an *unfolding sequence of activation-vectors*” within the brain.⁹⁵ Nor does knowledge fundamentally involve justified true belief. Rather, a “conceptual framework” turns out to be “a hierarchically structured, high-dimensional activation space,” and a “perceptual representation” turns out to be “a 10⁶-element neuronal activation vector.”⁹⁶ And Churchland tells us that while such neurological “representational vehicles . . . can have, or lack, sundry representational virtues,” they “are not the sorts of things to which the notion of Tarskian truth even applies.”⁹⁷

Now little or nothing in the way of argument is actually given by Churchland for any of these claims. A general materialism is simply taken for granted, and it is insinuated that since processes of the sort Churchland describes are the ones neuroscientists are discovering within the brain, they must be what cognition essentially consists in. To his credit, Churchland sees that the properties in terms of which thought is typically characterized—propositional content, truth and falsity, logical interrelationships, and so forth—simply cannot intelligibly be ascribed to the brute physiological processes he is interested in. But in that case, what reason can there be to characterize such processes as embodying “cognition,” “understanding,” “knowledge,” or the having of a “conceptual framework” in the first place? When stripped of propositional content, truth or falsity, logical connections, and the like, how does a pattern of neural activity constitute a “cognition” any more than the flexing of a tendon or the secretion of bile constitutes a cognition? In fact Churchland is simply equivocating, using terms like “cognition,” “concept,” etc., in a novel way, as *stand-ins* for physiological descriptions. He is in no way *explaining* cognition in terms of physiology. He is instead simply *ignoring* (or even *eliminating*) cognition altogether and talking about physiology instead, using the vocabulary of cognition but in a way that is mostly contrary to its usual sense.

I say “mostly” rather than “entirely” contrary because it is crucial to Churchland’s account that he retains the notion of “representation” in something like

⁹³Ibid., 3.

⁹⁴Ibid., 4.

⁹⁵Ibid., 22–3.

⁹⁶Ibid., 32.

⁹⁷Ibid.

its traditional sense. Now he does nothing to *justify* his use of the notion of representation; again, why a neural process counts as a “representation” any more than the flexing of a tendon or the secretion of bile counts as a representation is something Churchland does not tell us. (Indeed, he is critical of existing materialist attempts to explain representation in terms of the causal relations between neural processes and properties of the external world, in part for indeterminacy reasons of the sort briefly canvassed above.⁹⁸) Churchland simply *assumes* that the neural processes he describes constitute representations of a sort, and goes from there. In particular, he supposes that the brain embodies something like a “map” of the external world.

Now with this an Aristotelian-Scholastic writer like Ross can readily agree, at least for the sake of argument. But the map-like representations Churchland postulates do not amount to *concepts* of the sort Ross and other Aristotelian-Scholastic writers are concerned with. They are instead to be identified with *phantasms*, which such writers have always acknowledged to be physiological. And they are no less indeterminate and less than universal than are phantasms as traditionally conceived. Churchland makes heavy use of the analogy of a road map, and of the notion that the “homomorphism” between such a map and the streets and highways it represents is a model for the homomorphism between the “maps” embodied in the brain and features of the external world. But, of course, a road map is as indeterminate as any of the other material symbols and images we have considered. For instance, there is nothing in the material properties of the lines on a map that of themselves determine that an inch represents a mile (say) rather than ten miles; and a legend placed on the side of the map to explain this will itself be comprised of material symbols that are *themselves* indeterminate in their meaning.

Churchland gives us no reason to think that any “map” encoded in the brain will be any less indeterminate. And thus his position is no challenge at all to the argument defended in this paper. To be sure, it is only fair to acknowledge that arguments like Churchland’s may indeed help to elucidate the *material* aspects of thought, the role that phantasms and physiology play in cognition. But that there are also, and more importantly, *immaterial* aspects of thought is a thesis that no neuroscientific discovery has refuted or could refute. Ross has, perhaps more than any other recent philosopher, helped us to see why.⁹⁹

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⁹⁸Ibid., 97–8.

⁹⁹For comments on an earlier draft of this paper I thank David Clemenson, an anonymous referee, and audience members at a symposium on the theme Creation and Modern Science held at the Dominican House of Studies in Washington, DC, on April 14, 2012.