

NATURAL PHILOSOPHY AND ITS LIMITS IN THE SCOTTISH ENLIGHTENMENT*

Where does Newtonian natural philosophy end and metaphysics begin? Despite the fact that figures in the Scottish Enlightenment are univocal in their commitment to Newtonianism, these thinkers offer quite different answers to this question. The goal of this short paper is to explore the way in which the Scottish Common Sense School answers this question by way of an analysis of Thomas Reid's work. After briefly stating the key tenets of Reid's Newtonianism, I will examine his remarks about the limits of Newtonian natural philosophy as they appear in his major and minor works, and his unpublished writings. I conclude that Reid unsuccessfully demarcates his Newtonianism from his metaphysics. This finding has implications for our assessment of Scottish Enlightenment thought about the scientific method, materialism, natural theology, and common sense. This result runs counter to recent judgments that Reid is not a 'mysterian' in the sense in which that term is used in contemporary philosophy of mind (Copenhaver 2006, 12), though, since I am here interested in determining what Reid means and believes by studying what he writes, I will not visit that issue. I conclude the paper by highlighting the implications of this tension in Reid for the legacy of the Common Sense School and for philosophy in Scotland in the nineteenth-century, and with a Humean analysis of Reid's skeptical inclinations.

1. Context

Newtonianism meant many things to many people in the eighteenth century (Schofield, 1978). Browse the work of members of the Scottish Common Sense School, including the writings of George Turnbull (2005 I, 5–6, 47–66, 439, but see also McCosh 1875, 99), Alexander Gerard (Gerard 1758–59, cited in Robinson 1989, 155), Colin Maclaurin (Maclaurin

1968, 22), John Gregory (Gregory 1765, 68), David Fordyce, Thomas Reid, and even David Hume, and you will find a two-fold application of the Newtonian method to matter and to mind.

For Hume and Maclaurin, the mind's *operations* can be studied through the Newtonian method, and its application to the mind leads to skepticism. This is because Newtonianism is committed to Skepticism generally since it asserts that we cannot know efficient causes operative in nature. The Newtonianism of Priestley and Hartley prompts a materialistic analysis of the mind's *operations* and *substance*. That is, they believe that Newtonianism applies to the study of the mind because they believe that the mind is explicable by appeal to matter alone. For Turnbull, Newtonianism leads to Berkeleyan idealism *via* common-sense commitments. Turnbull takes Newtonianism as far as he can within the realm of natural philosophy, but this leaves our common-sense commitments—the belief that there are minds, that I am the same person over time, etc.—intact. Each of these forms of Newtonianism produces significantly different results because their authors differ about the scope of Newtonianism *vis-à-vis* efficient causation and the mind.

Reid's advocacy and adoption of a Newtonianism is more explicit than his contemporaries'. First, it requires natural philosophers to make "patient observation[s], by accurate experiments." Put another way, Newtonianism does not permit the natural philosopher to proffer hypotheses (E 235a–b/49–50; cf. E 271a–b/120–21; E 397a/371; AC 527a). This makes Reid a bottom-up empiricist who begins with experiences of objects in the world from which he draws law-like generalizations about the interaction between world and mind. Hume instead moves top-down from a hypothetical philosophy of mind based upon impressions and ideas, proffered in the opening pages of the *Treatise*.

Second, Newtonian explanations are restricted to laws, which Reid takes to imply that causes are unimportant for scientific knowledge. Laws Reid has in mind include those that govern the relationship between three-dimensional objects and their corresponding visible figures, which fall under his "geometry of visibles." Given data about the dimensions of the facing surfaces of an object, and information about its distance from the eye, Reid can identify how that object will appear, or in other words, he can determine its visible figure when an eye is set at a known distance from it. This derivation is bidirectional: "in like manner, we may, by math-

ematical reasoning, from the visible figure, together with the distance of the several parts of it from the eye, infer the real figure and position" (I 193b/188).

Third, despite laws like this, Reid insists that we state such laws without using causal terminology. In rare cases in which he does use such terminology, he recommends its use be governed by the seemingly innocuous proviso that we are only speaking of physical causes. "[W]hen physics shall be carried to the utmost perfection, there would not be found in the whole science such a conception as that of a cause" (Reid 2001, 7; see EAP 526a and C 142). Newton's genius lay in identifying general laws to explain the phenomena; he did not mix metaphysics with natural philosophy, and so he did not posit general or particular efficient causes within his natural philosophy (EAP 527a). Reid restricts the philosophical use of the term 'cause' to refer to agent causes only (E 478/446b; E 503/457b; E 497/455a). Reid's commitment to efficient causes is not a conclusion from his Newtonianism but rather from his common-sense commitments.

Fourth, Reid emphasizes the first two of Newton's *regulae philosophandi*:

Rule 1. No more causes of natural things should be admitted than are both true and sufficient to explain their phenomena. (Newton 1999, 794)

Rule 2. Therefore, the causes assigned to natural effects of the same kind must be, so far as possible, the same. (795)

Reid debates the first rule and its application to the materialist study of the mind with Joseph Priestley. Reid's arguments against Priestley's approach occur in the notes for his review of Priestley's *Hartley's Theory of the Mind*, of which he composed five versions (McCosh 1875, 192). (These are now collected in *Thomas Reid on the Animate Creation*, or 'AC'.) Their disagreement concerns the implications of the claim that explanations must be both true and sufficient to account for the phenomena. Reid takes this opportunity to observe that Newton explicitly uses the term 'true' here because he is not referring to efficient causes in these rules (AC 187; C 142–43).

In one sense made popular by Hume, Reid is not a Newtonian. Hume emphasizes Newton's use of inactive matter being pushed around by insensate forces as a model of the mind. The Humean mind is a receptive organ passively processing transactions of ideas and impressions. Ever

after, Hume has been described, first by himself, as a Newtonian on this count. Reid, though, holds that the mind is active and has active powers, thereby repudiating any analogy between the study of body and mind. This, however, is the first indication that the mind lies beyond Newtonian natural philosophy.

2. *Limits of natural philosophy in the major works*

In the major works Reid refers to the limits of natural philosophy in several places (I 6.21; E 2.–4 and 3.7). Reid addresses this issue when discussing the physical apparatus making human perception possible. Perception requires a medium through which the object is put into contact with our sensory organs. Material impressions are then conducted through the nervous system. Reid cautiously remarks, “probably, by means of the nerves, some impression must be made upon the brain,” then adds, “The impression made upon the organ, nerves, and brain, is followed by a sensation, . . . And, last of all, this sensation is followed by the perception of the object” (I 186b/174). Here Reid does not grant that brain activity “causes” or “produces” a sensation; consistent with the prohibition on causal language, ‘followed by’ connotes Humean constant conjunction.

Reid’s analysis may amount to nothing more than a universally quantified parallelism (I 187a/175). From Reid’s brusque dismissals of Leibniz’s pre-established harmony (E 308b–9a/191) and Malebranche’s occasionalism (E 265a–66a/109–10), I infer he wants much more than this. A page prior, Reid gives voice to his Newtonian doctrine. “We know very little of the nature of some of these operations; we know not at all how they are connected together, or in what way they contribute to that perception which is the result of the whole” (I 186b/174). This reluctance surprises the reader since Reid has just made claims about the physical process of perception.

Reid’s claim that the connection between impressions and sensations is “too subtle to be discovered by our senses” (I 187a/175) indicates that material impressions operate in ways that are beyond our ability to understand.

But how are the sensations of the mind produced by impressions upon the body? Of this we are absolutely ignorant, having no means of knowing how the body acts upon the mind, or the mind upon the body. When we consider the nature and attributes of both, they seem to be so different, and so unlike, that we can find no handle by which the one may lay hold of the other. There

is a deep dark gulf between them, which our understanding cannot pass; and the manner of their correspondence and intercourse is absolutely unknown. . . . who knows but their connection may be arbitrary, and owing to the will of our Maker? (I 187a–b/176)

These passages from the *Inquiry* constitute evidence for our inability to have knowledge of the mind and its causal relations through Newtonian natural philosophy. The prohibition Reid issues in this passage is justified by his failed attempt to observe events connecting mind and brain, to conduct experiments about the two and to reduce their connections to general rules. Reid's use of Newtonianism is oddly directed at informing us about what we do not—and apparently, cannot—know about the world. This is also interesting because Reid links together skepticism about the mind with his theological obeisance to God's will.

Whereas in the *Inquiry* he only describes a constant conjunction between the physical activity of the nerves and brain, and mental sensations, at *Intellectual Powers* 2.2 he describes a stronger relation. Reid argues for a counterfactual dependency of mental states upon the activity of the nerves and the brain: "A second law of our nature regarding perception is, that we perceive no object unless some impression is made upon the organ of sense, either by the immediate application of the object, or by some medium which passes between the object and the organ." He says this counterfactual relationship holds of each sense (E 247b/74). This remains consistent with a form of dualist parallelism.

Reid next criticizes other accounts of the connections between mind and brain by clarifying the implications of his method. His primary foil is David Hartley's theory according to which the nerves transmit material impressions by vibrations from their reception in the organs to the brain (Hartley 1971; see Allen 2002, chs. 3 and 5). Hartley observes an explanatorily useful causal dependence of mental operations like sensations upon brain activity. Reid explains Hartley's theory: "there is a certain connection between vibrations in the medullary substance of the nerves and brain, and the thoughts of the mind; so that the last depend entirely upon the first, and every kind of thought in the mind arises in consequence of a corresponding vibration. . . ." (E 251b–52a/84). According to Hartley, physical events are the efficient causes of all our mental events in virtue of vibrations through the nervous system, which in turn have effects on the brain.

Reid criticizes Hartley on the grounds that he has not made significant advances over earlier (speculative and false) pneumatic hypotheses, or the requisite observations to justify his claims (E 252a/84). Besides, Hartley's explanations, even if true, are insufficient to account for the phenomena (E 252b/85). This is a textbook application of Newton's first rule. But Reid moves from criticizing Hartley to disparaging his work. Reid says Hartley "is reduced to the necessity of heaping supposition upon supposition, conjecture upon conjecture, to give some credibility to his hypothesis" (E 252b/86). Reid offers a modal constraint on our study of the mind redolent of contemporary mysterian theories of mind: "We cannot, indeed, shew how any vibration should produce the sensation of sound. This must be resolved into the will of God, or into some cause altogether unknown" (E 253a/86). Reid's denial of Hartley's hypothesis itself begins to take on the air of a hypothesis because his application of Newton's first rule is injudicious. Reid's alleged evidence against Hartley consists in *a priori* speculation about the abilities of vibrations to convey complex information. We know that sound in all its complexity is conveyed by nothing other than vibrations transmitted through the eardrum to the bones of the inner ear, onto the fluid-filled cochlea. Furthermore, Reid himself explicitly appeals to the capacity of vibrations to convey complex information in his discussion of hearing (E 253a/86). Here, too, Reid uses Newtonianism to draw up boundaries about what we cannot know through observation.

Wolterstorff nicely describes this theme in Reid: "What lies at the bottom of Reidian epistemological piety is acknowledging the darkness—or the 'mystery', as Reid sometimes calls it. . . . [I]t becomes evident that darkness is one of the most pervasive themes in his writings" (Wolterstorff 2001, 256; cf. 259). Knowledge of the limits of knowledge itself is imperative for the philosopher who aspires to true wisdom. But Wolterstorff masks a disquieting problem in Reid by praising him for his "humility and active gratitude" and "trust" (260–61). Had Wolterstorff (in his 2001) considered Reid's manuscripts on dualism and materialism (published as *Animate Creation* in 1995), he would have had to have traded his honeyed and ennobling description for something less pleasant and more true to fact. Even in the major works, more frequently than not, Reid's appeals to Newtonianism are not directed at the discovery of laws through observation, but instead function to prohibit a materialist science of the mind. And in the minor works the limits of knowledge transmogrify into a veiled appeal to ignorance, which I now argue.

3. *Limits of natural philosophy in the minor works*

What I refer to as the set of Reid's "minor" works includes his correspondence, remarks in Wise Club meetings, notes for lectures, drafts of his review of Priestley's *Hartley's Theory of the Human Mind* (1775), and the anonymously published version of this review. (Priestley 1775 is an exegesis and discussion of David Hartley's *Observations on man, his frame, his duty, and his expectations* [1972].) I want to explain and assess Reid's modifications of his Newtonianism when it is not on full public display.

One concise and complete expression of the limits he places on natural philosophy occurs in a letter to Kames. Over the years, Reid witnesses Kames shifting toward allowing appeal to material efficient causes in natural philosophy. Kames says a realist methodology must seek efficient causes, and he is worried about Berkleyan idealism or Malebranchean occasionalism infecting Reid's allegedly common-sense philosophy. Kames's objections to Reid's constricted Newtonianism irritated Reid, as Reid's 16 December 1780 letter shows. Reid includes an uncharacteristically brief salutation and chooses not to compose a letter as such. Instead he enumerates 22 points in his defense, some of which read as follows:

9. By the Cause of a Phenomenon nothing is meant but the law of Nature, of which that Phenomenon is an instance or a necessary consequence. The Cause of a body's falling to the ground is its gravity. But gravity is not an efficient Cause, but a general Law that obtains in Nature of which Law the fall of this Body is a particular instance. . . .

11. Efficient Causes properly so called are not within the Sphere of natural Philosophy. Its business is, from particular facts in the material World, to collect by just Induction the Laws that are less general, and from these the more general as far as we can go. And when this is done, natural Philosophy has no more to do. (C 142-43)

Were Kames to ask Reid what is the cause of a billiard ball's movement across a table, Reid is barred from responding that it is the mass and motion of the billiard ball that hit it. Reid must offer an effete protest, as if saying, "This is a misuse of the term 'cause' and this does not fall within the ambit of natural philosophy. I know only that this conforms to a more general pattern of constant conjunctions, which Newton has shown bear mathematical relationships." This is odd both for a common-sense philosopher, and for someone who exhibits fervent concern to avoid skepticism about the material world. In short, this sounds like Hume.

Reid's obfuscatory retort, iterated throughout the correspondence, prompts Kames to complain that Reid's method "damps the Spirit of Inquiry" (C 140). Reid addresses this gripe here:

To confess Ignorance when one is conscious of it, I take to be a Sign, not of Pride, but of Humility, & of that Candor which becomes a Philosopher; and so I meant it.

2. . . . Now, my Lord, I have, ever since I was acquainted with Bacon & Newton, thought that this Doctrine is the very Key to Natural Philosophy, & the Touchstone by which every thing that is Legitimate & Solid in that Science is to be distinguished from what is Spurious & Hollow.

3. I would discourage no Man from conjecturing, onely I wish him not to take his Conjectures for Knowledge, or to expect that others do so. (C 140)

Reid does not pause to make the implications of a denial of Reid's non-interactionist substance-dualism clear to Kames, which might have been indelicate. With Priestley, an avowed antagonist, Reid is explicit.

Reid receives hints about the extent of Priestley's materialism from his *Examination* (1774), but only by reading Priestley's abridgement of Hartley's book, titled *Hartley's Theory of the Human Mind* (1775), does he understand its philosophical roots. Whereas Hartley retains remnants of dualism in his *Observations* (AC 154–55), Priestley dispenses with it and affirms that all our mental powers rest on nothing more than the physical structures of the brain. Reid's response to Priestley is telling as much for what he writes as for what he omits, as Alan Tapper observes. Priestley argues that materialism is more plausible than dualism because: (a) substance dualism leads to problems about causal interaction; related, (b) the universal correspondence between mind and brain is better explained by materialism; (c) Newton's rules themselves show materialism to be likelier than not; and (d) the active nature of matter obviates the need to posit spiritual substance. Reid neglects to consider the first two arguments, which reveals a decisive dialectical miscue on his part (Tapper 2003, 102–03). To make matters worse, Reid fails to address Priestley's arguments from points (c) or (d).

Reid says,

The Revd Dr Priestley has . . . endeavored to support [materialism] by new Arguments, drawn from principles of modern Philosophy, by the Rules of Philosophising laid down in the *Principia* of Sir Isaac Newton. The Sum of

the System is, that Man is not, as is commonly believed, compounded of two Substances, to wit an unthinking Substance which we call the Body, and a thinking substance which we call the Mind, but is wholly Material, That the thinking part of Man is his Brain, which requires onely a proper Organization to produce Sensation, Thought, Reasoning, and all the Mental Powers of Man. (AC 165; repeated at AC 173; see C 91)

For Priestley, matter is not merely one aspect of the efficient cause of mental events. Reid's use of 'onely' and 'all' signals that Reid (correctly) interprets Priestley as holding that matter and matter alone causes all human mental events.

Hartley's theory says sensations and vibrations are, in Reid's words, "totally coincident." Hartley affirms that both sensations and vibrations exist and are necessarily connected. Priestley defends the materiality of the soul, but he endorses Hartley's theory. This befuddles Reid. In one of the few places in which the draft and published review diverge, in the published version Reid says, "Whereas Hartley establishes only a *natural and necessary connexion*, Priestley will have an *absolute identity*" between "vibrations in the medullary particles of the brain and nerves" and "sensations" (Reid 1775, 383–84; my italics). So Reid adds, "Priestley's notion of the materiality of the soul makes the absurdity still greater, or at least more glaring." Priestley's affirmation of the necessary connection between a sensation event and a state of the brain and nerves seems inconsistent with his materialist theory of the soul on which, thinks Reid, sensations should be nothing over and above the brain state.

Reid is assessing the conceptual relationship between the limits of natural philosophy and the mind. His remarks suggest that questions about the *substance* of the mind, in contrast to questions about its *operations*, are outside the domain of Newtonian natural philosophy. Once faced with the specter of materialist explanations, Reid strengthens and widens the scope of the limits on philosophy in his papers on materialism.

A sampling of remarks illustrates this propensity on Reid's part. (a) About the relationships between muscles, nerves, and brain, Reid categorically says, "These are Mysteries beyond the limits of our Understanding; and all the Attempts made to make them intelligible have been in vain" (AC 118). (b) "The ways by which animals and vegetables produce their kind are various and all equally mysterious & incomprehensible to human understanding" (AC 225). (c) He says, of Locke's

thinking matter, “Far be it from us to limit the Power of the Almighty in any thing that is possible to be done” (AC 230). In this concession to Locke, inspired by methodological skepticism, Reid allows that it is in principle possible that God can make matter think. But Reid refrains from claiming to have *knowledge* of this modal claim about possibility because “we know so little about Substances of any kind. . . .” (AC 233). In other words, we cannot know even that it is possible that matter think. These comments are in addition to his general skeptical pronouncements about our inability to know efficient causes (C 97, 127, 139, 144, and 158; see EAP 526b).

The division between natural philosophy and metaphysics marks a watershed for Reid. Metaphysics is not subject to the rules of natural philosophy. Once in the realm of metaphysics, Reid frees himself to discuss efficient causes through his common-sense first principles. He is even able to attain “certainty” about his beliefs about efficient causes, as we will see next.

4. Active Matter and Efficient Causes in the minor works

The divide between the mental and physical worlds—what Reid calls the “vast interval between body and mind” (E 11/216b)—leads Reid to adopt certain tactics as he enters scientific disputes, particularly about the nature of matter. Upon the 18th century debate about active matter hang some of the central arguments for materialism in Reid’s milieu. By affirming that mind is active and matter inactive, Reid paves the way to his claim that one must invoke activity arising from outside the natural order to account properly for the existence, order, and motion of matter.

Whereas earlier Reid had refrained from positing hypotheses by keeping his lips sealed, when he attempts to refute the thesis that matter possesses innate activity, he evidently feels he cannot stiff-arm demands for explanation with an appeal to ignorance. First he affirms that we cannot know that the muscles and nerves account for our voluntary actions. That claim lies within Newtonian philosophy insofar as Reid is ruling out a physical explanation for a phenomenon. But immediately following this remark we witness a spillover effect in which he shifts seamlessly from Newtonian methods to an appeal to common-sense metaphysics.

We have a natural Conviction of our being the Cause of our voluntary actions, and therefore accountable for them. This Conviction, which is the

Work of Nature, and of the greatest Importance in Life, ought not to yield to Physical or Metaphysical Speculations. Nor indeed can the System of occasional Causes, though adopted, overturn it. For he that believes a certain Effect to be in his Power and exerts his Power to effect it, is undoubtedly in moral Estimation the Cause of that Effect and accountable for it. whether in Physical Consideration he be really the Efficient, or onely what the Cartesians call the occasional Cause. This Dispute therefore about occasional Causes, as it seems hardly capable of a certain Determination, is of little Importance but to convin<c>e us how ignorant we are of our own Frame, & Make. (C 120)

Disagreements about the nature of human agency only obscure the more important conclusion that people are, by a "moral Estimation," the causes of their actions. When Reid takes solace in our "natural Conviction" that humans are agents of efficient causation, he is not conducting Newtonian philosophy. In this context Reid is appealing to the third of his contingent, common-sense first principles to take him where Newtonianism could not go.

Preservation of a Christian version of the soul and substance dualism is a supplementary motivation for appealing to ignorance of our "Frame, & Make" in his attack upon the theory of active matter.

So far this System [*viz.*, that humans are not "compounded of two Substances" but are "wholly Material"] is common to Dr Priestley and former Materialists. But the addition made by him to the ancient System is, That Matter is not an Inert Solid & Impenetrable Substance, as it has commonly been supposed to be. [Priestley] has discovered a new essential property of Matter, namely inherent powers of Attraction & Repulsion. (AC 165; repeated at AC 173)

Priestley was of the opinion that, if matter were active, the appeal to God in explaining natural events would be unnecessary since the appeal to active matter and its intrinsic properties would be capable of accounting for a range of biological and chemical phenomena.

One course of action open to Reid is to refute Priestley's appeal to active matter by carefully examining the scientific evidence on its behalf. As early as 1744, Abraham Trembly had published results of his experiments on the fresh-water hydra, which fueled support for active matter. Reid could have stayed true to his vision of Newtonianism and discredited the scientific pedigree of Priestley's reasoning by applying Newtonian methods to Trembly's observations and experiments on behalf of active matter.

But Reid takes a sharply different tack by assuming that matter is inactive. He says,

The distinction of the different classes of Material beings being thus ascertained I apprehend that from the inactivity of Matter compared with the Phenomena of the Material World we may draw these two conclusions. 1 That all the inanimate Matter that falls within our view is constantly acted upon by something immaterial. 2ly That both vegetables and Animals are United to something immaterial, by such a Union as we conceive between Soul and Body, which Union continues while the Animal or Vegetable is alive, & is dissolved when it dies. (AC 218–19)

One might object that “peculiar combinations” of matter result in activity, or in other words, complex, inter-working states of minute portions of matter might be used to explain the activity and life of, say, a carrot. To this, Reid responds, “by no means.” “The Animated Matter has united to it a Principle of Life, which pervades the whole Animal or Vegetable, and Unites it into one being. . . .” (AC 224). He explores what this “Principle of Life” is but doesn’t get far since “we are at a loss to give a distinct Answer” (AC 224; see Wise Club minutes at Aberdeen MS 2131/6/1/17, 1r). This appeal to ignorance frees him to offer a metaphysical hypothesis:

From all that has been said it seems reasonable to conclude that as inanimate Matter is constantly acted upon by immaterial Beings so as to produce its Gravitation Cohesion and the various Corpuscular Affinities and Attractions which Natural Philosophy has discovered, so Animals and Vegetables are animated by some immaterial Being which is the Efficient Cause of their Animal & Vegetable Functions while they live & which is separated from them when they die. (AC 229; see AC 226–27)

Reid is borrowing from Samuel Clarke’s argument that Newtonian gravitation gives evidence of the existence of immaterial agents since they are needed to animate it (Clarke 1738, iii 759–849). He appeals to immaterial intervention to explain certain muscle movements, traits of intestinal worms, and the instincts of infants.

5. *Between Skepticism and Materialism*

Reid is in a conundrum. First, he prohibits appeal to efficient causes within natural philosophy. Second, he forbids the use of hypotheses in natural philosophy that are not supported by “patient observation[s]” and “accurate experiments.” But beyond the line separating natural philosophy from metaphysics, Reid allows himself the freedom to proffer several hypotheses untestable by the very Newtonian methods Reid champions. Not only that, but his hypotheses include appeal to efficient causes.

This does not imply that Reid is formally inconsistent. He consistently does not appeal to hypotheses in the domain of Newtonianism. But I do infer that Reid uses his Newtonianism for dialectical purposes in order to reclassify what materialists construe as a set of *scientific* problems into a set of *metaphysical* problems to which science cannot apply. At the same time, Reid enlarges the terrain of metaphysics so that it occupies ground that most of his contemporaries thought was sown and harvested by natural philosophy.

To this extent, I infer Reid is employing a double standard on philosophical explanation *unless* he has principled reasons for drawing the division between metaphysics and natural philosophy where he does. An optimistic interpretation, such as Wolterstorff's, infers that Reid has good reasons to distinguish metaphysics and natural philosophy in the way that he does, and has good reasons to be positing hypotheses in the realm of metaphysics, as he does. The cynical interpretation I have come to favor suggests that Reid draws the boundary between natural philosophy and metaphysics at the place he does in part because it allows him the conclusions he desires.

The optimistic interpretation is based upon comments in Reid's epistemology in which he emphasizes the incapacities of the human mind in general to plumb the secrets of the mind/body relation. However, a preponderance of textual evidence shows that Reid offers a number of hypotheses about many different physical events that seek to explain such events by appeal to the supernatural. The "God of the gaps" strategy Reid exemplifies in these unpublished passages favors the cynical reading.

Reid writes that all vegetables have an immaterial being causing them certain effects that are necessary for the fulfillment of their life processes. Then he says, "It may be asked to what Order of Beings we must refer those immaterial Agents that act upon inanimate Matter, & those by which Animals and Vegetables are Animated? Are they thinking intelligent Beings or not are they moral or immortal? What becomes of the Soul of Plants and Animals when they die[?]" Reid pulls up his pen to leave us in darkness: "I am not so much moved by [these] Questions," adding, "To these and such Questions I can answer onely by confessing my Ignorance" (AC 229).

This tendency in Reid is difficult to appreciate, so I offer an analogy with present-day Intelligent Design Theory, which holds that since natural phenomena cannot be adequately explained within the confines of

materialism, an appeal to God as efficient cause is appropriate. Advocates of Intelligent Design Theory are sophisticated about the use of God in scientific investigation. That is, while appeal to God is necessary to explain the complexity of certain natural systems, appeal to God is not to be made in typical scientific explanations. Its proponents make dialectical use of the limits of the scientific method to find efficient causes in order to reclassify what naturalists construe as a set of scientific problems (about the etiology of complexity in the natural world) into a set of metaphysical problems to which the scientific method cannot apply. Its proponents wield their own account of the limitations of natural science to prohibit knowledge of efficient causes of biological complexity thereby replacing naturalistic with supernaturalistic explanations.

The best way of framing this tension in Reid is as a challenge about what is to be included within the domain of natural philosophy. Different responses to this issue in eighteenth-century Scotland were to have great influence on the development of philosophy in Britain—and in America—in the nineteenth century. This is in part due to Reid's prominent role in the Scottish Common Sense School and the influence of his student, Dugald Stewart, on many of the founders of early American universities. The division between empirical psychology and traditional philosophy in Scotland in the nineteenth century reflects the fact that the response to this problem is as divided in the generation of philosophers after Reid as it is divided between Reid's major and minor works. Knowledge of the material mechanisms of the mind became Alexander Bain's pursuit because he was willing to consider materialist explanations for mental events, whereas James Ferrier sought to preserve the traditional domain of the philosopher through idealism. In the early decades of *Mind*, this tension is played out in fascinating detail as its contributors actively debated the limits of natural philosophy.

My speculative interpretation of this tension at the heart of Reid's philosophical division of labor is appropriately indebted to Hume's advice to religious leaders. In his *Dialogues*, Philo counsels Cleanthes that the best foundation for religious belief occurs by way of becoming "thoroughly sensible of the weakness, blindness, and narrow limits of human reason." Cleanthes recommends that, "if certainty or evidence be expelled from every other subject of enquiry, it will all retire to these theological doctrines, and there acquire a superior force and authority" (Hume 1993, 34, 35; cf. 130). Reid's attempt to defend the existence of the Christian soul

against Priestley exemplify Cleanthes' argumentative strategy. Cleanthes' remark resonates with what Hume believes is the proper interpretation of Newtonianism. Hume describes Newton as "the greatest and rarest genius that ever arose for the ornament and instruction of the species. . . . While Newton seemed to draw off the veil from some of the mysteries of nature, he shewed at the same time the imperfections of the mechanical philosophy; and thereby restored her ultimate secrets to that obscurity in which they ever did and ever will remain" (Hume 1770 viii, 350–51).

6. Reid and posterity

Lest we take the wrong impression from the argument presented in this paper, let us remember Newton. He was an impassioned alchemist, and devoted extensive effort in understanding and applying Biblical prophecies. Nonetheless, his reputation as received through future generations was genius and light. This is as it should be. His quixotic researches did not encroach on his natural philosophy in ways that detract from our appraisal of the brilliance of the *Principia* or the *Optics*. Not only this, but Newton and Reid are considerably more judicious in their attempts to accommodate metaphysical commitments through the division of labor in their philosophical systems than are philosophers like Leibniz or Berkeley, who endorse their principal metaphysical doctrines to preserve the defensibility of their religious beliefs. Reid offers scant reason for his readers to perform grand *reductios* on his metaphysical commitments after his readers arrive at the destinations to which Reid carries these commitments, in contrast to the way we appraise Berkeley's idealism or Leibniz's pre-established harmony. I leave a comparison of metaphilosophies and philosophical methods of these philosophers for another occasion and say only this. Though I have argued that Reid's demarcation of natural philosophy from metaphysics is not as principled as it is expedient, this alone does not seriously tarnish his reputation as a philosopher of the first rank or as the best epistemologist of the eighteenth century.

To his credit, Reid refrains from publishing those speculations that do his reputation the most harm. Reid was aware of the historiographic questions this would raise in his students in future generations. Perhaps he would wish them to take account of an episode in his life in October 1782. Reid was faced with the delicate matter of giving honest comment upon Lord Kames's book-length draft of what Kames had provisionally entitled

Essays upon the Laws of Motion. With gentle care, and with a foresight for Kames's reputation through posterity, Reid advises him against publishing. Reid proceeds upon what he calls a "strong Inclination to take a Liberty which I am afraid I am not intitled to" in order to say that he thinks it is not in Kames's best interest to deliver this work to the public. Ironically, this is because Kames "mixed too much Metaphysicks with Physicks" (C 157–58). Kames sensibly chose to withhold publication. We can be pleased that Reid took his own advice.

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ABBREVIATIONS

- I Thomas Reid, *Inquiry into the Human Mind on the Principles of Common Sense*. (Reid 1994a & Reid 1997; see below).
- E Thomas Reid, *Essays on the Intellectual Powers of Man*. (Reid 1994b & Reid 2002; see below).
- EAP Thomas Reid, *Essays on the Active Powers of Man*. (Reid 1994c).
- C Thomas Reid, *The Correspondence of Thomas Reid*. (Reid 2002b).
- AC Thomas Reid, *Thomas Reid on the Animate Creation*. (Reid 1995).

The recent editions of Hume and Reid prompt a note about the conventions I will use to cite them. Brookes's editions of Reid's *Inquiry* and *Essays* are new and authoritative. I refer both to page numbers in them and to page numbers in Hamilton's sixth edition of those texts. 'EIP 277b/133' refers to page 277, second column, of Hamilton's edition of the *Intellectual Powers* and to page 133 of the Brookes's. The reference 'I 186b/174' refers to page 186, second column, of Hamilton's edition of Reid's *Inquiry*, and to page 174 of Brookes's.

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