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Hume on the Lockean Metaphysics of Secondary Qualities

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Abstract: Hume is widely read as committed to a kind of anti-realism about secondary qualities, on which secondary qualities are less real than primary qualities. I argue that Hume is not an anti-realist about secondary qualities as such, and I explain why Hume's remarks on the primary-secondary distinction are better read as abstaining from the realist/anti-realist debate as it was understood by modern philosophers such as Locke. By contextualizing Hume's discussion of the primary-secondary distinction in *Treatise* 1.4.4 as a response to a broadly Lockean understanding of the distinction, my analysis retrieves Hume's critique of the resemblance and inseparability theses that structure Locke's version of the distinction and establishes that Hume has epistemic reasons to reject Locke's metaphysical conclusions about the distinction.

The following remark from the *Treatise of Human Nature* is representative of the various passages in which Hume speaks of secondary qualities: "sounds, colours, heat and cold . . . according to modern philosophy, are not qualities in objects, but perceptions in the mind" (T 3.1.1.26; SBN 469).[1] According to what I shall call the standard reading of Hume, there is only one way to read such passages: Hume is committed to a kind of anti-realism about secondary qualities, on which they do not exist in the external world but are merely psychological reactions to the world.[2] I argue that the standard reading is mistaken about Hume's conception of secondary qualities, and I offer a new non-metaphysical reading of Hume's remarks

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that better situates him in opposition to the metaphysical understanding of the primary-secondary distinction held by his contemporaries, specifically Locke and corpuscularian natural philosophy. The outcome of my arguments is that while Hume acknowledges the mind-dependence of secondary qualities, he does not attach the metaphysical significance to this fact that Locke does, hence Hume does not regard himself as an anti-realist about secondary qualities.

Section 1 prepares the background for Hume's remarks about secondary qualities by explaining Locke's conception of corpuscularianism and of the primary-secondary quality distinction as a distinction in ontological kinds. In section 2, I argue that Hume's views about secondary qualities are best understood not as anti-realist, but as anti-metaphysical rejoinders to a broadly Lockean view.[3] On my reading of *Treatise* 1.4.4, "Of the modern philosophy," Hume targets Locke's two reasons for claiming that primary qualities like extension or solidity are more real than secondary qualities: first, the *inseparability thesis*, on which our ideas of primary qualities are inseparable from our ideas of matter; and second, the *resemblance thesis*, on which our ideas of primary qualities resemble the qualities of mind-independent objects. I reconstruct Hume's grounds for concluding that neither thesis is warranted by experience, and I explain his claim that only "the most extravagant scepticism" can come from metaphysically-freighted interpretations of the primary-secondary quality distinction (T 1.4.4.6; SBN 228).

My placement of Hume in a Lockean context distinguishes my reading from others that also reject the standard reading of Hume as an anti-realist about secondary qualities.[4] Specifically, interpreting Hume with an eye to Locke on resemblance and inseparability yields three interpretive payoffs that I develop in section 2. First, I provide a new reading of Hume's analysis of solidity that untangles two distinct lines of argument, one tackling Locke's use of resemblance and the other his use of inseparability (section 2.1). Second, I recover Hume's neglected argument against superaddition in *Treatise* 1.4.5, in which he critiques Locke's claim that causal accounts of the production of secondary qualities by the primary qualities of bodies flounder on the lack of resemblance between them (section 2.2.2). Third, I identify the following presupposition of Locke's metaphysics: primary qualities are real because our ideas of them resemble and are inseparable from non- or extra-perceptual objects; conversely, secondary qualities are not real because our ideas of them do not resemble and are separable from extra-perceptual objects. I argue that Hume finds this presupposition unintelligible because nothing, in his view, puts us in contact with anything ontologically different in kind from our perceptions. Hence, Hume commits to neither realism nor anti-realism about secondary qualities because he rejects the Lockean framework for the debate (section 2.3).

1. Locke on Primary and Secondary Qualities

In this section, I present Locke's understanding of the primary and secondary quality distinction, presupposing a certain interpretation of Locke's relationship to corpuscularian natural philosophy.[5] Section 1.1 develops Locke's views on secondary qualities in the context of corpuscularianism and his commitment to the inseparability and resemblance theses. Section 1.2 highlights a pair of metaphysical consequences of Locke's conception of secondary qualities.

1.1. Corpuscularianism and the Inseparability and Resemblance Theses

Locke's version of the primary-secondary quality distinction is informed by what he calls the "corpuscularian Hypothesis," although the distinction itself predates the hypothesis and can be drawn in different ways (Locke, *Essay* IV.3.16, 547).[6] The hypothesis is that the apparent variety of properties attributed to bodies can in principle be explained by the mechanical interactions of the material particles (corpuscles) that compose such bodies.[7] Corpuscularians like Robert Boyle argued that natural scientific investigation indicates that all corpuscles have a few basic, or primary, properties such as solidity, extension, and motion. Pursuant to their hypothesis' drive toward explanatory simplicity, corpuscularians reasoned that we might explain all other observable qualities of bodies by reference to these primary qualities and their combinations in various structural patterns (what the corpuscularians and Locke call intangible "textures"). As Boyle puts it in *The Sceptical Chymist*: "from these more catholic and fruitful accidents [namely, the universal and primary qualities] of the elemental matter may spring a great variety of textures, upon whose account a multitude of compound bodies may very much differ from one another" (476.) Corpuscularians then denominate as "secondary" those qualities that natural scientific investigation reveals are not basic to bodies as such but that merely appear to be. Secondary qualities are in turn explained as the result of the operations of the primary qualities of external bodies' corpuscles upon the primary qualities of the corpuscles comprising our body's sensory apparatus (Alexander, *Ideas, Qualities and Corpuscles*, 53, 72).

I shall assume that the corpuscularian hypothesis shapes Locke's way of drawing the distinction between primary and secondary qualities. According to Locke, when an object acts on our senses so as to give rise to an "Idea" of that object or body, we can become aware of the object as possessing certain properties or "Qualities" (*Essay* II.8.8, 134).[8] Our ideas are of two sorts of qualities, he argues, which we can distinguish according to how the qualities relate to the objects that caused them. In the following passage, Locke explains that "primary qualities" (for example, mobility, extension, and solidity) are those that can in principle explain the production of our ideas of all the properties of material bodies:[9]

> And thus I have, in a short draught, given a view of our *original Ideas*, from whence all the rest are derived, and of which they are made up; which if I would consider, as a Philosopher, and examine on what Causes they depend, and of what they are made, I believe they all might be reduced to these very few primary, and original ones, *viz. Extension, Solidity, Mobility*. . . . For by these, I imagine, might be explained the nature of Colours, Sounds, Tastes, Smells, and all other *Ideas* we have, if we had but Faculties acute enough to perceive the severally modified Extensions, and Motions, of these minute Bodies, which produce those several Sensations in us. (*Essay* II.21.73, 286–87)[10]

As this passage indicates, Locke's understanding of the primary-secondary distinction is allied with corpuscularian natural sciences' epistemological goal of explanatory asymmetry. Explanatory relationships run downhill until they bottom out in the interactions of the primary qualities of "minute bodies" or corpuscles. Primary qualities are thus, as Maurice Mandelbaum puts it, "basic in the order of explanation" because they track the figure and motion of the corpuscular bodies that are the primary causal agents in nature (18–19). Locke follows the corpuscularians in labeling as "secondary" those qualities (for example, colors, sounds, tastes, and smells) our ideas of which can be causally explained in terms of the primary qualities of bodies, rather than by attributing the colors, sounds, and so on to the bodies themselves.[11]

On Locke's view, the explanatory virtues of the corpuscularians' way of drawing the primary-secondary quality distinction reflect two insights that I will call the *inseparability* and *resemblance theses*. The inseparability thesis directs our attention to the fact that certain qualities are indissolubly bound up with external bodies or matter.[12] Locke, in fact, defines primary qualities as those intrinsic, or essential, to bodies:

> Qualities thus considered in Bodies are, First, such as are utterly inseparable from the Body, in what estate soever it be; such as in all the alterations and changes it suffers, all the force can be used upon it, it constantly keeps; and such as Sense constantly finds in every particle of Matter, which has bulk enough to be perceived, and the Mind finds inseparable from every particle of Matter. . . . These I call *original* or *primary Qualities* of Body. (*Essay* II.8.9, 134–35)

Locke names several qualities that he claims are inseparable from our ideas of matter: solidity, extension, figure, motion, and number. For example, Locke continues,

> Take a grain of Wheat, divide it into two parts, each part still has *Solidity*, *Extension*, *Figure*, and *Mobility*; divide it again, and it retains still the same qualities; and so divide it on, till the parts become insensible, they must retain still each of them all those qualities. For division (which is all that a Mill, or Pestel, or any other Body, does upon another, in reducing it to insensible parts) can never take away either Solidity, Extension, Figure, or Mobility from any Body, but only makes two, or more distinct separate masses of Matter. (*Essay* II.8.9, 135; see also II.13.11, 171–72)

What the inseparability thesis tells us, then, is that there are certain basic qualities that are common to all material objects as such. Locke accordingly labels these inseparable qualities "*original* or *primary Qualities* of Body."

Alongside these primary qualities that are inseparable from objects, we also register qualities that *are* somehow separable from the object. Color is a case in point. In Locke's example, porphyry is only reddish-white when there are both observers and a light source. Porphyry "*has no colour in the dark*" because such qualities are, strictly speaking, not really in the objects themselves. Color and other non-intrinsic qualities of bodies are thus secondary qualities, which Locke defines as "nothing in the Objects themselves, but Powers to produce various Sensations in us by their *Primary Qualities*, *i.e.* by the Bulk, Figure, Texture, and Motion of their insensible Parts, as Colours, Sounds, Tasts, *etc.* These I call *secondary Qualities*" (Locke, *Essay* II.8.10, 135).[13] Notice that, for Locke, a secondary quality like the "yellow" of a ripe lemon is not really a distinct kind of *quality* at all, but rather the undiscovered powers that bodies have, by means of their primary qualities, to act on the senses.[14] In sum, the inseparability thesis shapes Locke's distinction as follows: primary qualities are properties that objects possess intrinsically or independently of any percipient, whereas secondary qualities are nothing but powers that bodies have by means of their primary qualities to produce sensations in percipients.

Locke's resemblance thesis is a consequence of both the inseparability thesis, on display in his definitions of primary and secondary qualities, *and* the corpuscularian theoretical program of, as Peter Alexander puts it, explaining "*apparent* qualities in terms of others" (*Ideas, Qualities, and Corpuscles*," 190). Locke formulates the resemblance thesis as follows.

> [T]he *Ideas of primary Qualities* of Bodies, *are Resemblances* of them, and their Patterns do really exist in the Bodies themselves; but the *Ideas*, *produced* in us *by* these *Secondary Qualities*, *have no resemblance* of them at all. There is nothing like our *Ideas*, existing in the Bodies themselves. [Secondary qualities] are in the Bodies, we denominate from them, only a Power to produce those Sensations in us: And what is Sweet, Blue, or Warm

> in *Idea*, is but the certain Bulk, Figure, and Motion of the insensible Parts in the Bodies themselves, which we call so. (*Essay* II.8.15, 137)

Locke's invocation of resemblance must be handled with caution. As Mandelbaum notes, the resemblance thesis has sometimes been interpreted as if "Locke believed that the idea of a primary quality is a direct image of that quality, resembling it as perfectly as, say, a plaster cast might resemble the statue from which it was cast" ("Locke's Realism," 16–17). Yet, Locke's point is presumably not that our ideas of primary qualities are one-to-one correspondences with the primary qualities of bodies, as though my idea of fifty meters is itself fifty meters in extension.[15] Rather, in keeping with the corpuscularian explanatory program, Locke's resemblance thesis is the claim that our ideas of primary qualities resemble (are "patterned" after) their primary quality causes as those qualities exist in bodies themselves; conversely, our ideas of secondary qualities bear no similarity to their primary quality causes.[16] For example, ideas of motion, extension, and solidity resemble (give us accurate ideas of) the properties of corpuscular bodies that cause those ideas in us, but ideas of color do *not* resemble (do not give us accurate ideas of) the causally relevant properties of corpuscular bodies (Locke, *Essay* II.8.25, 142). Thus understood, the resemblance thesis reveals a representational upshot to the primary-secondary distinction (Locke, *Essay* II.8.18, 138).[17] By Locke's lights, our ideas of primary qualities represent their causes in virtue of resembling them, whereas our ideas of secondary qualities do not represent their causes in virtue of resembling them.[18]

1.2. Metaphysical Consequences of the Inseparability and Resemblance Theses

Locke takes the corpuscularian primary-secondary quality distinction to generate a pair of metaphysical consequences. The first concerns whether secondary qualities are real, and the second concerns whether the powers to produce secondary qualities are really powers that bodies could have by means of their primary qualities. I address these in turn.

At first glance it might appear as though Locke regards the corpuscularian *hypothesis* as just that, an hypothesis or epistemological conjecture about the sorts of properties that are "useful" guides to natural scientific investigations (*Essay* IV.3.26, 556). For instance, Locke expresses reservations about the ultimate "truth" of the corpuscularian hypothesis:

> But *as to the Powers of Substances* to change the sensible Qualities of other Bodies . . .; I doubt, as to these, whether *our Knowledge reaches* much farther than our Experience; or whether we can come to the discovery of most of

> these Powers. . . . I have here instanced in the corpuscularian Hypothesis, as that which is thought to go farthest in an intelligible Explication of the Qualities of Bodies; and I fear the Weakness of human Understanding is scarce able to substitute another. (*Essay* IV.3.16, 547–48)

Despite Locke's professed agnosticism in the above passage, the corpuscularian hypothesis does claim that certain qualities exist in all material bodies, and because of this its heuristic value can easily be read as a way of talking about metaphysical grounding.[19] As I shall argue, this metaphysical component of the corpuscularian hypothesis is inherent in Locke's understanding of the primary-secondary distinction as well.

In addition to promoting the epistemic virtues of their science, some corpuscularians were evidently committed to a *metaphysical hypothesis* as well, insofar as they take their science to dictate what is and is not part of nature. As Locke's mentor, Robert Boyle, puts it, "Nature is the aggregate of all bodies, that make up the world, framed as it is, considered as a principle, by virtue whereof they act and suffer, according to the laws of motion . . . it consists in a convention of the mechanical affections (such as bigness, figure, order, situation, contexture, and local motion) of its parts (whether sensible or insensible)" (*Origines of Formes*, 372). Boyle appears to be motivated by something like the following line of thought: the corpuscularians' explanatory hypothesis—on which, analysis of the primary qualities of corpuscles harbors fundamental explanations of natural phenomena—is inherently bound up with a metaphysical hypothesis, on which "nature" just *is* that which "falls under the categories of physical science," categories derived from the primary qualities of corpuscles.[20]

Locke was attracted to this metaphysical hypothesis as well, and it led him to a kind of anti-realism about secondary qualities. Locke's anti-realism about secondary qualities must be formulated with care, however. We should regard "secondary quality" as ambiguous in Locke between (i) our idea of the powers that bodies have by means of their primary qualities to produce sensations in us, and (ii) our idea of the essentially phenomenal qualities presented to us in those sensory experiences. Locke certainly does not deny that secondary qualities exist in the first sense.[21] However, Locke takes "real" to be equivalent to existing *not merely in the mind*, and so he does deny that secondary qualities are real in the second sense: there is no phenomenal quality corresponding to how blue looks, say, that really exists outside the mind. Hereafter, my use of "secondary qualities" is shorthand for our idea of the essentially phenomenal qualities presented to us in sensory experiences unless otherwise specified.[22]

Locke's anti-realist conclusion about secondary qualities appears in his discussion of both the inseparability and resemblance theses. Here is how Locke

weaves metaphysics into the contrast between qualities separable or inseparable from particles of matter:

> The particular *Bulk*, *Number*, *and Motion of the parts of Fire*, *or Snow*, *are really in them*, whether any ones Senses perceive them or no; and therefore they may be called *real Qualities*, because they really exist in those Bodies. But *Light*, *Heat*, *Whiteness*, or *Coldness*, *are no more really in them*, *than Sickness or Pain is in* Manna. Take away the Sensation of them; let not the Eyes see Light, or Colours, nor the Ears hear Sounds; let the Palate not Taste, nor the Nose Smell, and all Colours, Tastes, Odors, and Sounds . . . vanish and cease and are reduced to their Causes, *i.e.* Bulk, Figure, and Motion of Parts. (*Essay* I.8.17, 136–38)

Given the inseparability thesis, Locke concludes that because primary qualities are mind-independent properties intrinsic to bodies, primary qualities are real parts of the corpuscular fabric of nature. In contrast, because secondary qualities are merely mind-dependent, they are not real parts of the world revealed by corpuscularian science.

Locke's discussion of the resemblance thesis is likewise interspersed with a discussion of the metaphysical dimension of the primary-secondary distinction. For example, Locke writes,

> *Colours* and *Smells . . . and other the like sensible Qualities*; which, whatever reality we, by mistake, attribute to them, are in truth nothing in the Objects themselves, but Powers to produce various Sensations in us, and *depend on those Primary Qualities, viz.* Bulk, Figure, Texture, and Motion of Parts. . . . From whence I think it is easie to draw this Observation, That the *Ideas of primary Qualities* of Bodies, *are Resemblances* of them, and their Patterns do really exist in the Bodies themselves. . . . [But] there is nothing like our *Ideas* [of secondary qualities], existing in the Bodies themselves. (*Essay* II.8.14–15, 137)

What we may conclude from such a passage is that when Locke speaks of primary qualities, his use of "'primary' is thus equivalent to 'in the strict sense,'" as Reginald Jackson puts it ("Locke's Distinction," 56), by which Locke means that primary qualities are the only real properties. Secondary qualities, in fact, are mere placeholders for our lack of knowledge of the way the natural world works ("Locke's Distinction," 60).[23] Secondary qualities are therefore bad guides to ontology, because while we may in everyday life act and speak as if objects were colored, in reality there is nothing resembling that quality in the objects themselves.

To review, Locke discounts the reality of secondary qualities because they are mind-dependent phenomena that are separable from material corpuscles and that do not resemble their primary quality causes.

The second metaphysical consequence that Locke takes to follow from his conception of the primary-secondary distinction pertains to whether corpuscles have the power, by means of their primary qualities, to cause secondary qualities. I explain why Locke doubts that such powers exist in corpuscular nature in virtue of its primary qualities before presenting his speculation that God may have "superadded" these powers to nature.

Locke is skeptical of corpuscularianism's ability to explain mind-dependent phenomena, such as secondary qualities, in terms of the primary qualities of corpuscles. As Locke sees it, while corpuscularian natural science presents us with the existence of the primary qualities of corpuscular figure and motion in *bodies* and the existence of secondary qualities in *minds*, it does not present us with a causal connection between them.

> That the size, figure, and motion of one Body should cause a change in the size, figure, and motion of another Body, is not beyond our Conception. . . . But our Minds not being able to discover any *connexion* betwixt these primary qualities of Bodies, and the sensations that are produced in us by them, we can never be able to establish certain and undoubted rules [of their production]. . . . We are so far from knowing what figure, size, or motion of parts produce a yellow Colour, a sweet Taste, or a sharp Sound, that we can by no means conceive how any *size, figure, or motion* of any Particles, can possibly produce in us the *Idea* of any *Colour, Taste,* or *Sound* whatsoever; there is no conceivable *connexion* betwixt the one and the other. (*Essay* IV.3.12–13, 545)[24]

Locke is identifying an explanatory gap between the promissory note that corpuscularian natural science issues and what it delivers. He notes that the corpuscularians hold that "all natural Things . . . have a real, but unknown Constitution of their insensible Parts, from which flow [their] sensible Qualities" (*Essay* III.3.17, 418). Locke claims that corpuscularian science does not cash this out, leaving us in a state of "Ignorance" about the precise primary quality microstructure of objects. Consequently, Locke recommends giving up as "lost labour" the corpuscularian attempt to explain how sensible or secondary qualities "flow" from objects' primary quality microstructure (*Essay* IV.3.29, 558–59).

Perhaps surprisingly, Locke refuses to consider the possibility that the scientific jury is still out, that corpuscularian science may yet discover the exact causal powers that bodies have by means of their primary qualities. Locke's pessimistic stance turns on a number of issues surrounding his conception of scientific explanation,

which I can only schematically indicate here.[25] In general, as Edwin McCann puts it, Locke's pessimism is grounded in the thought that "we cannot see, even in the broadest terms, how it could be that primary qualities should cause sensations in perceivers, and it is of course in terms of the production of particular sensations in us that secondary qualities are defined" ("Locke's Distinction," 184). But what is it that Locke thinks we cannot see? Locke distinguishes three different limitations on our knowledge: "*First*, Want of *Ideas*. *Secondly*, Want of a discoverable Connexion between the *Ideas* we have. *Thirdly*, Want of tracing, and examining our *Ideas*" (*Essay* IV.3.22, 553). For present purposes, we can set aside the third limitation, which Locke explains as having to do with "the ill use of *Words*" (*Essay* IV.3.30, 561). Locke's first limitation refers to ideas that we lack for three reasons: (1) just as the blind person lacks the capacity for ideas of sight and colors, human nature may not equipped with the relevant capacities for some ideas; (2) other ideas, such as ideas of the flora and fauna on other planets, are too remote from our comprehension; and (3) still other ideas, such as ideas of the ultimate microphysical parts of matter, are too minute to be sensible (*Essay* IV.3.23–26, 553–57). We might think that, at least with ideas of remote or minute things, the barrier is not in principle insuperable and that with more powerful space-probes and microscopes, for example, we could asymptotically remedy our ignorance of at least some of the ideas that Locke claims we lack. However, his own view is that our knowledge of how secondary qualities arise from the primary qualities of bodies is limited by more than (what we might regard as) a contingent and remediable lack of the relevant ideas.

As Locke explains, there is a second limitation on our knowledge as well, which is the "[w]ant of a discoverable Connexion" between such ideas as we do have. For example, we have ideas of the primary qualities of bodies, and we also have ideas of secondary qualities, and it is "evident" that the former "produce in us" the latter. What we nevertheless lack, according to Locke, is an idea of how this causal connection transpires. One of the contributing difficulties hereabouts stems from a familiar asymmetry from the resemblance thesis, namely, there is "no affinity" or "correspondence" between secondary qualities and their primary quality causes. Locke writes, "the *Ideas* of sensible secondary Qualities, which we have in our Minds, can, by us, be no way deduced from bodily Causes, nor any correspondence or connexion found between them and those primary Qualities which (Experience shews us) produce them in us" (*Essay* IV.3.28, 558–59). More specifically, Locke appears to be impressed by the want of resemblance between how mental states act on each other, on the one hand, and how physical bodies act on each other, on the other:

> Matter, *incogitative Matter* and Motion, whatever changes it might produce of Figure and Bulk, *could never produce Thought*. . . . Divide Matter into as

> minute parts as you will, . . . vary the Figure and Motion of it, as much as you please . . .; and you may as rationally expect to produce Sense, Thought, and Knowledge, by putting together in a certain Figure and Motion, gross Particles of Matter, as by those that are the very minutest, that do any where exist. They knock, impell, and resist one another, just as the greater do, and that is all they can do. (*Essay* IV.10.10, 623–24)

Even were we able to observe the collisions of the most minute particles of matter, Locke insists, we would find only mechanical interactions and nothing like the sensing, say, of *how blue looks*. By Locke's lights, then, the want of resemblance means that we are unable to see, even in principle, how material bodies could have the power, by means of their primary qualities, to produce the secondary qualities in us that corpuscularian natural science predicts.

Locke's response to this epistemic limitation is to distinguish between the powers that material bodies naturally possess in virtue of their primary qualities and the powers that God may have super-naturally added to material bodies. Locke calls the latter "super-added" powers or faculties. Under this heading, he distinguishes two different possibilities: God super-adds an immaterial thinking substance to matter, or God super-adds the power of thinking to matter.[26] Locke explains,

> [I]t being impossible for us, by the contemplation of our own *Ideas*, . . . to discover, whether Omnipotency has not given to some Systems of Matter fitly disposed, a power to perceive and think, or else joined and fixed to Matter so disposed, a thinking immaterial Substance: It being, in respect of our Notions, not much more remote from our Comprehension to conceive, that GOD can, if he pleases, superadd to Matter a Faculty of Thinking, than that he should superadd to it another Substance, with a Faculty of Thinking. (*Essay* IV.3.6, 540–41)

Locke's official view is that our limited knowledge prohibits us from ruling out either hypothesis. However, he does hold that we must appeal to some such super-added power to fill the explanatory gap he finds between secondary qualities and their putative but non-resembling primary quality causes in material bodies.[27] In the following passage, Locke again flags the problematic lack of resemblance between primary and secondary qualities and hypothesizes that God superadded to bodies the power to cause secondary qualities in us.[28]

> Let us suppose at present, that the different Motions and Figures, Bulk, and Number of such Particles, affecting the several Organs of our Senses, produce in us those different Sensations, which we have from the Colours and Smells of Bodies. . . . It being no more impossible to conceive, that

> God should annex such *Ideas* to such Motions, with which they have no similitude; than that he should annex the *Idea* of Pain to the motion of a piece of Steel dividing our Flesh, with which that *Idea* hath no resemblance. (*Essay* II.8.13, 136–37)

Ayers rightly cautions that we should not understand Locke to be advocating some occasionalist doctrine of standing miracles ("Mechanism, Superaddition," 229–30).[29] Rather, Locke seems to insist that there is no inherent contradiction or violation of the laws of nature in hypothesizing that our sensations may be "effects produced by the appointment of an infinitely Wise Agent, which perfectly surpass our Comprehensions" (*Essay* IV.3.28, 559). Locke consequently urges a super-natural supplement to the corpuscularian hypothesis, on which secondary qualities are only explicable on the assumption that God superadds to corpuscular matter a power for sensation or thought that matter, as such, would not otherwise conceivably possess.

In this section, I argued that Locke formulates the distinction between primary and secondary qualities in terms of the resemblance and inseparability theses and that the influence of such corpuscularian natural philosophers as Boyle led Locke to a pair of metaphysical conclusions about that distinction: first, Locke discounts the reality of secondary qualities because they are mind-dependent phenomena that are separable from material corpuscles and that do not resemble their primary quality causes, and secondly, the powers to produce secondary qualities are not in corpuscular bodies by means of their primary qualities but are superadded to matter by God.

2. Hume on Primary and Secondary Qualities

Many commentators believe that Hume has a Lockean understanding of the primary-secondary quality distinction and that Hume is consequently, like Locke, a kind of anti-realist about secondary qualities insofar as "reality" requires something more than existence *merely in the mind*.[30] In this section, I reject the standard reading of Hume on secondary qualities on the grounds that Hume is critical of Locke's arguments and counsels an anti-metaphysical understanding of the primary-secondary distinction. Section 2.1 reconstructs Hume's critique, in *Treatise* 1.4.4, "Of the modern philosophy," of the Lockean inseparability and resemblance theses. Section 2.2 develops Hume's claim that modern philosophers' understanding of the primary-secondary distinction generates unnecessary metaphysical dilemmas. Section 2.3 briefly explains how Hume accommodates the existence of mind-independent objects without Locke's substantive metaphysical commitments.

2.1. Hume's Critique of the Inseparability and Resemblance Theses

Hume reports in a 1734 letter to his friend Michael Ramsey that he was reading Locke's *Essay* as he composed his own *Treatise of Human Nature*.[31] Locke is, therefore, almost certainly among the unnamed "modern philosophers" whose conception of primary and secondary qualities Hume targets in *Treatise* 1.4.4. I present Hume's characterization of the primary-secondary distinction he finds in philosophers like Locke before turning to Hume's specific criticisms of the inconceivability and resemblance theses as they figure in that distinction.

Hume's exposition of the primary-secondary distinction has three steps. First, Hume states in summary form the broadly Lockean thesis under examination: "The fundamental principle of [modern] philosophy is the opinion concerning colours, sounds, tastes, smells, heat and cold; which it asserts to be nothing but impressions in the mind, deriv'd from the operation of external objects, and without any resemblance to the qualities of objects" (T 1.4.4.3; SBN 226).

Second, Hume explains that the primary-secondary distinction is, as he understands it, motivated by relativity or a conflict of appearances, which he describes thus: "Upon examination, I find only one of the reasons commonly produc'd for this opinion to be satisfactory, *viz*. that deriv'd from the variations of those impressions, even while the external object, to all appearances, continues the same" (T 1.4.4.3; SBN 226). Hume then provides a catalogue of relativity examples, the upshot of which is that because *how something looks* (tastes, smells, and so on) can vary from percipient to percipient, even as other qualities of objects remain invariable, we distinguish between the relativity of secondary qualities and the non-relativity of primary qualities.[32] Hume's characterization of the primary-secondary distinction is curious because relativity does little to motivate the distinction, in Locke at least, and Hume acknowledges that there are other arguments for the primary-secondary distinction that he will pass over in favor of relativity.[33] We may simply need to take Hume at his word that he finds the relativity argument the most satisfactory.

Third, Hume uses relativity to segue into the questions of resemblance (secondary qualities are "without any resemblance to the qualities of the objects") and inseparability (secondary qualities are "nothing but impressions in the mind") broached in Hume's summary of the Lockean thesis:

> The conclusion drawn from [examples of relativity], is likewise as satisfactory as can be imagin'd. 'Tis certain, that when different impressions of the same sense arise from any object, every one of these impressions has not a resembling quality existent in the object. For as the same object cannot, at the same time, be endow'd with different qualities of the same sense, and as the same quality cannot resemble impressions entirely different; it

> evidently follows, that many of our impressions have no external model or archetype. Now from like effects we presume like causes. [Therefore] impressions of colour, sound, &*c*. are confest to be nothing but internal existences, and to arise from causes, which no ways resemble them. (T 1.4.4.4; SBN 227)

According to Hume, then, we recoup the primary-secondary quality distinction with the following argument: if *how something looks*, and so on, is relative to perceivers, and two mutually exclusive qualities cannot exist in the same object at the same time (presumably on pains of violating the law of non-contradiction), then these secondary qualities are best conceived as psychological effects that do not resemble the object that is their external cause. Following Hume's suggestion in the passage above, I will call this the *causal conclusion* of modern philosophy. It is a causal conclusion because it establishes that secondary qualities are alike in having causes they in no wise resemble.[34]

Hume pronounces the causal conclusion about the primary-secondary distinction "as satisfactory as can be imagin'd," which is somewhat baffling if we consider that he goes on to criticize how modern philosophers like Locke conceive of primary qualities. In the remainder of this section, I consider Hume's specific complaints about the inseparability and resemblance theses as they relate to the primary qualities of motion, extension, and solidity, deferring until the next section my examination of how these complaints fit into the overall argument of *Treatise* 1.4.4.[35]

Recall that, according to modern philosophers such as Locke, the inseparability thesis is the claim that primary qualities are basic properties that objects possess intrinsically or independently of percipients. Hume first tests the inseparability thesis against motion, but he soon sets motion aside on the grounds that it "necessarily supposes . . . a body moving," and therefore is parasitic on "the idea of [the] extension or of solidity" of a body (T 1.4.4.7; SBN 228). Whatever the merits of Hume's analysis of motion, his ensuing appraisal of extension clarifies what he regards as problematic in the inseparability thesis. Significantly, Hume does not directly challenge the Lockean claim that primary qualities, such as motion and extension, are inseparable from bodies. His point, rather, is that some secondary qualities are evidently inseparable from our conceptions of bodies, too. Specifically, Hume argues that if we are unable to conceive of bodies without extension, we are equally unable to conceive of extension without color or solidity (T 1.4.4.8; SBN 228). For example, on Hume's view, we simply cannot form ideas of uncolored triangles that also lack solid shape (T 1.2.3.16; SBN 39; see also EHU 12.15; SBN 154–55).[36] Let us focus on color for a moment. Hume's claim that color, a secondary quality, is as essential to our ideas of body as extension, a paradigmatic primary quality, comes as a rebuke to the Lockean inseparability thesis. Whether or not

there are qualities inseparable from external bodies, Hume seems to be suggesting, inseparability is not exactly aligned with the traditional enumeration of primary and secondary qualities.[37]

Solidity's inseparability from body does not immediately pose the same embarrassment to a modern philosopher like Locke, who classifies solidity as a primary quality (for example, *Essay* II.8.9, 135). Hume, however, claims that solidity confronts pressures similar to that of extension with regard to the inseparability thesis, and ultimately Hume folds these pressures over into his argument that solidity (and presumably the other primary qualities) cannot satisfy the resemblance thesis.

Hume begins his treatment of solidity and the inseparability thesis by establishing an agreed upon definition of solidity. Hume claims that "properly speaking, solidity or impenetrability is nothing, but an impossibility of annihilation" (T 1.4.4.11; SBN 229).[38] Locke would probably agree, for he writes that "[t]he *Idea* of which filling of space, is, That where we imagine any space taken up by a solid Substance, we conceive it so to possess it, that it excludes all other solid Substances" (*Essay* II.4.2, 123). Now if solidity is best understood as impenetrability, Hume reasons, then in order to know whether something is solid we need to conceive of *two* objects or bodies "pressing on each other without any penetration" (T 1.4.4.10; SBN 229). But this requirement generates, according to Hume, a "difficulty": "how to form an idea of this [solid] object or existence without having recourse to the secondary and sensible qualities" (T 1.4.4.11; SBN 230). We can see why Hume thinks there is a difficulty if we heed his analysis of solidity as the idea formed when *our body* comes into contact with another body (for example, a floor or a leaping dog), and these two space-filling bodies exclude or resist each other. On Hume's view, the primary quality of solidity is, therefore, inconceivable without appeal to the sense modality of touch (T 1.4.4.12; SBN 230) and associated secondary or sensible qualities such as hard and soft.[39] At this point, Hume's specific criticisms of the Lockean inseparability thesis are complete.

To review, Hume takes himself to have shown that even if paradigmatic primary qualities like motion, extension, and solidity are inseparable from matter, at least one of two secondary qualities are also inseparable from body: color or hardness and softness.[40]

Hume nevertheless devotes several more paragraphs, the balance of *Treatise* 1.4.4, to solidity, shifting his focus to whether solidity satisfies the resemblance thesis. What likely spurs Hume's change of gears is the fact that Locke concedes solidity's inseparability from touch, prefacing his discussion of solidity with this remark: "The *Idea of Solidity* we receive by our Touch; and it arises from the resistance we find in Body, to the entrance of any other Body into the Place it possesses, till it has left it" (*Essay* II.4.1, 122–23). Hume argues that solidity's inseparability from touch has consequences that go unrecognized by modern philosophers

like Locke. The problem concerns the resemblance thesis, on which our ideas of primary qualities resemble the primary qualities of their corpuscular causes.

As Michael Jacovides notes, solidity is conspicuously absent from the lists of primary qualities that Locke offers when speaking of resemblance ("Locke's Resemblance Theses," 480). Ascertaining whether Locke is silent because he assumes, denies, or is ambivalent as to whether our tactile ideas of solidity resemble solidity itself is beyond the scope of this paper. I can suggest a couple of reasons why *Hume* focuses on solidity. First, Hume's critique of the inseparability thesis, since it applies to motion and extension, has left solidity the last stand of the modern philosophers, and if he can introduce skepticism that our idea of solidity resembles its external causes, the primary-secondary distinction as understood by modern philosophers will be in shambles. Second, Locke claims that solidity is essential to our idea of external bodies (*Essay* II.4.1, 123), and Hume (as I shall argue in section 2.2) may wish to highlight the problems with solidity by way of criticizing the metaphysical claims about mind-independent bodies that modern philosophers take the primary-secondary distinction to authorize.

Hume speculates that modern philosophers like Locke are willing to concede solidity's inseparability from touch because they assume that tactile impressions of hardness, unlike other secondary qualities, manage to acquaint us with solidity as it exists in itself. Hume writes, "we naturally imagine, that we feel the solidity of bodies, and need but touch any object in order to perceive this quality" (T 1.4.4.12; SBN 230). But, Hume continues, there is no reason to believe that a tactile impression like hardness resembles its primary quality cause, and to suppose otherwise is a "method of thinking . . . more popular than philosophical" (T 1.4.4.12; SBN 230).[41]

Hume provides two arguments to show that solidity violates the resemblance thesis.[42] I will call his first argument the Sensory Representation Argument. Hume argues that while touch can represent solidity, it does not follow that a tactile impression represents solidity in virtue of resembling the material objects causing it. To demonstrate, Hume asks us to imagine a person who has palsy in one hand but not the other. When this person rests both hands on a table, each represents or conveys "as perfect an idea of impenetrability" as the other, insofar as the table resists the downward trajectory of both her hands (T 1.4.4.13; SBN 230). It is unclear why we should think resemblance plays any role in this representational story, Hume argues, particularly given that the tactile perceptions can represent the same thing without resembling each other in either physiological causes or occurrent feeling. (Hume assumes that the perceptions of the palsied and non-palsied hands have different neural causes and also feel different.) As Hume puts it, "An object, that presses upon any of our members, meets with resistance; and that resistance, by the motion it gives to the nerves and animal spirits, conveys a certain sensation to the mind; but *it does not follow*, that the sensation, motion,

and resistance are any ways resembling" (T 1.4.4.13; SBN 230, emphasis added). Minimally, the effect of Hume's first argument is thus to shift the burden of proof of the resemblance thesis onto modern philosophy, at least in the specific case of tactile qualities.

Hume may also intend for the Sensory Representation Argument to trade on earlier warnings in the *Treatise* against a resemblance theory of representation with respect to secondary quality sensations (or what Hume, in a different context, calls simple impressions of sensation) more generally.[43] Those warnings occur against the backdrop of what is often called Hume's Copy Principle, and I trace their emergence in the four points that follow. First, Hume divides all the "perceptions" of the mind into two classes, impressions and ideas. Impressions are our most forceful or vivid perceptions, and ideas are somewhat fainter or less lively "images" of them (T 1.1.1.1; SBN 1). Secondly, Hume distinguishes between simple and complex perceptions, which leaves us four possible types of perceptions: simple impressions, complex impressions, simple ideas, and complex ideas (T 1.1.1.2; SBN 2). Thirdly, Hume takes the impression-idea and simple-complex distinctions to license "one general proposition" that commentators have labeled the Copy Principle.

The Copy Principle flags a special feature of the relationship between simple ideas and simple impressions: "that all our simple ideas in their first appearance are deriv'd from simple impressions, which are correspondent to them, and which they exactly represent" (T 1.1.1.7; SBN 4). The Copy Principle actually makes two distinct claims, as Hume himself recognizes: a causal claim, on which simple impressions cause simple ideas (T 1.1.1.8; SBN 5), and a representational claim, on which simple ideas "are exact copies" of the simple impressions that caused them: "every simple idea has a simple impression, which resembles it; and every simple impression a correspondent idea" (T 1.1.1.5; SBN 3).

The fourth point is that Hume claims there is an asymmetry in the Copy Principle's representational claim: On his view, although simple ideas represent the simple impressions that caused them in virtue of both resemblance and causation, a parallel account is not available for simple impressions. Hume provides a couple of reasons for this: we are not entirely sure about "the natural and physical causes" of our simple impressions (T 2.1.1.2; SBN 275), and even if our science improves, he claims that we could never possibly find ourselves in the epistemic position to compare our impressions and their extra-perceptual causes in the way that certification of their resemblance would seem to require (T 1.4.2.47; SBN 212). Consequently, on Hume's view, if (or however) simple impressions represent, they do not do so in virtue of resembling their causes. Given that Hume classifies secondary quality sensations such as color (T 1.4.4.8; SBN 228) and hardness or softness (T 1.4.4.14; SBN 231) as simple impressions, it is reasonable to suppose that the general epistemic strictures associated with the Copy Principle are in the

background of the Sensory Representation Argument. In short, on my reading the Sensory Representation Argument appeals to principles that allow Hume to challenge the resemblance thesis directly on the grounds that *no* sensation, insofar as it is a simple impression, represents in virtue of resembling its cause.

Hume's second argument to prove that solidity violates the resemblance thesis is (what I will call) the Argument from Simplicity. Once again, Hume's endgame is to show that our idea of solidity does not resemble its external causes, but this time he pursues that goal by underscoring a difference between the simplicity of a tactile impression and the complexity of solidity. Recall that Hume glosses solidity as impenetrability, which means that solidity "necessarily supposes two bodies" and as such is "compound" (T 1.4.4.14; SBN 231). Setting aside the general puzzle of how something compound could ever "be represented by a simple impression" such as of hardness, Hume argues that the simple-compound contrast raises a special problem for the resemblance thesis. The problem revolves around the claim that an impression of touch is essentially phenomenal, whereas solidity in itself is not. Hume describes the problem this way: "let us put two cases, *viz*. that of a [person], who presses a stone, or any solid body, with [her] hand, and that of two stones, which press each other; 'twill readily be allow'd, that these two cases are not in every respect alike, but that in the former there is conjoin'd with solidity, a feeling or sensation, of which there is no appearance in the latter" (T 1.4.4.14; SBN 231).

Hume predicts that an interlocutor like Locke will move to disarm the bite of the disanalogy by "remov[ing]" the tactile feeling or sensation as somehow inessential to our idea of solidity as it exists in bodies without us. After all, our idea of solidity is compound, so presumably aspects of it—like its phenomenal aspect—can be safely removed.[44] According to Hume, however, the Lockean can only make this readjustment by forfeiting her right to the resemblance thesis. Here's why: Locke agrees that touch is a simple sensation (*Essay* II.3.1, 122), which means that in order to remove the phenomenal aspect from solidity, Locke is "oblige[d] to remove the whole" tactile impression from our idea of solidity. But if the entire tactile impression must be removed from our representation of solidity, then Locke effectively concedes that however a tactile quality represents solidity, it does not do so in virtue of resembling it, because the impression has no "archetype or model in external objects" (T 1.4.4.14; SBN 231). The conclusion of Hume's argument from simplicity, therefore, is that the simplicity of tactile impressions, on the one hand, and the complexity of solidity, on the other, are incompatible with the resemblance thesis.

So far I have reconstructed *Treatise* 1.4.4 with a view to Hume's causal formulation of the primary-secondary quality distinction and to his detailed critique of the inseparability and resemblance theses that structure Locke's understanding of the distinction.

2.2. Hume on the Lockean Metaphysics of Inseparability and Resemblance

Hume's meticulous criticisms of the inseparability and resemblance theses have a common aim: censure of the Lockean metaphysics of primary and secondary qualities. Just as Locke's articulation of those theses is interwoven with conclusions about how secondary qualities are less real than primary qualities, Hume's criticisms are likewise intertwined with an anti-metaphysical agenda. Below I present Hume's conception of the metaphysical interpretation of the primary-secondary distinction that he opposes and then explain his objection to it. I conclude this section by arguing that Hume rejects Locke's metaphysics of superaddition as well.

2.2.1. Reductio of Secondary Quality Anti-Realism

Hume credits as "satisfactory" a causal chain of reasoning that issues in the primary-secondary quality distinction. Hume first establishes that what we can conclude from the relativity of secondary qualities is that these are psychological effects of external objects whose primary or intrinsic properties do not resemble the sensations they cause. In the next paragraph, he introduces a further conclusion that modern philosophers take the distinction to entail: "upon the removal of sounds, colours, heat, cold, and other sensible qualities, from the rank of continu'd independent existences, we are reduc'd merely to what are called primary qualities, as the only *real* ones" (T 1.4.4.5; SBN 227).

There are two noteworthy features of this passage. First, although Hume was satisfied with modern philosophy's causal conclusion, he now appears to place some critical distance between himself and its additional conclusion, which he says only "seem[s] to follow." Second, this additional conclusion is expressly metaphysical in nature. Its Lockean claim is that primary qualities are "the only *real* ones," and it contrasts this with the downgraded reality of secondary qualities, which undergo "removal . . . from the rank of continu'd independent existences" to the rank of phenomena that exist merely in the mind.[45] Taken jointly, these features indicate that Hume's quarry throughout the ensuing portions of *Treatise* 1.4.4 will be this Lockean metaphysical conclusion about the primary-secondary distinction.

What, precisely, is Hume's objection to the metaphysical conclusion defended by modern philosophers like Locke? Hume provides a résumé of his objection at the close of *Treatise* 1.4.4:

> Thus there is a direct and total opposition betwixt . . . those conclusions we form from cause and effect, and those that persuade us of the continu'd and independent existence of body. When we reason from cause and effect, we conclude, that neither colour, sound, taste, nor smell have a continu'd and independent existence. [But w]hen we exclude these

> sensible qualities there remains nothing in the universe, which has such an existence. (T 1.4.4.15; SBN 231)

As Hume claims elsewhere, there is a kind of "contradiction" between the causal and metaphysical conclusions (T 1.4.7.4; SBN 266). Yet it is not obvious why the contradiction takes this form. The causal conclusion entitles us to distinguish between the mind-dependence of secondary qualities and the mind-independence of primary qualities. (To the extent that there is already a metaphysical dimension to the characterization of secondary qualities as mind-dependent, Hume may regard it as trivial insofar as it is a settled matter of scientific fact recognized by all but the "vulgar" (T 1.4.2.12; SBN 192; see also T 3.1.1.26.; SBN 469).) The metaphysical conclusion locates reality on the side of mind-independent or primary qualities. It is not obvious, however, that there is any contradiction between these two conclusions; if garden-variety "realism" just means (as it does for Locke) existing outside the mind, then anti-realism is perfectly compatible with the mind-dependence of secondary qualities.

We can retrieve the animus behind Hume's objection if we look not for a logical contradiction, per se, but rather for the skeptical imbroglio resulting from tension between the causal and metaphysical conclusions. Indeed, Hume advises us that an eye to skeptical consequences will afford us the perspective to see what is objectionable in the Lockean metaphysical interpretation of the primary-secondary distinction:

> I believe many objections might be made to this system: But at present I confine myself to one, which is in my opinion very decisive. I assert, that instead of explaining the operations of external objects by its means, we utterly annihilate all these objects, and reduce ourselves to the opinions of the most extravagant scepticism concerning them. *If* colours, sounds, tastes, and smells be *merely* perceptions, nothing we can conceive is possest of a real, continu'd, and independent existence; not even motion, extension and solidity, which are the primary qualities chiefly insisted on. (T 1.4.4.6; SBN 227–28, emphasis added)

The clue to Hume's objection lies in the final sentence and its understated conditional, which takes the metaphysical conclusion as the antecedent and skepticism as the consequent.

In skeletal form, his objection is this: "*If* [secondary qualities] be *merely* perceptions," then skepticism, because "nothing we can conceive is possest of a real, continu'd, and independent existence" (T 1.4.4.6; SBN 228). Hume's characterization of the resultant skepticism as "most extravagant" is pejorative, so it seems safe to assume he is urging us to reject the antecedent, which is the metaphysical

conclusion following from the Lockean understanding of the primary-secondary quality distinction.[46] With the framework of Hume's objection now in place, we can fill it out by answering two questions: first, why does the metaphysical conclusion lead to skepticism? and second, why does this skepticism (or the metaphysical conclusion, or both) stand in "opposition" to the causal conclusion about the primary-secondary distinction?[47]

Much of the groundwork needed to answer the first question has already been laid. As I established in section 1.2, Locke characterizes the primary-secondary quality distinction in terms of the inseparability and resemblance theses, and from this understanding of the distinction he draws a metaphysical conclusion: primary qualities are more real than secondary qualities because the latter are not intrinsic to and do not resemble the material bodies that cause them. In section 2.1, I showed that Hume finds fault with both the inseparability and resemblance theses because he finds no evidence for them even with respect to the paradigmatic primary qualities of motion, extension, and solidity. What I now emphasize, however, is that in each of his three detailed case studies, Hume underscores the ontological stakes of his critique.

> **Case 1.** Motion "must resolve itself into the idea of extension or of solidity; and consequently the reality of motion depends upon that of these other qualities." (T 1.4.4.7; SBN 228)

> **Case 2.** "Colour is excluded from any real existence. The reality, therefore, of our idea of extension depends upon the reality of that of solidity, nor can the former be just while the latter is chimerical." (T 1.4.4.8; SBN 228)

> **Case 3.** The idea of solidity "is suppos'd to be real" (T 1.4.4.12; SBN 230). However, modern philosophy "leaves us no just nor satisfactory idea of solidity, nor consequently of matter." (T 1.4.4.9; SBN 229)

By Hume's reckoning, neither extension nor motion nor solidity merit the title of "reality," as someone like Locke understands it, for two reasons. First, even though some qualities may be inseparable from matter, this does not mean that the qualities meet Locke's criterion of mind-independence. Hume argues that we cannot conceive of mind-independent material bodies independently of the contributions of our sensibility, because our ideas of primary qualities are dependent on ideas of color and tactility. This first point helps explain Hume's claim that Locke's metaphysical conclusion engenders skepticism: if Locke thinks that secondary qualities are not real because they are mind-dependent, then primary qualities are not real either, because our ideas of them are just as inextricable from our sensibility. Given that modern philosophers take the distinction between

primary and secondary qualities to be exhaustive, there are no remaining contenders for real properties, hence we "reduce ourselves to the . . . most extravagant scepticism" because "nothing we can conceive is possest of a real, continu'd, and independent existence."[48]

Hume's second reason for claiming that primary qualities do not meet Locke's criteria for being "real" deals with the resemblance thesis, and his reasoning illuminates the supposed conflict between the metaphysical and causal conclusions. Hume rejects the resemblance thesis, arguing that we cannot conclude that our ideas of primary qualities are real depictions of mind-independent material objects—if there are such objects—as they exist in themselves, for there is no evidence that our perceptions mirror the extra-perceptual objects they purport to represent. Consequently, Locke's metaphysical conclusion denies us "real" knowledge of extra-perceptual objects. Hume thinks that when taken in conjunction with skepticism about the existence of mind-independent objects, this finding undermines the causal argument for the primary-secondary distinction. As Hume presents it, the causal argument distinguishes between sensations (secondary qualities) and the external causes of those sensations (primary qualities). Yet, if we have no "real" knowledge of the extra-perceptual objects supposedly causing our sensations, we cannot infer that what our ideas of primary qualities are *of* is anything specifically different from what our ideas of secondary qualities are *of*—for they are equally of merely perceptual objects.[49] According to Hume, by granting that we have no epistemic access to extra-perceptual objects, we thereby deprive ourselves of the right to causal conclusions about the relationship between perceptual and extra-perceptual objects. Hume says, "as long as we take our perceptions and objects to be the same, we can never . . . form any argument from the relation of cause and effect" (T 1.4.2.14; SBN 193). But the primary-secondary distinction is premised, on Hume's view, on a causal conclusion. By Hume's lights, therefore, the skepticism invited by the metaphysical conclusion undermines the epistemological basis for drawing the primary-secondary distinction in the first place.[50]

2.2.2. Rejection of Superaddition

There are indications that Hume also rejects Locke's second metaphysical conclusion, that the powers to produce secondary qualities must be superadded by God to material bodies. In *Treatise* 1.4.5, "Of the immateriality of the soul," Hume explains how we avoid the need for something like superaddition once we realize that the lack of resemblance between primary and secondary qualities is not the problem Locke thought it was.

According to Hume, one of the "more intelligible" and "more important" reasons to deny that material bodies can be "the *cause* of our perceptions" turns on resemblance. Hume claims that some philosophers presume that effects must resemble their causes and on that presumption proceed to argue that because our

thoughts and sensations do not resemble the movements of material bodies, our thoughts and sensations cannot be caused by material bodies. Hume summarizes those philosophers' argument as follows:

> Matter and motion . . . however vary'd, are still matter and motion, and produce only a difference in the position and situation of objects. . . . 'Tis absurd to imagine . . . [t]hat the shocking of two globular particles shou'd become a sensation of pain, and that the meeting of two triangular ones shou'd afford a pleasure. Now as these different shocks, and variations, and mixtures are the only changes, of which matter is susceptible, and as these never afford us any idea of thought or perception, 'tis concluded to be impossible, that thought can ever be caus'd by matter. (T 1.4.5.29; SBN 246–47)

While Hume does not mention Locke by name, the view Hume describes closely matches Locke's. To establish the need for God to superadd or "annex such [secondary quality] *Ideas* to such Motions, with which they have no similitude," Locke had argued that "*Bodies* produce *Ideas* in us . . . manifestly *by impulse*" (*Essay* II.8.11, II.8.13, 135–36) or the "knock[ing]" about of "gross Particles of Matter" (*Essay* IV.10.10, 624). So Locke infers from the non-resemblance of matter-in-motion and perceptions (including secondary quality sensations) that the powers to cause thoughts and sensations are not in matter's primary qualities save through being superadded to matter by God.

Hume's response to the Lockean argument is to deny that causes must resemble their effects.[51] Hume here draws on his earlier account of causation, arguing that experience and observation do not support limiting causal connections to objects that resemble each other:

> I have inferr'd . . . that to consider the matter *a priori*, any thing may produce any thing, and that we shall never discover a reason, why any object may or may not be the cause of any other, however great, or however little the resemblance may be betwixt them. This evidently destroys the precedent reasoning concerning the cause of thought or perception. For tho' there appear no manner of connexion betwixt motion or thought, the case is the same with all other causes and effects. (T 1.4.5.30; SBN 247)

While Hume's account of causation is notoriously complex, the important point for my purposes is that if we rid ourselves of philosophical preconceptions of what causes *must* be and instead judge from experience, we shall recognize *A* and *B* as standing in a causal relationship to one another if (among other things) there is a constant conjunction between the appearance of *A* and the ensuing appearance

of *B*.[52] Hume claims that these conditions are satisfied in the case of matter and mental states. According to Hume, we have experience of co-variation, "every one may perceive, that the different dispositions of [her] body change [her] thoughts and sentiments" (T 1.4.5.30; SBN 248), as well as constant conjunction, "thought and motion . . . are constantly united" (T 1.4.5.30; SBN 248). Given that these are "all the circumstances that enter into the idea of cause and effect," Hume concludes that "motion may be, and actually is, the cause of thought and perception" (T 1.4.5.30; SBN 248). Unlike Locke, Hume is untroubled by the supposed fact that we cannot conceive of the figure and motion of particles causing the sensations they produce because there is no resemblance between them. For Hume, given that "the constant conjunction of objects constitutes the very essence of cause and effect, matter and motion may often be regarded as the causes of thought, as far as we have any notion of that relation" (T 1.4.5.33; SBN 250). Consequently, on Hume's view, there would be no reason to accept Locke's metaphysical conclusion that the power to produce sensations cannot be one that matter has by means of its primary qualities unless such a power is superadded to matter by God.[53]

2.3. Hume's Critique of Extra-Perceptual Objects

If "realism" about secondary qualities means they exist in external objects independently of our perceiving them, then Hume is not a realist, because he acknowledges that they are mind-dependent. However, I have just argued that Hume is also unsympathetic toward Lockean "anti-realism" about secondary qualities because Locke's reasoning leads to skepticism and super-addition. In this concluding section, I propose an explanation for why Hume refrains from attributing metaphysical significance to the mind-dependence of secondary qualities, drawing on some passages from *Treatise* 1.2.6, "Of the idea of existence, and external existence," and 1.4.2, "Of scepticism with regard to the senses."[54]

My proposal begins by taking stock of Hume's distinction between perceptions and external objects. Hume says, "'tis universally allow'd by philosophers, and is besides pretty obvious of itself, that nothing is ever really present with the mind but its perceptions or impressions and ideas, and that external objects become known to us only by those perceptions they occasion" (T 1.2.6.7; SBN 67). For present purposes, this passage raises two questions.

First, what does Hume mean by "external objects"? At an initial pass, Hume means roughly what we commonly mean—something *distinct* from ourselves (external to our bodies and causally independent of our minds) (T 1.4.2.9; SBN 190). Hume also understands external objects to be not only distinct but also *continued* existences, by which he means they still exist even when unperceived (T 1.4.2.3; SBN 188). The way Hume characterizes "the continu'd and distinct existence" of bodies is equivalent to what we might call their *mind-independence*, as the following

remark indicates: "[we commonly] think an object has a sufficient reality, when its Being is uninterrupted, and independent of the incessant revolutions, which we are conscious of in ourselves" (T 1.4.2.10; SBN 191); in other passages, Hume contrasts the mind-independence of external objects with the mind-dependence of our perceptions (T 1.4.2.12, 1.4.2.14, 1.4.2.47, 1.4.2.50, 1.4.2.52; SBN 192, 193, 212, 213–14, 214–16). I will therefore use mind-independent and mind-dependent as shorthand to characterize external objects and perceptions, respectively.

Second, how can external objects be known? Hume seems to posit a kind of representational relationship between perceptions and external objects, claiming in the passage above that "external objects become known to us only by those perceptions they occasion" (see also T 1.4.2.36; SBN 205).[55] The epistemic limitation imposed by "only" is important, and Hume stresses it on several occasions. For example, Hume cautions that we must limit our conclusions about cause and effect to the relationships apparent between pairs of "different perceptions," explaining that we can "never observe [causation] between perceptions and objects" (T 1.4.2.47; SBN 212; see also T 1.4.2.54; SBN 216). Schematically, then, Hume's position is that (at least some of) our perceptions purport to be of external objects, and our knowledge of external objects is limited to our "experience and observation" of the perceptions they produce in us, a limitation in keeping with the epistemological principles of his science of human nature (T Intro. 6–8; SBN xvi–xvii).[56]

One consequence of Hume's view is that we can trace an epistemic dividing line between what I will call, following Donald Ainslie, perceptual and non- or extra-perceptual objects (Ainslie, "Adequate Ideas"). For Hume, both perceptions and external objects are perceptual objects insofar as they are known through our perceptions of them. Now in Hume's remark about causation noted in the previous paragraph, he also speaks of something we can "never observe," and we can classify these as extra-perceptual objects. However, Hume argues that we barely have so much as an idea of what an extra-perceptual object is and hence cannot be said to know it even indirectly:

> ['T]is impossible for us so much as to conceive or form an idea of any thing specifically different from ideas and impressions. . . . The farthest we can go towards a conception of external objects, when suppos'd *specifically* different from our perceptions, is to form a relative idea of them, without pretending to comprehend the related objects. Generally speaking we do not suppose them specifically different, but only attribute to them different relations, connexions and durations. (T 1.2.6.8–9; SBN 67–68)

We can do little more than posit the virtually empty idea of an extra-perceptual object when we do not attribute to it any of the qualities familiar from experience,

because the perceptions through which "objects become known to us" are, by definition, not available. As Hume sees it, we can either "conceive of an external object merely as a relation without a relative" (T 1.4.5.19; SBN 241), in which case we admit the bare conceivability of an extra-perceptual object but give up the right to knowledge claims about it, or "make it the very same with a perception or impression" (T 1.4.5.19; SBN 241), in which case we let the bare conceivability of an extra-perceptual object drop out as irrelevant to the pursuit of the only knowledge we can have, that of perceptual objects, that is, objects known directly or indirectly through our perceptions of them.[57] Hume's injunction thus limits our epistemic inquiries to objects as they appear to our senses and bans speculation about extra-perceptual objects.

Hume's refusal to speculate about extra-perceptual objects explains why he has little interest in being drawn into early modern debates about the ontological status of secondary qualities.[58] From Locke's perspective, the reason primary qualities are more real than secondary qualities is that our ideas of primary qualities resemble those qualities that are inseparable from and original to objects in the world without us, while our ideas of secondary qualities meet neither requirement. I argued above that Hume takes his critiques of the Lockean inseparability and resemblance theses to disabuse us of any pretensions to have evidence that primary qualities have such features. Now we can articulate Hume's critique somewhat differently: if Hume is right that Locke's conception of primary qualities renders them unperceivable, then Locke places reality on the side of extra-perceptual objects. Locke thereby simultaneously places real knowledge forever out of reach in extra-perceptual objects and casts an unwarranted skeptical pall on perceptual objects, which are now less than real. On Hume's view, Locke is wrong to conclude that our ideas of mind-independent external bodies and their primary qualities put us in contact with anything ontologically different in kind from our perceptions and secondary quality sensations. Both are perceptual objects according to Hume, who notes, "For as to the notion of external existence, when taken for something specifically different from our perceptions, we have already shewn its absurdity" (T 1.4.2.2; SBN 188). For Hume, whether or not something is mind-independent is orthogonal to metaphysical speculation about its reality—if by "reality" we mean (as Hume understands Locke to mean) its existence and nature *qua* extra-perceptual object. So, to the extent that that standard of reality is the price of admission to metaphysical interpretations of the primary-secondary distinction, Hume attaches no metaphysical significance to the mind-dependence of secondary qualities.

Several passages in Hume's texts confirm his antipathy to metaphysical interpretations of the primary-secondary distinction. In his *History of England*, Hume presents the following contrast between Boyle and Newton:

> Boyle was a great partizan of the mechanical philosophy; a theory, which, by discovering some of the secrets of nature, and allowing us to imagine the rest, is so agreeable to the natural vanity and curiosity of [humans]. . . . While Newton seemed to draw off the veil from some of the mysteries of nature, he showed us 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. (322–23)

Two features of Hume's portrayal of the difference between Boyle and Newton are significant for the present purposes. First, it was Boyle whose lead Locke perhaps followed in saddling the corpuscularians' heuristic distinction between primary and secondary qualities with metaphysical import (see section 1.2). Second, Hume somewhat critically labels Boyle a "partizan" of a theory that encourages philosophers' vain attempts to descry all the "secrets" of nature, and he approvingly notes that Newton prescinds from such futile endeavors.[59] We can extend Hume's assessment of Boyle to Locke, who likewise places a premium on secrets which Hume thinks are forever veiled. Whatever else Hume has in mind in talking about nature's "secrets," minimally he means knowledge of extra-perceptual objects.

In the first *Enquiry*, Hume links epistemic "vanity" to what is most objectionable in metaphysics. "Here indeed," he says, "lies the justest and most plausible objection against a considerable part of metaphysics, that they are not properly a science; but arise . . . from the fruitless efforts of human vanity, which would penetrate into subjects utterly inaccessible to the understanding" (EHU 1.11; SBN 11). Extra-perceptual objects are, by Hume's standards, the very definition of a subject "utterly inaccessible to the understanding," and it is reasonable to conjecture that his hostility to metaphysical distinctions tethered to such vain knowledge informs his departure from Boyle as well as Locke.

Hume draws the same line in the sand in the *Treatise*:

> I . . . confes[s] that my intention was never to penetrate into the nature of bodies, or explain the secret causes of their operations. For . . . I am afraid, that such an enterprize is beyond the reach of human understanding, and that we can never pretend to know body otherwise than by those external properties, which discover themselves to the senses. As to those who attempt any thing farther, I cannot approve of their ambition. (T 1.2.5.26; SBN 64)

He continues in a footnote, "If we carry our enquiries beyond the appearances of objects to the senses, I am afraid, that most of our conclusions will be full of scepticism and uncertainty," adding that if "*the Newtonian* philosophy be rightly

understood, it will be found to mean no more" and that "[n]othing is more suitable to that philosophy, than . . . a fair confession of ignorance in subjects, that exceed all human capacity" (T 1.2.5.26n12.2; SBN 639).

Admittedly, in these passages from the *Treatise*, Hume does not explicitly single out Boyle and Locke for rebuke for helping themselves to knowledge of extra-perceptual objects and extrapolating metaphysical conclusions from that basis. However, the fact that Hume aligns himself with (what he understands to be) Newton's epistemic modesty signals that the contrast is operative if implicit, and Hume's critique of "Of the modern philosophy" later in the *Treatise* runs on precisely the lines we would expect: the metaphysical interpretation of the primary-secondary distinction held by modern philosophers like Locke requires subscription to claims (the inseparability and resemblance theses) that carry us "beyond the appearances of objects to the senses," and the bitter fruits of their ambition are "scepticism and uncertainty."

In this section, I advanced three claims about Hume's conception of the primary-secondary distinction defended by modern philosophers like Locke. First, I argued that Hume targets the inseparability and resemblance theses that structure Locke's understanding of the distinction. Second, I summarized Hume's arguments against the metaphysical conclusions that Locke draws from the distinction: Hume rejects Locke's claim that secondary qualities are less real than primary qualities, a claim that, Hume argues, leads to skepticism and undermines a "satisfactory" causal argument for the primary-secondary distinction, and Hume rejects Locke's claim that the powers to produce secondary qualities in us cannot really be bodies in virtue of their primary qualities unless superadded by God, a claim that, Hume argues, is unnecessary because there is no support for a resemblance constraint on causal relationships. Third, I showed that Hume eschews metaphysical interpretations of the primary-secondary distinction to the extent that metaphysics rides on claims about extra-perceptual objects.

To conclude, there is little support for the standard reading of Hume as an unabashed anti-realist about secondary qualities. An historically contextualized analysis of Hume's remarks on the primary-secondary distinction establishes, rather, that Hume is properly understood as inhabiting a somewhat quirky but coherent position. On the one hand, Hume acknowledges the mind-dependence of secondary qualities. On the other hand, Hume refuses to conceive of mind-dependence in the metaphysical way that modern philosophers like Locke suggest. I have argued that Hume regards the conception of reality operative in the Lockean metaphysics of the primary-secondary distinction to be as follows: what is real exists *not merely in the mind* but also in extra-perceptual objects. As Hume sees it, Lockeans claim that primary qualities satisfy this standard because they resemble and are intrinsic to bodies as they exist in themselves. Because Hume denies that

we can make any substantive claims about objects as they exist beyond our perceptions, he declines to judge secondary qualities less real than primary qualities. Hume, therefore, did not commit himself to anti-realism about secondary qualities, because he regards the realist/anti-realist debate as unintelligible.

NOTES

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1. References to the *Treatise* are to David Hume, *A Treatise of Human Nature*, ed. Norton and Norton, hereafter cited in the text as "T" followed by Book, part, section, and paragraph number, and to *A Treatise of Human Nature*, ed. Selby-Bigge, rev. by Nidditch, cited in the text as "SBN" followed by the page number. There are similar passages in Hume's *An Enquiry Concerning Human Understanding* and in his *Essays Moral, Political, and Literary*. See EHU 115.20 (SBN 154), "The Sceptic," 166n, and "Of the Standard of Taste," 234–35. References to the first *Enquiry* are to David Hume, *An Enquiry concerning Human Understanding*, ed. Beauchamp, hereafter cited in the text as "EHU" followed by section and paragraph number, and to David Hume, *An Enquiry Concerning Human Understanding*, ed. Selby-Bigge, rev. by Nidditch, hereafter cited in the text as "SBN" followed by page numbers. My focus is on Hume's views in the *Treatise*; although I do not think that there is any significant shift in his views in later works, I shall not attempt to defend the point here.

2 There are some realist interpretations of Hume on secondary qualities, most notably, Kail, *Projection and Realism*, xxxiv–xxxvi, 147–242 and Norton, *David Hume*, 55–93, 113. However, the anti-realist readings are widespread, especially in discussions of Hume's analogy of morals to secondary qualities. Prominent anti-realist readings of Hume in both moral and non-moral contexts include Blackburn, "Errors and Phenomenology," 152; Boghossian and Velleman, "Colour as a Secondary Quality," 76–77, 102–104; Darwall, Gibbard, and Railton, "Toward Fin de siècle Ethics," 163n; Flew, *David Hume*, 140–42; Fogelin, *Hume's Skepticism* 127, 142–45; Gill, *The British Moralists*, 244, 255–58; Goldman, *Moral Knowledge*, 55–58, 76–88; Harman, *Explaining Value*, 181–82; Laird, *Hume's Philosophy*, 215–16, 234; McDowell, "Projection and Truth," 151–52, 166; Mackie, *Hume's Moral Theory*, 58, 66 and *Ethics*, 29, 35; McGinn, *Subjective View*, 150–55; Noonan,

Hume on Knowledge, 144–48; Pitson, "Projection, Realism, and Moral Sense," 67–69; Prinz, *Emotional Construction of Morals*, 15; Raphael, "Hume and the Enlightenment," 21–22; Shaw, "Hume's Moral Sentimentalism," 40; Stroud, "'Gilding and Staining' the World," 268; Sturgeon, "Moral Skepticism and Moral Naturalism," 15; Wiggins, "A Sensible Subjectivism," 192–94 and "Postscript," 346; Winkler, "Hutcheson and Hume," 5, 15; and Wright, *Sceptical Realism* , 112.

3 Hume's views on the primary-secondary quality distinction, of course, were shaped by others besides Locke. However, I take it as uncontroversial that Locke was one such influence on Hume, and I hope to show that Locke is a rewarding and not yet exhausted lens through which to read Hume's arguments on the primary-secondary distinction. For some discussion of the influence of Bayle, Berkeley, Hutcheson, and Malebranche, see Kail, *Projection and Realism*; Nelson and Landy, "Qualities and Simple Ideas"; Norton, *David Hume*; and Wright, *Sceptical Realism*, 85–122.

4 My anti-metaphysical reading of Hume on secondary qualities follows that of Morris, "Hume's Conclusions," 100–108, and Swain, "Passionate Objectivity," 488. The possibility that Hume is not endorsing anti-realism about secondary qualities is also broached by Baier, *Progress of Sentiments*, 194, and Garrett, *Cognition and Commitment*, 218.

5 Although the following authors and I do not agree on every point, my interpretation of Locke is most roundly defended by Alexander, "Boyle and Locke" and *Ideas, Qualities and Corpuscles*, Jacovides, "Locke's Resemblance Theses," Mandelbaum, "Locke's Realism, and also, to a lesser extent, by Curley, "Locke, Boyle," especially 453. For other readings of Locke, see Atherton, "Corpuscles, Mechanism, and Essentialism"; Ayers, "Mechanism, Superaddition, and Proof," *Locke: Epistemology and Ontology*, and "Primary and Secondary Qualities," 280; Campbell, "Locke on Qualities"; Downing, "Status of Mechanism"; McCann, "Locke's Philosophy of Body" and "Locke's Distinction"; Owen, "Locke on Real Essence"; Rozemond and Yaffe, "Peach Trees"; Stuart, "Locke on Superaddition"; and Wilson, "Superadded Properties."

6 For discussion, see the essays collected in Nolan, *Primary and Secondary Qualities*.

7 See the discussion of Alexander, "Boyle and Locke," 63, 66–68, and "Boyle's Corpuscular Philosophy." For a different reading of Boyle, see Anstey, *Philosophy of Robert Boyle*. For a helpful examination of the influence of seventeenth-century science more generally on the primary-secondary distinction, see Smith, "Of Primary and Secondary Qualities."

8 Locke, *An Essay Concerning Human Understanding*, hereafter cited in the text as *Essay* with book, section, and paragraph number followed by page number.

9 See also, e.g., Locke, *Essay* II.8.4, 136; II.8.12–13, 133; and II.8.21, 139).

10 For a related reading of an analogous remark in Boyle, see Alexander, "Boyle and Locke," 67–73.

11 Bennett offers a similar assessment in *Locke, Berkeley, Hume*, 106.

12 On the subtleties hereabouts, see McCann, "Locke's Distinction."

13 Locke gives the porphyry example at *Essay* II.8.19, 139.

14 By "quality," neither Locke nor I am referring to ordinary *properties*; that is, I am not suggesting that Locke denies that yellow, say, is a property of ripe lemons. Rather, when Locke denies that a secondary "quality" is a distinct kind of quality at all, the relevant sense of "quality" refers to the Scholastic-Aristotelian notion of qualities that manifest themselves in our experience just as they are in (because communicated by) the object. In this Scholastic-Aristotelian sense of "quality," Locke *does* deny that secondary qualities are genuine qualities—color in us (our experience) is not identical to color in the object (corpuscular figure and motion). See, e.g., Nolan, "Descartes on 'What We Call Color,'" 85. The somewhat cumbersome expression "powers that bodies have by means of their primary qualities" is dictated by Locke's insistence that there can be no powers of powers, but only powers of substances (*Essay* II.21.1–3, 233–34 and II.21.14–19, 240–43).

15 Locke himself may be anticipating and rejecting this strict interpretation of "resemblance" at *Essay* II.8.7, 134.

16 For a thorough discussion of this reading of Locke, see Jacovides, "Locke's Resemblance Theses." Despite some grumbling, Mandelbaum concurs; see his "Locke's Realism," 21–23. Alexander devotes chapter 10 of his *Ideas, Qualities and Corpuscles* to resemblance, and while his view is more subtle than I can discuss here, he does assent to the general point that by "resemblance" Locke means that our ideas of primary qualities give us "an accurate idea of" (172) the qualities in bodies causing those ideas in us (198), and that primary qualities and their ideas "resemble one another as an object and its mirror image do" (199).

17 Locke's section summaries are revealing. That for II.8.15–22 is "Ideas *of primary Qualities are resemblances*; *of secondary*, *not*" and for II.8.24–25 is "*The* 1st. *are Resemblances*. *The* 2d. *thought Resemblances*, *but are not*."

18 As several commentators have argued, Lockean secondary qualities may nonetheless represent their causes in some other way, perhaps by causal covariance or teleological relationships. However, I avoid that debate. For discussion of the issues, see Bolton, "Locke on Simple Ideas," Lennon, "Locke on Ideas," and Ott, "What is Locke's Theory?"

19 My thanks to an anonymous reviewer and Don Garrett for help on this point.

20 Mounce reads him this way (*Hume's Naturalism, 9*). McGuire argues that the corpuscularians' (or at least Boyle's) commitment to this metaphysical thesis was merely nominalist. I am not sure that McGuire is entirely correct, but I do not believe my argument turns on the issue. While the corpuscularians tried to be epistemic naturalists, I do not wish to say that the corpuscularians were committed to *metaphysical naturalism*, which Garrett helpfully defines as "the doctrine that there is nothing outside of nature," explaining further that "[d]ifferent versions of this doctrine result from different specifications of the kinds of things that would be outside of nature, if they were to exist. These may include, for example, a personal God; abstract, universal, or immaterial entities; irreducible and inexplicable representational or normative qualities; or causal influences that are not subject to ordinary causal laws, such as miraculous interventions, the 'agent' causation of libertarian free will, or occurrences of special intellectual insight" (Garrett, "Hume's Conclusions," 171–72). Indeed, both Boyle and Locke were committed to the existence of many of the things on Garrett's list.

21 There are passages in which Locke stresses that our *ideas* or *sensations* of secondary qualities are real, presumably inclusive of both senses (i), *qua* ideas of the powers that bodies have by means of their primary qualities to produce sensations in us, and (ii), *qua* ideas of the essentially phenomenal qualities presented to us in those sensory experiences. As Locke puts it, "Our *simple* Ideas *are all real* . . . being in us the Effects of Powers in Things without us, ordained by our Maker, to produce in us such sensations" (*Essay* II.30.2, 372). However, here Locke is preparing the groundwork for his claim that secondary qualities are real *qua* causally-co-varying or teleological signs, thus his use of "real" in this context contrasts not so much with "un-real" (existing not merely in the mind) as with "fantastical" or "wrong representation" (*Essay* IV.2.14, 537 and IV.4.4, 564). There is obviously some overlap between the un-real and the fantastical; we can know that our ideas of the essentially phenomenal qualities presented to us in sensory experiences are of *un-real* qualities because they misrepresent, for instance, the intrinsic qualities of external bodies.

22 I am grateful to an anonymous reviewer and Don Garrett for helping me to clarify this point.

23 Jackson, "Locke's Distinction," 56, 60. See also the discussion of Laudan, "Method and the Mechanical Philosophy," 118 and Smith, "Of Primary and Secondary Qualities," 238.

24 Locke makes this claim frequently. See, for example, *Essay* IV.3.6, 541; IV.3.14, 546; and IV.3.24, 555. Locke also believes that there is a real contrast: while *our* ignorance is incurable, other epistemically superior beings could detect the flow (*Essay* IV.3.6, 543 and IV.3.23, 554).

25 Locke often presents the ideal form of scientific knowledge as an (almost) a priori explanation that "flows" with the axiomatic necessity of a geometrical proof. See *Essay* II.31.6, 380, III.3.17, 418, and IV.3.25, 556 for discussions of this in the context of secondary qualities. This aspiration to what Ayers calls "a hard or geometrical 'must'" shapes Locke's characterization of the epistemic hurdle: science must deduce sensible or secondary qualities properties from objects' primary quality microstructure like a geometer deduces the properties of squares and triangles from four- and three-sided plane figures. And this, Locke thinks, corpuscularianism cannot do. For discussion, see Ayers, *Locke*; Campbell, "Locke on Qualities"; Downing, "The Status of Mechanism"; McCann, "Locke's Philosophy of Body"; Rozemond and Yaffe, "Peach Trees, Gravity, and God"; Stuart, "Locke on Superaddition"; and Wilson, "Superadded Properties."

26 Locke sometimes claims that sensation must be the product of "some Spiritual Being within me, that sees and hears," and he continues, "[t]his I must be convinced cannot be the action of bare insensible matter; nor ever could be without an immaterial thinking Being" (*Essay* II.23.15, 306). While Locke ultimately suspends judgment on whether sensation must be the action of an *immaterial substance*, he continues to defend some kind of *property dualism*. Locke suspends judgment about the nature of "thinking Being" (*Essay* IV.3.6, 542). Rozemond and Yaffe arrive at a similar assessment of Locke's commitment to a kind of property (or substance, they claim) dualism ("Peach Trees," 404–405).

27 My thanks to an anonymous reviewer for pressing me on this point.

28 Strictly speaking, as Margaret Wilson points out, "the ideas in our minds may be doubly 'superadded': they occur because God has (perhaps) superadded to our bodies the property of thought, and has *also* annexed to certain motions of matter the power to 'produce' particular ideas in us" (Wilson, "Superadded Properties," 200). Locke says that gravity must be superadded to matter as well. See Locke, *Thoughts Concerning Education*, 166, 168.

29 While I follow Ayers's formulation of both this and the following point, I do not concur with his assessment that superaddition "in no way implies that something supernatural or *contrary* to the essence of matter is going on" (Ayers, "Mechanism, Superaddition," 229–30.

30 Despite their many differences, the following commentators take Hume's formulation of the distinction to echo Locke's: Ayer, *Hume*, 81; Corvino, "Second Quality Analogy," 160; Costelloe, "Beauty, Morals, and Character," 404; Flew, *David Hume*, 114; Goldman, *Moral Knowledge*, 72–76; Mackie, *Hume's Moral Theory*, 58, 66, 72; Pitson, "Projection and Realism," 67; Shaw, "Hume's Moral Sentimentalism," 40; Stroud, *Hume*, 181–84; Sturgeon, "Moral Skepticism and Moral Naturalism," 63–64n22; and Williams, *A Cultivated Reason*, 44–47. Wright argues that agreement with Locke (or at least with the natural philosophy behind Locke's distinction) is compatible with what he calls Hume's "sceptical realism" (*Sceptical Realism*, 107–12). McGinn sees Hume's conception of secondary qualities as broadly Lockean but argues that the analogy does not (*pace* Hume's intentions) automatically counsel anti-realism; see *Subjective View*, 145–48 and note 32.

31 A transcript of the letter appears in Morrisroe, "Did Hume Read Berkeley?" 314–15.

32 Elsewhere Hume suggests that primary qualities are also relative to some extent (T 1.4.2.45; SBN 210–11 and perhaps T 1.4.4.14; SBN 231).

33 Hume may be thinking of Locke's example of how lukewarm water feels hot to a chilled hand and cold to a warmed hand (Locke, *Essay* II.8.21, 139). However, the emphasis on relativity arguably comes from Berkeley, and Hume credits Berkeley in the first *Enquiry* (EHU 12.15n; SBN 154–55n). See Berkeley, *Principles* I.14–15, 46–47) and "First Dialogue."

34 As Garrett notes, at T 1.4.4.4 Hume is invoking not only his fourth rule for judging of causes and effects ("The same cause always produces the same effect" (T 1.3.15.6; SBN 173), which reappears as "from like effects we presume like causes"), but also his fifth rule ("where several different objects produce the same effect, it must be by means of some quality, which we discover to be common among them" (T 1.3.15.5; SBN 174)). Garrett notes that "the fourth rule does not require that the causes of like effects be similar in *all* respects but only that they be similar in *at least one*." According to Garrett, the "satisfactory" argument "concludes that the causes of our impressions of secondary qualities are all alike in one respect; namely, *having no resemblance to the impression*. But for all that the fourth rule actually requires, the causes of impressions might vary in their resemblance to the impressions themselves—so long as those causes all had some *other* feature in common" (*Cognition and Commitment*, 219).

35 There is some precedent in Locke for Hume's exclusive focus on motion, extension, and solidity. All three are prominent in Locke's discussion of space; see, for example, *Essay* II.13.11–14, 171–73.

36 My thanks to an anonymous reviewer for pointing out that both *uncolored* and *non-tactile* are necessary because Hume would allow that blind persons can have ideas of extension (through acquaintance with solid shapes) despite not seeing colors. This stretch of argument raises at least two major issues that I cannot take up. First, Hume is relying on his earlier argument about space in *Treatise* 1.2; on this see Falkenstein, "Space and Time." Second, Hume may be wrong. As some commentators have argued, Hume's argument presupposes an empiricism according to which *particular* modalities of sensory experience are the inlets of all knowledge. Hume appears to hold this conception of empiricism (T 1.1.1; SBN 1–7). However, one can object that the essential thing about primary qualities is not whether you or I can form a particular idea of them in isolation from any empirical coloring, but that they underwrite the construction of theoretical truths whose validity lies not in our sensations but in the objectivity of the world they bring into view. Many commentators have leveled a version of this objection against Hume; see, for example, Bennett, *Locke, Berkeley, Hume*, 92; Daniels, *Thomas Reid's Inquiry*, 47–96; Evans, "Things Without the Mind," 270–75; and Van Cleve, "Reid on the Real Foundation," 274–303.

37 Berkeley criticizes Locke's inseparability thesis along similar lines; see *Principles* I.10–11, 45.

38 I will not discuss it here, but Hume provides an argument for the equation of solidity with impenetrability or the impossibility of annihilation in *Treatise* 1.2.4. See Passmore, *Hume's Intentions*, 140–41.

39 Hume lists hard and soft as secondary qualities at EHU 12.15 (SBN 154–55). In the *Treatise*, Hume seems to operate with a more expansive array of tactile qualities, such as hot and cold (T 1.4.4.3; SBN 227) and other kinesthetic impressions in his discussion of our ideas of space (T 1.2.5). My thanks to Don Garrett for assistance with this point.

40 Hume also emphasizes the indispensability of color and tactile impressions to explanation at, for example, T 1.2.5.27 (SBN 64) and T 1.2.5.26n (SBN 638–39).

41 Once again, there is a Berkeleyan line of inheritance to Hume's critique of resemblance; see *Principles* I.9, 44-45.

42 For discussion of Hume's views on resemblance more generally, see Gamboa, "Hume on Resemblance."

43 In T 1.4.4.13 (SBN 230), Hume uses the word "conveys" rather than "represents," but he appears to have representation in mind, given that in the next paragraph he says we can no longer make sense of impressions of touch representing solidity when we attend to their simplicity. As I read this, Hume is saying that impressions can represent, but the issue is controversial. However, my claim can be phrased in a way congenial to most interpretations: *if* Hume thinks that simple impressions represent, then it is certainly not in virtue of resembling their causes. For a sampling of the debate, see Ainslie, "Adequate Ideas," 39–67; Cohon and Owen, "Hume on Representation," 47–76; Garrett, "Hume's Naturalistic Theory" 301–19; and Landy, "Hume's Theory of Mental Representation," 23–54.

44 As Hume undoubtedly realizes, his account of how we would form an abstract idea of solidity demands a similar readjustment. On Hume's view, the abstract idea of solidity is, roughly, a sign to "revive" particular ideas of solidity in objects we have

touched as well as counterexamples of solidity in, say, objects we have not touched (T 1.1.7; SBN 20). However, Hume need not be troubled by such a readjustment, given that he is not (unlike his interlocutor in *Treatise* 1.4.4; SBN 225–31) committed to a resemblance theory of representation for simple secondary quality sensations.

45 By "continu'd and distinct existences," Hume means objects that *continue* to exist "even when they are not present to the senses" and are *distinct* ("external" or "independent") "from the mind and perception" (T 1.4.2.2; SBN 188).

46 I take my gloss on "extravagant" to be uncontroversial, but for some other pejorative instances of "extravagant" in the *Treatise*, see T 1.2; 1.3.11.6; 1.3.14.26; 1.4.7.13 (SBN xiii–xiv, 125–26, 167–68, 271–72).

47 A third question is, why does the move from the causal conclusion to the metaphysical conclusion occur in the first place? I think Hume provides a diagnosis of why this move seems inevitable in "Of scepticism with regard to the senses," but addressing it is beyond the scope of the present paper. On that stretch of the *Treatise*, see Dicker, "Three Questions," 115–53.

48 The "extravagant skepticism" Hume is deploring is therefore a kind of idealism, as Hume had occasion to flag once before (T 1.4.2.50; SBN 214) and will again insist on in the *Enquiry Concerning Human Understanding* (EHU 12.15; SBN 155 and 155n). On my reading, Hume is trying to stanch the flow of this skepticism (which he associates with a Berkeleyan idealism formed in reaction to Locke), so Reid's influential characterization of Hume as enthusiastically carrying the tradition to its skeptical conclusion is, as Kemp Smith noted some time ago, inaccurate. See Kemp Smith, *Philosophy of David Hume*, 5–6.

49 Given Hume's musings that primary qualities may be just as perceiver-relative as secondary qualities (T 1.4.2.45 and T 1.4.4.14; SBN 210–11, 231), it is not entirely clear what difference remains between them *qua* perceptual objects. Determining Hume's commitment to the primary-secondary distinction, as such, or indeed his attitude to the epistemological hypothesis motivating the distinction in Locke or corpuscularian natural philosophy, is outside the aims of this paper. I indicate a possible way in which Hume could appropriate the distinction below (note 58). For the moment, I note that Hume lists "gravity" as one of the most basic explanatory principles in nature (EHU 4.12; SBN 60), and gravity was then considered to be a stock example of the limits of corpuscularian mechanism. My thanks to an anonymous reviewer for this point.

50 Hume opened his discussion on "the modern philosophy" by announcing that there are two different types of principles of the imagination: (i) those that are "permanent, irresistible, and universal; such as the customary transition from causes to effects," and (ii) those that are "changeable, weak, and irregular; such as those I have just now taken notice of" (T 1.4.4.1; SBN 225). On my reading, these are precisely the same principles that are generating the skeptical clash between the causal and metaphysical conclusions concerning the primary-secondary distinction. Admittedly, Hume seems to refer the latter principles of the imagination to those shown in *Treatise* 1.4.3 to animate "the opinions of the ancient philosophers, [on] substance and accident." However, as W. E. Morris has argued, Hume is here speaking not in his own voice but in that of the modern philosophy, which "pretends to be entirely free from this defect [of the ancients], and to arise only from the solid, permanent,

and consistent principles of the imagination" (T 1.4.4.2; SBN 226) (Morris, "Hume's Conclusions," 97). What *Treatise* 1.4.4 ultimately shows, on my (and, I think, Morris's) reading, is that the modern philosophy has not escaped the "changeable, weak, and irregular" principles of the imagination, for the moderns' understanding of the primary-secondary distinction breeds a metaphysical conclusion about "continu'd and distinct existences" that in turn generates the topic of *Treatise* 1.4.2: "Of scepticism with regard to the senses."

51 As I argued in section 2.1, Hume also denies Locke's resemblance thesis, on which our ideas of primary qualities resemble primary qualities as they exist in themselves. Hume's critique of Locke's use of resemblance in the case of superaddition is complementary to that earlier critique, but here Hume concentrates specifically on resemblance as it figures as a causal requirement that Locke thinks cannot be satisfied (and which Locke therefore takes to require the postulation of superadded properties).

52 More precisely, as Hume explains in the first of his two definitions of cause: "An object precedent and contiguous to another, and where all the objects resembling the former are plac'd in like relations of precedency and contiguity to those objects, that resemble the latter." Hume's second definition of cause takes up the "determination" of the mind to associate a necessary connection between objects so related. See T 1.3.14.31–33 (SBN 170–71). Garrett provides a helpful discussion of Hume's account of causation and also reviews some of the important debates in the secondary literature in *Cognition and Commitment*, 96–117.

53 One obvious objection to my interpretation is that Hume never directly mentions superaddition in this stretch of the *Treatise* (or, for that matter, anywhere). However, there is evidence that Hume's formulation of the argument I have examined from *Treatise* 1.4.5 was indebted to his reading of the debate between Samuel Clarke and Anthony Collins, which contains explicit references to Locke and superaddition. Clarke argues that thinking cannot be the product of material forces. One of Clarke's recurrent arguments—which he credits to Locke—turns on resemblance: if matter really has the power to cause sensation, then the "*sweetness* or *color* of a rose" should also "belon[g] to the *several parts*" of the relevant system of matter, which Clarke observes is not the case (in Uzgalis, *Correspondence*, 58; the argument reappears on 172–74, with an explicit reference to "Book IV, ch. 10, sect. 17" of Locke's *Essay*.) Indeed, Clarke is so impressed by this line of argument that he considers Locke's recourse to superadded properties inadequate: "I think the argument drawn from the divisibility of matter proves that matter is not a subject capable of such *superaddition*" (Uzgalis, 176; see also 58). In response, Collins argues that many properties are produced by parts that do not share in the properties to which they give rise; for instance, even a primary quality like *roundness* does not exactly resemble its corpuscular parts, which are at most "little curves or arches" that "have a tendency to roundness" (Uzgalis, *Correspondence*, 208). Given the similarity between this aspect of the Clarke-Collins debate and how Hume joins the debate with his unnamed interlocutor in the passages I examined from *Treatise* 1.4.5, it seems probable that Hume had not only Locke, but superaddition, in mind, even though he does not mention them by name. For further discussion, see Attfield, "Clarke, Collins and Compounds," 47; Russell, *Riddle of Hume's "Treatise,"* 195–97; and Uzgalis, *Correspondence*, 36, 319. Hume may also have been acquainted with superaddition through Bayle. In note "G" to his article on Jupiter, Bayle writes that "some Christian

Philosophers maintain, that matter is capable of thinking," and Bayle also flags their more specific claim "that matter becomes thinking, only by a particular gift of God." See Bayle, *Dictionary*, 3:650–51.

54 For excellent discussion of many of these issues, see Ainslie, "Adequate Ideas."

55 John P. Wright observes that for Hume to say that external objects "occasion" our perceptions is probably "a cautious way of saying they cause the perceptions" (*An Introduction*, 58). Of course, as Wright himself notes, Hume does not thereby commit himself to any particular causal story about how external objects produce perceptions in us; see Hume's comment at T 1.3.5.2 (SBN 84).

56 This claim may need additional subtlety. As Nelson and Landy argue, Hume's "science of human nature will employ in its explanations theoretical objects that are not themselves phenomena and not directly experienced. . . . Hume posits such entities on the grounds that they *explain* certain phenomena . . . in need of explaining" ("Qualities and Simple Ideas," 225).

57 For some discussion, see Baxter, "Identity, Continued Existence," 117–18 and Flage, "Relative Ideas Revisited," 158–71.

58 Note that Hume's position is consistent, however, with his claim to find "satisfactory" the causal or relativity argument for the primary-secondary distinction (see section 3.1 *above* and footnote 49). Hume's view is that even though we only have epistemic access to objects through our perceptions of them, some of our perceptions present characteristics as of mind-independent objects and their intrinsic or primary qualities, and some of our perceptions present characteristics as of objects with observer-relative or secondary qualities.

59 On Hume's relationship to Newton, see De Pierris, "Hume and Locke."

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