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Reid on the Real Foundation of the Primary/Secondary Quality Distinction

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The distinction betwixt primary and secondary qualities hath had several revolutions. Democritus and Epicurus, and their followers, maintained it. Aristotle and the Peripatetics abolished it. Des Cartes, Malebranche, and Locke, revived it, and were thought to have put it in a very clear light. But Bishop Berkeley again discarded this distinction, by such proofs as must be convincing to those that hold the received doctrine of ideas. Yet, after all, there appears to be a real foundation for it in the principles of our nature.

Thomas Reid¹

Every student of philosophy knows how to draw up the lists of primary and secondary qualities.

On the left go extension, size, shape or figure, solidity, motion or rest, and number; on the right go color, sound, scent, taste, heat and cold. But what is the principle of the distinction? Does it have to do with objective versus subjective? Categorical versus dispositional? Intrinsic versus extrinsic? Or something else? And does the distinction stand up to the criticisms that various philosophers have made of it? In this chapter, I expound the answers to these questions given or made possible by Thomas Reid.

1. Reid's relation to Locke and Berkeley

¹ Thomas Reid, *An Inquiry into the Human Mind on the Principles of Common Sense*, edited by Derek R. Brookes (Edinburgh: Edinburgh University Press, 1997; first published in 1764), Chapter 5, Section 4, p. 62. Subsequent references to this work will be in this style: IHM 5.4, 62. A similar passage occurs in Reid's *Essays on the Intellectual Powers of Man*, edited by Derek R. Brookes (University Park, PA: Pennsylvania State University Press, 2002; first published in 1785) in Essay II, Chapter 17, p. 201. Subsequent references to this work will be in this style: EIP 2.17, 201.

Though the term ‘secondary quality’ was introduced by Boyle, the distinction between primary and secondary qualities comes down to us mainly through Locke and Berkeley. Here is how Locke defines secondary qualities:

[Secondary qualities are] Such *Qualities*, which in truth are 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.²

It is clear from this passage that what Locke understands by a secondary quality is something quite definitely in the object. Locke scholars may disagree about whether this something is a dispositional property or its categorical basis—an interpretive issue we shall shortly encounter in connection with Reid as well—but in either case, secondary qualities reside in external objects.³

When Berkeley came to present Locke’s teaching on primary and secondary qualities, he did not adhere to Locke’s own understanding of what a secondary quality is. Here is how Berkeley has Hylas present the distinction in the *Three Dialogues*:

You must know sensible qualities are by philosophers divided into *primary* and *secondary*. The former are extension, figure, solidity, gravity, motion, and rest. And these they hold exist really in bodies. The latter are those above enumerated [colors, sounds, tastes, etc.]; or briefly, all sensible qualities beside the primary, which they assert are only so many sensations or ideas existing nowhere but in the mind.⁴

As Hylas uses the term, a secondary quality is a quality that exists nowhere but in the mind. This divergence in usage—secondary qualities as properties (if only dispositional ones) in external objects versus secondary qualities as properties existing only in the mind—persists down to the present day. Unfortunately, there is not only divergence from one writer to another, but sometimes

² John Locke, *An Essay Concerning Human Understanding*, 2.8.10.

³ Students sometimes stumble on Locke’s comma, taking him to say that secondary qualities are “nothing in objects themselves.” But that reading conflicts with the rest of the sentence, which says that secondary qualities are powers, which can hardly be anywhere but in the object. On this point, see Mackie, *Problems from Locke*, p. 12, or Edwin McCann, “Locke’s Philosophy of Body,” in *The Cambridge Companion to Locke*, pp. 56-88, at p. 63. (OR THIS VOL?)

⁴ George Berkeley, *Three Dialogues Between Hylas and Philonous*.

even divergence from one passage to another in the same writer.⁵ Students do well not to be confused by this.

Despite their divergence in terminology, we can identify an important thesis on which Locke and Berkeley agree. If by ‘red’ we mean the occurrent, sensuous, aesthetically significant quality that most of us initially mean by the term (as opposed, say, to the power of objects to reflect light of certain wavelengths and absorb the rest), then redness is not in external objects, but only in minds. It is a feature of sensations or ideas only, as Hylas says. This is the thesis that Locke states in terms of resemblance:

The 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.⁶

Locke is saying that colors, tastes, and so on—“the ideas produced in us by these secondary qualities”—do not resemble any properties in the objects that cause them.

We can also identify significant points on which Locke and Berkeley disagree. For Locke, there certainly are primary qualities in objects, and they do resemble the ideas “of” them in our minds. For Berkeley, by contrast, all qualities reside in the mind alone, and nothing in the mind resembles anything outside it.

⁵ Hume and Putnam may be mentioned as classical and contemporary cases in point. Hume compares his account of moral virtues and vices to the account of secondary qualities given by the modern philosophy. He says his philosophy “defines virtue to be *whatever mental action or quality gives to a spectator the pleasing sentiment of approbation*; and vice the contrary” (*An Enquiry Concerning the Principles of Morals*, p. 289). That definition puts virtue and vice in the action contemplated, not in the spectator. But he also says this: “When you pronounce any action or character to be vicious, you mean nothing, but that from the constitution of your nature you have a feeling or sentiment of blame from the contemplation of it. Vice and virtue, therefore, may be compar’d to sounds, colours, heat and cold, which, according to modern philosophy, are not qualities in objects, but perceptions in the mind” (*A Treatise of Human Nature*, 3.1.1, p. 469). That comparison puts virtues and secondary qualities in the mind.

The same double usage occurs in Hilary Putnam, *The Many Faces of Realism* (La Salle, Ill.: Open Court, 1987). Putnam characterizes secondary qualities both as “dispositions to affect us in certain ways” (p. 8), which puts them in objects, and as properties that are “merely ‘appearance’, or merely something we ‘project’ onto the object” (p. 9), which puts them in minds.

⁶ Locke, *Essay*, 2.8.15. Ideas “of” primary qualities are not necessarily intentional states; they may simply be ideas produced in us by primary qualities, in parallel with Locke’s language in the second half of the sentence.

How now does Reid relate to Locke and Berkeley? He agrees and disagrees with each of them on important points. In agreement with Locke and in opposition to Berkeley, he maintains that there are indeed objects outside the mind, and that they are invested with the primary qualities. In agreement with Berkeley and in opposition to Locke, he maintains that ideas or sensations do not resemble external things in respect of primary qualities any more than they do in respect of secondary qualities.

Reid's resistance to Locke's positive resemblance thesis comes out most strongly in his *experimentum crucis*—the thought experiment by which he seeks to show that we have clear conceptions of certain qualities (notably, extension and hardness) that we could never have derived from our sensations.⁷ In the thought experiment, we are to imagine a person stripped of his notion of extension and thus of the primary qualities generally (since size, shape, and motion all presuppose extension). We are to consider whether such a person could recover the notion of extension just from tactile sensations and the power of reasoning. Reid describes a sequence of progressively richer sensations—the prick of a pin, the pressure of a blunt instrument, the drawing of a finger across the subject's back, the feelings of moving his arm with and without resistance—and contends that at no step of the way would any of these sensations afford the subject any conception of extension. Reid concludes that the notion of extension must be innate in those who have it, constituting an exception to Hume's principle that all our ideas are copies of impressions. The interesting implication for present purposes is that there is *no resemblance* between our sensations and extended objects. If there were, the subject of the experiment *could* get the conception of extension by reflection on his sensations.⁸

⁷ For this thought experiment, see IHM 5.6, pp. 65-67. Reid refers back to it as his '*experimentum crucis*' on p. 70.

⁸ I have always thought there is an odd disparity in the reasons Reid gives for his doctrine of "no resemblance" between sensations and external things. Sometimes he presents it as though it were the result of careful introspection: attend to your sensations carefully enough, and you will see that they resemble nothing in the external world (IHM 6.6, p. 92; EIP 2.17 209 lines 10-18). At other times he presents it as though it were a matter of *a priori* ontology: sensations are mind-dependent, traits of external objects are not, and no resemblance can span such fundamentally different types of

To summarize this section, the basis of the primary/secondary quality distinction for Reid cannot be that primary qualities reside in objects and secondary qualities do not (as Berkeley's Hylas has it), since *both* sets of qualities reside in objects. Nor can it be that primary qualities resemble their associated ideas or sensations and secondary qualities do not (as Locke has it), since in *neither* case is there any resemblance. So what, if anything, is the basis for the distinction?

2. The real foundation: epistemological or metaphysical?

Reid gives his own account of the primary/secondary quality distinction in the following passage from the chapter in the *Intellectual Powers* devoted to the distinction:

Is there a just foundation for this distinction? Is there anything common to the primary which belongs not to the secondary? And what is it?

I answer, That there appears to me to be a real foundation for the distinction; and it is this: That our senses give us a direct and a distinct notion of the primary qualities, and inform us what they are in themselves: But of the secondary qualities, our senses give us only a relative and obscure notion. They inform us only, that they are qualities that affect us in a certain manner, that is, produce in us a certain sensation; but as to what they are in themselves, our senses leave us in the dark. (EIP 2.17, 201)

A few paragraphs later, he gives a reprise:

Thus I think it appears, that there is a real foundation for the distinction of primary from secondary qualities; and that they are distinguished by this, that of the primary we have by our senses a direct and distinct notion; but of the secondary only a relative notion, which must, because it is only relative, be obscure; they are conceived only as the unknown causes or occasion of certain sensations with which we are well acquainted. (EIP 2.17, 202)

So there we have it: our notions of primary qualities are *direct* and *distinct*, whereas our notions of secondary qualities are *relative* and *obscure*.

'Direct' is the opposite of 'relative'. Reid explains what he means by 'relative' as follows:

A relative notion of a thing, is, strictly speaking, no notion of the thing at all, but only of some relation which it bears to something else. (EIP 2.17, 201)

being (IHM 6.6, p. 94; EIP 2.17, 209 lines 31-38). At EIP 2.17, p. 203, he presents both considerations seamlessly in the same paragraph.

This [the notion of gravity as whatever causes one body to be drawn toward another] is a relative notion, and it must be obscure, because it gives no conception of what the thing is, but of what relation it bears to something else. (EIP 2.17, 202)

An example of a relative notion would be the notion conveyed by the description ‘the object that was in Descartes’s pocket on the day he died’; clearly, such a description leaves us in the dark about what the object was or what it was like. Reid cites medicine as a source of further examples: terms such as ‘astringent’ and ‘narcotic’, which signify qualities known only by their effects on animal bodies (IHM 6.5, p. 88).

Examples of direct notions are our notions of the various shapes and the notion of hardness, which Reid defines as the firm adhesion of the parts of a body so as to make it resistant to change of shape (IHM 5.4, 61-62). When we know a thing to be hard or square, we do know what it is like in itself, not merely how it is related to something else.

‘Distinct’ is the opposite of ‘obscure’. It appears to have been Reid’s view when he wrote the EIP chapter on secondary qualities that relative notions are *ipso facto* obscure: when we know only what relation a thing bears to something else, we have no distinct notion of it, but “only a relative notion, *which must, because it is only relative, be obscure*” [emphasis added].⁹

According to Reid’s official account of the difference between primary and secondary qualities, then, our notions of the former are direct and distinct while our notions of the latter are relative and obscure. This account may well prompt in the reader the following thought:

Reid’s distinction between primary and secondary qualities is merely epistemological, not metaphysical. The two types of quality differ not in their own natures, but in the types of access we have to them.

⁹By the time he wrote the *Essays on the Active Powers of the Human Mind*, however, he had come around to the position that some relative notions are distinct, not obscure. For example, he says that the relative notion we form of a chiliagon by considering its relations to polygons of a greater or lesser number of sides is distinct—indeed, more distinct than the direct conception of a chiliagon we obtain when we see or imagine one. This change of mind was no doubt meant to accommodate his view that notion of *active power* is relative to its effects, yet distinct for all that. See *Essays on the Active Powers of the Human Mind*, edited by Baruch Brody (Cambridge, Mass.: MIT Press, 1969), pp. 7-9.

This is the understanding of Reid advocated by Lehrer and McKittrick, and there is undeniably support for it in Reid's text.¹⁰ But I believe it is also possible to interpret Reid in such a way that his distinction between primary and secondary qualities is rooted in the nature of the qualities themselves after all: primary qualities are *intrinsic* and secondaries *extrinsic*. In the next two subsections, I explore what can be said for and against these two interpretations.

A. Dispositions or bases?

The question whether Reid's foundation for the distinction is epistemological or metaphysical is closely aligned with another question: does Reid think of secondary qualities as mere *dispositions* in objects, or does he think of them as the *causal bases* of dispositions? As explained below, the 'disposition' answer suggests a metaphysical foundation for the distinction, whereas the 'base' answer suggests a merely epistemological one.

Where contemporary philosophers use the term 'disposition', Reid more often uses the terms 'power' and (with no pejorative intent) 'occult quality'.¹¹ I shall generally use the contemporary term in what follows.

Dispositions are often defined by subjunctive conditionals. To say that the glass is fragile is to say that if it were struck, it would break; to say that sugar is soluble is to say that if it were placed in water, it would dissolve; and so on. Schematically, x has a certain disposition (to exhibit manifestation M in circumstances C) IFF if x were placed in C, it would exhibit M. A definition of the color red fitting this schema might look like this:

x is red IFF if x were placed in view of a normal human observer in daylight, the observer would receive red* sensations.

¹⁰Jennifer McKittrick, "Reid's Foundation for the Primary/Secondary Quality Distinction," *The Philosophical Quarterly*, 52 (2002), 478-94; reprinted in *The Philosophy of Thomas Reid*, edited by John Haldane and Stephen Read (Oxford: Blackwell, 2003), pp. 65-81; Keith Lehrer, "Reid on Primary and Secondary Qualities," *The Monist*, 61 (1978), 184-91, at p. 186.

¹¹ See, for example, IHM 6.5 88 and EIP 2.18, p. 216. We do have 'disposition' at EIP 2.17, p. 204.

By ‘red* sensations’, I refer to the type of sensations you get when something looks red to you—a type I could define ostensively by putting you in the right circumstances and letting you see what happens.¹² I use ‘red*’ rather than ‘red’ in the definiens for two reasons: (i) I do not want to give the appearance of a circular definition, and (ii) in Reid’s view, sensations and external things are certainly not red in the same sense (else we would have an instance of the resemblance thesis he so strenuously opposes).

The *causal base* of a disposition is the categorical property (if any) in virtue of which the disposition is possessed—in other words, it is some nondispositional property of the object such that it is a causal law that objects with that property exhibit M in C. The basis of the fragility of glass is presumably some aspect of its molecular structure, its pattern of bonding or whatnot; the basis of an object’s looking red (i.e., producing red* sensations in observers) might be whatever properties of its surface make it reflect light of certain wavelengths while absorbing light of other wavelengths. Philosophers debate the question whether all dispositions must have categorical bases; I shall simply assume here that the answer is yes.¹³

Now we may pose the issue of this subsection: are Reidian secondary qualities dispositions to produce sensations, or are they the bases of such dispositions?¹⁴ Bases, say McKittrick and

¹² My device of starring does much the same work as Peacocke’s device of priming predicates; I prefer it only for typographical reasons. See Christopher Peacocke, *Sense and Content* (Oxford: Oxford University Press, 1983), ch. 2.

¹³ Elsewhere I have argued for a yes answer with one qualification: although *universal* dispositions (those possessed by everything) need not have categorical bases, dispositions possessed by some things but not others must have them. See my “Putnam, Kant, and Secondary Qualities,” *Philosophical Papers*, 24 (1995), 83-109, Appendix 00 CHECK.

¹⁴ The question ‘disposition or base?’ is short-circuited by those philosophers who *identify* dispositions with their bases, as D.M. Armstrong professes to do. There are objections to such an identity view, however. To mention just one, the same disposition may have different bases in different objects and cannot be identical with them all. (For this objection along with two others, see Elizabeth W. Prior, Robert Pargetter, and Frank Jackson, “Three Theses about Dispositions,” *American Philosophical Quarterly*, 19 (1982), 251-57.) Moreover, in some of Armstrong’s own elucidations of his so-called identity view, it appears that he really holds something else. In “Dispositions as Categorical States,” his contribution to *Dispositions: A Debate*, edited by Tim Crane (London: Routledge, 1996), he spells out his view thus: what it is for glass to be brittle is for it to have a categorical property that, together with its being struck and the laws of nature, entails that it shatters. That makes dispositions supervenient on categorical properties without being identical with them.

Wolterstorff; dispositions, say Yaffe and I.¹⁵ This question is related to the epistemological versus metaphysical issue in a clear-cut way. If secondary qualities are bases, they may simply be (as in Locke's view they explicitly are) combinations of primary qualities, in which case, of course, they would be the same in nature as primary qualities. Secondary qualities would differ from primary qualities only in our mode of access to them (via their effects). But if secondary qualities are dispositions, they will differ metaphysically from primary qualities—they will be relational or extrinsic properties, in a sense to be explicated further below, whereas primary qualities are intrinsic.

The textual evidence on the disposition versus base issue pulls in both directions. Reid sometimes says that a secondary quality is a "certain power or virtue in bodies" (IHM 6.5, 87, lines 9-12; see also IHM 2.9, 43, line 3), suggesting a dispositional account. However, his more frequent formula is that secondary qualities are *unknown causes of known effects*. Here is a sampling of passages:

[T]he qualities in bodies which we call *heat* and *cold*, are unknown. They are only conceived by us, as unknown causes or occasions of the sensations to which we give the same names. (IHM 5.1, 54)

[T]hat idea [a term Reid uses here interchangeably with 'sensation'] which we have called *the appearance of colour*, suggests the conception and belief of some unknown quality in the body, which occasions the idea; and it is to this quality, and not to the idea, that we give the name of *colour*. (IHM 6.4, 86)

But of the secondary qualities, our senses . . . inform us only, that they are qualities that affect us in a certain manner, that is, produce in us a certain sensation. (EIP, 2.17; p. 201)

¹⁵ For the view that Reidian secondary qualities are bases, see McKittrick; Nicholas Wolterstorff, *Thomas Reid and the Story of Epistemology* (Cambridge: Cambridge University Press, 2001), pp. 112-13, where it is said that this is Reid's "dominant tendency;" and Barry Maund, "Color," *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), Edward N. Zalta (ed.), forthcoming URL = <<http://plato.stanford.edu/archives/fall2008/entries/color/>>. For the view that Reidian secondary qualities are dispositional (and relational) properties, see Gideon Yaffe, "Thomas Reid", *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), Edward N. Zalta (ed.), forthcoming URL = <<http://plato.stanford.edu/archives/fall2008/entries/reid/>>.

[S]mell in the rose is an unknown quality or modification, which is the cause or occasion of a sensation which I know well. . . . The same reasoning will apply to every secondary quality. (EIP 2.17, 202)

Characterizing secondary qualities as “unknown causes” suggests that secondary qualities are bases rather than dispositions for two reasons: it is bases, not dispositions, that do the causing,¹⁶ and it is bases that are unknown.¹⁷

The second of these points has been pressed by Wolterstorff: “If green were a disposition in things to cause certain sensations under certain conditions and not the physical basis of that disposition, we would know what it was.”¹⁸ This argument is presumably to be spelled out as follows:

1. If green were a disposition in things to cause certain sensations in us, we would know what green is (for we know what that disposition is).¹⁹
2. According to Reid, we do *not* know what green is—it is an unknown quality, etc.
3. Therefore, Reid’s view implies that green is not a disposition, but its base—for it is the base of which we are ignorant.

Call this the argument from ignorance.

It seems to me that this argument cannot be decisive, since it may be countered by an equally good argument from knowledge. If we do not know *what* green is, then we do not know of anything *that* it is green. This is an instance of the general principle that you know *x* to be *F* only if you know what it is to be *F*. But it is clear that for Reid, we *do* often know of things that they are green. Hence, we must know what it is for them to be green, contrary to premise 2 in the argument from ignorance.²⁰

¹⁶ See Prior, Pargetter, and Jackson for an argument that dispositions are causally impotent.

¹⁷ A related point is that if Reid were thinking of secondary qualities as dispositions, it would be more natural for him to speak of the property *of* causing such-and-such sensations rather than the property *that* causes them.

¹⁸ Wolterstorff, p. 112.

¹⁹ Compare what Reid says about gravity at EIP 2.17, pp. 201-202: when the word is used to signify the tendency of bodies toward the earth (as opposed to the cause of this tendency), we know perfectly what it is.

²⁰ Reid’s own attitude to the argument I have just given is difficult to make out. At EIP 203-204, he seems to repudiate its general principle (that you know something is *F* only if you know what it is to be *F*): “Our feeling informs us that

I said above that the textual evidence on the disposition versus base issue pulls both ways. Here is a passage that makes trouble for the base view and favors the disposition view:

[Sensations belonging to secondary qualities] are not only signs of the object perceived, but they bear a capital part in the notion we form of it. We conceive it only as that which occasions such a sensation, and therefore cannot reflect upon it without thinking of the sensation which it occasions. (EIP 2.17, 204; see also IHM 6.4, p. 86, lines 31-36)

Call this the “capital part” thesis. The thesis is clearly true if secondary qualities are dispositions, defined in the manner above. The definiens in each dispositional definition of a secondary quality makes reference to a type of sensation, and for that reason, we could not conceive of the property without conceiving of the sensation. But the thesis is not so clearly true, and indeed seems false, if secondary qualities are bases. The base might be a primary quality with which we are in fact acquainted (perhaps without knowing that it is the base), and in that case we would be able to conceive of it without conceiving of any sensation. People who do not know that motion is the base of the disposition to produce heat sensations (and even those who do) may conceive of motion without conceiving of heat sensations.

The argument I have just given may raise suspicions. An instance of it would be the following:

1. I cannot conceive of heat without conceiving of heat sensations. (The “capital part” thesis)
2. I can conceive of motion without conceiving of heat sensations.
3. Therefore, heat is not motion.

We know nowadays that heat is a form of motion, so must there not be something wrong with the argument?

the fire is hot; but it does not inform us what that heat of the fire is.” Yet before the paragraph is over, he acknowledges that “if we had not some notion of what is meant by the heat of fire, and by an inebriating quality, we could affirm nothing of either with understanding.” He seeks to reconcile this remark with the preceding one by saying that our notion of heat is merely relative—what we know in knowing the fire to be hot is that it contains some cause of our heat sensations, but not what this cause is. I shall be arguing below that his reconciliation is best effected by taking the notion of heat to be dispositional.

The validity of the argument ought to be conceded by anyone who adopts an intensional criterion for the identity of properties, and premise 2 seems beyond question. The controversial part is premise 1. Contemporary readers who know their Kripke would say that if we characterize heat by the formula “Heat is the cause of heat sensations,” we are not *giving the meaning* of ‘heat’, but fixing its reference. We are not saying that ‘heat’ is synonymous with ‘whatever causes heat sensations’, but are saying instead something that amounts to this: there is a property P that causes heat sensations, and heat is *that property P*. If motion turns out to be the cause of heat sensations, it would then follow that heat is motion.²¹ The first premise and the conclusion of the argument above would both be false.

The argument is therefore contentious. What matters for our interpretive purposes, however, is whether Reid would have accepted its first premise. I believe he would have. When he affirms his “capital part” thesis, I do not believe he is merely expressing a deficiency in human knowledge—that in our ignorance of the causes of certain types of sensations, we can only refer to them indirectly as whatever properties cause the sensations. I believe he is affirming an essential link between the concept of heat and heat sensations, the concept of color and color sensations, and so on. In Lehrer’s terms, he is saying that sensations are “semantic constituents” of secondary-quality concepts; in McDowell’s terms, he is saying that secondary qualities are “essentially phenomenal qualities,” i.e., “qualities that could not be adequately conceived except in terms of how their possessors would look.”²²

²¹ Galileo was one of the first to conjecture that molecular motions are the cause of heat sensations. It is of interest that he states his conjecture by saying that motion is the cause of *heat*. In other words, he identifies heat with the sensations and not with their cause. This shows just how much the semantics of ‘heat’ has changed between Galileo’s day and our own. See *Thus Spoke Galileo*, edited by A. Frova and M. Marenzana (Oxford: University Press, 1998), p. 409.

²² Keith Lehrer, *Thomas Reid* (London: Routledge 1989), p. 27; John McDowell, “Values and Secondary Qualities,” in *Morality and Objectivity: A Tribute to J.L. Mackie*, edited by Ted Honderich (London: Routledge and Kegan Paul, 1985); reprinted in *Moral Discourse and Practice: Some Philosophical Approaches*, edited by Stephen Darwall, Allan Gibbard, and Peter Railton (Oxford University Press, 1997), pp. 201-13. The quoted words occur on p. 203 in the latter volume. McDowell goes on to say that if in light of improved microphysical knowledge of the causal base of redness, we began to ascribe the microphysical quality to objects that look red to us, we would no longer be ascribing redness to them.

We have now reviewed two sets of passages in Reid that seem to pull in opposite directions on the present issue—the “unknown cause” passages, which suggest that secondary qualities are causal bases, and the “capital part” passages, which suggest that secondary qualities are dispositions essentially defined in terms of certain sorts of sensations. Is there any way to accommodate them all? Perhaps not, if we must remain true to their letter; but perhaps so, if we may hazard a certain guess as to their intent or spirit. In what follows, I take up an idea mentioned by McKittrick, though not attributed by her to Reid.

McKittrick points out that some philosophers analyze dispositions along the following lines:

X has disposition D to produce manifestation M in circumstances C IFF there is some property P such that (X has P & P would cause M in C).²³

A disposition as defined by a definition in this style is a *second-order* property—the property of having some property that satisfies a certain condition.²⁴ If redness were a disposition in this sense, it would be the property of having some property P that causes red* sensations in humans (in the specified circumstances). It would not be whatever *specific* property causes red* sensations—perhaps there is more than one—but the property of having *some property or other* that causes red* sensations. Properties that are dispositional in this sense are also dispositional in the “bare” sense discussed earlier (defined in terms of subjunctive conditionals), but the converse is not necessarily true—the bare sense leaves it open whether there is a causal base and the second-order sense does not.

McKittrick does not ascribe to Reid the view that secondary qualities are dispositions on the second-order property model—she thinks secondary qualities for Reid are bases.²⁵ But I think the

²³ McKittrick, pp. 67-68.

²⁴ This notion of a second-order property should not be confused with another that also goes by the name ‘second-order property’, namely, a property had by first-order properties rather than individuals. Second-order properties in the current sense may be had by individuals; they are called second-order because in the specification of them we quantify over other properties.

²⁵ Her view is actually more complicated than this, as she ascribes to Reid the supposedly Armstrongian view that dispositions and bases are identical. In my view, this leaves her hard pressed to handle Wolterstorff’s observation that

second-order view may be just what we need to accommodate some of the things Reid says. Look again at this passage:

[T]hat idea [sensation] which we have called *the appearance of colour*, suggests the conception and belief of some unknown quality in the body, which occasions the idea; and it is to this quality, and not to the idea, that we give the name of *colour*. (IHM 6.4, 86)

How should we characterize the “belief of some unknown quality in the body” that occasions the sensation? There are two possibilities. One is

- (1) We believe there is a property P such that (P is in the object & P causes such-and-such sensations in us)

and the other is

- (2) There is a property P such that we believe (P is in the object & P causes such-and-such sensations in us)

The second formula cannot be right, precisely because the quality that causes red* sensations is unknown to us; until we have discovered which quality it is, we do not really believe of any property that *it* is the cause of our sensations. What we believe is better captured by the first formula—we believe that some property or other is in the object and causes red*sensations. Now if that is what we *believe* when we believe an object is red, it would be natural to say as well that that is what it *is* for an object to be red: namely, to have some property P that causes red* sensations in us. That would make redness a disposition as dispositions are construed on the second-order property model.

To be sure, Reid says that we give the name of color to the property that does the causing. But that is because he is operating with just two alternatives: is redness the cause in the object, or is it the effect in us? His main concern is to reject the second alternative—he wants to locate secondary qualities in objects. Given just those two alternatives, he plainly prefers the former. But were he given three alternatives—the effect in us, the specific cause of this effect, or the property of

dispositions are known and bases are not, as well as the objections mentioned in n. 13

containing some cause or other of this effect—I bet he would opt for the third. That would nicely accommodate the following passage, which is the *Inquiry*'s version of the “capital part” thesis:

[The notion of color] is really in some sort compounded. It involves an unknown cause, and a known effect. . . . But as the cause is unknown, we can form no distinct conception of it, but by its relation to the known effect. (IHM 6.4, 86)

The second-order conception involves both elements Reid requires—the known sensory effect by direct reference to it and the unknown cause by existential quantification over it. But it does not identify secondary qualities with unknown causes.

So let us adopt the hypothesis that secondary qualities are dispositions to produce certain sorts of sensations in us and see if that gives us a metaphysical foundation for the primary/secondary quality distinction. I think it does. This will be so regardless of whether we think of dispositions as defined simply by conditionals or as defined in terms of second-order properties.

B. Intrinsic versus extrinsic

If secondary qualities are dispositions to produce sensations rather than their bases, then there is at least one important metaphysical difference between primary and secondary qualities: primary qualities are *intrinsic* properties of their bearers, while secondary qualities are not.

To establish this point, it is necessary first to take some care with the notion of an intrinsic property. Intrinsic properties are often contrasted with relational properties, and relational properties are sometimes explicated as properties whose exemplification requires the existence of something else beyond the thing having it.²⁶ Kant gave a famous test for whether a property P is intrinsic in this sense:

Kant's test: A property P is intrinsic iff it would be possible for an object that was all alone in the universe to have P.²⁷

²⁶ By ‘beyond x’ I mean not merely *distinct* from x, but *discrete* from x, i.e., having no part in common with x. Otherwise, any property that implied having proper parts, such as being square, would count as relational, which is not what is intended.

²⁷ Kant invokes this test in “On the First Ground of the Distinction of Directions in Space” to show that the property of being a right hand is not a relational property involving other material things. For discussion, see James Van Cleve,

Although dispositional properties are often regarded as being relational or extrinsic, a little thought shows they are intrinsic by Kant's test. Take a typical disposition, for example, the water-solubility of sugar—its being such that if it were placed in water it would dissolve. Is water-solubility a relation to water? No, for a given sugar cube would presumably still be water-soluble even if all water were removed from the universe.

There is another sense, however, in which dispositional properties *are* correctly thought of as extrinsic rather than intrinsic. This sense is brought out by another test:

Moore's test: A kind of [property] is intrinsic if and only if, when anything possesses it, that same thing or anything exactly like it would *necessarily* or *must* always, under all circumstances, possess it in exactly the same degree.²⁸

I maintain that being such as to dissolve in water and being such as to give human beings who view it red* sensations are not intrinsic properties by Moore's test. An object that is *just like* one of the red objects in our world (having the same surface structure, reflectancy, etc.) could be situated in another possible world where it is no longer red. This could happen if the neural constitution of humans in that world were such that they did not get red* sensations upon viewing it; it could also happen if human beings were the same, but the laws of nature connecting causes with effects were different.

I am obviously presupposing here that the laws of nature are contingent—that they could have been different from what they are.²⁹ This is an assumption with which Reid agrees—he notes in many places that for laws of nature, no other reason can be given but that they are the will of our

"Right, Left, and the Fourth Dimension," *The Philosophical Review*, 96 (1987), 33-68.

²⁸ G.E. Moore, "The Conception of Intrinsic Value," in *Philosophical Studies* (Totowa, New Jersey: Littlefield, Adams, & Co., 1968; first published in London by Routledge and Kegan Paul in 1922), pp. 253-75, at p. 265. Moore actually stated this just as a criterion for when *values* are intrinsic, but the criterion may be extended to properties in general. That in effect is what David Lewis has done with his suggestion that an intrinsic property is one that can never differ between two duplicates; see *On the Plurality of Worlds* (Oxford: Blackwell, 1986), pp. 59-63.

²⁹ For a defense of this position against some contemporary views that oppose it, see Jonathan Schaffer, "Quiddistic Knowledge," in *Lewisian Themes*, edited by Frank Jackson and Graham Priest (Oxford: Clarendon Press, 2004), pp. 210-30. In Schaffer's terms, I am a *quiddistic contingentist*.

Maker. It is also the view of Hume, who holds that there are no necessary connections between distinct existences, and of Locke, who says that God must “superadd” the power to produce certain sensations in us to its physical basis in bodies.³⁰

Let us now return to what Reid says about the real foundation of the distinction between primary and secondary qualities—that as regards the former, our senses inform us what they are in themselves, but as regards the latter, our senses leave us in the dark, telling us only how they affect us. I would put his point thus: in knowing that an object is square, we know something about how it is intrinsically, or as Reid puts it, how it is in itself. We do not merely know something about how it would interact with our sensory apparatus. By contrast, in knowing that an object is red, we do not know anything about how it is in itself. We only know that it is such as to produce a certain kind of sensation in us, but that is something an object could do even if it were intrinsically quite different. An object’s being red does not tell us how the object is in itself. This is not an epistemic point, but a point about the natures of the properties known; it concerns the informational contents of *x is square* and *x is red*. Reid’s thesis about the difference between primary and secondary qualities is a metaphysical thesis about the nature of what is known, not a thesis about our manner of knowing it.

C. Fixed or variable?

I turn now to an interesting issue raised by McKittrick: whether Reid’s way of drawing the primary/secondary quality distinction makes it relative to individuals and times. Might the same quality be secondary for one individual and primary for another, or secondary at one time and primary at another?

³⁰ For a good discussion of Locke’s views on this issue, see Rae Langton, “Locke’s Relations and God’s Good Pleasure,” *Proceedings of the Aristotelian Society*, 100 (2000), 75-91.

On McKittrick's understanding of Reid, it may seem initially that the answer is yes. According to her,

Both [primary and secondary] qualities are causal bases of dispositions to cause sensations. . . . Reid's account of the foundation of the distinction is that the sensations caused by primary qualities suggest or signify [for us] something about the intrinsic nature of those qualities, while the sensations caused by secondary qualities signify only some unknown cause of that sensation. . . . On this picture, the only difference between primary and secondary qualities is 'in the head,' not in the properties. There is no metaphysical difference in the properties, only a difference in our epistemic access to them.³¹

This account suggests that if our heads change in the right way, the status of a given quality as primary or secondary would also change. Suppose that heat sensations prompt us to believe that some quality of an external object is causing our sensations, but we have no idea of what this cause is—we conceive of it *only* as the cause of our sensations. Suppose further that as science progresses, we come to know exactly what property of hot objects causes heat sensations in us,³² and that we teach ourselves and our offspring to respond to the sensations by attributing that property. Would heat not then have become a primary quality for us?

Before we answer this question, let us note that if the primary/secondary quality distinction must be relativized to individuals and times, it must also be relativized in a further way not noted by McKittrick—to types of sensations. The fully relativized notion would be something like this:

Q is a {primary, secondary} quality relative to S, t, and K iff (i) Q causes K sensations or impressions in S at t, and (ii) S is disposed at t to respond to K sensations by deploying a {direct, relative} conception of Q.

To see why we need the reference to K as well as to S and t, suppose that molecular motions at certain energy levels are the cause of heat sensations in us, and suppose (as in a figure of Locke's) that we are endowed with microscopical eyes, enabling us to see those very motions. If the

³¹ McKittrick, pp. 77-78.

³² Reid certainly envisioned this possibility. McKittrick cites EIP 2.17, p. 204: "The nature of secondary qualities is a proper subject of philosophical disquisition; and in this, philosophy has made some progress. It has been discovered, that the sensation of smell is occasioned by the effluvia of bodies; that of sound by their vibration. The disposition of bodies to reflect a particular kind of light occasions the sensation of colour. Very curious discoveries have been made of the nature of heat, and an ample field of discovery in these subjects remains."

relationship between motion and heat sensations is subtle enough, we may not realize that the motions we see (and form direct conceptions of as prompted by our visual impressions) are the cause of our heat sensations. We will respond to our heat sensations by conceiving of the state of motion that causes them merely as “whatever causes heat sensations,” and we will respond to our visual impressions by forming a direct conception of this very state of motion. In this circumstance, motion would be a primary quality relative to visual impressions and a secondary quality relative to heat sensations.

Now let us return to McKittrick’s question. In the situation envisioned two paragraphs back, would heat have become a primary quality for us (relative to heat sensations) owing to the advance in our knowledge? Her answer is no. She points out that on Reid’s understanding of primary qualities, they are qualities of which our senses *naturally* or *by our original constitution* give us a direct notion.³³ So if we discover what quality in objects causes our heat sensations and teach ourselves to respond to our sensations by forming a direct conception of this quality, it will not yet be the case that heat has become for us a primary quality. For it to be a primary quality, heat sensations would have to prompt us to form a direct conception of their external cause as part of our native endowment.³⁴

³³ At IHM 6.4, p. 61, Reid contrasts secondary qualities with primary by saying that of the secondary “we know no more *naturally*, than that they are adapted to raise certain sensations in us.” On the next page, he says that our conceptions and beliefs in primary qualities “are invariably connected with the corresponding sensations, by an *original* principle of human nature.” (Both emphases are mine.)

³⁴ McKittrick connects this point with Reid’s distinction between original and acquired perception. We have acquired perception of a feature F when we form perceptual beliefs about the presence of F only because we have learned a correlation between F and other features perceived originally. For example, we do not, in Reid’s view, have original perception of three-dimensional shape by sight, but only by touch. Once we have learned correlations between two-dimensional visual cues (shading, etc.) and three-dimensional shape (as gauged by touch), we automatically respond to the cues by conceiving of and believing in the three-dimensional shape of the object. In the case of learning to respond to heat sensations by conceiving of molecular motion, McKittrick would say that this is only acquired perception, not original perception. I would add: whether it would even count as acquired perception depends on whether the microstate that causes heat sensations is directly accessible to us through some other sense modality or whether it is something we learn about only through the hypothetico-deductive method.

But let us take her scenario one step further. Suppose we do not merely *train* ourselves to respond to heat sensations with a direct conception of their cause, but somehow *evolve* into creatures who so respond as part of their native constitution. In that case, heat would indeed have become a primary quality for our descendants. McKittrick concludes that although Reid's primary/secondary distinction need not be relativized to individual perceivers and times, it must be relativized to species.³⁵

That conclusion would be correct if the primary/secondary quality distinction were merely epistemological, as McKittrick believes. But what if primary qualities are intrinsic and secondary qualities are extrinsic, as I have proposed? In that case, there could be no such thing as a secondary quality becoming primary (or vice versa), because there is no such thing as an extrinsic property becoming intrinsic (or vice versa).³⁶

3. Four views that conflict with Reid's

To bring the contours of Reid's views about primary and secondary qualities into sharper relief, I now discuss four significant views that are opposed to his (and therefore ruled out if he is right). The four oppositions hold up regardless of the outcome of the debate discussed in the previous section—that is, regardless of whether Reid's foundation for the primary/secondary quality distinction is epistemological or metaphysical.

A. Naive realism: sensuous color is in the object

³⁵ McKittrick, p. 81.

³⁶ What *might* be possible on Reid's view, however, is that a property should pass from primary to *nonprimary* or vice versa. I have not aligned the primary/secondary distinction completely with the intrinsic/extrinsic distinction. Powers to produce changes in other insentient things—what Locke scholars sometimes call tertiary qualities—are extrinsic properties without being secondary qualities. There is also room in Reid's scheme for the converse combination of intrinsic properties that are not primary qualities. To qualify as primary in what seems to be Reid's view, a quality must not only be intrinsic, but also such as to produce sensations that natively trigger in us a direct conception of the property. If so, a property could gain or lose its status as primary in consequence of a change in the native sensory or cognitive endowment of human beings. If hardness ceased to produce any sensations in us, or if the sensations it did produce ceased to elicit in us a direct conception of hardness, hardness would no longer count as a primary quality.

Reid, the self-proclaimed champion of common sense, seldom admits to holding any views at odds with those of the plain man. He thinks that the central tenet of modern philosophers about the secondary qualities, with which he agrees, is not at variance with common sense, but appears to be so only because of the philosophers' misleading use of ambiguous terms. In particular, he thinks that secondary quality terms are systematically ambiguous, the same term, such as 'heat', being used both as the name of a type of sensation and as the name of a power in objects to produce that sensation in us. When philosophers deny that there is heat in the fire, they are only denying that the fire has any sensations, which the vulgar would readily deny as well. When the vulgar affirm that there is heat in the fire, they are only affirming that there is some quality in the fire that causes heat sensations in us, which the philosophers admit as well. So it is with color and the other secondary qualities—the apparent dispute between philosophy and common sense is only verbal:

[O]ne of the most remarkable paradoxes of modern philosophy . . . is, in reality, when examined to the bottom, nothing else but an abuse of words [W]hen philosophers affirm that colour is not in bodies, but in the mind; and the vulgar affirm, that colour is not in the mind, but is a quality of bodies; there is no difference between them about things, but only about the meaning of a word. (IHM 6.5, 88; the same point is made again in EIP 2.17 at pp. 205-06)³⁷

It seems to me, however, that there is something the man in the street believes that Reid, along with the philosophers, denies.³⁸ It is this: there is *sensuous color* in external objects. Call this naïve realism about color.³⁹ A good emblem for naïve realism (as I once heard George Pappas say) is the “cover the earth” logo of the Sherwin-Williams paint company, in which red paint pours out of a tilted bucket and coats the globe. Despite the fact (as it seems to me) that naïve realism is what most of us believe most of the time, it is not an easy view to pin down for a philosophical audience.

³⁷ Interestingly, Reid holds in his published work that color terms are the one exception to the systematic ambiguity of secondary-quality terms. He says that color terms never refer to sensations, but only to the external qualities that cause them (IHM 6.4, 85-87).

³⁸ Reid admits as much in an unpublished manuscript of unknown date, but presumably earlier than the *Inquiry*: “Color is imagined to be in the body by the vulgar but not by philosophers” (Aberdeen University Library MS 2131/8/VI/3).

³⁹ I distinguish naïve realism from direct realism, the view that external things are directly perceived. I take Reid to be a direct realist, but not a naïve realist.

It is not enough to characterize the view simply by saying that objects really are red, for there are meanings of that formula under which Lockean dispositionalists and Australian materialists (and Reid, depending on which of these camps we assimilate him to) would all assent to it. Yes, says Locke, objects are red, for they have the power to give us red* sensations; yes, says the Australian materialist, objects are red, because their microstructure is such that they absorb light of most wavelengths while reflecting light of wavelengths in the 760-to-647 nanometer range. But I do not believe that either of those things is what a child or a poet believes who believes that a rose is red. How shall we characterize the property that is attributed to objects by the naïve and the romantic? It is a property that has no dependence on sentient minds; it is categorical, not dispositional; it is intrinsic; its nature is manifest to those who know nothing of physics; its nature is not manifest to those who know a lot of physics but have never experienced it. The various sophisticated philosophers' versions of red do not have all these characteristics.⁴⁰

I am not necessarily saying that Reid is *wrong* to exclude sensuous color from external objects. I am only saying that he is wrong to think that in so excluding it, his views are compatible with common sense. On this point, I agree with Lorne Falkenstein, who has observed that “Reid is really *denying* that visible figures are ‘coloured’ in the truly common sense of the term.”⁴¹

B. Mill, Putnam, and Langton: all properties are secondary qualities

I turn now to a view at the other end of the spectrum from naïve common sense: the view that *all* properties of external things, or at least all properties we know of, are secondary qualities in Locke's sense—powers to produce sensations in us. Mill, Putnam, and Langton have all attributed versions of this thesis to Kant, as well as favorably entertaining it themselves.

⁴⁰ Naïve realism is not the prerogative of the vulgar alone, but has been defended as well by able philosophers, including John Campbell, “A Simple View of Colour,” in *Reality, Representation, and Projection*, edited by John Haldane and Crispin Wright (Oxford: Clarendon Press, 1994), pp. 257-69, and Peter Unger, *All the Power in the World* (Oxford: Oxford University Press, 2006), especially chapter IV.

⁴¹ Lorne Falkenstein, “Reid's Account of Localization,” *Philosophy and Phenomenological Research*, 61 (2000), 305-28, at p. 322.

Here is Putnam's version:

I suggest that (as a first approximation) the way to read Kant is as saying that what Locke said about secondary qualities is true of *all* qualities If *all properties are secondary*, what follows? It follows that *everything* we say about an object is of the form: it is such as to affect *us* in such-and-such a way. *Nothing at all* we say about any object describes the object as it is 'in itself', independently of its effect on *us*⁴²

'All properties are secondary' (i.e., *all properties are Powers*)⁴³

Putnam is apparently attributing to Kant the thesis that the only properties *there are* in external things are powers to affect us in certain ways. This raises two interesting issues that I cannot pursue here. If one thinks of powers to affect us as relations, the question arises whether all properties of things can be relational. If one thinks instead of powers to affect us as dispositions, the question arises whether all properties of a thing can be dispositions, or whether instead the dispositions must have some categorical basis. I have discussed both issues elsewhere.⁴⁴

A somewhat less extreme view, making a claim not about *all* the properties of external things but just the ones we *know of*, is expounded by Mill under the label 'the relativity of knowledge':

[T]hat all the attributes which we ascribe to objects, consist in their having the power of exciting one or another variety of sensation in our minds; that to us the properties of an object have this and no other meaning This is the doctrine of the Relativity of Knowledge to the knowing mind⁴⁵

Mill attributes this doctrine to a number of philosophers, including Kant. We may distinguish two versions of it: one according to which the only properties we can *know objects to have* are powers to produce sensations in us, and another according to which the only properties of external things we can even *form any conception of* are powers to produce sensations in us. Mill's language somewhat more strongly suggests the second.⁴⁶

⁴² Hilary Putnam, *Reason, Truth, and History* (Cambridge: Cambridge University Press, 1981), pp. 59 and 61.

⁴³ *Ibid.*, p. 63.

⁴⁴ James Van Cleve, "Putnam, Kant, and Secondary Qualities," *Philosophical Papers*, 24 (1995), 83-109.

⁴⁵ John Stuart Mill, *An Examination of Sir William Hamilton's Philosophy* (Boston: W.V. Spencer, 1865), Vol. 1, p.16.

⁴⁶ For a contemporary incarnation of Mill's doctrine, see John Foster, *The Case for Idealism* (London: Routledge, 1982), p.63.

Reid's views are clearly at odds with Putnam's thesis and both versions of Mill's. Squareness and hardness, according to him, are intrinsic properties of objects in the sense we have discussed above; they are not merely dispositions to give us sensations, even if they imply such dispositions. They are also properties that we can both conceive of and know objects to possess.⁴⁷

Why would anyone hold that we cannot have any knowledge of the intrinsic properties of things? Rae Langton has given one answer to this question in her book *Kantian Humility*.⁴⁸ She reconstructs what she takes to be one of the central arguments of the *Critique of Pure Reason* as follows:

Receptivity: Human knowledge depends on sensibility, and sensibility is receptive: we can have knowledge of an object only in so far as it affects us. We have knowledge only of those properties of things in virtue of which they enter into causal relations with us.

Irreducibility: The relations and relational properties of substances (which include their powers to affect us) are not reducible to the intrinsic properties of things. The causal relations between things are not necessitated by their intrinsic properties. *Therefore*,

Humility: We have no knowledge of the intrinsic properties of things.

Langton explains that by an intrinsic property she means "a property something can have, no matter what else exists--and no matter what the laws are. . . ."⁴⁹ The first clause—"no matter what exists"—says in effect that intrinsic properties must pass Kant's test; the second—"no matter what the laws are"—implies they must pass Moore's. Langton takes the Irreducibility premise to be true because she thinks (as I do) that a thing with the same intrinsic properties as a given thing need not have the same powers as the original if placed in a setting with different laws.

⁴⁷ One qualification is called for. What I can know *immediately* through vision is that an object is visibly elliptical, i.e., that it looks elliptical from a certain angle or to a viewer situated at a certain place in relation to it. This is a relational property of the object, not an intrinsic property of it. It is founded on an intrinsic property, however: the object's being round, together with its lying obliquely to my line of sight. I can have *mediate* knowledge (which eventually becomes acquired perception) of the object's roundness by inference from what I know immediately through sight, and I can verify this knowledge by the immediate knowledge I have through touch. For Reid's discussions of these matters, see IHM 6.3 and 6.7 as well as his various discussions of acquired perception.

⁴⁸ Rae Langton, *Kantian Humility: Our Ignorance of Things in Themselves* (Oxford: Clarendon Press, 1998).

⁴⁹ P. 119.

I find it striking that Reid accepts both premises of Langton's Kantian argument, but rejects the conclusion. Human beings are so constituted, Reid tells us, that they achieve knowledge of the world around them only because objects affect their sense organs, giving rise to physical impressions, which in turn give rise to mental sensations, which are the occasions for perception.⁵⁰ This is Receptivity. Moreover, of the laws whereby this sequence of operations takes place, we can give no explanation except that they are the will of God: "Who knows but their connection may be arbitrary, and owing to the will of our Maker?"⁵¹ This clearly implies that laws of nature are contingent, and thus implies as much of the Irreducibility premise as is needed in Langton's argument. Yet Reid is far from accepting Humility. When we know something is square—as we sometimes do—we know how it is in itself and not merely how it affects our sensibility. So Reid would have cited the primary qualities as exceptions to Kantian Humility.

If Reid is right—as I believe he is—Langton's argument must be unsound. So what in particular is wrong with it? Inspection reveals that the argument is invalid as it stands. It would be valid only if supplemented by the following unstated premise: a causal relation holds between two things in virtue of certain of their properties only if it is *necessary* that any two things with those properties are causally related. For short, there is causation only where there is necessitation. This is a premise that Reid (siding for once with Hume) would deny—as would I. We can be affected by things in virtue of their intrinsic properties even if those properties do not necessarily have the effects they do.⁵²

C. Berkeley and Hume: no object could have the primary qualities exclusively

⁵⁰ IHM 6.21, p. 174.

⁵¹ *Ibid.*, p. 176.

⁵² I have discussed Langton's argument at greater length and considered further ways of making it valid in James Van Cleve, "Receptivity and our Knowledge of Intrinsic Properties," *Philosophy and Phenomenological Research*, 65 (2002), 218-36.

An issue raised by Berkeley and Hume for “the modern philosophy” is this: *could* an object have the primary qualities exclusively, without having any properties from the list of secondaries?⁵³

Finding it inconceivable that an object should have the primaries without any secondaries, Berkeley and Hume both say no. Reid says yes.

Let us be clear about the issue Berkeley and Hume are raising. As we have seen above, secondary qualities are identified by some authors with dispositions in objects to produce sensations in us and by others with the bases of such dispositions. Berkeley and Hume are not asking whether an object could have primary qualities but no power to produce sensations in us. The answer to that question, if I am right about the contingency of laws, is obviously yes. Nor are they asking whether an object could have primary qualities without having those qualities that are in fact the bases of powers to produce sensations. Given that the causal bases of such powers *are* primary qualities—as Locke explicitly says—the answer to that question is obviously no. What Berkeley and Hume are asking is a question of which the following is a more concrete instance: could an object have a shape without having any *sensuous* color or texture to fill in its boundaries and differentiate it from its surroundings? To that question, their answer is no.

In the rest of this section, let it be understood that ‘color’ without qualification means ‘sensuous color’ in the sense of the term I have tried to indicate above,⁵⁴ and let it further be understood that we are talking of *seen* objects, for which tangible properties would not suffice as their sensuous “filling.”

⁵³Ironically, two of the issues raised by the thesis that all properties are secondary—could all properties be relational, and could all properties be dispositional?—are thought by some writers to arise for the thesis that all properties are *primary*. In his *Philosophy and Scientific Realism* (London: Routledge and Kegan Paul, 1963), J.J.C. Smart notes, “All the properties which science ascribes to physical objects [mass, charge, spin, even shape insofar as it is defined in terms of length] seem to be purely relational” (p. 72), and he equates the question ‘Can a thing have the primary qualities alone?’ with the question “Can a thing have relational properties only?” (pp. 73-74). Simon Blackburn, who like Smart is trying to clear the way for the view that objects have only the properties that science ascribes to them, sees his task as defending the possibility that all properties of objects are dispositional. See his “Filling in Space,” *Analysis*, 50 (1990), 62-65.

⁵⁴With this exception: sensuous color for Berkeley and Hume is not independent of minds.

If there can neither be (nor be conceived) shape without color, as Berkeley and Hume maintain, what follows? Three interesting lines of argument open up. The first is an argument for naïve realism: there is no shape without color; there is shape in external things; therefore, there is color in external things. The second is Berkeley's argument for extending idealism to shapes: there is no shape without color; there is no color except in minds; therefore, there is no shape without minds.⁵⁵ The third is Hume's twist on Berkeley: we cannot conceive of an object with extension or figure but no color; color exists only in internal impressions; therefore (since we cannot conceive of external things if we do not conceive of them as extended), we cannot conceive of external things.⁵⁶

Reid disputes the conclusions of all three arguments. He holds that we *do* have a conception of external things, that they *are* endowed with shape, and that they are *not* endowed with sensuous color. Since he accepts the minor premise in each argument, it is incumbent on him to deny the major—that there can neither be, nor be conceived, shape without color. That is exactly what he implicitly does in his discussion of visible figure in section 5.8 of the *Inquiry*. Curiously, however, he does not there connect the discussion with the issues I am raising now, nor mention Berkeley and Hume as his antagonists.⁵⁷

In IHM 5.8, Reid argues that it would be possible to see shape without seeing any color. As we are presently constituted, he says, the stimulation of a point on one of our retinas (which Reid calls

⁵⁵ Here is how Berkeley states the argument in the *Principles of Human Knowledge*, section 10: “For my own part, I see evidently that it is not in my power to frame an idea of a body extended and moved, but I must withal give it some colour or other sensible quality which is acknowledged to exist only in the mind. In short, extension, figure, and motion, abstracted from all other qualities, are inconceivable. Where therefore the other sensible qualities are, there must these be also, to wit, in the mind and nowhere else.”

⁵⁶ Hume's argument in the *Treatise of Human Nature* (1.4.4, pp. 228-29) is actually more complicated, running as follows: it is impossible to conceive of a body as extended without conceiving of it as either colored or solid; color is excluded from bodies by the modern philosophy; the idea of solidity is the idea of being impenetrable by other bodies and therefore presupposes an antecedent conception of what bodies are; therefore, the modern philosophy leaves us no just conception of bodies. Since we are concerned at present only with what sensuous properties *visible* extension must have, we can work with the simpler argument I use in the text.

⁵⁷ He does take explicit exception to Berkeley and Hume on the shape-color issue in a discourse delivered before the Aberdeen Philosophical Society, but never published: “I think both Berkly & Hume affirm that there can be no idea of visible space without colour. I am of a contrary opinion & think I have a distinct conception of visible extension without colour” (p. 277 in the Brookes edition of the *Inquiry*).

the “material impression” involved in vision) has two effects: it makes us see a point of the object at a certain location (along the straight line from the point of stimulation running through the center of the eye and out into the environment), and it gives us a sensation of color. The stimulation of many retinal points simultaneously makes us see an array of object points at various locations, and that is just what it is to see figure. (Visible figure is determined by the location of all the points in an object with respect to the eye.) Now if it had pleased our Maker, Reid says, our eyes might have been so framed that retinal stimulations had the first of these effects without having the second—the perception of figure without any sensation of color.⁵⁸ Contrary to Berkeley and Hume, then, it would be possible to see shape without seeing any color.⁵⁹ This takes away their reason for saying there could not *be* an object with shape but no color.

On the question whether there could *be* objects with shape but no color, I side with Reid. There is nothing inconceivable in the idea of a hexagonal pane of perfectly clear glass. What seems more doubtful to me is his contention that one could *see* an object as shaped without seeing any color in it or its surroundings. That is what Reid says we would do if endowed with the eye he imagines; it is even arguably what we do on Reid’s view as we are constituted now.

Reid allows that under our present constitution, color is always “joined with” figure in our perception of figure (p. 101, lines 10-13). But we must note what this being “joined with” amounts to. It certainly does not mean that sensuous color is spread out over objects or is co-located with any of the object’s surface points. The closest things we can get to instantiators of sensuous color in Reid’s philosophy are color sensations, but it would be a category mistake on his view to think that color sensations take up any area or are located at any point. What can be spread over an area

⁵⁸ Reid also argues for the converse possibility of an eye in which retinal stimulations have the second effect without the first, in which case one would see color without perceiving location, extension, or figure. He thinks this is actually or nearly what happens in those who suffer from severe cataracts—“such persons see things as one does through a glass of broken gelly.” If he means to show that one could perceive color without extension, I demur. Does not the cataract sufferer perceive blurry extension?

⁵⁹ D. Bennett references here

is at best some primary quality that causes the sensations in us. So that which Berkeley and Hume regard as impossible—seeing an object with figure but no sensuous color—is not only possible on Reid’s view, but actual; it happens whenever we see at all.⁶⁰

Without sensuous color, I do not see what satisfactory account Reid can give of seeing boundaries. What happens, on his account, when I see a wall painted green on the left side of a central line and red on the right? (i) Concerning the locations on the left side of the line, I have the perception-induced beliefs “there is something *there* and something *there* and something *there*,” and similarly for locations on the right. (What are the *some things*? That is going to be the nub of my problem.) (ii) The retinal stimulations that cause beliefs with respect to environmental locations also cause color sensations; points of the retina stimulated by light from the left side of the wall cause green* sensations and points stimulated by light from the right side cause red* sensations. (iii) I believe that the sensations are caused by properties instantiated in my environment in various parts of the wall.

Conditions (i)-(iii) cannot be the whole story, however. They are not enough to distinguish seeing green on the left and red on the right from seeing things the other way around, for all three conditions are satisfied in both cases. What must we add?

On Reid’s view, the following condition will also be satisfied: (iv) I believe, concerning the various locations on the left, “something *there* is causing green* sensations in me,” and concerning the various locations on the right, “something *there* is causing red* sensations in me.” I have

⁶⁰ Some contemporary “error theories” of color have it that we mistakenly paint objects with colors or project colors onto them. The error itself (if we take the description of it literally) is an impossibility on Reid’s view, as it is contrary to the nature of color sensations to be projected onto any surface.

qualms about whether Reid is entitled to say this.⁶¹ Assuming that he is, however, I wish to raise the question whether (iv) would be sufficient for perceiving boundaries.

My question is whether a perceptible boundary can be created for me just by the fact that I believe objects on one side to cause aspatial F-sensations and objects on the other to cause aspatial G-sensations. Recall that color sensations are no more spatial for Reid than olfactory sensations. Suppose I were blindfolded and placed before a tangle of honeysuckle on the left and a heap of pine mulch on the right. If I believed that the sweet scent had its cause on the left and the pungent smell had its cause on the right, would that create a perceptible boundary for me? I doubt that it would, and the same doubt carries over to color sensations. While agreeing with Reid, then, that the world might be a locus of primary qualities without being a locus of sensuous colors, I cannot believe that we could ever *see* objects in a world like that.

D. Smart, Harman, and Armstrong: we do not know what sensations are like intrinsically

The last anti-Reidian view I shall consider is that we do not know what our sensations are like intrinsically. This might be held on the basis of any of the following successively stronger doctrines, sometimes advanced under the banner ‘the transparency of sensations’:

- that we seldom, if ever, notice our sensations;
- that even in attending to our sensations, we are aware only of their relational features, not their intrinsic features;
- that sensations do not even *have* any intrinsic features.

Views along one or another of these lines have been put forward by many contemporary philosophers, including Smart, Armstrong, and Harman. The motive, in many cases, is to make the

⁶¹ The qualms arise from a suspicion that Reid faces some sort of binding problem. What can enable the believer to place the causes of aspatial sensations in various locations? Perhaps Reid can solve the problem with material impressions, which (unlike sensations) carry spatial information, and which might be able to inject the sensations they cause into the contents of beliefs about locations.

world safe for materialism—if we are not aware of any intrinsic features of our sensations, then we cannot claim that sensations have features that no brain state could have.⁶²

Reid himself goes part way with the *first* transparency doctrine. It is a recurrent theme of his philosophy that for the sensations in a broad range, we seldom notice them and can do so only with a special effort. He compares sensations to “the words of a language, wherein we do not attend to the sound, but to the sense” (IHM 2.9, 43) And he often says things like this:

We are so accustomed to use the sensation [of hardness] as a sign, and to pass immediately to the hardness signified, that, as far as appears, it was never made an object of thought, either by the vulgar or by philosophers . . . There is no sensation more distinct, or more frequent; yet it is never attended to, but passes through the mind instantaneously, and serves only to introduce that quality in bodies, which, by a law of our constitution, it suggests. (IHM 5.2, 56)

But Reid would have opposed the extreme form of the first transparency doctrine, which says we are *never* aware of our sensations. His analogy with the words of a language tells us as much, for there is nothing to prevent our attending to the sounds that express the various senses. Moreover, in the case of sensations associated with secondary qualities, we are bound to be aware of them, as we know from the “capital part” thesis: we can conceive of the qualities only by reference to the sensations.⁶³ Finally, even in the case of sensations associated with primary qualities, which normally make our thoughts leap immediately to the qualities they signify, we can know what they are like by careful attention. We must be able to do this to carry out his *experimentum crucis*, which teaches us that tactile sensations are nothing like the extension, hardness, and other primary qualities they signify.

⁶² Such was the motive for Smart’s thesis of “topic-neutrality,” a version of transparency in the early days of identity-theory materialism. According to Smart, we can conceptualize our experiences only by descriptions along the lines of “it’s like what goes on in me when I see ripe tomatoes.” See J.J.C. Smart, “Sensations and Brain Processes,” *The Philosophical Review*, 68 (1959), 141-156.

⁶³ We do not always attend to them, though. Reid was one of the first authors to emphasize the various perceptual constancies. He notes that a plain man who is not a painter will perceive an object that is moved from near to far or light to shade as remaining constant in color, though the various color appearances or sensations have certainly changed. See IHM 6.3, p. 83.

Those who hold the *second* transparency doctrine listed above hold that the only features of our sensations or experiences we are aware of are their relational features—typically, their intentional features or their causal relations (the first of which some philosophers try to reduce to the second).

Thus Harman:

When Eloise sees a tree before her . . . [she does not] experience any features of anything as intrinsic features of her experiences. . . . She is aware only of the intentional or relational features of her experience, not of its intrinsic nonintentional features.⁶⁴

And Armstrong:

A perception of something green will involve a green-sensitive element, that is to say, something which, in a normal environment, is characteristically brought into existence by green things.

A green-sensitive element within need not be green, nor is it introspected as something green, nor indeed is it introspected as having any quality at all. It is introspected simply as something having sophisticated causal relationships to green things.⁶⁵

Reid would say that Armstrong has things precisely backwards. Rather than being able to characterize our sensations only by reference to their causes—say, green things—we can characterize green things only by reference to the sensations they cause in us. As for the sensations themselves, we do know what they are like intrinsically. If our notions of them were only relative—a matter of how they are related to something else—we would not have distinct notions of them, but we do: “Upon reflection I find, that I have a distinct notion of the sensation which [that quality in a rose I call its smell] produces in my mind” (EIP 2.17, 202). Reid even goes so far as to say we know our sensations *perfectly*: “The sensations of heat and cold are perfectly known; for they neither are, nor can be, any thing else than what we feel them to be” (IHM 5.1, 54).

⁶⁴ Gilbert Harman, “The Intrinsic Quality of Experience,” in *Philosophical Perspectives*, edited by James Tomberlin, Vol. 4 (Atascadero, CA: Ridgeview Publishing Co., 1990), 52-79; reprinted in *The Nature of Consciousness*, edited by Ned Block, Owen Flanagan, and Guven Guzeldere (Cambridge, MA: MIT Press, 1997), 663-75. The quotation is from p. 667 of the latter.

⁶⁵ David M. Armstrong, “Qualities: an Excerpt from *Consciousness and Causality*, in *Metaphysics: The Big Questions*, edited by Peter van Inwagen and Dean W. Zimmerman (Oxford: Blackwell, 1998), pp. 273 and 275.

The *third* transparency doctrine listed above was espoused by Moore, from whom contemporary writers have taken the term ‘transparency’, but often without realizing how radical his view really was. The sensation of blue, says Moore, “seems, if I may use a metaphor, to be transparent—we look through it and see nothing but the blue.”⁶⁶ His point is not just that we are unaware of the intrinsic nature of the sensation, but that the sensation itself *has* no intrinsic nature: everything it is, it owes to its object. Sensory consciousness is like a clear pane of glass through which we view objects, the glass differing from one episode of consciousness to the next only in what lies on the other side.⁶⁷ Reid’s view cannot be like this, for he holds that sensations do not *have* objects; they are simply modifications of the mind. Sensing bluey and sensing greenly differ intrinsically rather than in their relation to anything beyond themselves.

An especially unsettling combination of un-Reidian views would arise if we combined the thesis of Mill, Putnam, and Langton with that of Smart, Armstrong, and Harman: we know nothing intrinsic about external things (but only that they are related to mental states in certain ways), nor anything intrinsic about mental states (but only that they are related to external things in certain ways). That would mean we have no knowledge of the intrinsic properties of *anything*—knowledge of the relational features of some things would always dissolve away into knowledge of the relational features of yet other things, with nothing to anchor the system.⁶⁸ Needless to say, Reid would oppose this combination even more strenuously than he opposes each element separately.

⁶⁶ G.E. Moore, “The Refutation of Idealism,” originally in *Mind* for 1903, but reprinted in *Philosophical Studies* (London: Kegan Paul, 1922), pp. 1-30, at p. 20.

⁶⁷ I have developed this interpretation of Moore at greater length in “Troubles for Radical Transparency,” forthcoming in a festschrift for Jaegwon Kim.

⁶⁸ If I am not mistaken, this is the real upshot of Langton’s Kantian argument from Receptivity, for knowledge of our own mental states presumably depends, just as much as our knowledge of external things does, on our being affected by them.

APPENDIX: HAVING IT BOTH WAYS?

By the “capital part” thesis, I mean Reid’s thesis that sensations play a capital part in the notions we form of secondary qualities, the qualities being conceivable only in terms of the sensations. As Lehrer puts it, sensations are “semantic constituents” of our secondary quality concepts.⁶⁹ This thesis would be true on a dispositional understanding of secondary qualities.

By the “physical supervenience” thesis, I mean the thesis that the color of an object supervenes on its intrinsic physical character in the following sense: anything just like a given red object in all intrinsic physical respects would itself be red.⁷⁰ This thesis would be espoused by any physicalist worth his salt; it would presumably also be attributed to Reid by anyone who thought he identified colors with the causal bases of dispositions rather than the dispositions themselves.

Is it possible to define secondary qualities in a way that makes *both* theses true?

Three ways of defining or specifying secondary qualities have been discussed in this chapter.

The first is the simple conditional definition of red as a disposition:

- D1. *x* is red =df if *x* were placed in view of a normal human observer in normal circumstances, the observer would be caused to experience red* sensations.

The second is the second-order property definition of red as a disposition:

- D2. *x* is red =df there is some property *P* such that *x* has *P* & *P* causes red* sensations in normal human observers in normal circumstances.

From now on, let’s abbreviate ‘causes red* sensations in normal human observers in normal circumstances’ to ‘causes red* sensations in humans’. The third definition identifies red with the causal base of the disposition defined by D1 or D2, using sensations only to fix the reference of ‘red’:

⁶⁹ Keith Lehrer, *Thomas Reid* (London: Routledge, 1989), p. 27.

⁷⁰ For one expression of this thesis, see Crispin Wright, *Truth and Objectivity* (Cambridge, Mass.: Harvard University Press), p. 113.

D3. There is a property P such that P causes red* sensations in humans; x is red =df x has that property P.

How do our two theses fare under these definitions?

D1 makes the capital part thesis true, since sensations figure in its definiens. (I am relying on the old-fashioned idea that the definiendum in an apt definition must, in Spinoza's language, be "conceived through" the definiens.) But it makes the physical supervenience thesis false, since a thing in another world just like a red thing in our world might *not* be such that humans who looked at it would get red* sensations. Perhaps the neural structure of humans is different in that world, or perhaps the laws of nature are different there.

D2 also makes the capital part thesis true, since it again defines color in terms of sensations. And like D1, it makes the physical supervenience thesis false, because humans or the laws might be different in some world containing a physical duplicate of a red object. In such a world, the duplicate need not have any property making things that have it look red (= cause red* sensations).

D3 reverses the verdicts yielded by D1 and D2. It makes the capital part thesis false, since it mentions sensations only outside the definition proper, using them merely to fix the reference of 'red'. Redness under this definition is a certain microphysical property, and you can grasp that property without conceiving of red* sensations. By the same token, it makes the physical supervenience thesis true, because if redness just is a certain physical property, then anything physically just like a red thing would be red, regardless of whether it causes red* sensations in humans.

None of our definitions, then, makes both theses true. Is there any way of understanding secondary qualities that *does* make both theses true? The answer is yes, although it involves a tricky device of contemporary philosophical logic that was unknown to Reid.

Definitions imply necessarily true biconditionals, and such biconditionals hold in all possible worlds. The most natural way to understand D2 in terms of possible worlds would be this:

D2a. For all worlds w : x is red in w =df for some property P , x has P in w & in w P causes red* sensations in humans.

But we can also understand D2 in another way—and here comes the trick—by indexing the second conjunct in the definiens to the actual world, @:

D2b. For all worlds w : x is red in w =df for some property P , x has P in w & in @ P causes red* sensations in humans.

D2a and D2b both imply the same verdict on the capital part thesis, since as with D1 and D2, they define redness in terms of sensations. But they part ways on the supervenience thesis, D2a making it false (as D2 did) and D2b making it true. D2b makes it true because if an object x in @ has a property P making it look red, any physical duplicate of x in another world w will also have that property P ; and since P makes things *in @* look red, possession of P by the duplicate in w makes it red even if it does not *look* red in w .

Our results so far may be summed up in the following table:

	D1	D2a	D2b	D3
Is the capital part thesis true?	yes	yes	yes	no
Is the physical supervenience thesis true?	no	no	yes	yes

If one wanted both theses to be true, then, one should opt for definition D2b.

Yet there are a number of problems or puzzles that arise if we try to explicate Reid's views using definitions in the style of D2b. Ryan Nichols has suggested that a definition parallel to D2b would be equally true in the case of a primary quality like hardness:

D2b'. For all worlds w : x is hard in w =df for some property P , x has P in w & in @ P causes hard* sensations in humans.⁷¹

This might be thought problematic for two reasons. Does it not imply that hardness counts as a secondary quality? And does it not also imply that sensations of a certain sort are a capital part of our notion of hardness? Both implications would be un-Reidian.

In reply to these supposed difficulties, I would note two things. First, what makes something a primary quality is not that it cannot be defined in the D2b way, but that it *can* be defined in some other way. Reid defines hardness thus: a thing is hard when its parts “adhere so firmly, that it cannot easily be made to change its figure” (IHM 5.2, 55), which is a definition that tells us how a hard thing is in itself, as befits the definition of a primary quality. Second, though the biconditional corresponding to D2b' is a necessary truth, that does not mean that D2b' is correct as a definition. The symbol ‘=df’ is a hyperintensional connective, which is to say that a statement of the form ‘ P =df Q ’ is not automatically true simply because the corresponding biconditional ‘ P iff Q ’ is a necessary truth. So D2b' may not be true in the definitional way needed to sustain the capital part thesis in the case of hardness.

But other drawbacks of using D2b to explicate Reid's thought remain. I have wanted to keep alive the interpretive possibility that Reidian secondary qualities are dispositions rather than their bases. Is the property defined by D2b a disposition? It is a second-order property like the property defined by D2a, which we agreed was a disposition; yet it is necessarily co-extensive with the property defined by D3, which I said was a base. By including the reference to @ in D2b, we may have constructed a definition that no longer defines a disposition.

⁷¹ Ryan Nichols, *Thomas Reid's Theory of Perception* (Oxford: Clarendon Press, 2007), p. 179. Nichols is addressing an earlier version of my proposal that was couched in terms of laws of nature rather than causation; I have adapted his point to apply to my proposal in its current wording.

The suspicion that D2b does not define a disposition may be reinforced if we use a diagnostic scheme offered by Wolterstorff.⁷² Suppose that camellias in some world *w* have the same intrinsic physical characteristics as our camellias, but look green rather than red to inhabitants of *w*. Are camellias in that world red or green? If you say green, you are thinking of colors as dispositions; if you say red, you are thinking of them as bases. The property defined by D2b does not satisfy this test for being a disposition.

The bottom line is that we cannot have things all *three* of the following ways: colors are conceived in terms of the sensations they produce, they supervene on the intrinsic physical characteristics of things, and they are dispositions.⁷³

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⁷² Wolterstorff, p. 112.

⁷³ The complications that arise when definitions in the D2b style are introduced can be illustrated by noting that the following set of propositions is inconsistent: (1) properties defined as second-order properties (like redness as defined in D2a) are dispositions; (2) if the property defined in D2a is a disposition, so is the property defined in D2b; (3) the property defined in D2b is co-intensive with the property defined in D3; (4) if one of two co-intensive properties is a disposition, so is the other; (5) the property defined in D3 is not a disposition, but the base of one. I have suggested above that (2) is false. In correspondence, Maya Eddon and David Manley have both suggested to me that (4) is also false.

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