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Primary and Secondary Qualities

John Locke's distinction between primary and secondary qualities of bodies has been a widely discussed feature of his work. Locke makes several assertions regarding primary and secondary qualities. This essay presents an interpretation that holds that this distinction is a metaphysical distinction regarding bodies. Locke makes several assertions about primary and secondary qualities, central among those are these:

- (1) Primary qualities are inseparable from bodies. (§9)¹
- (2) Secondary qualities are nothing in the objects themselves and only powers to produce ideas in us. (§10)
- (3) Ideas of primary qualities of bodies (hereafter, 'primary ideas') are resemblances of them; patterns of primary ideas exist in bodies themselves. (§15)
- (4) Ideas of secondary qualities ('secondary ideas') are not resemblances. (§15)

I shall argue that (1) defines 'primary qualities' in Locke's Essay and (2) nearly defines 'secondary qualities' in the Essay. I shall further argue that Locke takes this distinction to be of metaphysical significance and that it lines up symmetry between Locke's metaphysical philosophy and his natural philosophy. (3) and (4) are central claims in Locke; however, as it is my goal to present clearly the distinction itself this paper will deal with them limitedly. I shall argue against some of the claims the A. D. Smith makes in his discussion of primary and secondary qualities, viz. those related to his contention

¹ Unless otherwise noted, all references to *An Essay concerning Human Understanding* are to II, viii.

that the only way to get a grip on primary (secondary) qualities is via their relationships to our primary (secondary) concepts.²

I think that a careful reading of II, viii, where Locke introduces the distinction between primary and non-primary qualities, supports my interpretation of Locke as making a metaphysical distinction. When I say ‘metaphysical distinction’, I mean a distinction that does not require reference to minds, ideas or understanding; the distinction is, on my interpretation, one about real kinds in the material world. Before mongering his distinction between primary and non-primary qualities Locke notes that qualities are powers to produce ideas in the mind. The term ‘primary quality’ first appears at (§9) where Locke says

“Qualities considered in bodies are, First such as are utterly inseparable from the Body, in what estate soever it be; such as in all the alterations and changes it suffers, all the force can be used upon it, it constantly keeps; and such as Sense constantly finds in every particle of Matter, which has bulk enough to be perceived, and the Mind finds inseparable from every particle of Matter. . . These I call original or primary Qualities of Body. . .” (italics his except ‘call’)

If Locke were not defining ‘primary quality’ here, the final sentence would be curious. Moreover, this is the only section of the *Essay* where Locke writes at such length about a single feature (or, at least, a group of very closely related features) of primary qualities. If one takes this as non-definitional, one has the burden of explaining the rhetorical oddity of introducing the definition after giving this as a list of (non-defining) qualities.

² In fairness to Smith, I should note that he is not obviously always speaking of *Locke’s* primary and secondary qualities. However, my point in discussing him is twofold. An incautious reader may understand Smith as interpreting Locke; I point out several differences between Locke and Smith. Further,

It is notable that Locke is not merely defining ‘primary quality’ here: he is also giving empirical reason to suppose that there are qualities that all bodies share and that these qualities are qualities with which we are often acquainted.

Locke says that there are “[s]uch 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, as Colours, Sounds, Tasts, *etc.* These I call *secondary Qualities*.” The definition *seems* to be that secondary qualities are those qualities in objects that are only powers to produce ideas in us. This however is not his strict definition of ‘secondary quality’. Another feature of my interpretation is that I resist the temptation to make a tripartite distinction between primary qualities, secondary qualities and the qualities of “a third sort which are allowed to be barely powers.” Rather, I read Locke as making two bipartite distinctions. The primary qualities are essentially in bodies where as the secondary qualities are not. Note that this necessarily includes all of the qualities that there are.³ The second bipartite distinction in §26 seems to be widely missed⁴ in the literature:

“To conclude, besides those before mentioned *primary Qualities* in Bodies. . . all the rest . . . are nothing else, but several Powers in them, depending on those primary Qualities; *whereby they are fitted, either by immediately operating on our Bodies, to produce several different Ideas* in us . . . *or else by opperating on other Bodies . . . as to render them capable of producing Ideas* in us. . . . The former of

Smith speaks as if his is the only intelligible primary/secondary quality distinction. It is not for all that he says and I make this clear.

³ $(x)(Fx \text{ OR } \sim Fx)$ is a logical truth.

⁴ A. D. Smith is an excellent example of this, see below.

these, I think, may be called *Secondary Qualities, immediately perceivable*: The latter, *Secondary Qualities, mediately perceivable*.” (some italics mine, some his) Thus, Locke's second distinction is a distinction between kinds of secondary qualities. The first kind, which Locke calls ‘immediately perceivable’, are powers acting upon our own bodies; the second kind, which he calls ‘mediately perceivable’, are powers in bodies external to us acting on each other such that when such an event is perceived it produces an idea in us. I think that much of what Locke says is easily misconstrued. His polemic in §7-22 inveighs against what he sees as a mistake of the common, viz. the acceptance of that some secondary qualities immediately perceivable are in objects as more than bare powers. It is for this reason that in §8, just before introducing the distinction between primary and secondary qualities, Locke notes that there is a difference between ideas, which are in the mind, and qualities, which are in bodies.

Locke’s natural philosophy was heavily influenced by Boyle.⁵ Boyle held what he called a ‘corpuscularian’ view of mechanics. On this view, there are simple bodies, “corpuscles”, that are imperceptible and material and out of which all material things are composed. The bodies are supposed to be simple in that they have only the qualities that are essential to material bodies; in addition, since they have all of the qualities essential to bodies, they are further supposed to be catholic. Everything that Boyle’s mechanics was supposed to explain⁶ was supposed to be explained in terms of arrangements of corpuscles, called “textures”, and the motions of corpuscles. Boyle was particularly concerned to have the most ontologically parsimonious and explanatorily powerful theory

⁵ The following discussion of Boyle’s corpuscularian mechanics is taken from P. Alexander. None of it is my own. Alexander persuasively argues in the introduction to (1985) that Locke’s major scientific influence was Boyle.

that he could. He wanted to depart from previous natural philosophies that posited dormative virtues in their explanation; he wanted to present a theory suited to serious explanation of natural phenomena. Boyle's textures were supposed to do this: the primary qualities of corpuscles⁷ and the spatial relations between them were supposed to determine the sensible qualities of medium sized objects and the relations between those objects in a law-like way.

Some of the similarity between (my interpretation of) Locke and Boyle should already be apparent. Locke notes that primary qualities determine secondary qualities or that the motion of insensible parts results in observed phenomena at §10, §16, §22, §23 (twice), §24 and §26. There are similar, apparently corollary theses elsewhere in II, viii. Locke mentions textures at §20 and §21; in §21, he also mentions corpuscles. I hope that the similarity in these two philosophers is now obvious.

Locke asserts that our primary ideas are resemblances of the qualities and that our secondary ideas are not resemblances; particularly, the patterns of primary ideas are patterns in the primary qualities. I think that the following passage explains this best:

". . . it is impossible, that the same water, if those ideas were really in it, should at the same time be both Hot and Cold. For if we imagine Warmth, as it is *in our hands*, to be *nothing but a certain sort and degree of Motion in the minute Particles of our Nerves, or animal Spirits*, we may understand how it is possible that the same Water may produce the Sensation of Heat in one Hand, and Cold in

⁶ Boyle never insisted that his mechanics explained everything. E.g., he thought that God was explanatorily fundamental and did not hold that his mechanics explain Him.

⁷ Locke and Boyle may disagree as to which qualities are primary. Boyle thinks that they are three: size, shape and motion. I do not think that the disagreement, if any, between them is crucial to my interpretation of Locke.

the other; which yet figure never does, that never producing the *Idea* if square by one Hand, which has produced the *Idea* of a Globe by another. §21

I take Locke to be making a distinction between representing the world, which one does in the case of primary qualities, and representing the way in which the world affects us, which we do in the case of immediately perceivable secondary qualities. Moreover, I tentatively suppose that this is instructive for understanding Locke's claim that our representations of primary qualities are resemblances in the patterns of objects. However, I find the notion of representing a thing as it is really, as Locke sometimes claims that our ideas of primary qualities do,⁸ very mysterious. For the purposes of this paper I remain agnostic regarding further interpretation of Locke's view of ideas of primary qualities

A. D. Smith argues that the correspondence of primary and secondary concepts is the best way of capturing the distinction between primary and secondary qualities. A concept is the content of a representation; correspondence is a causal relation between features of the world and concepts, where in normal circumstances and *ceteris paribus* the features give rise to the concepts. Smith says that we may "characterize qualities indirectly as follows: a quality is primary (secondary) if and only if it corresponds to a primary (secondary) concept." I shall summarize and subsequently discuss three of Smith's reasons for adopting this position.

First, says Smith, the relation between ideas and the external world was of primary philosophical significance to the seventeenth and eighteenth centuries. A reasonable question arises once we have a representation, i.e. and idea, of the world: "are

⁸ E.g., §15: "I think it is easie to draw this Observation, That the *Ideas of primary Qualities* of Bodies, are *Resemblances* of them, and their patterns do really exist in the Bodies themselves."

all [conceptual] natural representations equally faithful and adequate delineations of the physical world?" I take Smith to be asking whether the representation is faithful to the represented. Perhaps some explanation is in order. If there were a portrait of John Coltrane, it would be a representation of him and he would be the represented; the representation is a portrait and has many properties that Coltrane does not but the representation is of Coltrane. Another example,⁹ 'Water' represents H₂O. 'Water' is a word and, leaving out trivial cases, has none of the properties of H₂O but never the less the representation that 'water' does is representation of H₂O. The question I thus take Smith's "faithfulness" to be a property of relations between the representations and their represented. Smith says that if a representation relation is "faithful" then the concept is primary and if a representation relation is not faithful then the concept is secondary. Smith adopts this position, he says, because it enables us to understand this concern of the seventeenth century.

Second, Smith says that direct characterization of qualities as primary and secondary is unintelligible. An objective description of the world, claims Smith, would not warrant dividing qualities into primary and secondary classes. He says, "in order to motivate such a classification we should have to bring in a reference to the concepts to which the various concepts correspond." Smith claims that we must introduce the faithful and non-faithful representation in order to make sense of Locke's qualities that "are allowed barely to be powers" unless they are to become a metaphysically identical kind with secondary qualities.¹⁰

⁹ I include this because I do not want to mislead the reader in thinking that having similar phenomenal character is necessary for representation. It is not sufficient either.

¹⁰ Smith has not noted my two bipartite distinctions and seems to think that Locke had a tripartite distinction in mind. I am here using 'secondary quality' as Smith does.

Finally, Smith applies the referent and mode of presentation distinction to properties and predicates. Thus, Smith says “suppose that we give sounds a secondary status; but suppose, furthermore, that we have a community of deaf scientists investigating the properties of vibrating air, their effects on normal human ear drums and nervous systems, and the consequent differential behavior.” Smith claims that only among people are there questions about secondariness of concepts; “the question of secondariness does not arise in relation to the deaf scientists investigations.”

Even if we suppose that the greatest concern of philosophers in the seventeenth century was understanding the relation between ideas and bodies, it does not follow that the best way of capturing the distinction between primary and secondary qualities is in terms of the kinds of ideas to which they correspond. If we accept my interpretation of Locke then ideas do play a crucial role in Locke’s reasons for making his distinction but that doesn’t mean that the distinction itself is a distinction that involves ineliminable reference to ideas. On my view, part of Locke’s motivation was to clarify the different kinds of things that ideas could apply to in order to eliminate naïve metaphysical suppositions. Locke thought that the vulgar erroneously supposed that the ways bodies affected them were features in the bodies themselves. Locke thought that this was not only false but also, I think, he supposed that it caused the sort of dormative virtue explanations that medieval natural philosophy used so abundantly. If Smith’s demand is to show the relationship between the seventeenth century concerns with ideas and what they represent, I have done so. And certainly, Smith cannot be so demanding as to suppose that any interpretation of Locke must immediately involve this concern.

Smith claims that an objective account of the intrinsic features of objects would not be sufficient for classifying some of the features as primary qualities and some as secondary. However, if my interpretation of Locke is correct then this is false. Of course we cannot distinguish between the primary and secondary qualities of corpuscles: the corpuscles are supposed to have all and only primary qualities. The arrangement of corpuscles within a particular body, which is a set of extrinsic features of the corpuscles, is an intrinsic feature of that particular body. On Locke's view, such an arrangement determines the secondary qualities of a body. On this model, there are at least two ways of defining primary qualities without reference to concepts. First, feature *x* is a primary quality iff *x* is a determinable¹¹ feature of corpuscles. Second, feature *x* is a primary quality iff *x* is a determinable intrinsic feature of bodies. Locke (to put things in more contemporary terminology) is a supervenience theorist: he takes the properties and arrangement of corpuscles as the supervenience base, and non-corpusclarian bodies and secondary qualities as the supervenient facts. So, in his base facts Locke includes certain properties and relations: the properties in the base are primary qualities. Smith notes within this argument that Locke's secondary and tertiary qualities are "metaphysically identical" unless they are distinguished by the nature of the concepts to which they correspond. However, if one takes my interpretation seriously then what Smith calls "secondary qualities" are metaphysically identical with what he calls "tertiary qualities." The difference between them is only in how they are perceivable, viz. mediately or immediately.

¹¹ I use 'determinable' in the same sense as Smith: *x* is determinable iff there can exist determinate instances of that property. E.g. 1 foot is a determinate instance of being extended. See Smith p. 233.

Smith says that in the case of the community of deaf scientists, “the question of secondary status does not even arise” but if this is so to Locke, then it is because it is perfectly obvious to him that the deaf scientists perceive the vibration of air *mediately*. As I interpret Locke, the vibrations of air are bare powers and, since they are not immediately perceivable to the deaf scientists, the deaf scientists will not mistake the powers to be qualities in the object.

There are many remaining issues regarding primary and secondary qualities with which this paper has not dealt. My goal here has been to explicate just what that distinction is and if that goal has been accomplish, this paper is the beginning of a deeper discussion of the consequences of the distinction and whether it has relevance to contemporary philosophy.

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