

## Primary and Secondary Qualities

LPS 200  
Fall 2014 - Winter 2015

The familiar distinction between primary and secondary qualities arose in the early modern period, alongside the revolutionary new science of the day. That science is no longer with us. Should the primary-secondary distinction have died along with the science that spawned it? If not, has it changed its form in the context of contemporary science? These are the guiding questions for this seminar.

The default requirement for those taking the course for a grade (other than S/U, which involves only reading and attendance) is three short papers (750-1250 words) due at the beginning of class in the 4<sup>th</sup> week, 7<sup>th</sup> week, and 10<sup>th</sup> weeks. Each paper should isolate one localized point in one of the readings and offer some analysis and/or critique. (For many, the most difficult part of the exercise is finding a topic of the right size and a thesis to match. All little-paper writers are encouraged to email me their topic and thesis, or even better, a draft introductory paragraph, for discussion well before the due date.) Other options are open to negotiation.

I assume everyone has access to copies of

Nolan, ed., *Primary and Secondary Qualities*.

Wilson, *Ideas and Mechanism*.

Hatfield, *Perception and Cognition*.

(You'll only need Hatfield's book for the second quarter, but if you're interested in the history and philosophy of perceptual theory, you'll want to have a copy.) The rest of the assigned readings are available on the course EEE web site.

Please come to the first meeting prepared to discuss the reading in Topic 1.

## Topics

### 1. Aristotelian scholasticism vs. mechanism

Pasnau, 'Scholastic qualities, primary and secondary'.

Cohen, 'St. Thomas on the immaterial reception of sensible forms', pp. 193-195, 205-207.

Gaukroger, 'Francis Bacon'.

Baigrie, 'The new science: Kepler, Galileo, Mersenne', pp. 49-52.

Galileo, *The Assayer*, pp. 308-314.

Pasnau sketches in the reigning scholastic view; Cohen tries to make better sense of their account of perception. Bacon marks the new scientific approach to inquiry; Baigrie traces the rise of mechanistic thinking to Kepler; Galileo, another pioneer of the new science, puts the case against secondary qualities. (Galileo's methodologically oriented *Assayer* also includes the famous passage declaring that nature is written in the language of mathematics (*ibid.*, pp. 183-184).)

Extra reading:

Hatfield, 'The cognitive faculties', especially pp. 956-358.

Straker, 'Kepler, Tycho, and the "optical part of astronomy": the genesis of Kepler's theory of pinhole images'.

### 2. Descartes I

Wilson, 'Skepticism without indubitability'.

Descartes, *Principles of Philosophy*, I §§66-71; II §§1-4, 11; IV §§197-203.

Downing, 'Sensible qualities and material bodies in Descartes and Boyle', pp. 109-128.

Wilson traces the influence of the new mechanism into Descartes's philosophy. The excerpts show him drawing the key distinction between primary and secondary qualities. Downing examines his case for doing so.

Extra Reading:

Garber, 'Body: its existence and nature', *Descartes Metaphysical Physics*, chapter 3.

Garber, '*Semel in vita*'.

### 3. Descartes II

Wilson, 'Descartes on the perception of primary qualities'.

Wilson, 'Descartes on the representationality of sensation'.

Nolan, 'Descartes on "what we call color"', pp. 81-92.

Extra reading:

Wilson, *Descartes*, pp. 101-119.

Nolan, 'Descartes on "what we call color"', pp. 92-107.

This section of Nolan's paper completes the argument from the assigned excerpt. It's worth reading for those with an special interest in Descartes, though it gets a bit further into the interpretive weeds than seems appropriate for our purposes here. Relevant background is contained in

Nelson, 'The falsity in sensory ideas: Descartes and Arnauld'.

For another take on the status of the senses at the end of the *Meditations*, see

Broughton, *Descartes's Method of Doubt*, pp. 196-202.

### 4. Atomism

Descartes, *Principles of Philosophy*, I §§26-27, II §§5-20, 33-34, IV §202.

Garber, 'Descartes against the atomists', pp. 117-136.

LaLordo, 'Gassendi and the seventeenth-century atomists on primary and secondary qualities'.

The leading alternative to Descartes's picture is atomism, of which Gassendi was a key proponent.

Extra reading:

Wilson, 'Descartes on the infinite and indefinite'.

Ariew, 'The infinite in Descartes' conversation with Burman'.

Frankfurt, 'Descartes on the creation of the eternal truths'.

Bacon, Galileo and Kepler were all roughly contemporary (along with Shakespeare), with Descartes and Gassendi just slightly later. Now Boyle and Locke form the next cohort. (This is the Boyle of Boyle's Law. Locke worked for a time in Boyle's lab, and later corresponded with Newton.)

## 5. Boyle and Locke

Boyle, *The Origin of Forms and Qualities according to the Corpuscular Philosophy*, pp. 50-53.

Downing, 'Robert Boyle'.

Downing, 'Sensible qualities and material bodies in Descartes and Boyle', pp. 128-135.

Locke, *An Essay concerning Human Understanding*, Book II, chapter VIII; Book III, chapter VI, §6; Book IV, chapter IV, §§1-5, 11-12.

Boyle sets the stage; Locke presents the primary-secondary distinction as it's come down to us today.

Extra reading:

Jacovides, 'Locke's distinctions between primary and secondary qualities'.

## 6. Locke II

Alexander, 'Boyle and Locke on primary and secondary qualities'.

Alexander's book, *Ideas, Qualities and Corpuscles*, lays out a systematic reading of Locke as philosopher of Boylean science. (See also Mandelbaum in the extra reading.)

Wilson, 'Superadded properties: the limits of mechanism in Locke'.

Wilson, 'Reply to M. R. Ayers', pp. 211-212.

McCann, 'Locke's philosophy of body', pp. 67-76.

Downing, 'The status of mechanism in Locke's *Essay*', pp. 381-386.

Here we explore the force and limits of Locke's corpuscular mechanism.

Extra reading:

Mandelbaum, 'Locke's realism'.

Mandelbaum's account was apparently the first (1964) to emphasize Locke's reliance on Boyle (and, Stroud thinks, the best). This piece is part of Mandelbaum's larger effort to show that 'scientific inquiries are directly relevant to epistemological issues' and he bemoans 'the fact that contemporary philosophers tend to draw a sharp distinction between scientific and philosophical problems' (*Philosophy, Science, and Sense Perception*, p. vii).

## 7. Locke III

Downing, 'The status of mechanism in Locke's *Essay*', pp. 387-414.

Rickless, 'Locke on primary and secondary qualities'.

Here we continue our focus on corpuscular science as the source of Locke's distinction. Rickless then provides a recent entry in a venerable line of interpretation that instead finds Locke arguing for the distinction on grounds of perceptual relativity and the like.

Extra reading:

Downing, 'Locke: the primary secondary quality distinction'.

In her overview, Downing gives a nice sketch of some of what goes on in 'The status of mechanism'.

Downing, 'Locke's Newtonianism and Lockean Newtonianism'.

This paper follows up the question of Locke's take on Newtonian gravitation.

Now along comes Berkeley, apparently debunking the distinction between primary and secondary qualities.

## 8. Berkeley I

Berkeley, *Principles of Human Knowledge*, §§1-33.

Berkeley, *Three Dialogues between Hylas and Philonous*, first dialogue.

Extra reading:

Fogelin, *Berkeley and the Principles of Human Knowledge*, pp. 39-70.

Wilson, 'Berkeley on colors'.

Harris, 'Berkeley's argument from perceptual relativity'.

Rickless, *Berkeley's Argument for Idealism*, pp. 149-165.

Wilson and Harris examine the argument from perceptual relativity; Rickless the 'identification' argument ('heat is a pain').

As we saw with Rickless, there is a line of thought that sees Locke, not as taking the primary-secondary distinction from science, but as arguing for it, at least partly on the basis of considerations of perceptual relativity. This interpretive theme carries through to Berkeley, who's then viewed as arguing that primary qualities are no different from secondary in this respect. (This raises the question: is Berkeley just using Locke's arguments against him, or does Berkeley enlist those arguments for his own purposes? Harris's answer, in the extra reading below, is 'both'.)

## 9. Berkeley II

Stroud, 'Berkeley v. Locke on primary qualities'.

Wilson, 'Did Berkeley completely misunderstand the basis of the primary-secondary distinction in Locke?'

The alternative line we've been focused on sees Locke as adopting the primary-secondary distinction from the corpuscular science, not as arguing for it, at least not on the basis of perceptual relativity and the like. If this is right, then Berkeley's response to Locke seems to misunderstand him completely. Stroud and Wilson think Berkeley understood the situation much better than that.

Berkeley, *Principles of Human Knowledge*, §§60-66, 101-102.

Garber, 'Locke, Berkeley and corpuscular skepticism'.

Here we begin to explore Berkeley's attitude toward the corpuscular view.

Extra reading:

Winkler, *Berkeley*, pp. 255-275.

## 10. Berkeley III

Wilson, 'Berkeley and the essences of the corpuscularians'.

Downing, 'Berkeley's natural philosophy and philosophy of science'.

Wilson continues to explore the possibility of incorporating some kind of corpuscular view into Berkeley's immaterialism. Downing lays out his broader philosophy of science, including his preference for the Newtonian approach.

Extra reading:

Atherton, 'Corpuscles, mechanism and essentialism in Berkeley and Locke'.

Atherton paints a broader picture of the relations of Locke and Berkeley, and of both thinkers to the science of their day.

As Berkeley's engagement indicates, Newtonianism is by this time superseding corpuscular mechanism. Hume explicitly professes himself a Newtonian, something like 'The Newton of the Science of Man'. Still, there are tensions, because 'force', the new fundamental notion that Newton adds to Boyle's list, stands with those notions Hume famously debunks (i.e., causes, powers, and necessary connections).

## 11. Newton and Hume

Hume, *Treatise concerning Human Nature*, introduction.

Schliesser, 'Hume's Newtonianism and anti-Newtonianism', 1-16.

Hazon, 'Newtonian explanatory reduction and Hume's system of the sciences'.

Extra reading:

Stein, 'Newton's metaphysics', pp. 256-264, 272-285, 288-291.

Where Berkeley is detailed in his critiques of both corpuscularism and Newtonianism (in *De Motu*), not to mention his penetrating critique of the calculus (in *The Analyst*), Hume was less engaged with the fine points of the science, so perhaps it's not surprising that his discussions of the primary-secondary distinction echo the perceptual relativity strain in Locke's and Berkeley's treatment.

## 12. Hume and ideas

Hume, *Treatise of Human Nature*, 1.4.2.44-47, 1.4.4.

Hume, *Enquiry concerning Human Understanding*, 12, ¶¶5-16.

Loeb, *Stability and Justification in Hume's Treatise*, pp. 217-223.

Loeb highlights the one respect in which Hume's relativity arguments go beyond Berkeley's.

Winkler, 'Hume and sensible qualities', pp. 255-256.

Winkler asks whether Hume can be properly understood to claim that 'the mind has never anything present to it but the perceptions' (*Enquiry*, 12.12). Thomas Reid, our next stop, took all the philosophers we've read so far to embrace some form of the Theory of Ideas, now called a representative theory of perception:

By the impressions made on the brain, images are formed of the object perceived ... the mind, being seated in the brain ... immediately perceives those images only, and has no perception of the external object but by them. ... [we perceive] external objects, not immediately, but in certain images or species of them conveyed by the senses. (Reid [1785], II.4, p. 90)

Yolton (most prominently) suggests there are 'reasons to cast considerable doubt on Reid's historical accuracy' (Yolton, *Perceptual Acquaintance from Descartes to Reid*, p. 5). Before we turn to Reid and his attack on ideas, let's pause to glance at three responses to Yolton, concerning Descartes, Locke and Berkeley, respectively.

Wilson, 'Descartes on sense and "resemblance"', pp. 10-19.

Chappell, 'Locke's theory of ideas', pp. 29-35.

Tipton, '"Ideas" in Berkeley and Arnauld'.

Extra reading:

Mackie, 'Did Locke hold a representative theory?'

De Bary, 'Was Reid tilting at a straw man?', pp. 105-114, 122-126.

From here we'll stick with Reid's 'standard interpretations' and examine how he proceeds. Reid begins, like Hume, with an endorsement of Newtonian methods, but from there they diverge dramatically.

13. **Reid I**

Reid, *Inquiry*, §§I.1-8.

Reid, *Inquiry*, §§II.1-2, 8-9; *Essays*, §II.16 (on smell and sensation).

Reid, *Inquiry*, §VI.20; *Essays*, §II.1-2, 5 (on perception).

Maddy, 'Naturalism and common sense' (Hume and Reid), pp. 19-27.

In these pages, I give an overview of Reid's case against ideas, drawn from a number of places in the *Inquiry* and the *Essays*. His discussion is in the extra reading.

Extra reading:

Reid, *Essays*, §II.14 (on ideas).

14. **Reid II**

Reid, *Inquiry*, chapter §§V.1-6, VI.4; *Essays*, §II.17-18 (on touch and primary-secondary).

McKittrick, 'Reid's foundation for the primary-secondary qualities distinction'.

Extra reading:

Nichols, 'Perceptual awareness through touch'.

15. **Reid III**

Nichols, 'Qualities'.

Van Cleve, 'Reid on the real foundation of the primary-secondary quality distinction'.

To this point, the secondary literature has offered up rough versions of the various leading contemporary philosophical positions on the 'ontology' of color or the 'location problem' for color: it's a feature of the object (often call 'physicalism'); it's a dispositional or relational property of some kind; it's a property of pure experiences ('qualia'). (See Cohen's 'The space of options' for an overview of the bewildering details of this taxonomy.) Locke and Reid notoriously slip back and forth between these. Many would say they simply aren't observing the standards of rigor we now demand in philosophy, but it might also be that their motivating concerns are different from ours.

Now let's return to Newton, this time not as a methodological inspiration, but as a contributor to the primary-secondary discussion in his own right.

#### 16. **Newton**

Stein, 'The enterprise of understanding and the enterprise of knowledge'.

Notice that Newton, as Stein describes him, also doesn't seem concerned to settle the location question (see footnote 12).

Extra reading:

Stein, 'On Locke, "the great Huygenius, and the incomparable Mr. Newton"'. .

#### 17. **Kant and Helmholtz**

Kant, *Prolegomena*, Part I, Notes I-III.

Kant, *Critique of Pure Reason*, 'Conclusions from the above concepts' (A26-30/B42-B45) and 'General remarks on the transcendental aesthetic' (A41/B59-A49/B66).

Hatfield, 'Kant and Helmholtz on primary and secondary qualities'.

Moving forward, what should we currently think about the primary-secondary distinction? There's obviously a large and lively contemporary debate on the nature of secondary qualities, focused for the most part on the above-listed postures on the location problem for color. If we follow the lead of Locke, Reid, Newton and others, setting this ontological problem to one side, we're left with compelling versions of at least two of the initial motivations for distinction. One is the project of separating the fundamental explanatory qualities from the rest. In the wake of Newton, we should be less inclined than Locke once was to think that the primary qualities should be somehow discernable in sensory experience or implicit in the concept of 'body', but it remains a leading goal of physical science to uncover these fundamentals, and a leading goal of the philosophy of physics to contribute what it can to this effort.

In addition, a second early question also lives on, a descendant of Locke's notion of 'resemblance': are there sharply different ways in which our sensory systems register information about the world, one for, e.g., spatial relations, another for, e.g., color? Here we

border on cognitive science and evolutionary theory rather than physics.

18. **Palmer and Hatfield**

Palmer, *Vision Science*, pp. 122-137, 171-182.

Hatfield, 'Representation and constraints: the inverse problem and the structure of visual space'.

19. **Hatfield II**

Hatfield, 'On perceptual constancy'.

Hatfield, 'Color perception and neural encoding: does metameric matching entail a loss of information?'

Extra reading:

Hatfield, 'Objectivity and subjectivity revisited: color as a psychobiological property'.

Whittle, 'Why is this game still being played?'

This is Hatfield's entry in the location debate. Whittle was an perceptual psychologist at Cambridge (d. 2009); his title well-describes the content of his paper, which appeared as a comment on the first publication of Hatfield's paper.

Finally, it seems fitting to close with a return to Wilson's historical perspective, as she describes what she takes to be the legacy of the early modern debate in contemporary philosophy.

20. **Primary/secondary now**

Wilson, 'History of philosophy today; and the case of sensible qualities'.

This paper also includes her thoughts on the relations between the history of philosophy and philosophy proper, a topic we might consider for a passing moment ourselves in the final session.

**A Small Chronology**

Bacon 1561-1626

Galileo 1564-1642

[Shakespeare (1564-1616)]

Kepler 1571-1630

Gassendi 1592-1655

Descartes 1596-1650

Boyle 1627-1691

Locke 1632-1707

Newton 1642-1727

Berkeley 1685-1753

Reid 1710-1790

Hume 1711-1776

Kant 1724-1804

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