

A PLEA FOR
BOYLE'S AND LOCKE'S
PRIMARY — SECONDARY QUALITY DISTINCTIONS

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This paper exposes the difference between Boyle and Locke on primary qualities and also defends Boyle's and Locke's conception of secondary qualities against the recent inconsistency allegations of two important commentators, R. B. Jackson and E. M. Curley.

Locke's distinction between primary and secondary qualities has been a heatedly debated topic since Locke wrote his book, *An Essay Concerning Human Understanding*, and yet there has not been a consistent interpretation of Locke's distinction. Amazingly enough, in this ongoing debate, instead of assessing Locke on his own merits, many commentators, among them R. B. Jackson (1929), implicitly or explicitly assumed that Locke's distinction is the same as Boyle's. Therefore, to clarify Locke's position, they have constantly referred back to Boyle. However, to use Boyle as the pivotal point for understanding Locke's distinction has not necessarily been advantageous and correct.

Jackson (1929: 55) alleged also that both Boyle and Locke are sometimes inconsistent on secondary qualities, by identifying them

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with the intrinsic properties of matter. E. M. Curley⁽¹⁾ (1972 : 442-443), a recent and important commentator, took Jackson's charges of inconsistency with respect to Boyle and Locke for granted. The purpose of this paper is to expose the difference between Boyle and Locke on primary qualities and also defend Boyle's and Locke's conception of secondary qualities against these recent allegations of inconsistency or, more succinctly, to present a consistent and correct interpretation of Boyle's and Locke's primary-secondary quality distinctions.

I

Being a scientist, Boyle accepts that not secondary qualities such as colors, sounds, smells, etc., but only geometrical or quantifiable properties, i.e. primary qualities, do belong to sensible objects. To elucidate the distinction between primary and secondary qualities he presents his famous key-lock analogy :

When Tubal-Cain or whoever else were the Smith, that invented Locks and Keyes, had made his first Lock, (for we may Reasonably suppose him to have made That before the Key, though the Comparison may be made use of without that Supposition,) That was onely a Piece of Iron, contriv'd into such a Shape; and when afterward he made a Key to that Lock, That also in it self consider'd was nothing but a Piece of Iron of such a Determinate Figure : but in regard that these two pieces of Iron might now be applied to one another after a Certain manner, and that there was a Congruity betwixt the Wards of the Lock and those of the Key, the Lock and the Key did each of them now obtain a new Capacity, and it became a main part of the Notion and Description of a Lock, that it was capable of being made to Lock or Unlock by that other Piece of Iron we call a Key, and it was look'd upon as a Peculiar Faculty and Power in the Key, that it was Fitted to Open and Shut the Lock, and yet by these new Attributes there was not added any Real

(1) Curley still occupies the focal position in the most recent discussions. Especially see, P. Alexander (1974) and D. Palmer (1976).

or Physical Entity either to the Lock or to the Key, each of them remaining indeed nothing but the same piece of Iron, just so shap'd as it was before. (Boyle, 1667: 11-12).

A piece of iron, either key or lock, has a certain shape, a certain size, and other primary qualities. Thus, Boyle accepts primary qualities as properties of sensible objects and strictly separates them from powers.⁽²⁾ But secondary qualities, i.e. the relations between sensible objects and sensory organs, are analogical to the relation between the key and the lock. The key has the capacity or power to turn the lock, and the lock has the power to be turned by the key. For instance, if the lock is altered, then the key will lose its power to turn the lock. Notice that when the other object, the lock is altered, the key loses its own power. Similarly, alterations in the sensory organs will cause changes in the perception of sensible objects. Secondary qualities are then powers or capacities of sensible objects to produce ideas in us. Thus, secondary qualities cannot be matter itself or new entities in matter. It is essential that secondary qualities should not be identified with properties of matter itself. Although secondary qualities are merely powers and distinct from matter, they exist conjointly with matter. Boyle writes:

I say not, that there are no other accidents in Bodies then Colours, Odours, and the like; for I have already taught, that there are simpler and more primitive Affections of Matter, from which these Secondary Qualities, if I may so call them, do depend (Boyle, 1667: 29).

Although secondary qualities do depend on primary qualities, they are not the same thing. Nevertheless, Jackson and Curley mention some passages in which Boyle seems to identify secondary qualities or powers with the properties of matter itself. For example, Jackson (1929: 57) quotes the following passage from Boyle:

(2) In fact, instead of Locke's term "power" Boyle himself employs the term "capacity". By "power" he means an occult entity superadded to sensible objects.

They (secondary qualities) are not in the Bodies that are endowed with them any real or Distinct entities, or differing from the matter its self, furnished with such a Determinate Bignesse, or other Mechanical Modifications. (Boyle, 1667 : 13).

With respect to the last clause in this sentence, Jackson (1929: 57) claims that Boyle came very close to identifying powers with properties of matter. But in fact, what Boyle intends to say in this very passage is that secondary qualities are not new entities in matter but they depend, on or are explained by, the properties of matter itself. In other words, power is explained by, but not identified with, matter and its properties. Although matter and power are distinct, they exist together.

Of course Boyle uses this kind of language deliberately and rightly, and not only once, but several times. Contrary to Curley's contention (Curley, 1972: 446), even in the following passage Boyle does not identify powers with the properties of matter :

Now though the powers of Poisons be not onely look'd upon as **real** Qualities, but are reckoned among the Abstrusest ones: yet this Deleterious Faculty, which is suppos'd to be a Peculiar and Superradded Entity in the beaten Glass, is really nothing distinct from the Glass itself, (which though a Concrete made up of those innocent Ingredients, Salt and Ashes, is yet a hard and Stiffe Body,) as it is furnish'd with that determinate Bignesse, and Figure of Parts, which have been acquired by Comminution. (Boyle, 1667 : 16).

Here the power of poisons is not "a Peculiar and Superadded Entity in the beaten glass", but is dependent on the matter itself, namely the beaten glass. Boyle is once more *explaining* secondary qualities by means of the primary qualities, which are, according to him, the very properties of matter.

Moreover, after this passage Boyle tries to show the relation between the membranes of stomachs of animals and human beings and the beaten glass: When the membranes are strong and glass parts are quite small, like a powder, then the beaten glass will not be able

to cut the veins and the membranes of the stomach and cause a bleeding in those tissues. But when the beaten glass fits the membranes like a key's fitting a lock, i.e. when the glass parts are big enough and the membranes are weak, then the relation between the membranes of the stomach and the beaten glass will result in the power of poisoning. (Boyle, 1667: 16-17).

II

Contrary to the general belief, Locke did not copy the scientific account of the distinction from Boyle. While primary qualities are more significant than secondary qualities in Boyle, Locke for the first time puts both primary and secondary qualities into the same footing, by defining both sorts of qualities in the same way, viz. as powers to produce ideas in us.

Locke's definition of a quality is as follows: "The power to produce any idea in our mind, I call *quality* of subject wherein that power is." (Locke: 169). Concerning this definition, he does not make any distinction between the idea of primary qualities and the idea of secondary qualities. Power, then, is applicable to both primary and secondary qualities, and it produces in us *any* idea.

After making the distinction between idea and quality Locke gives an example to further explain his definition. A snowball has power to produce in us the ideas of white, cold, and round. Locke calls "the power to produce those ideas in us, as they are in the snowball" (Locke: 169) qualities. Notice that roundness is a primary quality, and a power in the snowball produces in us the idea of round. Thus primary qualities are also powers.

Powers are in the body, but they are not parts or properties of body. The following is a brief review of how Locke discusses the primary qualities in his book, *An Essay Concerning Human Understanding* edited by A. C. Fraser:

II, 8, 9 : Qualities thus considered in bodies are, **First**, such as utterly inseparable from the body... each part has still solidity, extension, figure, and mobility... These I call **original or primary qualities** of body, which I think we may observe to produce simple ideas in us, viz. solidity, extension, figure, motion or rest, and number.

II, 8, 17 : The particular bulk, number, figure, and motion of the parts of fire or snow are really in them.

II, 8, 18 : A piece of manna of a sensible bulk is able to produce in us the idea of a round or square figure; and by being removed from one place to another, the idea of motion.

II, 8, 22 : ...the qualities in bodies... the primary and real qualities of bodies, which are always in them.

II, 8, 23 : The qualities (primary qualities), then, that are in bodies.

In all these phrases Locke does not identify primary qualities of sensible objects with properties of matter or body. He says only that the ideas of extension, figure, number, and motion of sensible objects are all *caused* by the properties of insensible particles. Indeed Locke himself says:

Since the extension, figure, number, and motion of bodies of an observable bigness, may be perceived at a distance by the sight, it is evident some singly imperceptible bodies must come from them to the eyes, and thereby convey to the brain some motion; which produces these ideas which we have of them in us. (Locke : 172).

Immediately after this, Locke continues:

After the same manner that the ideas of these original qualities are produced in us, we may conceive that the ideas of secondary qualities are also produced, viz. by the operation of insensible particles on our senses. (Locke : 172).

Notice especially the adverb "also" which clearly signals that both ideas of primary qualities and ideas of secondary qualities are produced by the operation of insensible particles on our senses. Contrary to Locke, Boyle did not explain macroscopic primary qualities by means of insensible particles, but rather he considered them as properties of matter itself.

III

As we have shown, Locke differs from Boyle on primary qualities. Although Locke regards primary qualities as powers, Boyle accepts them as properties of matter. Despite this fact Jackson wrongly claims that Locke's primary qualities are properties of matter, because he interprets Locke through the spectacles of Boyle.

For instance, Locke (p. 178) counts situation among primary qualities and recognizes its relational nature. But for Jackson (1929: 66) only secondary qualities are relational, therefore in Locke situation cannot be a primary quality.

Contrary to Jackson, Curley is right when he (Curley, 1972 : 445) grants that even Lockean primary qualities are powers. But, unfortunately, he makes this correct interpretation of Locke inconsistent by also claiming that Locke frequently identifies powers with properties of matter. (Curley, 1972: 442-443; 450). The only evidence that Curley presents to support his last claim is that Locke at one place considers secondary qualities as being reduced to their causes in the absence of any perceivers. (Curley, 1972: 440). However, even in this case Locke does not identify secondary qualities with properties of matter, but simply explains secondary qualities by means of their causal basis. Furthermore, Curley does not make any sense in the following passage :

Locke does frequently identify powers with the qualities on which they depend. It is this which makes plausible his definition of qualities as powers which objects have to produce ideas in us. (Curley, 1972 : 450).

Here Curley confuses two different meanings of "qualities". In the first sentence the term "qualities" obviously means properties of matter. But in the second sentence "qualities" means powers to produce ideas in us. Surely, these two different meanings of "qualities" are not identical. Therefore, the second sentence cannot follow from the first one in a logical way. To identify powers with the properties of matter cannot make Locke's definition of "qualities" as powers to produce ideas in us plausible, but on the contrary rather implausible.

In conclusion, neither Boyle nor Locke is inconsistent, at least on the distinction between primary and secondary qualities, but unfort-

unately their interpreters, Jackson and Curley, are. They unjustly accuse both Boyle and Locke of being inconsistent, by misinterpreting and even by suppressing the evidence which contradicts themselves in order to justify their incorrect conclusions so far as the distinction between primary and secondary qualities are concerned.

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ÖZET

BOYLE İLE LOCKE'UN BİRİNCİL - İKİNCİL NİTELİK AYRIMLARININ SAVUNULMASI

Günümüze değin Boyle ile Locke'un birincil-ikincil nitelik ayrımlarının yorumu sürekli tartışmalara yol açmıştır. Her nedense yorumcular ya Boyle ile Locke'un ayrımlarını özdeş olarak görmüşler ya da Boyle ile Locke'un ikincil nitelikleri kimi kez nesnelere kendi içsel nitelikleri ile özdeşleştirdiklerini ileri sürmüşlerdir.

Önemli bir yorumcu olan Jackson, Locke'un birincil niteliklerini Boyle'da olduğu gibi nesnelere içsel nitelikleri ile özdeş olarak yorumlar. Oysa ki Locke'de birincil nitelikler, tıpkı ikincil nitelikler gibi, birtakım yakınlıklar anlamına gelmektedir.

Bu yazıda ayrıca Jackson ile Curley'e karşı, Boyle ile Locke'un yakınlık kavramını hiçbir zaman nesnelere içsel nitelikleri anlamında kullanıp tutarsızlığa düşmedikleri gösterilmektedir.

Böylelikle bu inceleme Boyle ile Locke'un birincil ile ikincil nitelik ayrımlarının tutarlı ve doğru bir yorumunu sunmaktadır.