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*Locke's Image of the World*
By Michael Jacovides
Oxford University Press, 2016. 256pp, £45
ISBN: 9780198789864
doi:10.1017/S0031819117000390

Jacovides's book is an account of Locke's treatment of primary and secondary qualities, with special attention to the impact on Locke of the scientific revolution of the sixteenth and seventeenth centuries. In Jacovides's view, the heart of Locke's account of primary and secondary qualities is his answer to the question, 'which of the sensible qualities of bodies belong to them as they are in themselves' and which are merely attributed to them because of the ways they affect perceivers' (1). He says this question is 'one of the most fertile' in metaphysics, revealing, if handled correctly, 'something about the relations between subjectivity and objectivity and between physics and experience.'

In the story that Jacovides tells, the early 1660s were pivotal for Locke. In 1660 Locke was in his late 20s, had already earned two degrees from Oxford University, and had begun to embark on a serious study of medicine. Within the next few years, he read Descartes, met Robert Boyle, and gained access to Boyle's library, which together led to his 'understanding and then eventually adopting *corpuscularianism,* the view that what explains the workings of artifacts, namely the size, shape, and motion of their material parts, explains the workings of all natural bodies' (4). Eventually Locke became so convinced of his new view that he found it impossible even to 'conceive of corporeal interactions that go beyond mechanical models,' an inability that, in Jacovides's view, blinded him to the possibility that the seeming obviousness to him of many of his major premises and observations in the *Essay* was due not solely to their intrinsic merit but also to his own 'time place, and project' (3).

Jacovides stresses that at the outset of Locke's conversion to *corpuscularianism* he was not 'a blank slate' upon which the new science could be written, but rather someone who had a deep understanding of earlier natural philosophy and entrenched commitments to parts of it. Thus, in the early 1660s the information about the scientific revolution that Locke was quickly assimilating and the commitments to it that he was increasingly making had to be played off against and often integrated with information he already possessed and commitments he had already made. This is part of what makes Locke so fascinating as a vehicle through which to view this collision of two intellectual cultures. Another part is his humility and skepticism. In



https://doi.org/10.1017/S0031819117000390 Published online by Cambridge University Press

Jacovides's account, even after his conversion, Locke takes himself to have shown not that corpuscularianism is the answer to how one should understand the natural world, but that *either* it is the answer *or else* that the answer is beyond our powers of comprehension.

Among the examples Jacovides provides of how Locke's understanding of the new science influenced his philosophy is Locke's declaration that his 'corpuscularian account of the physics of perception entails two theses about ideas', namely 'a positive resemblance thesis' to the effect 'that ideas of primary qualities resemble something in bodies', and 'a negative resemblance thesis' to the effect that 'ideas of secondary qualities don't resemble anything in bodies' (151). Jacovides says that to understand Locke's two resemblance theses we need to understand both what he retains and what he rejects of the scholastic theory of perception. To provide this understanding, Jacovides provides an erudite account of 'the scholastic theory of perception', tracing its evolution through Aristotle, Galen, Avicenna, and Alhacen, to its culmination in 'the Baconian synthesis', the main thesis of which is that 'sensible species multiply across a transparent medium, are received by the senses, combine into images in the front ventricle, are supplemented and recombined in the middle, and are stored and recollected in the rear' (152). Jacovides identifies two elements of this theory which he says Locke retains, and assesses these. He then does the same with what he says is 'another Aristotelian feature that makes its way into Locke's cognitive theory,' namely, 'a belief in the centrality of mental imagery' (157). This part of Jacovides's account, which is too complex to summarize here, culminates in the conclusion that in the case of primary qualities, 'shapes out in the world are as they are presented in mental imagery.' He says that 'Locke thinks that mental images are the proper objects of geometry and that external objects obey the theorems of geometry because they resemble these internal exemplars'. Ideas of secondary qualities, on the other hand, 'are restricted to the mind' and 'don't resemble anything in the outside world, not because such a thing is impossible but because that's just how the world happens to be (176).

Even though Locke says that he cannot imagine, or even conceive of, alternatives to corpuscularianism, in Jacovides's view, he was 'well aware of some of the limitations of copuscularianism as an explanatory framework' and even argued 'at length that there are insoluble puzzles associated with its foundations'. In addition, Jacovides says that Locke knew that most physicists in human history, some of whom he had carefully studied, hadn't been corpuscularians. So, he says, Locke knew that these physicists 'must have managed to



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conceive of alternatives' to corpuscularianism. Why, then, he asks, couldn't Locke also conceive of these alternatives? (25).

Jacovides says that to answer this question it helps to distinguish three senses of inconceivability in Locke's view. The first comes from denying something that is demonstrably true. For instance, 'Locke believes that bodies with a certain mechanical structure will necessarily have certain powers so that when put in motion in a certain way, they will demonstrably bring about certain effects'. Hence, he cannot conceive of their being put into motion and not bringing about these effects (26). The second comes from trying to transcend our rather limited power to generate new ideas. Locke believes that the simple ideas we receive from sensation and reflection impose strict limits on what we can think. 'If we haven't had certain experiences or we haven't carried out requisite procedures on the right sort of simple ideas', as in the case of a person blind from birth who hasn't had certain simple ideas of color, then it is inconceivable that subsequently he should have thoughts that require his having had these prior experiences (26). In addition, Locke thinks that the only things that are present to be experienced, and hence might generate simple ideas, are modifications of motion and that these modifications do not include the actions that caused them. Thus, in Locke's view, it is inconceivable that a person might witness the *action* of cold freezing water since the action itself, which is more than fluid water being followed by frozen water, is not available to be witnessed (27). Locke also thinks that 'the only way we can conceive of an interaction between two non-continuous bodies with nothing visible between them is though the impulsive mediation of imperceptibly small bodies' (27). So, action at a distance, as in Newton's theory of gravitation, turns out in Locke's view to be inconceivable.

Jacovides thinks that he (Jacovides) can perceive some causal interactions. He gives the example of 'fire burning a match.' He says that 'psychological research hasn't supported Locke's thesis that we perceive *only* impulsive causal connections' (29) and that 'Locke is wrong to think that the imperceptibility of actions entrails their inconceivability'. He says that 'mechanical explanation of the sort that Descartes, Boyle, and Locke think will govern the whole world turns out to apply only to a restricted domain' and that 'later natural philosophy develops concepts for actions that are not immediately copied from perception but that are rather constructed slowly and in unforeseeable ways. The range of intelligible thought that's been produced in the history of ideas is wider than what Locke's cognitive theory would have you believe' (29).



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The third sense of 'inconceivability,' which Jacovides calls 'probabilistic,' is required, he argues, in order to make sense of one of Locke's pivotal arguments in the fourth edition of the *Essay*. In the first edition he had argued that since the only way we can conceive of bodies interacting is by impulse action at a distance is not only inconceivable, but impossible. By the time he composes the fourth edition, he has, under the influence of Newton, come to believe in the reality of action at a distance. Even so, he cannot bring himself to admit that action at a distance is conceivable. So, he now claims that action at a distance, in which 'God makes bodies operate in an inconceivable way', is both inconceivable and real (35). Inside Locke's system, Jacovides says, 'we can think of this inconceivability as a matter of habitual belief coming to seem self-evident'. Outside of it, we can think of it 'as a byproduct of adopting a paradigm' (35).

Another example of Jacovides's explain-and-assess approach in this book is his discussion of the phenomenology of seeing. He sets this up by agreeing with A.D. Smith (*Mind*, 2000) that whereas during the eighteenth and early nineteenth centuries virtually all theorists of the phenomenology of seeing thought that we are immediately aware through sight of objects that are arrayed in two-dimensional space, by the twentieth century virtually all philosophers at least think that we are immediately aware through sight of objects that are arrayed in three-dimensional space. Jacovides rightly finds this puzzling. 'How,' he asks, can there be 'fashion in phenomenology?' (135).

Locke famously thought that what humans who look at a colored *sphere* see in the first instance is a colored *circle*, which they then judge to be an image of a colored sphere (136). Looking at a colored sphere, he held, brings two faculties into play: that of perception, which provides perceivers with the way the world *seems*, and that of judgment, which provides them with an appraisal of how the world *actually is*. Jacovides says that Locke's view was that this latter appraisal 'is derived from the appearances but doesn't displace them' (136).

To explain how Locke arrived at this theory Jacovides traces Alhacen's 11$^{th}$ century theory of optics through its development, first, by Tycho Brahe, in the 16$^{th}$ century, and then by Kepler, in the 17$^{th}$, which led to the discovery of the retinal image. In Jacovides's view, Locke thought that what human perceivers see directly is the retinal image, which is two-dimensional, and came close to reasoning that since what they see directly is two-dimensional then what they seem to see visually is also two-dimensional. Locke thought that this interpretation of how direct perception works



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gains additional support from certain of his thoughts on realistic paintings, especially from his view that some people have to touch a realistic painting of a globe in order to convince themselves that it is flat. 'Presumably', Jacovides's says, he thought 'that the viewer's idea of protuberance can't be acquired by sight, since, after all, the painting is flat' (142).

Jacovides counters that those who believe that vision presents us with three-dimensional objects can with equal justification say that 'the mysterious process that takes us from the retinal images to consciousness gives ideas of three-dimensional objects when we look at fruit and also when we look at paintings of fruit' (142). And, in opposition to what Locke's theory predicts, he says, 'when we look at a *trompe l'oeil* painting, the depicted object seems to be real and to have depth in the first instance, and only later can we see the painting as flat' (143). He concludes that 'insofar as *trompe l'oeil* paintings provide us with a crucial experiment to decide between Locke's theory and rival theories they seem to undermine Locke's view' (143).

Jacovides then turns to a brief, but fascinating, survey of views on closely related issues by G.E.M. Anscombe, Alberti, Leonardo De Vinci, Bertrand Russell, Wittgenstein, James J. Gibson, and Eric Schwitzgebel, among others, from which Jacovides derives his explanation of how it is possible for virtually all eighteenth and early nineteenth century theorists of seeing to think that 'what we see is obviously two-dimensional' and for virtually all philosophical theorists of seeing in the twentieth century to think that 'what we see is obviously presented with depth'. His explanation is that 'it's possible to see what's before us in either way' and since 'when we see things in one way, we have first-person authority that we are seeing things in that way', a person's 'views about the immediate object of sight will seem not just right but obviously right'. And 'since one way of seeing drives out the other, at least for the moment, philosophers and psychologists might think that alternatives are obviously wrong' (148). Finally, there follows in Jacovides's account a discussion of the views of Thomas Kuhn, Jerome Bruner, Leo Postman, and various contemporary psychologists on the ways in which expectation influences perception, which sets up Jacovides's overall conclusion: 'So, what we think we see depends on what we expect to see, and, when it comes to our ideas, what we think we see is what we actually see. Locke's historical, plain method turns out to be partly a matter of description and partly a matter of invention. The fat fingers of introspection aren't supple enough to pick up unmodified perceptions' (149).



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Jacovides may be right about much of this, but his argument for it, which I have only briefly sketched, leaves a few possibly important questions unaddressed. First, what about phenomenological surprises? If, as it seems, they are commonplace (think of the first time someone who has no idea what to expect looks through a stereoscope, or think of a skeptical student of Locke's theory who to test the theory examines what he sees directly when he looks at a globe and *much to his surprise* becomes convinced that Locke is right), then it must be at least an overstatement to say simply that people 'see what they expect to see' (148). Second, what of the popular view that people see not what they *expect* to see, but what they *want* to see? Is this view simply false? Or, if it is part of the truth, how do wanting and expecting interact in affecting what people see? Finally, why did the expectations of theorists of vision change over the centuries in the ways that Smith and Jacovides say they did. In other words, what happened in the late nineteenth century, or early twentieth century, to usher in current philosophical views of the phenomenology of seeing? And why didn't the views of the phenomenology of seeing held by twentieth-century psychologists change in the same way?

As should be clear from this brief survey of Jacovides's book, in addition to explaining what Locke's account of primary and secondary qualities was, what led him to propose it, and how he tried to justify it, Jacovides *assesses* Locke's proposals, both from the point of view of what was known in Locke's time and from that of what has been learned since. Throughout his book, Jacovides's scholarship is impressive, his writing clear and concise, and his assessments of Locke original and engaging. In sum, his book, while impressive as intellectual history is much more than intellectual history in the conventional sense. All in all, a remarkable achievement.

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This review first published online 17 October 2017

*Making Things Up*
By Karen Bennett.
Oxford: Oxford University Press (2017), pp xi + 260, £45
ISBN: 9780199682683
doi:10.1017/S0031819117000420

This – in some philosophical circles – is a long-awaited and eagerly anticipated book. In part, this is because a number of earlier draft



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