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Is Locke's answer to Molyneux's question inconsistent? Cross-modal recognition and the sight–recognition error

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ABSTRACT

Molyneux's question asks whether someone born blind, who could distinguish cubes from spheres using his tactile sensation, could recognize those objects if he received his sight. Locke says no: the newly sighted person would fail to point to the cube and call it a cube. Locke never provided a complete explanation for his negative response, and there are concerns of inconsistency with other important aspects of his theory of ideas. These charges of inconsistency rest upon an unrecognized and unfounded assumption that seeing entails recognition. Locke's negative answer to Molyneux's question is consistent with his other philosophical commitments.

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1. The landscape of Molyneux's question

Locke's negative answer to Molyneux's question[1] is inconsistent with other key aspects of his philosophy – or so it is widely argued. The Molyneux question was posed to Locke by his friend, William Molyneux, whom Locke had asked to provide comments for the second edition of his groundbreaking *Essay Concerning Human Understanding*. Molyneux asked Locke whether he thought someone who was born blind but could distinguish cubes from spheres using his sense of touch could, upon receiving his sight, '*distinguish, and tell, which is the Globe, which the Cube*' while seeing them for the first time (*Essay,* II.ix.8, italics in original). Locke and Molyneux both agreed that the answer would be no: the newly sighted man would fail to tell which of the two objects was the cube and which the globe.

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While this response seems unsurprising for an empiricist like Locke, critics think Locke neglected to see the pressure his negative answer puts upon his broader philosophical commitments.[2] Ayers (1991) argues that whether one thinks of Locke's common sensible ideas as intentional objects or as blank effects, his negative answer to Molyneux's question is problematic.[3] If we understand ideas as intentional objects, 'Locke's treatment of ideas of two senses here is inconsistent with his assertion elsewhere [*Essay* II.v] that spatial ideas are received 'both by seeing and feeling'' (Ayers 1991, 65). If, on the other hand, we think of ideas as blank effects,

> the idea of a primary quality, the tactual idea of squareness will 'resemble' squareness in the object. Since the same goes for the visual idea, the two ideas will resemble each other, at any rate with respect to their squareness. So Molyneux's argument fails whether 'ideas' are regarded as intentional objects or as blank effects. (Ayers 1991, 65)

The difficulties Locke's negative answer to Molyneux's question poses for his ideas of diverse senses and the resemblance of primary quality ideas is nearly universally acknowledged.[4]

In an effort to save Locke from these charges of inconsistency and provide a clear reason for the Molyneux man's failure, notable attempts have been made to sidestep Locke's discussion of common sensibles and resemblance, altogether, by *reinterpreting* Molyneux's question as one primarily concerned with visual perception rather than the cross-modal connection between tactile and visual experiences. However, such interpretations entail that Locke misleadingly characterizes the very question he means to be answering: instead of being primarily concerned with cross-modal recognition (i.e. the ability of a newly sighted person to recognize the objects he had previously touched when seeing for the first time), Molyneux's question is reduced to concerns over the first visual ideas of the newly sighted person, without regard to the connection to tactile ideas.[5]

The interpretive landscape of the Molyneux problem, therefore, leaves us with a dilemma: Either Locke's answer is inconsistent with his theory of ideas or we must change what the Molyneux question is asking and consequently overlook what Locke actually writes about the Molyneux question. Both options are unsatisfactory. In this paper, I aim to provide an account that passes through the horns of this dilemma between inconsistency and imaginative reinterpretation – an account that also (1) faithfully represents Molyneux's framing of the question as concerning cross-modal recognition, (2) favors a literal rather than a figurative reading, and (3) addresses the concerns over inconsistency. My view provides a middle way between the two sides of the dichotomy. I argue that Locke believes the newly sighted man's first visual ideas would include shapes, but this need not lead to the worries over inconsistency with common sensibles and resemblance. On my view, Molyneux's newly sighted man fails, because while he does see a shape (notably, a flat one), his existing concepts of cubes

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and spheres, derived from tactile experience, do not enable visual recognition at first sight. In other words, seeing does not entail recognition.

2. Which Molyneux question?

The most natural way to read Molyneux's question is as a query about the possibility of recognizing objects across different sense modalities at different times, i.e. cross-modal recognition. Molyneux asks:

> *Suppose a Man born blind, and now adult, and taught by his touch to distinguish between a Cube, and a Sphere of the same metal, and nighly of the same bigness, so as to tell, when he felt one and t'other, which is the Cube, which the Sphere. Suppose then the Cube and Sphere placed on a Table, and the Blind Man to be made to see. Quaere, Whether by his sight, before he touch'd them, he could now distinguish, and tell, which is the Globe, which the Cube.* (*Essay* II.ix.8: 146 italics in original)

The newly sighted man is someone who has learned to identify cubes and spheres using his tactile sensation. In asking whether he would, after receiving his sight, be able to identify which of the objects he sees is the globe and which the cube, Molyneux doesn't allow the man the same opportunity to be taught by his *vision* to distinguish the objects.[6] This suggests that Molyneux is more concerned with whether our experiences and knowledge acquired from one sensory modality (touch) enable us to immediately recognize the objects when seeing them for the first time rather than with just a general concern about the experiences of newly sighted people.

In his description of Molyneux's question, Locke takes for granted that the two objects are seen. The real question is not whether the newly sighted man would or could see when he first gets his vision restored (this was beyond the capabilities of empirical science at the time), but whether one's extensive tactile experiences had any bearing on one's first visual experiences, whatever they may be. It is a matter of matching the objects he sees with their tactile counterparts and being able to identify them by the same name. If the 'real' Molyneux question were limited to a question about what a person sees when she first receives sight after being blind, then Molyneux would not have needed to concoct a thought experiment at all (Bolton 1994). Why not pose the straightforward question: Were we to restore someone's sight, what would that person be able to see? Such a question requires no concern with a relationship between tactile and visual experiences of objects like globes and cubes, but is entirely focused on the developmental story about visual perception. Do we see objects immediately or is it a developmental process that occurs gradually and only after the requisite experience? In fact, the purely visual question is not furthered by thinking of a newly sighted adult but could be answered just as well by speculating about how infants acquire the faculty of vision. So, the question might have been better phrased as: What do infants see at birth? Which aspects of visual perception, generally, require experience and which do not?

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The answer Molyneux provides to his question further elucidates the cross-modal nature of his question. The man, he claims, would not at first sight be able to associate his earlier tactile impressions of the objects with his new visual impressions of them. He says:

> Not. For though he has obtain'd the experience of, how a Globe, how a Cube affects his touch; yet he has not yet attained the Experience, that what affects his touch so or so, must affect his sight so or so; Or that a protuberant angle in the Cube, that pressed his hand unequally, shall appear to his eye, as it does in the Cube. (*Essay* II.ix.8)

While some of Molyneux's language could be clearer, in denying the newly sighted man has the ability to connect his tactile experiences of how a globe affects his touch with his first visual experiences of the globe, it is obvious that, for Molyneux, his question concerns cross-modal connection: recognition across modalities.

If we really want to make sense of Molyneux's question and Locke's response, we must understand that the issue at stake is cross-modal recognition: it is a question about whether the newly sighted man's recent tactile experiences will connect in his mind with his first visual sensations of the objects in question. The fact that this reading of the question is generally said to lead to devastating inconsistency for Locke should not motivate us to reject the true nature of the question.

As for Locke's response, we know Locke agrees with Molyneux's conclusion 'that the Blind Man, at first sight, would not be able with certainty to say, which was the Globe, which the Cube, whilst he only saw them,' and we know that he likewise understands the question as concerning cross-modality: for the man fails, 'though he could unerringly name them by his touch, and certainly distinguish them by the difference of their Figures felt' (*Essay* II.ix.8, 146). Locke is comparing the newly sighted man's inability to do with one modality (sight) what he is able to do with another modality (touch), that is, identify which is the globe and which the sphere. Molyneux's question concerns cross-modal recognition rather than merely concerning vision alone.

3. Locke's answer

Surrounding Locke's treatment of the Molyneux question is a discussion of the way habits of judgment can alter the ideas adult perceivers receive from sensation without their being aware of it. Locke describes this process just prior to introducing Molyneux's question in the *Essay*:

> When we set before our Eyes a round Globe, of any uniform colour, v.g. Gold, Alabaster, or Jet, 'tis certain, that the *Idea* thereby imprinted in our Mind, is of a flat Circle variously shadow'd, with several degrees of Light and Brightness coming to our Eyes. But we having by use been accustomed to perceive, what kind of appearance convex Bodies are wont to make in us; what alterations are made in the reflections of Light, by the difference of the sensible Figures of Bodies, the

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> Judgement presently, by an habitual custom, alters the Appearances into their Causes: So that from that, which truly is variety of shadow or colour, collecting the Figure, it makes it pass for a mark of Figure, and frames to it self the perception of a convex Figure, and an uniform Colour; when the *Idea* we receive from thence, is only a Plain variously colour'd, as is evident in Painting. (II.ix.8: 146)

Locke believed this discussion had some bearing on answering Molyneux's question, though he doesn't specifically explain its application to the newly sighted man. After the above, he introduces Molyneux's question and, after agreeing with Molyneux's negative answer, leaves it for his readers 'to consider, how much he may be beholding to experience, improvement, and acquired notions, where he thinks, he has not the least use of, or help from them' (II.ix.8: 146).

The answer this passage may provide to Molyneux's question depends upon how it is interpreted. There are two prominent interpretations of the above passage – what I call the *Two-dimensional Shape Without Judgment* view (2D view) and the *No Shape Without Judgment* view (no shape view) – and consequently two kinds of explanations offered for Locke's negative response to Molyneux's question. Each interpretation has virtues as well as deficiencies. Ultimately, I believe the virtues of the 2D view outweigh those offered by the no shape view; therefore, it is better to interpret these passages literally.

On the standard interpretation, or 2D view, this passage is read literally as referring to two-dimensional shapes when Locke says the original ideas produced in the mind when we look at a globe are of 'flat circle[s]' and 'Plain' figures. The process of judgment, on this view, alters the original flat shape into a voluminous shape upon experience of learning how voluminous objects tend to reflect light and color. With enough experience, our minds perform this judgment as a matter of custom or habit, such that this change happens so quickly we fail to notice the process of judgment. We think the altered idea is the original idea we receive from the senses, even though it has been changed. The *No Shape Without Judgment View*, to the contrary, offers a figurative reading of the passages. On this view, the original ideas of sight exclude ideas of shape and are restricted to light and color. The process of judgment is needed to produce an idea of three-dimensional shape from the original ideas of light and color. This view is figurative, because in order to motivate this reading when Locke writes 'flat circle' and ' a Plain' variously colored, he should be taken to mean no shapes, just light and color.

3.1. The 2D view answer to Molyneux's question

According to the *Two-dimensional Shape Without Judgment* view, the newly sighted man, when seeing a globe for the first time, would receive the idea of a two-dimensional shape.[7] Without the experience necessary to perform 'unconscious automatic' judgments of the patterns of color and shadow, the newly

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sighted man's visual ideas would be limited to two-dimensional (flat) shapes of varying colors (Mackie 1976, 30). Mackie's view is a standard bearer for this interpretation. According to Mackie,

> We can infer that Locke's reason for saying that Molyneux's man would not be able, before touching the objects he was now seeing for the first time, to say which was the sphere and which the cube is that this man would not have acquired automatic interpretations of various patterns of shading as indicators of three-dimensional shapes such as spherical convexity or the corner of a cube projecting towards the viewer. (1976, 30)

There is a mismatch between the formerly blind man's three-dimensional tactile ideas and his two-dimensional visual ideas of shape, which explains his failure to connect his tactile and visual ideas.

The best explanation of this account, I believe, is given by Bruno and Mandelbaum (2010). On their view, the newly sighted man fails because he lacks the experience necessary to perform these perception-altering judgments that enable us to have visual ideas of three-dimensional shapes (Bruno and Mandelbaum 2010, 171). If the newly sighted man fails to see a *globe* (seeing a circle instead), it makes sense that he might fail to point to the globe and call it by name. According to Bruno and Mandelbaum:

> Although, one can passively perceive three-dimensional objects through touch, one could not transfer the tactile idea of (for example) 'cube' to the visual because the visual idea of cube requires active judgements. These judgements would require some prior cross-modal experience and training. One would have to have a habitual connection between touching the three-dimensional object and seeing the three-dimensional object before one could make the correct perception-altering judgements. (2010, 173)

A view like Bruno and Mandelbaum's is the solution most readily suggested by a literal interpretation of the judgment passages (the 2D view) bookending Locke's discussion of Molyneux's question. This account explains why the Molyneux man's visual ideas are different from his tactile ideas, and this may be enough to explain his failure at cross-modal recognition.[8]

While Bruno and Mandelbaum's cross-modal learning account has the virtue of making sense of the literal 2D view, it nevertheless is open to two substantial worries: (1) it fails to address the concerns about inconsistency with common sensibles and the resemblance thesis, and (2) it leaves open the possibility of success via inference, a possibility Locke rejects. Briefly, the worry is that if the visual and tactile ideas are both caused by the globe, and ideas of shape resemble their causes, they ought then to resemble each other. And if the ideas resemble each other, the newly sighted man ought to succeed.[9]

The second concern with the cross-modal learning account is that it doesn't rule out the possibility of successful inference. If the newly sighted man sees a circle and a flat cube, why couldn't he look at the circle and reason, 'This circle is round. The globe is round. If I had to guess between the two, I would say this one is the globe'? And when having the idea of a flat cuboid figure, why couldn't

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he say, 'This shape has pointed angles and straight edges just like the cube. Ah hah, this must be the cube!'? If the newly sighted man's failure is explained by the mismatch between a flat circle and a voluminous globe alone the possibility of *inferring* from the flat to the voluminous shape seems like a real possibility.

Edward Synge, a contemporary of Locke and Molyneux, gave a positive response to Molyneux's question (*Works* 9: 368–373). Synge, making no concession for the role of judgment in our ideas of three-dimensional shapes, assumes the newly sighted man will see the cube and sphere (rather than a circle, etc.). But it is by inference that Synge believes the newly sighted man might succeed: for he could reason that since both the tactile and the visual idea of the cube have 'distinct sides' while the sphere is 'continuously smooth,' the newly sighted man would easily connect the two ideas (*Works* 9: 370). Locke makes it clear that he thinks Synge's response is an error and calls it evidence of 'how hard it is for even ingenious men to free themselves from the anticipations of sense' (*Works* 9: 378).

The difference in spatial dimension between our tactile and visual ideas alone, however, doesn't eliminate the possibility of this kind of inference: Both the circle and globe are continuously smooth and both the cube and the irregular hexagon have distinct sides and angles. What is to prevent one from reasoning from these similarities and arriving at the right answer? Given Locke's acknowledgment of Synge's error, any interpretation of Locke's response to Molyneux's question that leaves open the possibility of successful inference along these lines may not be the best account of Locke's answer. The innovations I provide in §5 and §6 bolster the *2D view* and Bruno and Mandelbaum's cross-modal learning account to show why such an inference (from seeing a circle and making an inference to a globe, say) isn't open to Locke's newly sighted man.

3.2. The no shape view answer to Molyneux's question

The second way to interpret Locke's view of judgment suggests the newly sighted man would see no shapes at all. I call this view, which is promoted by Bolton (1994), the *No Shape Without Judgment* view (no shape view).[10] On this interpretation, 'a man just made to see would not receive any ideas of the figures of bodies he looked at,' but would see only an array of light and colors (Bolton 1994, 79). Only after sufficient experience would the formerly blind man be able to acquire (any) ideas of shape from judging the patterns of light and color.

The virtue of the no shape view is that it offers a clear explanation for the newly sighted man's failure: If he doesn't see the shapes of the cube and sphere then no one could expect him to point to them and call them by name, and there would be no information upon which to base a Synge-inspired inference. Another virtue of the no shape view is that it skirts the difficult charge of inconsistency with common sensibles and resemblance. If the newly sighted man sees no shapes, the concerns over resemblance between tactile and visual ideas of

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shape are simply moot. The problems with inconsistency arise only with the assumption that the newly sighted man sees shapes.

These seem like great points in its favor; nevertheless, it is difficult to square this interpretation with what Locke actually writes. To further such an interpretation, we must read Locke *figuratively*: When he says 'flat circle' and 'a Plain' we should read, *disorganized patches of light and color.* Although he clearly says we originally form the idea of a '*flat circle* variously shadow'd, which then with judgment becomes altered into a *globe* of uniform colour,' we are asked to ignore what Locke writes in favor of what he doesn't (II.ix.8: 145, emphasis in italics). Bolton's view doesn't and can't make sense of the difference in dimension made explicit by Locke: The idea of a *flat circle* is altered into an idea of a *convex globe*. The fact that the judgment involves the third dimension of space is evident in moving from a flat circle to a globe.

The literal 2D reading, which I favor, provides a faithful account of Locke's view of judgment but leads to worries of inconsistency and an as yet unsatisfactory answer to Molyneux's question. The no shape reading, on the contrary, provides a clear answer but ultimately unsatisfactory reading of the judgment passages (II.ix.8–10). The no shape view also asks us to abandon the cross-modal nature of Molyneux's question as discussed earlier (§2). Because I believe cross-modality is essential to Molyneux's question and favor faithful readings when possible, I aim to strengthen the position of the literal 2D reading, by adding to Bruno and Mandelbaum's cross-modal learning account, and tackling the worries of inconsistency.

4. Worries of inconsistency: the transitivity of resemblance

The worry over inconsistency was first posed by Berkeley (NTV) and reiterated by Mackie (1976), Ayers (1991), Bolton (1994), Hatfield (1998), Berchielli (2002), Schumacher (2003), and Bruno and Mandelbaum (2010). If the newly sighted man sees the shapes of objects (even in two rather than three dimensions), Locke really ought to think he would succeed at cross-modal recognition, or so the criticism goes. The worries of inconsistency are established by what I call the Transitivity of Resemblance argument. Our simple sensory ideas of shape are ideas of primary qualities (*Essay* II.viii.9).[11] In making his distinction between ideas of primary and secondary qualities, Locke says that there is nothing in mind-independent objects themselves that resembles our subjective experiences of secondary qualities like colors, smells, and tastes. That is to say, Locke thought the world was made up of collections of tiny corpuscles that bear no resemblance to our ideas of colors or smells. In contrast, our ideas of primary qualities, including our ideas of size, shape, and motion, are said to resemble the primary qualities of their causes (*Essay* II.xxxi.2; II.viii.15–16). Unlike our ideas of red or violet, our ideas of shape are supposed to resemble their causes and

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thereby 'provide information about the features of their causes' (Bolton 1994, 79). This is called Locke's resemblance thesis.[12]

Our simple sensory ideas of shape, whether from tactile or visual sensations, have the same cause: the physical globe and cube. They are common sensibles – what Locke refers to as simple ideas that come from more than one sense, in contrast with those that come from just one sense (*Essay* II.iii and II.v).[13] It seems to follow that, since the visual and tactile ideas resemble the same cause, they ought then to resemble each other. In other words, the property of resemblance is considered to be transitive. Mackie (1976) explains the transitivity of resemblance clearly in the following passage:

> If material things themselves literally have shape, size, and so on, it is not surprising that we can become aware of their shapes, sizes, and so on, more or less accurately, by way of more than one sensory channel; and if, for example, shapes as we see them and shapes as we feel them both resemble shapes as material things actually have them, intrinsically, they will naturally resemble one another. (29)

It seems then that Locke should have thought the newly sighted man would succeed; for, '[g]iven that both ideas resemble the same cause, it would be difficult for Locke to deny that their contents have significant overlap' (Bolton 1994, 79). This overlap ought to be enough, it is believed, for the newly sighted man to identify the cube and sphere successfully at first sight. As Ayers puts it, Molyneux's answer – that the man fails because 'he has not yet attained the experience, that what affects his touch so or so, must affect his sight so or so' (*Essay* II.ix.8: 146) – 'collapses, as it should' (Ayers 1991, 65). According to Ayers, this contradicts Locke's view of common sensibles, the 'spatial ideas [that] are received 'both by seeing and feeling'' (1990, 65).[14] There is a conflict between Molyneux's and Locke's response to the Molyneux question and Locke's doctrine of common sensibles. One that admittedly seems insurmountable.

To avoid these concerns of inconsistency, one can, as Bolton does, reinterpret the Molyneux question as posing a different question (sacrificing the question of cross-modal recognition) or attempt to provide a figurative interpretation of Locke's view on sense perception and judgment – trying to see something beyond what he clearly writes. But, these reinterpretations are neither desirable nor necessary. I would like to offer a solution to this quandary of inconsistency by challenging a common assumption underlying the Transitivity of Resemblance argument that is unwarranted by Locke's broader philosophy. I call this assumption the *sight–recognition error*.

5. The sight–recognition error

Those who charge Locke with inconsistency claim that if the tactile and visual ideas resemble one another, then the newly sighted man ought to succeed in recognizing the globe when he first looks at it. Apparently, Locke, according to his own philosophical commitments, got the wrong answer. This, however,

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is the wrong conclusion to draw. Even if the newly sighted man immediately receives a visual idea when looking at the globe (albeit an idea of a flat circle on the 2D view), and even if that idea resembles the shape represented by tactile sensation, it does not follow that Locke must think the man would succeed at Molyneux's task. To think that seeing a shape entails successful recognition is to commit the sight–recognition error: the assumption that *seeing* entails *recognizing* what one sees. Such an assumption is untenable for an empiricist like Locke, who believes the concepts necessary for recognition are acquired only by experience.

Dretske (1969, 1993) makes an important distinction between *seeing* and *seeing that*. We can, Dretske argues, see an apple without seeing that it is an apple. He calls this 'simple seeing' (1969).[15] Dretske describes this distinction by relating an experience of seeing an armadillo for the first time. He writes,

> The first time I became aware of an armadillo (I saw it on a Texas road), I did not know what it was. I did not even know what armadillos were, much less what they looked like. My ignorance did not impair my eyesight, of course. I saw the animal. I was aware of it ahead of me on the road. That is why I swerved. Ignorance of what armadillos are or how they look can prevent someone from being conscious of certain facts (that the object crossing the road is an armadillo) without impairing in the slightest one's awareness of the things – the armadillos crossing roads – that (so to speak) constitute these facts. (1993, 266)

What Dretske makes clear is that one may *see* an object even though she lacks the concepts necessary to *recognize* what the object is. The connection to the Molyneux thought experiment ought to be immediately apparent. For Locke, if concepts are not innate (as he argues in Book I of the *Essay*), then we must be able to see objects (receive visual ideas of them, as Locke would say) before we recognize them for what they are. The Molyneux man's his first visual experiences would be a case of seeing without recognition, just as Dretske's first visual experience of an armadillo was seeing without recognition.[16] The newly sighted man's failure arises not because he sees less than an ordinary adult perceiver (as Bolton argues) but because he doesn't have the experience necessary to recognize what he sees as a 'globe' or a 'cube'.

Of course, the Molyneux man already possesses the concepts 'globe' and 'cube' from his tactile experience. This is precisely what makes the Molyneux question so intriguing. Can the newly sighted man apply the concepts he acquired from his tactile experiences to his newly acquired visual experiences? Will he be able to recognize the objects he now sees, and point to the globe and call it a 'globe'? Despite what we know about his ideas concerning resemblance and common sensibles, Locke – in agreement with Molyneux – answers, No. Locke's account of concept formation explains the newly sighted man's inability to recognize shapes when seeing them for the first time.

According to Gary Hatfield (1998), Locke has no 'principled reason for denying that the newly sighted could recognize plane or even volumetric visual shapes' (1998, 988). I disagree. Here, Hatfield is committing the sight–recognition error.

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While Locke has no principled reason for denying that the newly sighted man could *see* plane shapes,[17] he does have a principled reason for denying that the newly sighted could *recognize* the figures when he sees them for the first time. Recognizing, or identifying what something is, requires successfully applying a concept.[18] And for Locke, a case can be made that the spatial concepts acquired through touch do not readily apply to the newly sighted man's first visual ideas.

Since concepts (or general ideas, in Locke's terminology) are not innate, they must come from experience. Importantly, general ideas are complex ideas, for Locke, which all begin with simple ideas (*Essay* II.xii.1). The chief mental operations by which the mind creates complex ideas are combining, comparing, and abstracting (*Essay* II.xii.1). For example, the mind can combine various ideas to create compound ideas, compare ideas to create relations, or abstract similarities among several distinct ideas to create general ideas. The key to the production of these complex ideas is that they depend upon experience.

General ideas, also called 'abstract ideas' and 'universal ideas,' are created in the mind by the mental operation of abstraction (*Essay* II.xi.9, II.xii.1, and III. iii.6–9). This is done, Locke says, 'by considering [these ideas] as they are in the Mind such Appearances, separate from all other Existences, and the circumstances of real Existence, as Time, Place, or any other concomitant *Ideas*' (*Essay* II.xi.9: 159, cf. *Essay* IV.ix.1). By this process, we can form 'general Representatives of all of the same kind' from collections of particular simple ideas (*Essay* II.xi.9) or collections of complex ideas as described in III.iii.6–9.[19] For instance, in acquiring my general idea of 'whiteness,' I begin with my 'repeated Sensations,' particular simple ideas, such as the color of milk, chalk, and snow (II.xi.8). The mind then abstracts the common ideas from all other ideas commonly associated with them, such as the snowball's coldness or the milk's creamy texture, sweet taste, and smell, as well as particulars of place and time.

There is an extensive debate in the secondary literature over the best way to understand Locke's process of abstraction. At various times Locke describes the process of abstraction using verb phrases like (1) *considering* ideas separate from others (II.xi.9: 159), (2) *taking an idea away* from other particular ideas (II. xi.9: 159), (3) *separating* them from all other ideas (III.iii.6: 411), and (4) leaving out that which is peculiar to each (III.iii.7–9: 411–12). There are two prominent accounts of abstraction drawn from these passages: abstraction as selective attention and abstraction as mental separation (sometimes referred to as subtraction).[20] At the very least, Locke's passages describing the process of abstraction, as well as the description I offered above, seem to be ambiguous between these two views (see Taylor 1978).

The process of abstraction begins once one has repeated sensations of a single kind (e.g. white in chalk, milk, or snow), each instance of which enters the mind singly and unmixed (II.ii.1, 119). Because objects frequently affect more than one sense organ, simple ideas are often accompanied by other simple ideas, in addition to details of place and time (e.g. the idea of white caused by

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a piece of chalk is accompanied by simple ideas of the chalk's smell, its texture, shape, etc.). In order for abstraction to occur, two other mental faculties likely play significant roles: memory and discernment. The role of discernment, or the mental 'faculty of Distinguishing … whereby [the mind] perceives two *Ideas* to be the same, or different,' is often overlooked in this process, but perhaps it isn't insignificant that Locke introduces abstraction in his chapter on discernment (II. xi.1). Before the mind can separate out the similar ideas from all the rest (mental separation) and thereby form a general idea, it must first attend to the ideas in question and discern which are the same and which are different.[21] I am persuaded by Ott's position that selective attention is involved in abstraction but does not constitute it (Ott 2004). Selective attention, discernment, and memory are mental faculties that all play significant roles in abstraction.

Whether we consider abstraction selective attention or mental separation, what is important is that the abstract idea does not alter or add anything to the original simple ideas. On the selective attention model, my mind is presented with an assortment of ideas, some the same and some different, and it abstracts by merely focusing its attention on those that are the same and ignoring the rest. On the mental separation model, there is a further step, where the mind mentally separates those ideas that are the same and these ideas alone remain. But either way, when the mind 'frame[s] an *Idea*, which they find those many Particulars do partake in,' the new idea is made in the mind 'not by any new addition, but only … by leaving out' (III.iii.8: 411–12). The content of the abstract ideas is nothing new.

In the case of the blind man's concept of 'globe,' it would be gained by first having several opportunities to touch globes so that he has several simple ideas of three-dimensional shapes. His mind isolates (requiring memory and discernment) these from particularities of time and place and any other accompanying ideas such as the texture of the globes, their temperature, and their size. The mind then either selectively attends to the 3D shape ideas, ignoring the rest, to frame a new abstract idea, or mentally separates these 3D shape ideas from any accompanying ones and then frames a new abstract idea.

Bolton claims, 'No principle of Locke's philosophy precludes the possibility that a blind man should have formed an idea of a globe sufficiently abstract to represent a globe were he to see one' (1994, 82–83). I believe this is false. If only ideas of 3D shapes (acquired via touch) went into the framing of the abstract idea 'globe', and abstraction doesn't alter or add anything to it, then the abstract idea itself would be of a 3D shape, and consequently would only stand as a representation of other three-dimensional globes. The newly sighted man's concepts 'globe' and 'cube' remain modality specific (in a sense), because they are composed only from simple tactile ideas. Because his new visual ideas (2D) are so unlike earlier tactile ones (3D), his new visual experiences could not be expected to connect to his existing concepts.[22] We shouldn't expect that

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the formerly blind man's concept of globe would readily apply to his visual two-dimensional idea.

This makes much out of the difference in dimensions between tactile and visual ideas of shape. Many philosophers think that if Molyneux's question were altered so the newly sighted man were asked to compare circles with circles rather than globes and circles – to level the playing field, as it were – Locke would change his answer.[23] But I think the judgment passages on the 2D view reveal something important about Locke's view of common sensibles more generally: Common sensible ideas are (or at least can be) modality specific. Given Locke's account of general terms and concepts as built from simple ideas, if the simple ideas that give rise to a concept are all specific to one sensory modality, then the resulting complex general idea must also be specific to that modality.[24]

Modality specificity does not imply that ideas of shape from tactile and visual sensation must be *wholly* different from one another: they could both be round, for instance. The point is that the concept of 'round' employed by a blind person will be restricted to what round feels like; it does not contain what 'round' looks like. As Hopkins notes, 'If he fails to deploy his concept, that is because it is a concept not Applicable to cubes as seen. Likewise, if he succeeds, that is because the concept does Apply to seen cubes' (2005, 454). I have argued that the newly sighted man's first visual ideas could not be recognized as a globe or a cube, because his abstract concept of these shapes was created solely from tactile experiences, and therefore cannot be expected to apply.

As we have seen, recognition requires concepts. Concepts, for an empiricist like Locke, in turn require experience – we must have multiple simple ideas as the basis for abstraction. But in order to supply these first experiences of simple ideas out of which concepts are created, we must be able to have simple ideas prior to recognition: Our first visual experiences, therefore, must lack recognition. Locke and Molyneux's newly sighted man has simple ideas that represent the visual shapes of the globe and cube (though in line with the two-dimensional shape reading, his ideas represent them as flat shapes – a circle and irregular hexagon – of various color and shading). He *sees* their shapes but does *not recognize* these images as instances to which his existing concepts 'globe' and 'cube' apply. Seeing does not entail recognition.

6. Conclusion

When we avoid the sight–recognition error, Locke's answer to the Molyneux question is no longer inconsistent with his resemblance thesis. Even if the tactile and visual ideas in a real sense resemble one another (both ideas of the globe are round), it does not follow that Locke believes the newly sighted man would *recognize* such a resemblance. He likewise has no concepts that apply to his visual ideas of *round*, *pointy angles*, or *straight edges*: he doesn't know what 'round' or 'pointy' – purely tactile concepts for him – *look like*. This is precisely

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what Molyneux's answer to his question expresses: '*he has not yet attained the Experience, that what affects his touch so or so, must affect his sight so or so; Or that a protuberant angle in the Cube, that pressed his hand unequally, shall appear to his eye, as it does in the Cube*' (II.ix.8: 146, italics in original). Like Dretske's armadillo, just as one cannot *see that* the creature crossing a Texas road is an armadillo unless one has the concept of an armadillo and knows what armadillos look like, one cannot *see that* an object is round unless one knows what round looks like, and one only knows what round looks like when one possesses a concept of 'roundness' that readily applies to visual ideas. The assumption that the Molyneux Man will automatically recognize objects or qualities of objects (like round) when seeing them for the first time requires a very different account of concept formation than the one Locke provides.

This may be what lies at the heart of Synge's error. He thinks the visual shapes he sees will be immediately recognizable as having straight sides or uniform appearance by the newly sighted man. Synge assumes that the newly sighted man would know what 'round' or 'straight edge' or 'protuberance' look like, even with no previous sighted experience. He assumes the newly sighted man has a general, abstract idea that stands as the general representative of both tactile and visual experiences even though the man lacks past visual experiences. Such an assumption simply does not fit with Locke's account of general ideas. This is what Molynuex's answer tries to explain, and what Synge gets wrong. The newly sighted man would not immediately make the link between what a straight edge feels like and what it looks like.

Recognition at first sight (i.e. success at Molyneux's task of cross-modal recognition) violates the core of Locke's empiricist account of concept formation. Within this context Locke's negative answer makes sense: he could not think the newly sighted man would recognize the objects he sees as round, unless he either believed in innate concepts or believed concepts can be created by a single experience, the first time one sees something. Neither of these options fits Locke's view of concept formation. Locke has no avenue to allow him to think the newly sighted person could possess visual concepts when seeing for the first time. Locke's negative answer to Molyneux's question is supported by his view that the acquisition of abstract or general ideas requires experience. With this in mind we can guard against the sight–recognition error: the newly sighted man *can see* a flat circle without *recognizing or knowing* he is seeing a flat circle.

In conclusion, we need not ignore the cross-modal nature of Molyneux's question nor offer an imaginative reinterpretation of Locke's words. The 2D view and the cross-modal learning account, coupled with an understanding that seeing does not entail recognition, provides Locke the means to avoid inconsistency. Locke's negative answer is supported by his view of general idea acquisition.

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Abbreviations

DA Aristotle. 1984. '*De Anima*.' In *The Complete Works of Aristotle*, edited by Jonathan Barnes. Princeton: Princeton University Press. Cited by section and line number.

NTV Berkeley, George. [1709] 1938. *A New Theory of Vision*. New York, NY: E.P. Dutton. Cited by section and page number.

NE Leibniz, G. W. 2000. *New Essays on Human Understanding*. Trans. and ed. by P. Remnant and J. Bennett. Cambridge: Cambridge University Press.

Essay Locke, John. 1975. *An Essay Concerning Human Understanding*. Edited by P.H. Nidditch. Oxford: Clarendon Press. Cited by book number, chapter, section, and page number.

Works Locke, John. 1824. *The Works of John Locke in Nine Volumes*. 12th edition. London: Rivington. Cited by volume and page number.

Notes

1. Molyneux posed a slightly different version of the question in response to a French abstract of the *Essay* in 1688, but Locke did not respond. There is no evidence that Locke ever saw this earlier version of the question. See Morgan (1977), Bolton (1994), Degenaar and Lokhorst (2014), and Glenney (2012) for a good overview of the history of the Molyneux problem.
2. Charges of inconsistency originated with Berkeley's criticism, but the worries over how Locke's answer relates to his views of simple ideas of primary qualities and common sensibles are still pressing in today's scholarship. Ayers (1991 and 1998), Berkeley NTV, Hatfield (1998), Mackie (1976), Bolton (1994), Schumacher (2003), Bruno and Mandelbaum (2010) all acknowledge the tension between Locke's answer and his views on resemblance and common sensibles. I will describe these difficulties in greater detail below.
3. Locke doesn't use the term 'common sensibles' when he discusses simple ideas from diverse senses (*Essay* II.v), but because of the close connection between ideas of diverse senses and Aristotle's distinction between common and special sensibles (*DA* III.i), many Locke commentators have adopted the terminology. See Mackie (1976), Hatfield (1998), and Morgan (1977).
4. In addition to Ayers, Mackie (1976), Bolton (1994), Hatfield (1998), Berchielli (2002), and Bruno and Mandelbaum (2010) all offer the same reasoning: 'if the visual and tactile idea of the same square must each resemble the square itself, then they must also resemble each other' (Berchielli, 48–49f). According to Hatfield: 'Locke could not, with consistency, argue that the perceiver must learn the connection between identical determinate visual and tactual shapes, because that would have violated his conception that the same determinable, shape, is perceived by both touch and vision' (987).
5. Lievers (1992) thinks Molyneux's question primarily concerns our visual ideas of depth, rather than cross-modal recognition. Berchielli (2002) likewise focuses her discussion primarily on visual perception (or the lack thereof) rather than

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cross-modal recognition. Bolton (1994) believes the newly sighted man fails because he does not immediately receive ideas of shape when seeing for the first time; for Bolton, our simple ideas of shape require judgment. She takes the '*Real* Molyneux question' as one primarily concerned with visual perception, specifically the experience that is required for one to learn to see shapes, and not cross-modal recognition.

6. This, I think, rules out the kind of answer offered by Berchielli (2002).
7. Those who accept this standard interpretation include Mackie (1976), Ayers (1991), Hatfield (1998, 987), and more recently Bruno and Mandelbaum (2010). Leibniz also interprets Locke along these lines in his *NE*.
8. As will become evident, I believe the lack of experience required for judgment is an important component of Locke's answer but that it is ultimately an insufficient explanation of Locke's negative answer to Molyneux's question.
9. The concern of inconsistency is a detailed object, which I will describe in more detail in §4.
10. Bolton (1994) promotes what she calls a 'wholly non-spatial reading' in which she denies the newly sighted man would have the ability to make sense of any spatial dimensions in addition to not being able to see shapes (80). For the sake of simplicity, I will focus just on her interpretation of Locke's discussion of shape in the judgment passages.
11. There is an ambiguity in Locke's discussion of primary qualities. The primary qualities are said to belong to the tiny particles of matter, but they can also be said to belong to the macro objects that are formed by collections of tiny particles. Locke seems to be aware of both sense of the term 'primary qualities.' The fact that Locke defines primary qualities as the powers in objects to produce our ideas of size, shape, and motion suggests he is talking about macro objects not the tiny particles, which themselves have size, shape, and motion, but are too tiny to be sensed and so could not cause our ideas. But his treatment is far from clear. See Bruno and Mandelbaum (2010) for an interesting discussion of this ambiguity in Locke's discussion of the resemblance of ideas of primary qualities. See also McCann (2011) for a discussion on the distinction between primary primary qualities and secondary primary qualities.
12. There is a debate over what Locke means by resemblance. I think it is clear, pace Jacovides (1999), that when Locke says ideas of primary qualities resemble their causes, what resembles the primary qualities I the world is the representational content of the idea, rather than the idea itself (or representational vehicle, to use Dretske's [2003] distinction). Representational resemblance can be anywhere along a continuum from weak to strong. Usually those who offer the line of reasoning above have *exact resemblance* in mind (see Bruno and Mandelbaum 2010), though it is less than clear how what is represented by an idea can exactly resemble a mind-independent object. I think there is good reason for thinking Locke holds a weaker view of resemblance, as evidenced by his saying our visual ideas of objects are perspectival. This is seen in the discussion of perception and judgment we've discussed above (II.ix.8–10). Additionally, in confronting Malebranche, Locke clearly says we don't *see* the legs of a table as all equal in length. Rather we see them as unequal (fitting our particular perspective) and judge them to be the same length based on our knowledge of tables having legs of the same length (*Works* 9:218). The same is true for seeing a coin from a distance as an oval rather than a circle. This I think clarifies that Locke does not think our ideas of shape have to *exactly resemble* their causes in order to be informative of their causes; a weaker resemblance is enough.

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13. For more on Locke's view of common sensibles, see Hatfield (1998, 979, 986–87); Ayers (1991, 65 and 1998, 1093); Lievers (1992); and Bolton (1994). Morgan (1977, 59–61) has a lengthy discussion of Berkeley's criticism of Locke's view of common sensibles. Hopkins (2005) explores the contemporary philosophical implications of common sensibles. This is quite problematic and elsewhere, I provide a comprehensive argument for which definition of common sensibles best fits with Locke's simple ideas of diverse sense.
14. The challenge of inconsistency may rest upon an understanding of Locke's doctrine of common sensibles, or simple ideas of divers sense (II.v), where there is numerically the same idea of shape whether one gets that idea by touch or by sight. Such a view is inconsistent, I think, with Locke's saying as he does that the immediate idea received from sight is of a flat circle, while the idea we receive from tactile sensation would be voluminous.
15. Chisholm (1957) makes a similar distinction between what he calls thing–perception vs. fact–perception.
16. Dretske also refers to this distinction between 'seeing' and 'seeing that' as 'non-epistemic' and 'epistemic seeing.' I have chosen not to emphasize Dretske's 'epistemic/non-epistemic' terminology, because I do not want to attribute to Locke the view that we have no knowledge of our initial simple ideas. I don't think this is entailed by Dretske's distinction; however, to avoid confusion, instead of using Dretske's 'epistemic seeing,' I will use 'seeing with recognition,' and instead of 'non-epistemic seeing,' I will use 'seeing without recognition.' The former requires concepts; the latter does not. There is a good body of evidence to suggest that Locke believes perceiving our ideas includes knowing our ideas. So that insofar as I perceive my idea and am able to distinguish it from different ideas, this constitutes a kind of knowledge. Owen (1999) and Weinberg (2015 and 2016) hold this view. According to Weinberg, 'distinguishing an idea is no more than to perceive it, which results in knowing it' (2015, 353). See also Ayers (1991), Loeb (1981), and Newman (2007) for discussions about what it means to know our ideas.
17. I would even argue that he does have a principled reason for denying that any of us see volumetric visual shapes; at least such a position is in line with the 2D view of the judgment passages in II.ix.8–10. In claiming that the ideas we receive when we look at a globe are of flat circles, he isn't restricting his discussion to the newly sighted, but is rather talking about ordinary adult perceivers.
18. I think Newman (2007) is right that 'To know … that the occurring sensation is of *red* is to perceive, in addition, an agreement between that idea of sensation and my general idea of red' (328 n18).
19. In III.iii.6–9 Locke describes how we form complex general ideas of the kind 'human being' by abstracting similarities from differences among our complex ideas of 'mother,' nurse,' and other complex ideas we have of particular people. The process of abstraction appears slightly different in these two cases (abstracting simple qualities such as 'whiteness' versus abstracting substances such as 'human beings'). See Laurence and Margolis (2012, 3) and Ott (2004, 55). In the discussion that follows, I focus on the illustration of abstracting simple qualities since this is the case most relevant to our discussion, as the tactile and visual shapes under question are simple ideas.
20. Those who hold the selective attention view include Mackie (1976), Taylor (1978), Winkler (1989), and Ayers (1991). Walmsley (1999) and Ott (2004) challenge the selective attention view. Dancy (1987) held an early view of mental separation which he called substraction. See also Laurence and Margolis (2012).

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21. There is an age-old criticism of empirical accounts of abstraction that if concepts are needed for recognition, then we will never be able to get abstraction started, because abstraction requires recognizing that things are similar. Laurence and Margolis (2012) call this 'the problem of similarity' (4, cf. Ott 2004). Wittgenstein (1953, 3) first offers this criticism of empirical accounts of abstraction, and Bennett frinds Locke's account unable to answer the worry (1971, 15). See also E.J. Lowe (1995). I think that Locke's faculty of discernment enables a recognition of similarity (and difference) that doesn't require first possessing the concept, but a full defense of such an account would be the subject for another paper.
22. This interpretation in some sense depends upon Locke's thinking of simple ideas as images. Ayers (1991) endorses an imagistic interpretation of Locke's ideas in 'Ideas as Images' (Vol. 1:44–45). See also Jolley (1999, 39–44) and Rickless (2014, 17–20).
23. This alteration was proposed by Diderot in 1749 (see Morgan 1977 and Glenney 2012), and Mackie (1976). Bruno and Mandelbaum (2010) likewise consider altering Molyneux's question to comparing flat shapes, with the result that Locke would then have no basis for maintaining that the newly sighted man would fail.
24. I believe modality specificity of common sensibles follows from Locke's view of sense perception and an imagistic view of simple ideas from sense (cf. footnote 14).

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