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Locke's architecture of ideas and cross-modal recognition

A new approach to Locke's answer to Molyneux's question

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Abstract
It's been more than three hundred years since William Molyneux posed his now-famous question to John Locke. While it's clear Locke agrees with Molyneux that someone born blind and made to see would be unable to recognize at first sight the objects he knew previously only by touch (cross-modal recognition), *why* Locke thinks this is never made explicit in his Essay or elsewhere. I argue here that this lack of clear textual support motivates the need for a new approach to explaining Locke's answer to Molyneux's question. The new approach I offer here is to consider what successful Lockean cross-modal recognition might look like given his "Architecture of Ideas," the work of his Essay to account for mental content, from simple sensory ideas to knowledge. This allows us to identify which ideas and mental faculties he would likely consider essential for success at Molyneux's task, and which, if lacking, explain the newly sighted man's failure. Furthermore, this approach yields some surprising results: there is more than one reason the newly sighted person would fail. And adjusting the question to involve a cross-modal comparison of two-dimensional shapes does not require Locke to change his answer to 'yes'.

Keywords
Cross-modal perception · Locke · Molyneux problem · Molyneux's question

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1 Introduction

If I were blindfolded, and you gave me an object to feel, then removed the blindfold and asked me to pick out which object, from among those I now see on a table in front of me, I had held in my hands, do you think I would succeed? If I do, then I am capable of *cross-modal recognition*: I can successfully integrate the sensory

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information I receive from two different sensory modalities: touch and vision. In other words, I can recognize by vision what I previously felt. Cross-modal recognition is a simple task for someone like me who has lots of experience both seeing and touching objects, but what about someone born blind and now seeing for the first time? If such a person were to feel an object, then be given sight, would she be able to succeed at this seemingly simple task?

This question about a formerly blind person's ability to recognize objects across different sensory modalities was posed by William Molyneux to his friend John Locke in 1693.[1] As a testament of their friendship,[2] Locke included Molyneux's question in the second edition of his *Essay Concerning Human Understanding*. 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. Quære, 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)

Molyneux and Locke agreed that the newly sighted person would most likely fail at cross-modal recognition. Locke, however, doesn't tell us *why* he thinks this.

In fact, Locke fails to do Molyneux the honor of devoting any more care to devising and supporting his own response than to profess his agreement with Molyneux and restate the question in his own words. "[T]he Blind Man, at first sight," Locke writes, "would not be able with certainty to say, which was the Globe, which the Cube, whilst he only saw them" (*ibid.*). Locke tells us his purpose in including Molyneux's question it to provide an opportunity for his reader 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" (*ibid.*). Otherwise, Locke makes no further attempt[3] to understand, explore, or engage

[1] The first letter from Molyneux to contain his famous question was composed in 1688 and received no response from Locke (*Correspondence* 3: 1064, pp. 482-3). The second time he asks the question was in a letter dated 2 March 1693. This is the source of Locke's quotation of Molyneux in his *Essay Concerning Human Understanding* (II. ix. 8: 146; *Correspondence* 4: 1609, pp. 647-52).

[2] Locke's inclusion of Molyneux's question in the *Essay* may also have been influenced by Locke's gratitude to Molyneux for his role in reading and recommending revisions for the second edition of the *Essay*. See Nidditch's introduction to his edition of Locke's *Essay* p. xix-xxi. This introduction provides an overview of Locke's and Molyneux's correspondence on the matter and includes a detailed account of which additions to the *Essay* are due to Molyneux's contributions.

[3] I agree with Bolton (1994) that "as far as I have been able to discover, there is no place where Locke elaborates on his friend's meagre explanation" (76). Locke does address the issue again in reply to Molyneux's sharing Edward Synge's answer to his question in a letter dated December 24, 1695. Locke again states his agreement with Molyneux's own assessment that Synge gets it wrong, but writes only, "I see by Mr. S.'s answer […] how hard it is for even ingenious men to free

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with this problem. Just *why* he presumed the newly sighted person would fail at cross-modal recognition remains an interpretive puzzle.[4]

In light of Locke's failure to justify or explain his answer to Molyneux's question, I offer here a new approach to understanding why Locke may have answered negatively. Molyneux's question asks whether someone seeing for the first time could succeed at cross-modal recognition.[5] If, then, we could discover what steps are needed to succeed at this task within Locke's mental architecture in the *Essay*,

themselves from the anticipations of sense" (*Works* 9: 378, for the entirety of this exchange with Molyneux see pp. 368-373). Just what these "anticipations of sense" in Synge's account might be is unexplained, and Locke offers no conclusive explication of his reasoning for the formerly blind person's failure. (See §2 for further discussion.)

[4] Locke's answer to Molyneux's question isn't only a puzzle because of this lack of textual evidence. It is also generally considered inconsistent with his account of simple sensory ideas. Berkeley was the first to argue that Locke's belief in 'common sensibles' should have prompted him to answer "yes" to the question. After all, if "a visible and tangible square differ only *in numero*," what could prevent the former blind man from recognizing what he sees (*NTV* 133)? J. L. Mackie (1976) and Ayers (1991) expand upon Berkeley's critique, reasoning that since Locke thought that both the visual and tactile ideas of a globe's shape would resemble their cause (the globe), they ought then to resemble each other. For Locke to be consistent, he should have answered yes. This *transitivity of resemblance* reasoning, in part, motivates Bolton's (1994) "wholly non-spatial" reading of Locke's account of depth perception in II. ix. 8-9 (p. 79). Since the inconsistency arises from the newly sighted man's ability to receive visual ideas of shape immediately when seeing for the first time, Bolton reasons, Locke must have thought the newly sighted person receives only visual ideas of light and color, thus eliminating the inconsistency. Other scholars who remark on this inconsistency, with varying levels of concern, include Hatfield (1998), Berchielli (2002), Schumacher (2003), Bruno and Mandelbaum (2010), Vaughn (2019) and Ott (2020). I address these worries over inconsistency in my (2019) paper on the subject where I argue that the charge of inconsistency rests on an unstated assumption that *seeing* a shape (i.e., receiving a simple sensory idea of shape from vision) entails *recognizing* that shape. I call this the "sight–recognition error" and argue that this assumption does not hold for Locke, who held that complex abstract/general ideas, which rely on repeated experience, are an essential part of one's ability to recognize objects, particularly during cross-modal recognition. My goal here is to add to this earlier view a fuller appreciation of what steps, ideas, and mental faculties are necessary for successful Lockean cross-modal recognition and to highlight that the experience required to form complex abstract ideas is not the only experience necessary for successful cross-modal recognition.

[5] There is of course disagreement about what Molyneux's question is *really* asking. Some, like Lievers (1992) and Bolton (1994) argue that the *real* Molyneux question isn't about cross-modal recognition at all but concerns only visual depth perception. For Bolton, the question asks only whether a newly sighted person would be able to see shapes at all. For Ott (2020) and Schumacher (2003), the question is also primarily about visual perception. Schumacher considers the question to ask, "what are the direct objects of sight?" Similarly, Ott (2020) couches Molyneux's question in terms of what Locke believes to be the 'given' of vision. Campbell (2005) breaks the question into two: 1) "Do we have just one repertoire of shape concepts, concepts such as 'sphere' or 'cube' [...] that we apply indifferently on the basis of sight and touch? Or are there different concepts of shape, special to the various senses?" And 2) Do we process shape information in the same way in both the tactile and visual cases of perception? Gareth Evans (1985) thinks Molyneux's problem concerns whether the blind have "genuine spatial concepts" or not (369). There are many more ways of interpreting Molyneux's question (see Glenney, 2012, 2013; also Matthen & Cohen, 2020). I interpret these, not as challenges to the view that Molyneux's question is about successful cross-modal recognition, but as attempts to reveal what the answer to the question

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we can discover what necessary experience is simply unavailable to someone seeing for the first time. Here, I use Locke's architecture of ideas—his account of our mental content and faculties, beginning with simple ideas from sensation in Book II and culminating in knowledge and assent in Book IV—to detail the various ideas and cognitive experience necessary for Lockean cross-modal recognition. By comparing an experienced perceiver (who has all the experience necessary, from touch *and* vision, to easily succeed at cross-modal recognition) with a newly sighted person (whose prior experience excludes simple visual ideas[6] and thus any complex ideas with visual components, and who fails at cross-modal recognition) we can discover just what experience Locke may think explains the newly sighted person's failure to recognize the globe and cube.

This comparison between an experienced and newly sighted perceiver reveals that experience is needed at *more than one* step of cross-modal recognition; thus, there is *more than one reason* why a newly sighted person would fail to identify what she sees for the first time. Yes, the newly sighted would lack the experience

about cross-modal recognition *turns* on. Clearly, if a newly sighted subject can't see shapes at all, he will fail at cross-modal recognition.

[6] Locke thinks a congenitally blind person necessarily lacks all visual ideas. If missing these simple ideas, then the complex ideas (abstract ideas and ideas of substances) based on those simples, would be lacking as well. I explore this in §3.3. This is uncontroversial for simple ideas of light and color that enter the mind only through sight, "which is peculiarly adapted to receive them" (II. iii. 1: 121). These are 'special sensibles' (as opposed to common sensibles) that "come into our minds by *one Sense* only" (*ibid.*). As Locke makes clear, "if these Organs, or the nerves which are the Conduits, to convey them from without to their Audience in the Brain, the mind's Presence-room [a receiving room for guests] […] are any of them so disordered [as with blindness], as not to perform their Functions, they have no Postern [or back door] to be admitted by; no other way to bring themselves into view, and be perceived by the Understanding" (*ibid.*). But shape (or *Figure* in Locke's terminology) is a common sensible! Our ideas of shape (and extension, rest, and motion) "convey themselves into the mind *by more Senses than one*" (*ibid.* See also II. v: 127). This is precisely why Molyneux's question is interesting. If someone is blind, Locke thinks they *do* have a postern by which the ideas of shape (and others) can be produced in the mind: touch. Molyneux's question then seems to turn on whether the ideas we receive of shape from touch and vision are identical or if they are different (i.e., specific to each modality). Presumably, if they are identical (differing only in number, à la Berkeley), then it seems the newly sighted person should succeed. However, if our ideas of shape are specific to each modality, then success will depend on whether our minds innately link our visual and tactile ideas together or if we must learn to connect them through experience. The latter may require both touching and seeing the same object. I think Locke's view on this cannot be discerned by the little he writes about "*Ideas* we get by more than one sense" (II. v: 127). Others view this as evidence for the identity of our ideas of figure and space. Ott (2020), for instance, refers to this as the "homogeneity thesis, Locke's version of the Aristotelian doctrine of common sensibles," presuming Locke thought our ideas of shape from touch and vision to be the same (672). However, in my mind, this passage is neutral, and, with further evidence, it could be consistent with either hypothesis: identity or diversity. For further (more contemporary) discussion of the nature of our concepts of space from touch and vision, see Evans (1985) who asks if there is just one spatial concept given by both vision and touch, or if there are two distinct spatial concepts. Hopkins (2005) and Campbell (2005) also explore whether our spatial concepts are modality specific.

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needed to perform the judgments needed for visual ideas of three-dimensions,[7] but she also lacks other complex ideas that are necessary for recognition and naming. We have reason, then, to reconsider the accepted expectation that Locke would change his answer if the worry over incommensurate dimensions were corrected for (were the newly sighted subject asked to compare tactile and visual two-dimensional shapes). Dimensionality does not fully explain the newly sighted person's failure.[8]

I start this project by examining the explicit textual evidence for Locke's answer in §2, arguing that while Locke's direct treatment of Molyneux's question provides clues or touchstones for us to use, they do not in themselves provide a justification for Locke's answer. In §3, I use Locke's architecture of ideas to provide a Lockean account of the ideas, faculties, and experience necessary to each stage of successful cross-modal recognition. By contrasting an experienced perceiver's ability to perform cross-modal recognition with a newly sighted person's inability, I highlight the areas of missing experience that account for a newly sighted person's failure at cross-modal recognition (at first sight) and Locke's negative answer. Finally, in §5, I explore the results that come from this method: that there is more than one reason why Locke might think the newly sighted person fails.

2 Locke's explicit treatment of Molyneux's question: Helpful but no justification

Locke never provides anything approaching a clear, let alone *complete*, explanation for his answer to Molyneux's question. Apart from his decision to insert the question in his chapter on perception, sandwiched by an account of our visual perception (or judgment) of depth, there is little evidence to suggest Locke ever

[7] I am, of course, not alone in claiming that Locke's consideration of judgment, which requires experience, plays a role in his negative response. Bolton (1994), Jacovides (2015), and Lievers (1992) hold such views. In fact, Ott (2020) goes so far as to characterize scholars' interpretation of Locke's judgment passages *as* different interpretations of Locke's answer to Molyneux's question: "I go on [...] to canvas the three main interpretations of Locke on the Molyneux question" (671). He goes on to categorize these "responses to Molyneux's question" on whether they interpret Locke as saying we see no shapes without judgment (the "minimalist" view), we see flat shapes without judgement (the "middle" view), or we see fully three-dimensional shapes without judgement (the "maximalist" view). It's important to recognize that these classifications, however much they may inform accounts of Locke's answer to Molyneux's question are *really* interpretations of Locke's perception/judgment passage in II. ix. 8-10. My own reading of II.ix.8-10 fits with the middle view; however, my approach to accounting for Locke's answer to Molyneux's question differs from other *middle viewers* in that I do not take this distinction between perception and judgment to be the only reason for our newly sighted person's failure.

[8] I am not attempting to clarify or provide an interpretation *of* Locke's justification. The evidence from Locke's specific treatment of Molyneux's question is insufficient. My goal is to offer the justification for Locke's answer *on his behalf* by employing the method I have just described. In other words, rather than focusing specifically on what he *does* say, my approach offers a grounding for what *he might have* said (had he considered the question more carefully).

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gave Molyneux's question much consideration at all (II. ix. 8-10).[9] In fact, he pretty clearly seems to avoid doing so, both here in the *Essay* and in further correspondence with Molyneux. Thus, the few passages that comprise Locke's direct textual treatment of Molyneux's question offer us little insight, even when pieced altogether, into Locke's reasons for thinking a formerly blind person would fail at Molyneux's task. Nevertheless, these passages do hold valuable clues. In this section, I explore both their revelations and limitations as textual evidence.

There are only three passages (I am aware of) in his *Essay* and correspondence where Locke directly addresses Molyneux's question: First (1), Locke states his agreement with Molyneux's negative answer and restates Molyneux's task in his own words (II. ix. 8). Second (2), Locke informs us of his purpose in including Molyneux's question in the *Essay* (II. ix. 8). Third (3), in a later exchange with Molyneux about Edward Synge's positive answer to Molyneux's question, Locke agrees with Molyneux that Synge's reasoning is *obviously* flawed (*Works* 9:378). Additionally, Locke's discussion of perception and judgment that bookends his insertion of Molyneux's question, though Locke doesn't directly connect this passage to Molyneux's question (there is no mention of a blind person, whether seeing for the first time or not, nor does it refer to tactile sensation), is nonetheless relevant and should be given due consideration.

(1) Molyneux thinks the newly sighted person fails because he lacks the experience necessary to relate how an object looks with what how it feels. Molyneux answers,

> *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: 146)

In other words, someone seeing for the first time wouldn't yet know how the straight edge of the cube or a curve of the globe would appear to his eye, even though he knows how they feel. The takeaway here is that Molyneux thinks the ability to link our visual and tactile ideas of an object's shape is not fully innate but requires experience.[10]

While Locke professes his agreement with Molyneux's answer, it's unclear how much he endorses Molyneux's *reasoning*. What Locke does say is this:

> I agree with this thinking Gent. whom I am proud to call my Friend, in his answer to this his problem; and am of opinion, that the Blind

[9] Many scholars consider Locke's account of depth perception in II. ix. 8-10 to be *his answer* to Molyneux's question. See footnote 7. However, while Locke's decision to insert Molyneux's question in this passage is certainly *relevant*, Locke does not explicitly cite this as his answer.

[10] Molyneux's focus on the perception of low-level sensory properties like "protuberant angles" and an uneven pressing against one's palm rather than focusing on holistic visual or tactile ideas of three-dimensional *globes* and *cubes* may be relevant.

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> Man, at first sight, would not be able with certainty to say, which was the Globe, which the Cube, whilst he only saw them: though he could unerringly name them by his touch, and certainly distinguish them by the difference of their Figures felt. (II. ix. 8: 146)

When Locke says here that he agrees with Molyneux's *answer* to his problem, is he expressing agreement with Molyneux's *reason* for his answer or just the *result* that the formerly blind person would fail? It's certainly *possible* that Locke agrees with Molyneux's reason as well as the result, but the passage remains ambiguous and doesn't provide enough evidence to know either way. As Ott (2020) acknowledges, Locke doesn't offer his own reason for claiming agreement with Molyneux, and so Molyneux's answer alone is "underdetermined" (674).

We do, however, get some insight from Locke's restatement of Molyneux's task. This passage can offer evidence that Locke, like Molyneux, takes the problem to concern cross-modal recognition. He acknowledges that the blind person could successfully *distinguish* between the objects he touched and even *name* them. However, the newly sighted person cannot extend this unimodal success in object recognition (naming and distinguishing) through touch alone to cross-modal success—at least not "whilst he only saw them." Locke may be further implying here that successful cross-modal recognition requires the experience of both touching and seeing objects simultaneously.[11]

A final observation centers on Locke's addition of the qualifier "with certainty." While the blind person can, with certainty, name and distinguish objects through touch, she cannot do so *with certainty* when seeing them for the first time. Perhaps Locke thought a newly sighted person could make an educated guess or state her answers with a probability of any level falling below certainty. This reading is much softer than a definitive "no, the newly sighted person would fail!" And this may be the preferred reading for those wish to avoid the appearance of inconsistency with his answer here and his earlier views of simple sensory ideas.[12] The newly sighted person should be able to succeed but might still fall below perfect certainty. But,

[11] According to Lievers (1992), historical accounts of depth perception during Molyneux's and Locke's time held that touching objects was necessary to being able to perceive depth by sight. I can see this evidenced in both Molyneux's and Locke's phrasing (such as that here) and think this is highly probable. Other scholars have likewise attributed such a view to Locke, including Bolton (1994) who says: "So for Locke, visual competence to determine figure must always presuppose competence in some other sensory mode, namely, touch" (97). I find it appealing to think Locke considered simultaneous touch necessary to being able to form judgments of depth from patterns of light and color; however, while this might be implied here, this passage doesn't say this directly.

[12] Locke's negative answer to Molyneux's question seems to conflict with the combination of his view that ideas of shape are common sensibles (presumably the same idea whether produced by touch or vision) and his view that ideas of primary qualities resemble their causes (the primary qualities—shape—of the same objects in the world). These two philosophical commitments together should entail a positive answer to Molyneux's question. See footnote 4.

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of course, we don't really know what Locke meant by this. It could also just be a way of hedging his answer in lieu of certainty on his own part.

What is clear is that even when characterizing his answer in his own terms, Locke never reveals *why* he thinks a formerly blind person would not be able to distinguish and name (with certainty) the objects placed in front of him. When it comes to Locke's statement of agreement with Molyneux's answer, there seem to be more questions than answers. There is too much uncertainty in it for this passage to provide sufficient evidence for a justification for Locke's negative answer for Molyneux's question.

(2) The next passage of explicit reference to Molyneux's question is Locke's statement of his purpose in including the Molyneux problem in his *Essay*. He writes, "This I have set down, and leave with my Reader, as an occasion for him 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"[13] (II. ix. 8: 146). This, I think, is an important and intriguing clue: just what are these experiences, improvements, and acquired notions that we employ without realizing it?! Locke doesn't specify. But here we see the only real connection between the Molyneux problem and Locke's discussion preceding and following it: the surrounding texts discuss a process of perception and judgment that also involves experience, improvement, and acquired notions without our noticing it.[14]

(3) The third piece of direct textual evidence is Locke and Molyneux's dismissal of their contemporary Edward Synge's positive answer and accompanying solution, which Molyneux included in a letter to Locke on December 24, 1695 (*Works* 9: 368-373). Synge provides a somewhat complex answer (which, by the way, is much more detailed and expressive than either Locke or Molyneux's offerings). Synge thinks that the newly sighted person will have an immediate image of the cube (3-D) and the sphere (3-D) and will immediately be able to detect their differences. Thus, the newly sighted person can connect these visual ideas to his previous tactile ones because, as Synge says, both the tactile and the visual ideas of the cube would have "distinct sides," while the sphere is seen and felt to be "continuously smooth" (*Works* 9: 370).

Locke and Molyneux agreed that it is *obvious* where Synge went wrong (though neither bother to discuss it openly). Molyneux writes in the letter: "You will find thereby, that what I say, of its puzzling some ingenious men, is true: and you will *easily discover* by what false steps this gentleman is led into his error" (*Works* 9: 370, emphasis added). Apparently the easily discoverable nature of Synge's error goes

[13] Locke also states another reason for his including Molyneux's question, which is another bit of flattery for his ingenious friend: the fact that Molyneux is readily able to convert others to his reasoning when he engages them in conversations about his question. Not being philosophically relevant, I omit it from the above discussion.

[14] I discuss the relationship between Locke's account of perception and judgment in II. ix. 8-10 and Molyneux's problem below in §3.2.

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without saying. We are left to decipher which parts of Synge's reasoning signify his "false steps."

In his reply to Molyneux, Locke writes, "I see by Mr. S.'s answer to that which was originally your question, how hard it is for even ingenious men to free themselves from the anticipations of sense" (*Works* 9: 378). What I take from this exchange is that in his answer Synge presumes we get more information from bare sensation than Locke finds warranted. At least this is my best understanding of what Locke might mean by "the anticipations of sense." Given that Locke doesn't specify just what constitutes an "anticipation of sense," Locke's offering here can at best serve as a clue, perhaps a warning to carefully distinguish between what is given in sensation and what we may unwittingly assume comes from sensation, even though it is based on experience or is an acquired notion. Or Locke could think something else entirely about Synge's missteps. It feels like Locke is again shying away from engaging with Molyneux's question in an informative way.

(4) Perhaps the strongest insight we have into Locke's treatment of Molyneux's question is his choice of where to insert it. This we can safely take to be a deliberate decision on Locke's part and thus we may safely assume Locke sees a connection between Molyneux's problem and the discussion that surrounds it, his discussion of perception and judgment. This may seem overly modest, as these passages are generally thought *to be Locke's justification* for his answer. But Locke's discussion of perception and judgment in II. ix. 8: 145-146 is the same in the second edition as it was in the first edition (1690), written years *before* Locke read Molyneux's question and decided to insert it here (1694). So, while we can consider Locke's decision to place Molyneux's question here as *significant*, it would be strange to think of it as *Locke's answer* to a question he hadn't been asked yet.[15]

Still, it's difficult to miss the relevance of Locke's choice to insert Molyneux's question within his account of vision, specifically that when we look at a three-dimensional figure like a globe, we the ideas we receive are "of a flat Circle variously shadow'd, with several degrees of Light and Brightness coming to our Eyes" (*Essay,* II. ix. 8: 145). However, these original ideas from sensation, he says, "*are often in grown* People *alter'd by the Judgment*, without our taking notice of it" giving us "the perception of a convex Figure, and an uniform color" (ibid.). By the time we are "grown" we presumably have enough experience to routinely judge the third dimension of space from the organization of color patches we see (*Essay*, II. ix. 8-9: 146; cf. *Works* 9: 218).[16]

However, Locke did not intend his discussion of perception and judgment to be his *answer* to Molyneux's question. I would argue he intended their relation-

[15] Of course, Molyneux first poses an earlier version of his question in his letter dated 1688 (inspired by Molyneux's reading of an abridged version of the *Essay* published that same year) *before* the first edition of the *Essay*. So, it's possible Locke read the letter and was inspired to craft an answer to the problem (without mentioning the problem?) to include in his completed first edition. But this seems unlikely to me.

[16] I want this description of Locke's treatment of perception and judgment to remain neutral to different interpretations, whether one takes a minimalist or middle view (see footnote 7).

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ship to be the opposite. Molyneux's question is included here to *illustrate,* or *add to*, his discussion of sensations habitually altered by judgments. Both, are examples of how experience, improvements and acquired notions can be confused with simple ideas of sensation (what is *given* in sensation rather than *acquired* after that). There is further evidence supporting this reading of the relationship of the passages surrounding Molyneux's question with the question itself if we consider this in conjunction with passages (2) and (3) above. This gives us some idea of what Locke might have in mind when he discusses Synge's "anticipations of sense," an erroneous expectation that our senses give us ideas that are actually acquired by experience and are thus *acquired* notions. This reading also fits with Locke's stated goal in discussing Molyneux's question as providing an opportunity for us to consider the truth of how we may fail to recognize the difference between what is given in sensation and what is the product of "experience, improvements, and acquired notions."

Nevertheless, even if Locke did not devise his discussion of depth perception with Molyneux's problem in mind nor intend it as his answer to that question, because Locke details here the ideas we receive from visual sensation, which interestingly and importantly, excludes three-dimensional shapes, these passages provide invaluable insight for the project of justifying Locke's answer to Molyneux's problem, even though Locke doesn't address Molyneux's task of cross-modal recognition here, refer to blind perceivers, or discuss the role touch might play in our understanding of convex figures. For, if we assume our newly sighted person receives the same simple visual ideas as an ordinary adult perceiver when first looking at the globe, both will receive ideas of a flat circle variously colored and shaded.[17] And since a formerly blind person would lack the repeated experiences[18] Locke outlines as necessary to make a judgment that "alters the Appearances into their Causes," we may safely assume she would be unable to perform these judgments and without the requisite experience would remain with flat circles and various colors (*Essay,* II. ii. 8: 145). Furthermore, although Locke doesn't make this explicit, the need for experience and judgment to perceive three-dimensional figures reveals an incongruity in the task of cross-modal recognition. While tactile shapes, presumably, are by nature three-dimensional, apparently our (pre-judgment) vi-

[17] This interpretation is in line with what Bercielli (2002) calls the standard view. Several commentators, however, including Bolton (1994) and Gallagher (2005) argue that Locke believed the visual experiences of the newly sighted person would be quite different from the visual experiences of normally sighted individuals. Both take the view that the newly sighted person would not receive ideas of shape when seeing for the first time but would experience only a "blooming, buzzing confusion" (in the words of William James, *Principles of Psychology* 1981). In (Vaughn, 2019), I refers to views like Bolton's as the "No Shape" view and those in line with the so-called standard view as the "2D-shape" view.

[18] Locke says, "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 Judgment presently, **by an habitual custom**, alters the Appearances into their Causes" (II. ix. 8: 145). The bolded portions of the text show how judgments require repeated experiences.

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sual sensations are not. Perhaps this too is relevant to why Locke thought a newly sighted person would fail.

While they fail to provide a clear explanation of Locke's negative answer, together these three passages of Locke's direct treatment of Molyneux's question, along with his decision to place his brief discussion of this question where he does, offer several important clues for understanding why Locke might think Molyneux's newly sighted person fails: she is someone who is now able to see but is lacking the further experience necessary to succeed at cross-modal recognition.

3 Locke's architecture of ideas and cross-modal recognition

Because the explicit textual evidence is sparse and insufficiently robust to explain why Locke answers "no" to Molyneux's question, we must broaden our scope and look to Locke's systematic architecture of ideas to see why Locke might have thought the newly sighted person would fail. Below, I use Locke's architecture of ideas to create a picture of successful Lockean cross-modal recognition. Then, by comparing an experienced perceiver with someone seeing for the first time, we can see what experience is unavailable to our newly sighted person.

The first step in Locke's architecture of ideas is (A) stimulation of the sensory organs by tiny particles of matter that produces (B) simple sensory ideas in the mind. Once populated with simple sensory ideas, we can observe our (C) active mental processes, or faculties, such as perception, memory, and discernment, to receive simple ideas of reflection that provide insights into the activities of the mind that, among other tasks, create (D) complex ideas, by combining, relating, or abstracting from the original building blocks of simple ideas. While we have names for (some of) our simple ideas, the (E) names we have for kinds or groups stand for our abstract or general ideas (*Essay* II.iii-iv). The culmination of Locke's architecture of ideas is (F) knowledge, which is the perceived agreement or disagreement of our ideas.

Cross-modal recognition, as we shall see, is a step-by-step process, or causal chain, where success at the later steps depend upon earlier ones and a break at any link in the chain will naturally impede those that come after. Molyneux's question asks whether the newly sighted person would be able to recognize and name the objects he is now seeing for the first time. The last link in the chain of cross-modal recognition then is (E) naming.[19] Since success occurs later in the chain, the newly

[19] What Molyneux actually asks is, "*Whether by his sight, before he touch'd them, he could now distinguish, and tell, which is the Globe, which the Cube"* (II. ix. 8: 146). One way of interpreting"to tell" here would be to take it as a synonym to 'to distinguish' or 'to tell the difference between.' As in, "Can you *tell* the difference between the rose sample and the coral one?" But if we understand "tell" in this way, one might wonder why Molyneux would ask if the newly sighted person could distinguish *and distinguish* which object is the globe and which the cube. In which case, Molyneux's question is redundant and unnecessarily clunky. Alternatively, "to tell" could refer

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sighted person's lack of experience might have occurred at any one of the earlier steps. What we are looking for is the link or links where prior experience is necessary for moving along the causal chain: this lack of experience is where the process of cross-modal recognition breaks down for the newly sighted.

Locke employs a strategy like this, relying on his architecture of ideas, when considering children who are unable to count. He writes,

> Thus Children, either for **want of Names** to make the several Progressions of Numbers, or not having yet the **faculty** to collect scattered *Ideas* into **complex ones**, and **range them** in a regular Order, and so **retain them in the Memories**, as is necessary to reckoning, do not begin to number very early, nor proceed in it very far or steadily, **till a good while after they are well furnished with good store of other *Ideas***[…]. (*Essay* II. xvi. 7: 208, italics in original, emphasis added in bold)

The problem, we see, can occur at several different steps in the process of counting. Lacking the right names, having an underdeveloped mental faculties, such as memory or those required to create complex ideas, can individually or together result in the failure to count: "for where-ever this fails, *a gap is made,* the *Chain breaks*, and the Progress in numbering can go no further" (*Essay* II. xvi. 7: 208, emphasis added).

Just as a child cannot count if she doesn't have the requisite ideas, a person lacking any experience needed to connect what he felt to what he sees will fail at cross-modal recognition, for likewise a gap is made and the chain will break. Given the architecture of ideas, the success of (E) naming relies on the success of sensory organ stimulation (A), simple sensory idea formation (B) for both tactile and visual sense modalities, properly functioning cognitive faculties (C), and the possession of complex ideas (D) that are needed for recognition, such as multimodal general ideas of globes and cubes and other spatial concepts and complex ideas of globes and cubes as substances. And, finally, the possession of the (E) names 'globe' and 'cube' that refer to these concepts. Experience missing at any of these levels naturally leads to failure at (E) naming.[20]

to *naming* the object seen. Since pointing to the cube and calling it a "cube" would be the only way for the newly sighted person to prove that he can successfully distinguish the cube from the globe, it makes sense to favor the interpretation of "tell" as naming. Furthermore, naming is involved in *Locke's* understanding of Molyneux's question. In his response, Locke says the newly sighted person "could unerringly name them by his touch" as well as "certainly distinguish them by the difference of their Figures felt. For a few that emphasize the importance of naming in the Molyneux problem, see Morgan (1977, especially pp. 6-7).

[20] Failing at any of the steps of cross-modal recognition will necessarily produce a failure at naming. Thus the failure to name does not in itself indicate why the newly sighted person fails to name.

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3.1 Sense Perception

Together, the (A) stimulation of our sensory organs and (B) the production of simple sensory ideas in the mind comprise 'sense perception' and Locke's philosophy of perception, such as it is.[21] Locke describes the connection between (A) and (B) early in Book II, where he writes:

> First, *Our Senses*, conversant about particular sensible Objects, do *convey into the Mind*, several distinct *Perceptions* of things, according to those various ways, wherein those Objects do affect them: And thus we come by those *Ideas*, we have of *Yellow, White, Heat Cold, Soft, Hard, Bitter, Sweet,* and all those which we call sensible qualities, which when I say the senses convey into the mind, I mean, they from external Objects convey into the mind what produces there those Perceptions. This great source of most of the ideas we have, depending wholly upon our senses, and derived by them to the understanding, I call *SENSATION*. (*Essay* II. i. 3: 105, emphasis in original)

He believes that "ideas in the understanding are coeval with *sensation*; which is such an impression or motion made in some part of the body, as [produces some perception] in the understanding" (II. i. 23: 117, italics in original; see also II. i. 3: 105). Locke further describes 'sensation' as that, "which is, as it were, the actual entrance of any idea into the understanding by the senses" (II. xix. 1).

Locke offers a mechanistic account of the perceptual process, beginning with tiny particles of matter that interact with our various sensory organs, which, through a causal process, results in the creation of ideas in the mind of both primary and secondary qualities. External bodies, he says, produce ideas in the mind by impulse (II. viii. 13: 136).[22] The mind in turn, is "fitted to receive the Impressions made on it" (II. i. 24: 118). The production of simple sensory ideas in the mind is automatic: simple ideas[23] are the natural result, given the innate structure of the mind, of external objects interacting with our sensory organs.

[21] Locke considers it a matter of speculation beyond the scope of his *Essay* to offer a *physical* account of how or "by what Motions of our Spirits, or Alterations of our Bodies, we come to have any Sensation by our Organs, or any *Ideas* in our Understandings" (*Essay,* I. ii. 2: 43). For an overview of what he does say in his philosophy of perception, see Jacovides (2012) where he makes a unique contribution to Locke's philosophy of visual perception including his interpretation of the perception/judgment passage, and (2015) where he offers a short and accessible overview of Locke's philosophy of perception, which he delves into more deeply in his (2017) book, *Locke's Image of the World.*

[22] It is important to acknowledge that while Locke thinks simple ideas are produced in the mind by impulse, he makes no claim that there is a strict representational connection between the stimuli on the sensory organs and the content of the ideas produced. He ultimately leaves this connection up to God. This enables Locke to account for differences between the way the world is and the way we experience it, which is especially important for ideas of secondary qualities like colors, smells, and tastes.

[23] Locke's account of the 'simplicity' of simple ideas is weighty topic. The only aspect of simple ideas that is important for my project here is their automatic and involuntary nature, which I

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Importantly, simple ideas are produced in the mind passively.[24] This whether the mind receives simple ideas is involuntary, or "not in its [the mind's] own Power. For the Objects of our Senses do, many of them, obtrude their particular *Ideas* upon our minds, whether we will or no" (II. i. 25: 118).[25] Furthermore, the mind can "no more refuse to have, nor alter, […] nor blot [simple ideas] out, and make new ones in itself, than a mirror can refuse, alter, or obliterate the Images or *Ideas*, which the Objects set before it, do therein produce" (ibid.).

Thus, we can presume that both the experienced perceiver's and our newly sighted person's simple ideas from touch and vision are produced passively or involuntarily into the understanding. But what does the newly sighted perceiver see? What are his first visual ideas?[26] Given the involuntary nature of the production of simple sensory ideas by impulse when someone's sensory organs are stimulated by the world around them, Locke likely believed someone seeing for the first time[27] would receive the same simple visual ideas as any other perceiver. They would *see* the same thing. For Locke, seeing results from the interaction of certain globules of light with our eyes resulting in simple visual ideas being produced in the mind. What the newly sighted person sees, therefore, is the equivalent of detailing what simple ideas he possesses as a result of sensory stimulation. Given that in Molyneux's thought experiment, the newly sighted person is "made to see," that is, he now has both working eyes and a brain equipped to receive the simple visual ideas that result from working eyes and brain interacting with globules of light.

We know from the perception and judgment passages discussed above that Locke thinks "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[28] variously shadow'd, with several degrees of Light and Brightness coming to our Eyes" (II. ix. 8: 145). Locke later says we sense, or receive the ideas, of

hope is uncontroversial. For a deeper understanding of Locke's account of simple ideas, I refer the reader to Stewart (1979, 1980), Bolton (2007), Stuart (2009), and Ott (2020).

[24] Ott (2020) refers to this as Locke's 'passivity thesis.' Both he and Bolton (1994, 2007) both consider Locke's view of the judgment's involvement in three-dimensional shape perception as complicating Locke's passivity thesis concerning simple ideas. Ott considers the post-judgment ideas of convex figures to be simple ideas (and simple primary ideas as well). For Bolton these ideas that "are altered by mental operations" nevertheless "function as simple sensory ideas should" thought they are exceptions to Locke's general view of simple ideas (Bolton, 2007, p. 100).

[25] I agree with Bolton (1994), that these first simple visual ideas are "caused immediately [in the mind] in accord with psychophysical laws" (98). However, we disagree about whether flat shapes should be included in this list of simple visual ideas. I interpret Locke's view of visual perception to include flat shapes, while Bolton thinks all "visual ideas of figure may require further operations of mind" (98).

[26] In line with Locke's account of sense perception, I take these two questions to be equivalent. *To see* is *to receive simple ideas.*

[27] Remember, this is a theoretical person miraculously given sight, not an actual person recovering from eye surgery who, due to the pain of the surgery, may not be able to really see when they first open their eyes.

[28] See footnotes 15 and 16.

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"only a Plain variously colour'd" (*ibid.*). I can see no reason why this should differ for our two perceivers. While repeated experience may be needed to judge this flat circle of various colors to be a globe of one uniform color, at the level of simple ideas from vision nothing other than having working visual receptors and an innate mental structure that enables simple sensory idea production is required.[29] The newly sighted person, in being "made to see" has magically been given working visual sensory organs (which include properly functioning eyes and brain). Given that the interaction of tiny particles with working eyes results in the creation of simple ideas in the mind by impulse, the newly sighted perceiver will have the same simple ideas as any ordinary perceiver.[30]

Several scholars, however, would disagree with my reasoning here. Ott (2020) and Bolton (1994) consider Locke's treatment of Molyneux's question to *complicate* his account of sensation as passive and immediate simple idea production. At least in the case of visual ideas of (three-dimensional) shapes, we have simple ideas that are not produced passively or immediately in our minds when sensation occurs. Such views interpret Locke to hold a perceptual learning account of seeing shapes.[31] On these views, our visual ideas of shapes that result from judgment ought to be thought of as simple visual ideas even though "they are altered by mental operations" (Bolton, 2007, p. 100). Ott (2020) considers our post-judgment ideas as primary quality ideas, a subset of simple ideas. For Bolton, these ideas "function as simple sensory ideas should" even though they "require further operations of mind" (98). Our experienced perceiver would, then, *actually see more* than someone seeing for the first time.

For me, though, Locke's account of perception and judgment is consistent with his distinction between simple and complex ideas. Simple ideas resulting from sensation are produced in the mind in the manner I have described here. After simple ideas populate the mind, our mental faculties can alter them (or combine, abstract, etc.) to create active ideas. So, at the level of (A) and (B) in Locke's architecture of ideas, sensation produces only our *prejudgment* sensory ideas, and as far as that is concerned, the same simple visual ideas would be produced in the minds of the newly sighted person on occasion of being made to see and an experienced visual perceiver. To understand more about judgment and complex ideas, let's continue

[29] Locke would call this 'perception' or 'sensation,' which he would classify as a mental faculty. I call it 'simple sensory idea production' here to avoid confusion.

[30] Allowing of course for the same spectrum of perceptual relativity Locke would allow for any perceivers, these simple ideas can vary from person to person in small ways. See II. xxxii. 15 for Locke's consideration of an inverted spectrum.

[31] Bolton (1994) provides a clear explication of a perceptual learning account: "everyone learns to see bodily shapes as the Molyneux-man does. We all begin by perceiving that various colour-patterns are associated with (caused by) objects of various shapes. To do this, we must perceive the shapes of things. Locke cannot suppose we *see* figures until we have noted at least a few correlations between light-color patterns and the perceived shapes of things" (97). While in her 2007 "Taxonomy of Ideas," Bolton falls short of calling these ideas of figure "simple ideas," she nevertheless considers them to "function as simples."

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along our journey in Locke's architecture of ideas and explore (C), our cognitive faculties.

3.2 Cognitive Faculties

In his account of the child who is unable to count, Locke posits the possibility of one or more underdeveloped *cognitive faculties* accounting for the child's difficulties. Likewise, success at Molyneux's task requires several cognitive faculties. The newly sighted perceiver must connect her earlier tactile ideas of the globe and sphere with her new visual ideas, which she has passively received from sense perception. This necessitates the use of memory and discernment; comparing and abstracting, which are necessary for creating complex ideas of substances and kinds; and judgment.

To succeed at cross-modal recognition, the newly sighted person must retain in her memory her earlier tactile ideas while looking at the globe and cube. She must also employ the faculty of discernment, which Locke defines as "Distinguishing one thing from another" (II. xi. 1, 156). For Molyneux's person to clearly distinguish her tactile and visual ideas, she must be able to attend to their differences and similarities.

While impaired mental faculties necessary for cross-modal recognition would lead to failure, there is no reason to think our newly sighted perceiver's memory is impaired. We can assume she has no particular difficulty employing her memory in any other context of her pre-sighted life—all the more, since she is able to correctly identify and name the cube and sphere through tactile sensation. Perhaps the newly sighted perceiver is somehow lacking in her capacity of discernment. A dull faculty of discernment, or one that is "not rightly made use of," can lead to confused notions and can cause "our Reason and Judgment [to be] disturbed or misled" (II. xi. 2: 156). In fact, according to Locke, "any of the forementioned Faculties, if wanting or out or order, produce suitable defects in Men's Understandings and Knowledge" (II. xi. 12: 160). A dull faculty of discernment, then, might explain the newly sighted person's failure, but only if there is reason to believe this might result from being born blind and having one's sight restored.

It is possible that at first sight our perceiver's faculty of discernment could be dull or out of order. Locke does think discernment is something that improves with experience. A gold inspector's power of discernment is greater than the average person's, enabling her to easily distinguish between the color of gold and other close shades of yellow because of her extensive familiarity with the mineral (II. xi. 21). However, the level of discrimination necessary to determine whether our tactile ideas and visual ideas are similar or different, or even discriminating[32] between the two simple visual ideas in question, does not require the same level of

[32] Discernment seems to contain an element of comparing, though Locke marks off comparing as a distinct mental faculty. However, discernment is simply being able to tell whether I have one idea or more than one idea. If, as I think, Locke believes our simple visual ideas are of flat shapes,

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fine-tuned discrimination as choosing between two close shades of yellow.[33] The standard for distinguishing two distinct ideas seems comparatively low.

Sense perception concerns what ideas are produced; discernment concerns how clearly one can distinguish those ideas from others. Given the parameters of Molyneux's question, there is no reason to think the newly sighted perceiver's visual faculty is abnormal. Nor is there reason to think, given the success of his earlier life, that his faculties of memory and discernment are in any way impaired.

When comparing his new visual ideas to his previous tactile ones via this faculty of discernment, the newly sighted person finds that his visual and tactile ideas appear quite different from each other. While the newly sighted person's previous ideas of globes and cubes from tactile sensation are three-dimensional representations, his visual ideas will be of two-dimensional shapes. If the newly sighted person's faculty of discernment is unimpaired, he ought easily to tell that his visual ideas of flat circles are distinct from his tactile ideas of globes. While this does not yet account for the newly sighted person's failure[34], it does point to another mental faculty that is necessary for successful cross-modal recognition: judgment.

Judgment is the cognitive faculty that enables the mind to alter the original ideas we receive from sensation (a flat circle and various colors) into a globe of uniform color (II. ix. 8-10).[35] Judgment requires experience; we must become accustomed to how convex bodies of different shapes, sizes, and motion alter the appearance of light, shadow, and color, that collect the figures we see (II. ix. 8). From all indications, judgment is an *active* process of the mind (unlike the passivity of sensation), that alters the ideas we originally receive from sensation. This, in

then this shows that the visual and the tactile shape ideas should be easily and clearly discerned as *different* ideas.

[33] This discussion presupposes a particular interpretation of Locke's view of common sensibles, specifically the view that Locke's belief of common sensibles is not consistent with a commitment to modality specific simple ideas. I discuss this further in (Vaughn, 2019).

[34] Several prominent views, including Mackie (1976), Ayers (1991, 1998), Hatfield (1998), and Bruno and Mandelbaum (2010), cite this discrepancy in dimensions as the reason for the newly sighted person's failure. This implies that altering the comparison in Molyneux's question so that the objects the newly sighted person is asked to compare are both two-dimensional images would lead to successful recognition (Bruno & Mandelbaum, 2010; see Mackie, 1976). Others, beginning with Evans (1985) and including Levin (2008), want to eliminate the issue of dimensional discrepancy from muddying their discussion and so alter the scenario to compare circles and squares, rather than globes and cubes. Altering cross-modal matching of 2D images in empirical studies has also been discussed by Heller (1989) and Cheng (2015). I disagree that this dimensional discrepancy fully explains the newly sighted person's failure.

[35] Locke's view of judgment is quite a dynamic and difficult topic, one that I acknowledge I cannot do justice to in this paper. In what I say here, I am trying not to weigh in on a debate I won't address fully and would take me too far afield from my goal here, so I am trying to stick as closely as I can to Locke's description in the text. What matters for my project here is that Locke believes voluminous visual shapes are not given in our first visual sensations because the necessary judgment requires experience that would be unavailable for someone seeing for the first time.

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time, becomes a settled habit of the mind, which performs the association of the simple idea from sensation with an idea formed on the basis of experience.

Here is our first true insight into the newly sighted person's inability to succeed at cross-modal recognition. Without the experience of how convex bodies in the world change the appearance of color and shadow, by which experienced perceivers judge it to be a convex body of a uniform color, the newly sighted person would have visual ideas of only flat shapes of varying light and colors. While at first sight the new perceiver's visual experience is wholly restricted to his immediate sensory ideas, the more experienced perceiver, in contrast, has extensive experience with how convex bodies appear and her mind can make the quick, habitual judgments to alter their idea of a flat circle into an idea of a globe. Having a visual idea of the globe or cube (rather than a circle or irregular hexagon) seems like an essential component to recognizing these solid objects when seeing them.[36]

There is now a clear difference between our experienced and novice perceivers. So, this is at least part of Locke's explanation of why Molyneux's perceiver fails: because of a lack of experience required to perform judgment, the newly sighted person's simple visual ideas of a globe and cube (flat shapes, variously colored) are quite different from his earlier tactile ideas (three-dimensional figures). But with enough familiarity, an experienced perceiver will be able to perform judgments so quickly and thus pay attention to three-dimensional images when she looks at a globe or a cube, and thus shouldn't have difficulty connecting what she sees with what she touches. Does this experience explain success at cross-modal recognition? This would easily be the case, were it not for a further question about how our visual and tactile ideas get linked and therefore facilitate recognition. If this connection is innate or our ideas of shape from touch and vision were amodal, recognition seems to follow readily. But, as we have seen, we have evidence that for Locke the simple ideas of shape from touch and vision are different. If they are modality specific, then what is the basis for their connection? Does Locke's architecture of ideas provide insight into the connection of tactile and visual ideas that is necessary for recognition across modalities? To explore this, let's now turn our attention to complex ideas, specifically abstract ideas and ideas of substance, and the role they may play in facilitating recognition.

[36] As mentioned earlier (see footnote 11), it seems likely to me that touching objects *while* seeing them is essential to being able to perform these judgments. I agree with Bruno and Mandelbaum's (2010) reasoning on this matter. Berchielli (2002), in contrast to Bruno and Mandelbaum, thinks the newly sighted person could get sufficient experience just by moving around the object and knitting together the various two-dimensional ideas. However, whether the experience necessary to perform judgments requires both touching and seeing or simply seeing plus movement, it is clear that, at first sight, the newly sighted person would lack the requisite experience to judge a three-dimensional shape from the pattern of light and color associated with a shape he perceives as flat.

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3.3 Complex Ideas

In addition to memory, discernment, and judgment, there are mental faculties that enable the creation of complex ideas. For instance, the mental faculties of combining, comparing, and abstracting create complex ideas of composites, relations, and abstract (or general) ideas (II. xi. 9: 159). Complex ideas, our next level in Locke's architecture of ideas, are created by an active mind from its stock of simple ideas acquired passively through sensation and/or reflection (II. xii. 1: 163). Locke's architecture suggests that some complex ideas may play a role in successful cross-modal recognition. The ordinary perceiver has complex ideas, such as general ideas of globes and cubes, as well as ideas of globes and cubes as substances that would differ from those available to someone seeing for the first time. Here then is a difference of experience that may account for the one's success and the other's failure.

Abstract ideas are created in the mind by the mental operation of abstraction. By the process of abstraction, we form "general Representatives of all of the same kind" from collections of particular simple ideas (II. xi. 9: 159). For instance, in acquiring my idea of 'whiteness', my mind beings with my "repeated Sensations," that is, particular simple ideas, such as the color of milk, chalk, and snow (II. xi. 8: 158). My mind then abstracts what the ideas have in common from all the other ideas associated with them, such as the snowball's coldness or the milk's creamy texture or sweet taste.

The general ideas of importance in Molyneux's task include not only general ideas of *globes* and *cubes*, but also general ideas of *round, straight, angle, protuberant, sharp, uniform, side, shape,* etc. All these general ideas are created by the mental operation of abstraction through repeated experience. An experienced perceiver might have a single general idea abstracted from experiences of both visual and haptic shapes, since she could have particular (simple) ideas of *round, side, straight* and the rest both visually and tactually. Because her general idea could be a representative of both visual and tactile representations of *straight* or *round*, when she sees the round object, she can connect it to her general idea of *round* and recognize it as round. This allows her to recognize objects as having four straight edges, etc. The new visual perceiver, however, whose past experience is restricted to tactile ideas of shape will have no general ideas in stock that correspond to her first visual ideas of the objects she sees. She will be unable, therefore, to classify her new visual ideas as round or circular or having straight edges and sharp corners, because these general ideas could not yet apply to her brand-new simple ideas from vision. To recognize something as *round* or *straight*, her experiences must bring to mind a general idea of *roundness* or *straightness.*

This is what I take to be Synge's mistake. Synge assumes the newly sighted person will immediately recognize the shapes she sees as possessing straight sides or as round. This presumes a recognition of what *round* or *straight edge* or *protuberance* look like when seeing them for the first time. According to Locke's account of ideas, this takes for granted that the new visual perceiver possesses a multimodal

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general or abstract idea, acting as the general representative of both tactile and visual experiences *before* that person has her first visual experiences. Such an assumption is contrary to Locke's account of general ideas. This is what Molyneux's answer (our first piece of the puzzle) is trying to elucidate. The newly sighted person would not immediately make the link between what a straight edge feels like and what it looks like.

Forming abstract ideas requires more than a single experience[37] —e.g., on Locke's model, we have to see different white objects on various occasions in order to form a general idea of whiteness—this is not something someone who is seeing for the first time will be able to do. While the general ideas of an experienced perceiver would be multimodal, containing information from repeated tactile and visual sensations, thus enabling easy success at cross-modal recognition, the relevant abstract ideas of the congenitally blind would be restricted to tactile sensation alone. To create abstract ideas, one must first have the simple ideas from which to abstract the representation of the kind. The newly sighted person lacks simple visual ideas of *globe, cube,*[38] *round, straight,* etc. Therefore, the general kinds that his general ideas of shape are representative of are restricted to tactile ideas of shape. Therefore, the newly sighted person will be unable to connect his new visual experience with his earlier general ideas like *straight, round,* or *angle.*

This demonstrates the relevance of Locke's agreement with Molyneux. As Molyneux says in his response, the newly sighted person has no experience connecting how a globe feels and how it looks, "*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). This connection is a necessary step in the newly sighted person's being able to include his visual experience as a like thing under one general idea of even two-dimensional shape ideas such as *round* or *straight.*

Other complex ideas that might play a role in cross-modal recognition are ideas of substance. When forming ideas of substances, our minds regularly combine simple ideas from more than one sense modality into new complex ideas. Substance is not something we ever sense directly but we can come to have an idea of indirectly by a sort of inference based on observing different ideas that "go constantly together" (II. xxiii. 1: 295). To gain an idea of a substance (like a horse, stone, or globe) the mind integrates all the qualities one perceives of the object from his or her various sensory modalities into a new complex idea. For the experienced perceiver, this will include the simple ideas from each of the sensory modalities she possesses that make up the substance *horse* or *globe.* Those who experience visual impairment would still have ideas of substances, but their ideas would be restricted to a combination of simple ideas from only their remaining sensory modalities. The ideas of the substances of globes and cubes would be different for Molyneux's

[37] See (Vaughn, 2019) for a more extensive explanation of this reasoning concerning Locke's view of general ideas.

[38] As explained earlier, my view is that Locke thinks none of us have simple visual ideas of globes or cubes.

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newly sighted perceiver than for an experienced perceiver. At first sight, our new visual perceiver would not be able to incorporate her newly acquired visual ideas into her substantial idea of globes and cubes as this requires observing the simple ideas that "go constantly together" (II. xxiii. 1: 295). Without additional experience, her visual ideas would not yet be able to "hang" with the rest of the simple ideas that comprise her complex ideas of the substances of globes and cubes.

Both general ideas and ideas of substances require repeated experiences with simple ideas for our minds to form them. These complex ideas would necessarily differ in the minds of an experienced perceiver and a newly sighted one. Because she has the experience to abstract from both tactile and visual ideas to form her abstract ideas of shape, and her ideas of substances were created by bundling together her tactile and visual ideas of things into one complex idea of it, the experienced perceiver possesses two kinds of complex ideas that would quickly enable her to recognize by sight an object she had touched when blindfolded. Our newly sighted person, however, would have abstract ideas of shape abstracted only from her ready store of her simple *tactile* ideas. And her complex ideas of the substances of globes and cubes would be composed of her simple ideas of that object, observed going along together, but her visual ideas of those objects wouldn't be excluded from her complex idea of 'Globe' and 'Cube'. Without these complex ideas that because they are composed from both tactile and visual form a link or connection of tactile and visual experiences, someone seeing for the first time would find it very difficult if not impossible to succeed at recognition what she sees using concepts created without input from vision.

3.4 Names

The final step in the process of cross-modal recognition, or at least the proof of it, that we can glean from Locke's architecture of ideas is an ability to name the object one both touches and sees. Names, for Locke, primarily[39] "stand as outward Marks of our internal *Ideas*" (II. xi. 9: 195). To be included under the general name 'globe,' an idea must be part of the complex general *idea* of *globe*, which means it can be recognizable or categorizable as a globe. As discussed above, while an ordinary adult perceiver can successfully apply the right abstract names to the sensory ideas he perceives, the newly sighted person's visual ideas, however, would be too new (and too different) to be immediately recognizable or categorizable under the general name of 'globe' and 'cube'. Since general names stand for general ideas, they could not stand for the newly sighted person's first simple visual ideas. The

[39] Locke holds an ideational theory of meaning, where names primarily refer to ideas (see III. ii. 1-3: 404-6). However, other passages suggest names can also refer to things themselves. In these situations, there is a "double reference" to the ideas in the hearer's mind (III. ii. 3: 406) and secondarily, to the reality of things outside the mind (III. ii. 5: 407). When it comes to the names of simple ideas and substances, while "they immediately signify" ideas, they "intimate also some real Existence, from which was derived their original pattern" (III. iv. 2: 421). For the general names 'globe' and 'cube' in question here, they should be taken to stand for our general ideas.

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same is true for complex ideas of substances: "*Words being suited to common apprehensions*, and made use of for quick dispatch, are called so united in one subject, *by one name*" (II. xxiii. 1: 295, emphasis added in italics). Because the newly sighted person lacks the requisite complex general ideas for her visual experiences, the names 'globe' and 'cube' likewise cannot apply to her first visual ideas. She will, therefore, necessarily fail to point to the globe and call it 'globe,' or point to the cube and call it 'cube.' Thus, the new visual perceiver will demonstrably fail at Molyneux's task.

I have shown so far that the two levels of Locke's architecture of ideas at which the new visual perceiver lacks the experience necessary to perform cross-modal recognition: the first is the lack of experience necessary to use judgment to move between the simple sensory ideas of flat shapes to the complex ideas of convex shapes. At this level, perhaps the newly sighted could be aided by changing the question and eliminating the dimensional discrepancy. But as we have seen, this is not the only place where the newly sighted person lacks the experience necessary to succeed at cross-modal recognition. Someone seeing for the first time would also lack the experience necessary to create multimodal complex ideas, such as general ideas and substantial ideas, that are necessary for cross-modal recognition. If the newly sighted person lacks this experience, she will necessarily fail to point to the cube and sphere and call them by name. If she lacks the idea, she will lack the corresponding names which stand for those ideas. Lacking the appropriate multisensory complex ideas to which the name 'cube' and 'sphere' refer would naturally result in an inability to apply the names.

4 Conclusion: Why the newly sighted man fails

The above discussion of Locke's architecture of ideas identifies the places where a newly sighted perceiver would lack the experience necessary to perform successful cross-modal recognitions. Contrary to previous attempts to understand Locke's answer to Molyneux's question, there might not be just one reason for the newly sighted person's failure. This failure, I have shown, is not at the level of sense perception (B) but is due to a lack of experience necessary to use judgment and to create complex ideas that are necessary for cross-modal recognition. The newly sighted person's visual perceptions are quite different from her tactile perceptions of shape, placing the original error at the level of cognitive faculties (C) and the mind's creation of complex ideas (D). Therefore, attempts to resolve the discrepancies at (C) would not necessarily lead to a positive answer to Molyneux's question. There is additional experience at the level of complex ideas that prevents a new visual perceiver from succeeding at cross-modal recognition and aids an experienced perceiver in easily identifying by sight objects she had only touched. Our newly sighted perceiver will therefore be unable to name (E) the objects she sees for the first time since calling visual and tactile ideas of a globe by the same name requires a common *multimodal* general idea of *globe*.

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Along the way, we have seen where each of the puzzle pieces of textual evidence fit into the justification for Locke's negative answer to Molyneux's question. Locke's distinction between the ideas we receive from sense perception and those we get from judgment (the second piece to the puzzle) explains the lack of experience that results in an inability to make judgments of three-dimensionality (which we placed at C in the architecture). This also provides us with evidence that Locke thinks the ideas we receive from tactile sensation, which are of three-dimensional shapes, are distinct from the ideas we receive from visual sensation, which are of two-dimensional shapes. Molyneux's answer to his question (the second puzzle piece of evidence) explains that experience is required to connect our tactile and visual shape ideas, which could not be immediately multimodal. Thus, the newly sighted person's general ideas of cubes and globes acquired from her tactile sensation alone do not readily apply to her first visual ideas. Synge's error (the third puzzle piece of evidence) likewise provides evidence that we ought not to assume that the newly sighted person would be able to look at the globe and cube and apply general ideas of shape that were acquired via tactile sensation alone.

Given Locke's architecture of ideas and the various levels of experience that play a vital role in cross-modal recognition, 'no' is the only *consistent* response to Molyneux's question Locke could offer. A positive response would threaten the integrity of his architecture of ideas. In order to succeed at cross-modal recognition the newly sighted perceiver must possess complex ideas that she is not warranted in possessing given Locke's process of idea acquisition that brings us from sensory stimulation to naming. If Locke were to answer 'yes' he would violate this, suggesting that, at first sight our perceiver would be able to create complex multimodal ideas without the experience required to do so. This is precisely the warning Locke gives us not to think we get more from the senses than we do. I have shown that Locke's negative answer not only makes sense within the broader context of his general account of human understanding in the *Essay*, but that it is the only answer he could have given.

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Abbreviations

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

Correspondence: Locke, John and others. *The Correspondence of John Locke*. Edited by E.S. De Beer, in eight volumes. Oxford: Clarendon Press, 1976

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.

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