

## Berkeley on the Language of Nature and the Objects of Vision

And there are some grounds to think that if there was one only invariable and universal language in the world, and that men were born with the faculty of speaking it, it would be the opinion of many that the ideas of other men's minds were properly perceived by the ear, or had at least a necessary and inseparable tie with the sounds that were affixed to them.

Berkeley, *An Essay Towards a New Theory of Vision*, Section 66

### 1. Introduction

George Berkeley's revolution in an *Essay Towards a New Theory of Vision* was to shift early modern debates about vision from the mechanisms of perception to perceptual psychology – to a discussion about visual experience rather than visual anatomy and optical geometry.<sup>1</sup> Margaret Atherton's revolution in Berkeley scholarship has been to take Berkeley at his word regarding three claims that have long puzzled his readers.<sup>2</sup> The first claim appears in the opening line of the *New Theory*: “My design is to show the manner wherein we perceive by sight the distance, magnitude, and situation of objects.”<sup>3</sup> In other words, Berkeley announces that the *New Theory* is intended to explain how we perceive distance and other phenomena *visually* – “by sight”. The second claim occurs throughout Berkeley's essay but makes its first appearance in the third line of the *New Theory*: “It is, I think, agreed by all that distance, of itself and immediately, cannot be seen.”<sup>4</sup> As we learn throughout the essay, Berkeley includes himself among those who agree that distance – along with figure, magnitude, and situation – cannot be seen, strictly speaking. Rather, according to Berkeley and the received view of his day, “in a strict sense, I see nothing but light and colors, with their several shades and variations.”<sup>5</sup>

Many commentators resolve the apparent tension between these two claims by dismissing the former in favor of the latter: we do not *see* distance, figure, magnitude, and situation; we *judge*

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<sup>1</sup> Hereafter *An Essay Towards a New Theory Of Vision* will be referred to using the abbreviated *New Theory* and cited using the abbreviation *NTV*. Berkeley, George (2008). *An Essay Towards a New Theory of Vision*, in Desmond M. Clarke (ed.), *George Berkeley, Philosophical Writings*. Cambridge: Cambridge University Press, 1–66. Quotations will be cited using the original section number, followed by the page number in Clarke, as follows: *NTV* 66;29.

<sup>2</sup> Atherton, Margaret (1990). *Berkeley's Revolution in Vision*. Ithaca, NY: Cornell University Press. See also Atherton, Margaret (1999). “How to Write the History of Vision: Understanding the Relationship between Berkeley and Descartes,” in David Michael Levin (ed.), *Sites of Visions: The Discursive Construction of Sight in the History of Philosophy*, Cambridge, MA: MIT Press: 139–166; Atherton, Margaret (2005). “Berkeley's Theory of Vision and its Reception,” in Kenneth P. Winkler (ed.), *The Cambridge Companion to Berkeley*. Cambridge: Cambridge University Press: 94–124; Atherton, Margaret (2008). “The Objects of Immediate Perception,” in Stephen H. Daniel, (ed.), *New Interpretations of Berkeley's Thought*. New York: Humanity Books, 107–119. Atherton, Margaret (2008). “What Have We Learned When We Learn to See?: Lessons Learned from the *Theory of Vision Vindicated*,” in Paul Hoffman, David Owen and Gideon Yaffe (eds.), *Contemporary Perspectives on Early Modern Philosophy*. Toronto: Broadview Press: 273–288.

<sup>3</sup> *NTV* 1;7.

<sup>4</sup> *NTV* 2;7.

<sup>5</sup> *NTV* 130;56. See also *NTV* (77; 36), (103;45), (129;55).

them after having seen something else.<sup>6</sup> Atherton's interpretation accepts that Berkeley intends both claims. Indeed, on her interpretation, Berkeley recognizes the conflict and presents the *New Theory* to resolve it. The question is *how* we perceive by sight distance, figure, magnitude, and situation when those features are not, strictly speaking, visible. The answer resides in a third claim, emphasized toward the end of Berkeley's essay: "that the proper objects of vision constitute an universal language of the Author of nature."<sup>7</sup> The proper objects of vision are *significant*: they *signify* distance, figure, magnitude, and situation. We perceive distance, figure, magnitude, and situation visually, though not immediately but by signification.

My view is inspired by Atherton's and is meant to be consistent with it, except in one way. Like Atherton, I read Berkeley as holding that vision, as an isolated modality, presents only color and light, modes of color and light (hue, saturation, etc.), and collections of color and light. I also read him as claiming, nonetheless, that typical perceivers experience distance, figure, magnitude, and situation *visually*. Visual experience of spatial features is *perceptual* – we do not see spatial features in an analogical or metaphorical sense: quite literally, we see them, though not immediately. Berkeley's explains how this happens by linking the visible with the spatial: visible features are *signs* or *marks* of spatial features. The spatial significance of visible features enables typical humans to see distance, figure, magnitude, and situation. Though spatial features are not immediately perceived by sight, they are perceived by sight nevertheless – as Atherton argues.

One way to describe this visual achievement is as a kind of learning, as Atherton sometimes does: "We cannot perceive physical objects when our senses are first conferred upon us. Rather, we have to learn to see physical objects..."<sup>8</sup> It is here that I differ with Atherton, though it is not clear whether she wants to emphasize that the required process is a process of *learning*. In any case, I claim that on Berkeley's view, visual experience of spatial features is not learned.<sup>9</sup> Rather, visible features form a universal, natural language – an unlearned language: "the language of vision is always with us," as Atherton writes<sup>10</sup> In particular, we do not learn to associate what we see with what we touch. Rather, to paraphrase Berkeley, nature sees to it that visible features signify spatial features.<sup>11</sup>

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<sup>6</sup> See, for example, Cummins, Philip D. (1987). "On the Status of Visuals in Berkeley's *New Theory of Vision*," in Ernest Sosa, (ed.), *Essays on the Philosophy of George Berkeley*. Dordrecht: D. Reidel Publishing Co., 165–194; Grush, Rick (2007). "Berkeley and the Spatiality of Vision," *Journal of the History of Philosophy*, 45 (3): 413–442.

<sup>7</sup> *NTV* 147;62.

<sup>8</sup> Atherton (2008): 114.

<sup>9</sup> The present interpretation is intended to be generally sympathetic with readings in Barnouw, Jeffrey (2008). "The Two Motives Behind Berkeley's Expressly Unmotivated Signs: Sure Perception and Personal Providence," in Stephen H. Daniel (ed.), *New Interpretations of Berkeley's Thought*. New York: Humanity Books: 145–177; Brook, Richard (2003). "Berkeley's Theory of Vision: Transparency and Signification," *British Journal for the History of Philosophy*, 11 (4): 691–699; Creery, Walter E. (1972). "Berkeley's Argument for a Divine Visual Language," *International Journal for Philosophy of Religion*, 3 (4): 212–222; Daniel, Stephen H. (2011). "Stoicism in Berkeley's Philosophy," in Timo Airaksinen and Bertil Belfrage (eds.), *Berkeley's Lasting Legacy: 300 Years Later*. Newcastle upon Tyne: Cambridge Scholars Publishing: 121–134; Hara, Akira (2004). "Depth and Distance in Berkeley's Theory of Vision," *History of Philosophy Quarterly* 21 (1): 101–117; Pearce, Kenneth L. (2008). "The Semantics of Sense Perception in Berkeley," *Religious Studies* 44 (3): 249–268.

<sup>10</sup> Atherton (1990): 198.

<sup>11</sup> "Visible figures are the marks of tangible figures...In themselves they are little regarded, or upon any other score than for their connexion with tangible figures, *which by nature they are ordained to signify*." *NTV* 140; 60, emphasis added.

For typical humans, the language of vision comes naturally: it is the basic structure of experience by which we anticipate and navigate a spatial environment – visually. According to Berkeley, two classes of objects are common for human visual perception: primary (light and colors) and secondary (distance, and tangible figure, magnitude, and situation). But Berkeley also appeals to a third class of a different sort: *visible* figure, magnitude, and situation, constituting the vocabulary of the language of vision. By considering two perceivers who lack this vocabulary – the disembodied person and the Molyneux person – we may better understand this third category and the difference between those who must learn the language of vision and those for whom it is a natural endowment.

## 2. The Language of Nature

Berkeley's *New Theory* starts with a puzzle: “it is plain that distance is in its own nature imperceptible, and yet it is perceived by sight.”<sup>12</sup> Several other puzzles emerge in the essay, including the moon illusion, the inverted retinal image, and the Molyneux person. Each is a special case of a general problem: a misfit between what is given to the eye and what is seen. In some cases, what is given to the eye underdetermines what is seen. If vision, by itself, presents only light and colors, why do typical adults see things as figured, at a distance, as having a magnitude, and as arranged in positions relative to one another? In other cases, what is given to the eye misleads. The retinal image inverts the scene experienced by the subject. The moon appears larger at the horizon than at the zenith. These puzzles were well known to writers on optical anatomy and geometry at the time, and those experts are the targets of the *New Theory*. In each case, Berkeley argues that the received views of the “optic writers” fail to solve the puzzle and that he has found a unified solution.

Berkeley attributes a single theory to “the optic writers,” (call it the *geometric theory*) and he agrees with much of it.<sup>13</sup> Vision, as an isolated sensory modality, presents only color and light, variations and modes of colors and light (hue, saturation, illumination), and collections of colors and light. Moreover, vision does not present depth, distance, or tangible figure, magnitude, and situation. Nonetheless, even with vision impoverished in this way, typical adults use it to identify, recognize, and anticipate depth, distance, figure and other spatial features in the environment. But Berkeley disagrees with the geometric theory about *how* typical adults manage this – how they achieve the needed abilities. On the geometric theory, these abilities are the result of a kind of deduction, says Berkeley. The understanding uses what is given to the eye, together with geometric information about the angles that subtend the eye, to form judgments about spatial features otherwise given only by touch. Vision thus becomes a secondary source of spatial information. Visual and tactile features are inter-derivable by a common geometry, supplemented by information about optical angles. Distance, depth, figure, and other spatial features are judged rather than seen. These judgments are conclusions of mathematical deductions performed, quietly and quickly, by the understanding.<sup>14</sup>

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<sup>12</sup> NTV 11;19.

<sup>13</sup> Whether the figures to whom Berkeley would attribute this theory may be interpreted charitably as holding the positions described is a different question.

<sup>14</sup> NTV 24;11.

But Berkeley insists that typical humans do not *deduce* spatial features from visible features, at least not in the course of perception. Anatomists and optic geometers might perform these deductions, using the hypothetical lines and angles of optical geometry – lines and angles that are theoretical, not real.<sup>15</sup> As artifacts of anatomy and optics, they are uncontroversial, useful for explaining the *mechanisms of vision*. But Berkeley wants to explain *vision itself*. His science is psychology, not optics or ophthalmology. Visual experience is his topic.

To explain how the mind or soul of man simply sees is one thing, and belongs to philosophy. To consider particles as moving in certain lines, rays of light as refracted or reflected, or crossing, or including angles, is quite another thing, and appertaineth to geometry. To account for the sense of vision by the mechanism of the eye is a third thing, which appertaineth to anatomy and experiments...But the former theory is that which makes us understand the true nature of vision, considered as a faculty of the soul. Which theory, as I have already observed, may be reduced to this simple question, to wit, How comes it to pass that a set of ideas, altogether different from tangible ideas, should nevertheless suggest them to us, there being no necessary connexion between them? To which the proper answer is, That this is done in virtue of an arbitrary connexion, instituted by the Author of nature.<sup>16</sup>

Because the lines and angles of optical geometry are theoretical entities, they are neither given to the eye nor seen. Because they are not objects of vision, the mind cannot use them in order to form judgments about distance, figure, or other spatial features in the environment.<sup>17</sup> Even if they were real, however, and even if they were seen, they would not explain how typical perceivers perceive depth, distance, and other spatial features by sight. Berkeley finds no necessary connections between the objects of vision and the objects of touch by which one could move from visible features to spatial features.<sup>18</sup> The geometrical angles themselves, even if real, would be spatial, but not visible. If they were seen, they could be seen only in the way we may ordinarily be said to ‘see’ what is spatial – the very thing that needs explaining! Berkeley denies that the objects of vision and touch have geometry as a common basis. Much of the *New Theory* is dedicated to establishing the Heterogeneity Thesis: “The extension, figures and motions perceived by sight are specifically different from the ideas of touch called by the same names, nor is there any such thing as one idea or kind of idea common to both senses.”<sup>19</sup> Vision alone presents only colors and light. The angles of the geometer, were they real, could not help us understand what vision is. Being spatial, they are unlike – indeed *incommensurate* with – objects of vision.<sup>20</sup> Without necessary connections between what is given to the eye and what is given to touch, visual experience of spatial features cannot be a kind of judgment based on reasoning from the former to the latter.

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<sup>15</sup> NTV 14;9.

<sup>16</sup> Berkeley, George (1948). *The Theory of Vision Vindicated and Explained*, in A.A. Luce and T.E. Jessop (eds.), *George Berkeley, The Works of George Berkeley, Bishop of Cloyne*, 9 vols. Edinburgh: Thomas Nelson and Sons, 241–279. Quotations will be cited using the original section number, followed by the page number in Luce and Jessop, as follows: TVV 43;266.

<sup>17</sup> NTV (12;9), (13;9), (52;24-5).

<sup>18</sup> NTV 15;9.

<sup>19</sup> NTV 127;54-5. See also NTV (49;23), (108;47).

<sup>20</sup> NTV 131;56.

There are no necessary connections between objects of vision and the objects of touch, no necessary connections between visible features and spatial features: the mind does not infer the latter from the former.<sup>21</sup> Yet they are connected, and it is by means of visible features that typical humans perceive distance, depth, and tangible figure, magnitude, and situation *by sight*. “It remains that we inquire,” Berkeley insists, “what ideas or sensations there be that attend vision, unto which we may suppose the ideas of distance [and other spatial features] are connected, and by which they are introduced by the mind.”<sup>22</sup> The objects of vision and the objects of touch are connected, he thinks, by a kind of convention. Because the relation is conventional, it is contingent. Berkeley uses the notion of a *language* to characterize the convention, and the notion of *suggestion* to express the connection.<sup>23</sup>

Berkeley calls languages that operate by human convention *artificial*, though we call them *natural*. In his vocabulary, artificial languages include English, Arabic, and Swahili. The English word ‘tomato’ refers to tomatoes not in virtue of its shape or sound or any other feature of the word itself. ‘Tomato’ does not resemble a tomato. We say ‘tomatoes,’ referring to tomatoes within conventions governing the use of words and their combinations in English. Had English been subtly different, speakers of English might have used some other combination of marks or sounds – like ‘wolfpeach’ – to do the job. Marks or sounds just like ‘tomato,’ but within a different convention, would not be the same as the English ‘tomato.’ That other ‘tomato’ would be a homonym of the English ‘tomato.’ In such ways, artificial languages are contingent because they might have been different than they are.

According to Berkeley, words are *signs* or *marks* that *suggest* that which is signified by them. Fluent speakers and readers of artificial languages do not attend to the shapes or sounds of words to infer from the shapes or sounds, as such, to what is being signified. The shapes and sounds, as such, have no significance. Within a convention, however, the shapes and sounds are *words* – *signs* – that direct speakers and readers to what the shapes and sounds signify. Signs signify by *suggestion*, which has a kind of immediacy: it is not a type of inference or any other act of the understanding.<sup>24</sup> “To perceive is one thing; to judge is another. So likewise, to be suggested is one thing, and to be inferred is another. Things are suggested and perceived by sense. We make judgments and inferences by the understanding.”<sup>25</sup>

Suggestion and signification are uses of language that Berkeley adapts to his new science. As a Newtonian in method, he takes the natural philosopher’s task to be the search for laws and regularities in nature, not for causes. Laws explain the regular course of nature, and inferences from laws explain phenomena. In place of causal relations, Berkeley substitutes *suggestion* or *signification* as the primary relation among natural phenomena.<sup>26</sup> Among these phenomena is the

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<sup>21</sup> NTV (26;12), (45;22), (59;26), (62;28), (64;29), (72;31-2), (104; 46), (105;46).

<sup>22</sup> NTV 16;9.

<sup>23</sup> NTV (16;9), (17;10), (25;11-12), (26;12), (45;22), (50;24), (53;25), (64;29), (73;32), (105;46).

<sup>24</sup> On this point, see Pappas, George S. (1987). “Berkeley and Immediate Perception,” in Ernest Sosa (ed.), *Essays on the Philosophy of George Berkeley*. Dordrecht: D. Reidel Publishing: 195–213.

<sup>25</sup> TVV 42;265.

<sup>26</sup> Berkeley, George (2008). *A Treatise Concerning the Principles of Human Knowledge*, in Desmond M. Clarke (ed.), *George Berkeley, Philosophical Writings*. Cambridge: Cambridge University Press, 67–149. Quotations will be cited using the original section number, followed by the page number in Clarke, as follows: *Principles* 63–66;108–109.

relation between the objects of vision and the objects of touch, between visible features and spatial, tangible features, connected by law. Visible features are signs that suggest spatial features. As signs, visible features are items of language – but not an artificial language like English, Arabic, and Swahili. In addition to languages of the artificial kind, Berkeley discusses a *natural* language.<sup>27</sup> Just as artificial languages are human conventions, natural language is a convention established by God. Absent the linguistic convention instituted by God, visible features would signify nothing. They would be just color and light, signifying nothing. But because the God established a convention by which visible features suggest and signify spatial features, vision is a language in which typical humans are fluent by their nature.

Like artificial languages, the language of nature is conventional. Its maker could have made it other than it is, so that visible features would not suggest spatial features or might suggest different spatial features.<sup>28</sup> Features presented in other sensory modalities – sounds, smells – could have suggested spatial features as visible features actually suggest them. The conventions governing artificial languages and the language of nature are arbitrary: they could have been different; they are contingent, not necessary. But they are not erratic or capricious.<sup>29</sup> As conventions, they are rule-governed. With apologies to Humpty Dumpty, words do not mean just what Mr. Dumpty wants them to mean.<sup>30</sup>

If there were no English or any other artificial language, the marks and sounds of the word ‘tomato’ would signify nothing. But the English ‘tomato’ has a real relation to tomatoes, even though the relation is by convention. Absent the language of nature, visible features would signify nothing. But the divine Author makes a law that connects visible features with spatial features, and this makes the visible signify the spatial.

Ideas are not any how and at random produced, there being a certain order and connexion between them...That a few original ideas may be made to signify a great number of effects...it is necessary they be variously combined together: and to the end their use be permanent and universal, these combinations must be made by rule, and with wise contrivance.<sup>31</sup>

Typical humans are naturally fluent in the language of vision. In typical human experience, visible features are really related to spatial features:

Visible figures represent tangible figures much after the same manner that written words do sounds. Now, in this respect, words are not arbitrary, it not being indifferent which written word stands for any sound...It is indeed arbitrary that, in general, letters of any

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<sup>27</sup> For an account of Berkeley on natural signs, see Winkler, Kenneth (2005). “Berkeley and the Doctrine of Signs,” in Kenneth P. Winkler (ed.), *The Cambridge Companion to Berkeley*. Cambridge: Cambridge University Press: 125–165.

<sup>28</sup> *NTV* (59;26–27); (63;28), (64;29), (104;46), (105;46).

<sup>29</sup> On the non-arbitrary nature of the language of vision, see Phillips, Robert L. (1964). “Austin and Berkeley on Perception,” *Philosophy* 39 (148): 161–163.

<sup>30</sup> Lewis Carroll (1999). *Through the Looking Glass*, in Martin Gardner (ed.), *The Annotated Alice: The Definitive Edition*. New York: W.W. Norton & Company, 129–274: 213.

<sup>31</sup> *Principles* 64-5;108–9.

language represent sounds at all. But when that is once agreed, it is not arbitrary what combination of letters shall represent this or that particular sound.<sup>32</sup>

How do artificial languages differ from the language of nature? Both are contingent. Both operate by convention. For users of either language, the mind is directed towards the significance of the signs that make up the language, not towards the signs themselves. Neither works by inference. The difference is that artificial languages are variable and local, while the language of nature is invariable and universal.

Different children are exposed to different stimuli, coming to speak different artificial languages. Linguists call this process language *acquisition* rather than language *learning*, reserving the latter term for the explicit processes used to make someone fluent in a second language. And yet artificial languages depend on experience in a way that a natural language – were there such a thing – would not. Speakers acquire artificial languages as experience goes on. The language of vision, by contrast, is built into experience. (Kant, transported into Berkeley's world, might call it a condition of the possibility of experience.) The real connection between objects of vision and objects of touch by which the former are signs of the latter is embedded in typical human experience. By a law of God's enactment, the same visible features signify the same spatial features for all typical humans, regardless of differences in environment. The language of vision may be acquired in experience, but it is not learned from experience.

There is indeed this difference between the signification of tangible figures by visible figures, and of ideas by words: that whereas the latter is variable and uncertain, depending altogether on the arbitrary appointment of men, the former is fixed and immutably the same in all times and places. A visible square, for instance, suggests to the mind the same tangible figure in Europe that it does in America.<sup>33</sup>

Typical humans are naturally fluent in the universal language of vision because God has made vision a basic tool of human agency. Because visible features signify the spatial features of our environment, humans can identify, recognize, and anticipate the spatial contours of the world.<sup>34</sup> God has made human visual experience *anticipatory* by coordinating vision and touch. The coordination equips humans to govern their movements and care for themselves. The Author of nature is provident: his human creatures do not need to learn how to associate what they see with what they touch. The language of vision is a gift of providence, given to help us live as embodied creatures in a spatial environment.

Upon the whole, I think we may fairly conclude that the proper objects of vision constitute an universal language of the Author of nature, whereby we are instructed how to regulate our actions in order to attain those things that are necessary to the preservation and well-being of our bodies, as also to avoid whatever may be hurtful and destructive of them.<sup>35</sup>

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<sup>32</sup> NTV 143; 60–1. See also *Principles* 63-66;108–9.

<sup>33</sup> NTV 152;64.

<sup>34</sup> NTV 45;22.

<sup>35</sup> NTV 147;62. See also NTV 59;26–7.

### 3. Objects of Vision

Humans are fluent in the language of vision by nature, but what sort of experience comes from using this language? What are the objects of typical human visual experience? Berkeley distinguishes between what vision presents as an isolated sensory modality – isolated from other sensory modalities – and what it presents in typical human experience. He uses pairs of words to mark this distinction – like immediate and mediate, proper and improper. The contrasts evoked by these terms have inspired inquiry about the epistemic status of seeing distance, depth, figure, magnitude, and situation. If such seeing is mediated, does that make it indirect? If the seeing is indirect, is it ‘seeing’ only metaphorically? To avoid these dilemmas, use another pair of terms that Berkeley used: *primary* and *secondary*.

There are two sorts of objects apprehended by the eye, the one primarily and immediately, the other secondarily and by intervention of the former. Those of the first sort neither are, nor appear to be, without the mind or at any distance off. They may indeed grow greater or smaller, more confused or more clear, or more faint, but they do not, cannot, approach or recede from us.<sup>36</sup>

The *primary* objects of sight, according to Berkeley are colors and light, variations and modes of colors and light (hue, saturation, illumination), and collections of colors and light. “What we immediately and properly see are only lights and colors in sundry situations and shades and degrees of faintness and clearness, confusion and distinctness.”<sup>37</sup> The *secondary* objects of sight are the *primary* objects of touch: distance, and tangible figure, magnitude, and situation. Vision is a secondary source of spatial information that would otherwise come only from touch. “The visible object, which being immediately perceived by sight, is connected with that other which is tangible and placed at a distance.”<sup>38</sup>

The primary objects of vision are signs that direct the mind to what they signify. While light and colors are the primary objects of sight, they are not the primary objects of visual *attention*. Because the primary objects of vision are signs, they draw attention not to themselves but to the *secondary* objects of vision: tangible features. “It has been already shown that in any act of vision the visible object absolutely, or in itself, is little taken notice of, the mind still carrying its view from that to some tangible ideas which have been observed to be connected with it, and by that means come to be suggested by it.”<sup>39</sup> Typical visual experience is rich in spatiality, which would be hard to ignore in order to attend to primary objects of sight. Just as a speaker of an artificial language would find it hard to ignore the meaning of someone else’s speech in order to attend only to its sound, typical perceivers would find it hard to attend to the primary objects of vision. Typical visual attention is directed towards the spatial environment that perceivers must navigate.

No sooner do we hear the words of a familiar language pronounced in our ears, but the ideas corresponding thereto present themselves to our minds...So likewise the secondary

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<sup>36</sup> NTV 50;24. See also NTV 54;25.

<sup>37</sup> NTV 77;36. See also, NTV (103;45), (129;55), (130;56).

<sup>38</sup> NTV 56;26.

<sup>39</sup> NTV 74;34.



objects, or those which are only suggested by sight, do often more strongly affect us, and are more regarded than the proper objects of that sense, along with which they enter into the mind and with which they have a far more strict connexion than ideas have with words.<sup>40</sup>

What about the third class of objects of vision – neither primary nor secondary – that Berkeley treats as items of language: *visible* figure, magnitude, and situation, which are not *tangible* figure, magnitude, and situation? Imagine talking to a friend on the street: you see her near a lawn and a tower. Your visual experience directs you to the navigable, spatial features of the scene: she is six feet tall; the tower is twenty times that height. She is three feet away, the tower a hundred times farther. She is right in front of you, the tower to the right. These spatial features, according to Berkeley, are the typical *tangible* features to which vision is directed: the primary objects of touch and secondary objects of sight. Now imagine your encounter on the street but paint the scene to eliminate ordinary (secondary) objects of vision. What you get is not simple light and color. The person you meet looks no taller or shorter than the tower. Neither is closer or farther away. They stand in no orientation. If your colleague moves, she blocks the tower, or the tower blocks her. Who can say? The *visible* figure, magnitude, and situation presented are different from *tangible* figure, magnitude, and situation. The distinction is often demonstrated by a coin: the tangible figure of a coin is a circular disc; the visible figure of a coin is circular when faced head-on, but elliptical as the coin rotates.

Visible figure, magnitude, and situation are objects of vision. Berkeley uses them to solve the puzzles created by the geometric theory. The problem of retinal inversion, for example, is not really a problem: if the retinal image is of *visible* figure, the image is not inverted.<sup>41</sup> The visible figure of your friend has her head in the air and her feet on the ground – right side up! Berkeley insists that visible figures are heterogeneous and incommensurable with tangible figures. Retinal ‘inversion’ comes from treating visible figure as commensurate with tangible figure. It makes no sense to speak of a visible figure as inverting a tangible figure – the space of visible figures is different in kind from the space of tangible figures. Visibly inverting a tangible figure is no more possible than inverting red or blue in the domain of sweet and sour. Insofar as the image on *the retina* is inverted, it is a tangible figure – a primary object of touch and a secondary object of vision, something never seen by the subject whose retina it is and seen only in optical experiments, as one tangible object among many.

Visible figure, magnitude, and situation are objects of vision, but of a special class. They are neither primary nor secondary objects of vision. Nor are they objects of touch. They are objects of vision treated as items of language: signs with significance. Call them *eidemes*.<sup>42</sup>

Except in the framework of English, the shape or sound of ‘tomato’ is just shape or sound – meaningless. Primary objects of sight – colors and light – are to Berkeley’s language of vision what shapes or sounds are to artificial languages. Yet such shapes and sounds, meaningless in

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<sup>40</sup> NTV 51;24.

<sup>41</sup> NTV 115;49–50.

<sup>42</sup> I am grateful to Brian P. Copenhaver for suggesting this term, which does not appear either in the OED or the supplement to the OED. However, the term has been used in recent years by linguists and computer scientists in various technical applications, but these are not my meaning here: for my meaning, see the text.

themselves, acquire meaning within the conventions of meaning called ‘English,’ ‘Spanish’ and so on. Thus conventionalized, shapes and sounds become *words*. They acquire meaning. One can attend to the words themselves as objects. Eidemes – visible figure, magnitude, and situation – are to the language of vision what words are to English. The primary objects of vision are connected with secondary objects of vision by law. Thus connected, the primary objects are embedded in a system of meaning. Visible figures are the units – the eidemes – of this system of meaning. Just as words direct us to what they signify, eidemes direct us to what they signify: the secondary objects of vision – tangible figure, magnitude, and situation.<sup>43</sup>

From hence we may see how the mind is enabled to discern by sight the situation of distant objects. Those immediate objects *whose mutual respect and order comes to be expressed by terms relative to tangible place*, being connected with the real objects of touch, what we say and judge of the one, we say and judge of the other, transferring our thought or apprehension from the signs to the thing signified: As it is usual, in hearing or reading a discourse, to overlook the sounds or letters, and instantly pass on to the meaning.<sup>44</sup>

Without the universal, natural language of vision, there would be no eidemes – no visible figures; without this language of vision, there would be no meaning in light and color or in their various configurations. Visible figures are the vocabulary of the language of vision.

Visible figures are the marks of tangible figures...In themselves they are little regarded, or upon any other score than for their connexion with tangible figures, which by nature they are ordained to signify. And because this language of nature does not vary in different ages or nations, hence it is that in all times and places visible figures are called by the same names as the respective tangible figures suggested by them, and not because they are alike or of the same sort with them.<sup>45</sup>

The puzzles generated by the geometric theory are the result of a use/mention error with eidemes. The geometric theory equivocates between visible and tangible figure: between sign and signified. According to Berkeley, the error is understandable. Human languages are variable and local, respecting contingencies and conventions and permitting devices like quotation to distinguish sign from signified. We must learn to use words, and we see others learning the conventions of artificial languages. But the language of nature is invariable, universal, and unlearned. In that framework, distinguishing eidemes – visual units of meaning – from what they mean is harder.

It must be confessed that we are not so apt to confound other signs with the things signified, or to think them the same species, as we are visible and tangible ideas. But a little consideration will show us how this may be, without our supposing them of a like nature. These signs are constant and universal, their connexion with tangible ideas has been *learnt at our first entrance into the world*; and ever since, almost every moment of our lives, it has been occurring to our thoughts, and fastening and striking deeper on our

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<sup>43</sup> *NTV* 59;27–8.

<sup>44</sup> *TVV* 48;267–8, emphasis added.

<sup>45</sup> *NTV* 140;60. See also *NTV* 139;59.

minds. When we observe that signs are variable, and of human institution; when we remember there was a time they were not connected in our minds with those things they now so readily suggest, but that their signification was learned by the slow steps of experience, this preserves us from confounding them.<sup>46</sup>

Visible figures are objects of vision only for creatures in whom the convention connecting visible features and tangible features operates. Eidemes rely on the convention. Primary objects of vision – color and light – resolve into eidemes when God’s laws connect them with secondary objects of vision. Those secondary objects of vision are primary objects of touch: tangible figure, magnitude, and situation. In other words, the space of *visible* figures is derivative: it is derived from the space of tangible figures, original to touch, though it is heterogeneous and incommensurable with it. The language of vision – the speech of eidemes – is unique to creatures like us, equipped with sight and touch, for whom objects of sight and touch are connected in a way that makes the former signs of the latter.

The nature of eidemes may be illustrated by considering three possible users: the typical person, the disembodied person, and the Molyneux person. The typical person has both sight and touch, by which she experiences a rich spatial world. She sees tall towers at a distance, she sees coins as circular, she anticipates the sharp corners of coffee tables, she reaches for glasses of water and ducks her head at fly-balls. She experiences a space of tangible objects, visually. The objects are the secondary to sight, but her experience of the phenomena is immediate. Vision directs her to the three-dimensional environment through which she moves. “We cannot open our eyes but the ideas of distance, bodies, and tangible figures are suggested by them. So swift and sudden and unperceived is the transition from visible to tangible ideas, that we can scarce forbear thinking them equally the immediate object of vision.”<sup>47</sup> By contrast, Berkeley asks us to imagine a disembodied person who has only sight.

...I shall...consider the case of an intelligence, or unbodied spirit, which is supposeth to see perfectly well, *i.e.* to have a clear perception of the proper and immediate objects of sight, but to have no sense of touch...it will be found he cannot even have an idea of plane figures any more than he can of solids...All that is properly perceived by the visive faculty amounts to no more than colours, with their variations and different proportions of light and shade...It is, indeed, no easy matter for us to enter precisely into the thoughts of such an intelligence...[it] will not seem strange if we consider how hard it is for anyone to hear the words of his native language pronounced in his hears without understanding them. Though he endeavor to disunite the meaning from the sound, it will nevertheless intrude into his thoughts, and he shall find it extreme difficult, if not impossible, to put himself exactly in the posture of a foreigner that never learned the language, so as to be affected barely with the sounds themselves, and not perceive the signification annexed to them.<sup>48</sup>

The disembodied person does not see visible figure, only light and colors. Imagining what visual experience is like for the disembodied person is very hard. Though Berkeley concedes to the

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<sup>46</sup> NTV 144;61, emphasis added.

<sup>47</sup> NTV 145;62.

<sup>48</sup> NTV 153–6; 64–5.

geometers the experiment of considering vision in isolation, he finds the hypothesis not just strained but alien – nothing like the visual experiences of typical humans. He accepts proper sensibles and rejects common sensibles, but resists the temptation to regard typical experience as a conjunction of isolated sensory modalities. While there may be no objects of experience common to both sight and touch, the *visual* experience of the typical person is different in kind from the visual experience of the disembodied person. The difference is not just added sensory modalities, so that the typical person sees what the disembodied person sees, while also feeling, tasting, hearing, smelling and so on. The typical person does not see what the disembodied person sees. Primary objects of sight are theoretical abstractions from ordinary experience.

Vision directs the typical person to features of the environment that are secondary objects of sight: tangible figure, magnitude and situation. The disembodied person sees only colors and light. These are the primary objects of vision – the objects that vision would present were it not bound up with touch in a system of signification. What are the objects of vision for the Molyneux person, “newly made to see?” Not what the typical person sees – tangible features – as we know from Berkeley’s negative answer to Molyneux’s question.<sup>49</sup> Yet it is not clear that the Molyneux person would see what the disembodied person sees. If one could communicate with the disembodied person and explain that the colors and lights he sees are like words, that they are meanings shaped by a sensory modality that he lacks, the news would make little sense to him. He would be like the prisoners in Plato’s cave, their departed friend returned to tell them that things in their world are just shadows of things somewhere else. The Molyneux person is unlike the disembodied person. He is born blind but otherwise typical. He moves through the same tangible space as typical people, speaks the same human languages, and knows he is blind. He realizes that his peers can anticipate the sharp edges of tables visually, that they can recognize cubes and spheres by sight, and that they can see the placement of things in the world. Though he has no first-person acquaintance with visual experience, he lives in a world with the sighted. He knows in advance of his gaining vision that his newly acquired sensory modality has a particular function in typical human experience – directing the sighted to features that he already knows by touch.

The Molyneux person is not like the disembodied person – not like a prisoner in Plato’s cave. That features in one sensory modality could signify features in another would not be incomprehensible to him. Prior to gaining vision, he will expect a successful procedure to allow him to see what typical people see. He will expect his vision to be spatially significant. He is less like one of the prisoners in the cave, and more like Quine’s radical field linguist, who must first hypothesize that the people with whom she interacts are speaking a language at all, and then form hypotheses about which sounds that she hears constitute words, and which are sentences.<sup>50</sup> Is ‘gavagai’ a word? Two words? A sentence? Part of an unfinished sentence? One of the first tasks of the field linguist is to make provisional decisions about parsing sounds under the expectation that the sounds have significance.

After a successful procedure, the Molyneux person must also succeed at radical translation in order to learn the language of vision – the speech of eidemes. He is presented only with light and colors – like the disembodied person – but he expects light and colors to form units and

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<sup>49</sup> *NTV* (41;20), (135;58).

<sup>50</sup> Willard Van Orman Quine (1960). *Word and Object*. Cambridge, Massachusetts: The MIT Press, 29–30.

complexes with spatial, tangible meaning. Upon first sight, his visual experience would not present him with these units and complexes, just as the field linguist is not presented with words and sentences. The Molyneux person must form provisional hypotheses about which features in his newly acquired visual experience count as eidemes – units of meaning in the visual language.

Hence it follows that a man born blind and afterwards, when grown up, made to see, would not in the first act of vision parcel out the ideas of sight into the same distinct collections that others do, who have experienced which do regularly coexist and are proper to be bundled up together under one name...All these ideas offered at once to his view, he would not distribute into sundry distinct combinations till such time as...he comes to know which are to be separated and which to be collected together.<sup>51</sup>

The Molyneux person would not, when he first sees, be presented with *visible* figures. Since these eidemes are the vocabulary of a conventional language of vision they are not available to the Molyneux person until he has learned those conventions. Though he forms hypotheses about which features in his experience constitute the lexicon of eidemes, learning that language takes time. The field linguist gives ‘gavagai’ the provisional assignment ‘rabbit’ in his home language. The Molyneux person gives some visual presentation the provisional assignment ‘cube’ in his home language of touch, thus tagging an eideme with a familiar word. Each assignment must be adjusted and refined to gain fluency. After years, the field linguist arrives at the provisional assignment ‘dinner’ for ‘gavagai.’ Likewise, the Molyneux person arrives at the provisional assignment ‘tissue box’ for the eideme originally tagged as ‘cube.’ As the Molyneux person becomes fluent in a new language, the lights and colors experienced at first sight evolve into eidemes, into visible figure.

Afterwards, when upon turning his head or eyes up and down, to the right and left, he shall observe the visible objects to change, and shall also attain to know that they are called by the same names and connected with the objects perceived by touch, then indeed he will come to speak of them and their situation.<sup>52</sup>

You learn a second language – like French. Upon first hearing, you hear only the music. Where one word ends and another begins is a mystery. But you know you are hearing a language whose utterances are made of words. After learning some vocabulary and a few grammatical rules, you catch a ‘je’ and a ‘voudrais’ here and there – glimmers of meaning in a fog of sound. After a few years, the person speaking French at the farmer’s market stands out, and you may understand what she says. But you focus on the words: you are still translating, though more proficiently. The Molyneux person learning the language of vision moves from a fog of colors and light to eidemes. A visible figure or a relative position pops out from the fog. Eventually, he can translate from vision to touch. His command of eidemes is an intermediate fluency; he is still learning the language.

Fully fluent speakers of a learned language no longer attend to its words, only to their sense. Full fluency in the language of vision means attending not to eidemes – to visible figure – but to what the eidemes signify, the tangible features of the environment. The Molyneux person fluent in the

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<sup>51</sup> NTV 110;48.

<sup>52</sup> NTV 97;44.

eidemic language of vision will see what the typical person sees: distance, depth, and tangible figure, magnitude and situation.

Farther, when he has by experience learned the connexion there is between the several ideas of sight and touch, he will be able, by the perception he has of the situation of visible things in respect of one another, to make a sudden and true estimate of the situation of outward tangible things corresponding to them. And thus it is he shall perceive by sight the situation of external objects which do not properly fall under that sense.<sup>53</sup>

The Molyneux person, when sighted, may eventually perceive what the typical person perceives, yet a difference remains. The Molyneux person is not typical, nor is the process of acquiring a language of vision. The typical person does not acquire the language of eidemes as the Molyneux person does. The typical person comes into the world sighted, born into a world with visible features and tangible features already coordinated by laws of nature. For the typical person, the eidemic language of vision is a native tongue. For the Molyneux person, however, the language of vision will always be learned.

Linguists distinguish between language acquisition and language learning. Native languages are acquired, second languages are learned – the processes are different. Both are experiential. Without linguistic stimuli, typical humans would not acquire their native languages. But the process by which native languages are acquired is not learned, nor are the languages. But second languages are learned through explicit and tacit techniques (memorization, immersion, and so on), and those techniques are also learned.

Both the typical person and the Molyneux person require experience to see distance, depth, tangible figure, magnitude, and situation perceptually. The typical person enters the world experiencing visible and tangible features coordinated by physical laws. Without this law-governed experience, the typical person would not perceive tangible features by sight. But the coordination that produces eidemes is not itself learned. That coordination is present naturally in human experience. The eidemic language is acquired in experience, not learned by it. The Molyneux person must learn the language of vision though the typical person does not.

#### **4. Conclusion**

According to Berkeley, vision is a universal, invariable language of nature by which typical humans perceive distance, depth, and tangible figure, magnitude, and situation. For typical humans, there are three objects of vision: primary objects (light and colors), secondary objects (distance, depth, and tangible figure, magnitude, and situation), and a third, linguistic category. This third category of objects – which I have called ‘eidemes’ of a visual language – is easily overlooked because, as the vocabulary of the language of vision, it is unnoticed by those for whom that language is a birthright. Typical humans do not learn this language, which is

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<sup>53</sup> NTV 99;44.

constitutive (in part) of human experience, allowing us to learn instead how best to care for ourselves as we move through the world.<sup>54</sup>

Rebecca Copenhaver  
Lewis & Clark College

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