

VEIL OF LIGHT: THE ROLE OF LIGHT IN CAVENDISH'S VISUAL PERCEPTION

BROOKE WILLOW SHARP

Temple University

Margaret Cavendish's views about the nature of bodies and perception leave her with a potentially problematic implication: that light has no role in visual perception. For her, perception occurs through the self-motion of animate matter, not through a mechanical system that appeals to local motions and collisions of contiguous bodies. This means that motion is not transferred from external objects with light playing a mediating role; the matter of our eyes simply moves itself to copy the sensible qualities of external bodies. However, Cavendish cannot ignore the simple empirical fact that we appear to have visual perceptions in the presence of light but not in the presence of darkness. Light must play some role. I argue that light for Cavendish plays an intermediary role but does not transfer motions as the mechanical model suggests. Rather, light behaves like our eyes by moving itself to form copies of external objects. Our eyes then see these copies. For Cavendish, we are directly acquainted with a "veil of light" rather than the objects themselves.

Nature's Dress

The Sun crowns nature's head with beams so fair:
The Stars do hang as jewels in her hair.
Her garments made of pure bright watched sky,
Which round her waist the zodiac doth tie.
The polar circles are bracelets for each wrist;
The planets round her neck do twist.
The gold and silver mines, shoes for her feet,
And for her garters are soft flowers sweet.
Her stockings are of grass that's fresh and green;
The rainbow is like colored ribbons seen.

Contact: Brooke Willow Sharp <brooke.sharp@temple.edu>

The powder for her hair is milk white snow,
 And when she comes, her locks the winds do blow.
 Light, a thin veil, doth hang upon her face,
 Through which her creatures see in every place.
 -Margaret Cavendish, *Poems and Fancies*¹

Light plays an important role in theories of vision since we typically need it to see. In the early modern period, mechanical philosophers such as Thomas Hobbes and René Descartes appeal to light or the medium in their causal explanations of visual perception and, more specifically, of perceptions of color. On the mechanical story, motions from the objects of perception are transferred through the mediation of light to strike the sense organs causing visual perception and the appearance of colors. Margaret Cavendish, however, claims that perception works differently from the mechanical story. For her, motions do not strike the sense organs causing visual perception but rather, the cause of perception is the self-motion of animate matter. The objects of perception merely occasion the perceiver's own self-motion. One potential troubling implication of her view is that light seemingly plays no role in visual perceptions. Cavendish, however, cannot ignore simple empirical facts: we tend to need light for visual perceptions. She must explain why this is the case if light does not play a causal role in visual perception.²

Cavendish does not completely ignore this empirical fact. She writes that light "presents" or "reveals" objects to our optic nerves. She claims in OEP, "but light only doth present exterior objects to our view, so as we may the better perceive them" (2001: 77).³ The goal of this paper is to determine the role of light in visual perception for Cavendish and explain what the locution of "presents" means given her views that (1) animate matter has self-motion and that (2) bodies are "sensuously colored", that is, colored in the way they appear to be.⁴

The plan is as follows. In Section 1, I explain why it might seem that light has no role in visual perception by explaining the main features of Cavendish's theory of perception. I show that for her, light cannot have the same roles that it does for mechanical philosophers by discussing two of her contemporaries, Thomas Hobbes and René Descartes, whose works she argued against. In Sec-

1. This poem has three different editions: 1653, 1664, and 1668. I use here the online critical edition edited by Liza Blake which considers the changes made over the three publications.

2. There are two senses of the term medium: one in which something allows for the transmission of light and the other in which something is an intermediary for vision. For Cavendish, this term refers to the latter but as I explain in Section 3 of this paper, she struggles with this distinction.

3. See References for the abbreviations for primary works.

4. Allen (2019) and Chamberlain (2019) argue bodies for Cavendish are colored as they appear in our visual perception. I take the locution "sensuously colored" from Chamberlain's paper (2019: 295).

tion 2, I explain the ontological status of light, and the related phenomenon of darkness, and the medium as Cavendish describes. I draw out her claims that these all must be bodies themselves with their own motions and sensible properties. I argue that the medium is a heterogenous body consisting of light, air, and sometimes water. In Section 3 I propose that the role light plays in visual perception for Cavendish is that of a “chameleon” or reliable copier. This means that light makes a copy of an external body like a mirror, and the object of visual perception is this copy in the body of light rather than the external body itself. Instead of being directly acquainted with external bodies, we are directly acquainted with light, and these copies made in the body of light. In Section 4, I discuss some possible objections to the idea that we perceive copies of objects in the veil of light.⁵

1. Perception as Patterning

Cavendish’s account of perception stands apart from many of her contemporaries. Her theory is distinctive for two main reasons. First, Cavendish holds that matter moves itself. Matter does not require collisions from contiguous bodies for motion. She writes, for example, that when a hand tosses a ball, the hand is the occasion of the movement, and the ball moves itself (OEP 2001: 140). Cavendish’s account of occasional causation provides her framework for perception: the objects of perception merely occasion the sense organs to move themselves and produce a sensory perception. The second is that perception is ubiquitous throughout matter. The aforementioned example of a hand moving a ball is an instance of perception for Cavendish: the ball perceives the hand and then the ball moves itself accordingly.⁶

For this to work, Cavendish’s material system is built upon three degrees of matter existing in a blended commixture which cannot be separated. For my purposes here, the three degrees have two main differences: differences in motion or movement, and differences in function. The three degrees of matter that Cavendish recognizes are rational, sensitive, and inanimate degrees. Lascano (2021: 414) describes the three degrees of matter as differences of freedom in terms of movement: rational matter has the most freedom while inani-

5. A common early modern concern was the with the “veil of ideas” in which it appears that we are not acquainted with objects but rather only with our own ideas of objects (Simmons 2015: 91). The title to my paper is both a play on this concept and from Cavendish’s own description of light in her poem “Nature’s Dress”.

6. Eileen O’Neill’s *Introduction* argues that Cavendish’s occasional causation is like the Stoics in that the nature of the ball is the principle and perfect cause of the ball’s motion (OEP 2001: xxxii). Lascano (2021: 418–19), in contrast, argues that the perceiver (i.e., ball) is not the entire cause but that the external object (i.e., hand) plays a role as well.

mate matter has the least. In other words, rational matter has the most motion, sensitive matter has less motion, and inanimate matter has no motion. In terms of function, broadly speaking, Cavendish usually aligns the rational degree with mental events like thoughts, ideas, conceptions, remembering, etc. whereas the sensitive degree is largely responsible for sensory perception through a process called “patterning” (OEP 2001: 182; PL 1664: 26). Since inanimate matter has no inherent motion, it is moved by sensitive matter (OEP 2001: 157; GNP 1668: 5). I discuss the freedom of rational matter in greater detail in the next section.

The entire process of perception, however, requires all three degrees of matter. The process starts when the sensitive matter of sense organs is occasioned by an external object. The sensitive matter makes a “pattern” or a copy of the external object and then the rational matter imitates that pattern to create ideas in the mind.⁷ The inanimate degree of matter is moved by the sensitive matter to create these patterns (OEP 2001: 24). Cavendish writes, “My sense and reason does observe, that the animal, at least, human perception, performed by the sensitive and rational motions in the organs appropriated for it, is made by patterning or framing of figures, according to the pattern of exterior objects” (OEP 2001: 169).⁸ For example, when I touch some sandpaper, the sensitive matter of my skin patterns out the texture, the rational matter then takes that pattern, resulting in the feelings of the texture becoming an idea in my mind.⁹ Rational matter’s role also includes compiling different sensory experiences together into one object.¹⁰ For example, when I have a sensory perception of a single object like sandpaper, my eye patterns the color, my nose the scent, and my hand the texture. Rational matter binds these into one coherent picture in my mind (PPO 1663: 82).¹¹

7. Adams (2016) and Lascano (2021) discuss whether the external object causes patterning; Michaelian (2009: 39) defines patterning as an imitation or copy of external objects.

8. Cavendish mentions two processes: figuring and patterning. Figuring is an umbrella term for the actions of self-moving matter and patterning is just a species of figuring (OEP 2001: 170). Patterning is exclusive to sensory perception since sensitive matter patterns external objects. Figuring includes the motion of thoughts as when rational matter figures itself into a thought. Cavendish considers dreams and generation, which are both actions of sensitive matter, figuring and not patterning.

9. Lascano (2021: 418) notes that for Cavendish there are two causes of perception: the external object and the self-motion of the perceiver.

10. Thus far no consensus exists in the secondary literature on how to interpret rational perception. Boyle (2015: 236–37) argues that Cavendish discusses rational perception in three ways: 1) as rational matter taking information from sensitive matter 2) as a way for sensitive patterns to be consciously registered by the subject and 3) as a general sense in which rational perception makes a cohesive picture of all the sensory perceptions of one object. She does not, however, discuss the apparent ability of rational matter to pattern objects like sensitive matter. Michaelian (2009: 42) notes that rational matter’s role in sensory perception is unclear but most likely plays an integrative role. Chamberlain (2022) discusses the integrative role of rational matter in mental unification.

11. Cavendish wrote two version of the PPO: one in 1655 and another which she expanded and revised in 1663. I reference the latter.

Although there is generally a division of labor between the degrees of matter, some overlap exists between the functions of rational and sensitive matter. Sensitive matter can move without the presence of external objects such as when we dream. Rational matter can sometimes perceive external objects in what Cavendish calls a “double perception” (OEP 2001: 150).¹² This overlap allows her to account for many instances of perception in general, not just sensory perception. My discussion, however, concerns the basic act of sensory perception and, more specifically, visual perception, such as my eye patterning color.

The part of Cavendish’s process of sensory perception at issue here is how patterning is occasioned. This part of her process indicates a potential problem. When I see a red apple, according to Cavendish, my optic nerves copy the apple making a pattern or print of it. Nothing else is seemingly needed for visual perception on Cavendish’s account other than an external body to occasion the sensitive matter of my eyes. But a simple fact remains that Cavendish must account for: I tend to see when light is present and not when it is absent. Because of this simple fact, theories such as the mechanical theories of visual perception tend to give light a causal role. In fact, for two of Cavendish’s mechanical contemporaries, Hobbes and Descartes, light has two important roles. The first is to cause visual perception. For example, Hobbes claims that sensory perception requires pressure from the objects of perception on the sense organs. Hobbes writes, “The cause of sense is the external body or object which presseth the organ proper to each sense, either immediately, as in taste or touch, or mediately, as in seeing, hearing and smelling” (1651: 1–2). In the case of seeing, he offers a more in-depth discussion in the EW I that involves resistance within the perceiver. He writes,

the sun doth by its simple circular motion thrust away the ambient ethereal substance sometimes one way sometimes another, so that those parts which are next the sun, being moved by it, do propagate that motion to the next remote parts, and these to the next, and so on continually [. . .] the foremost part of the eye will at last be pressed; and by the pressure of that part, the motion will be propagated to the innermost part of the organ of sight, namely, to the heart; and from the reaction of the Heart, there will proceed an endeavour back by the same way, ending in the endeavour outwards of the coat of the eye called the retina. But this endeavour outwards [. . .] is the thing which is called light, or the phantasm of a lucid body. (1656: 448)

12. Rational matter can also perceive beyond the exteriors of objects into the interiors (OEP 2001: 41). What this means, however, is beyond the scope of this discussion.

Here motions from a light source transfer through the medium to the eye and impact the eye. The resistance of the body's own motions against this motion from a luminous body is light for Hobbes.¹³ Descartes similarly takes light to be motions transferred through the medium and which strike the eye causing sight. He writes, "I would have you consider the light in bodies we call 'luminous' to be nothing other than a certain movement, or very rapid and lively action, which passes to our eyes through the medium of the air and other transparent bodies" (*Optics I*, AT VI 84/CSM I 153).

For Cavendish, however, light cannot play this role in visual perception. Occasional causation and self-motion, not impact or a transfer of motions, explain sensory perception including visual perception. She writes in the PL, "for Perception is but the effect of the Sensitive and rational Motions, and not the Motions of the Perception; neither doth the pressure of parts upon parts make Perception" (1664: 18). Her criticisms are well documented in the works of Adams (2016) and Boyle (2019) so I will not elaborate on her arguments here. Broadly, Cavendish views what Boyle (2019: 238) terms the "pressure model of perception" (PMP) which Hobbes furthers as unable to explain the variety of sense perception.¹⁴ Adams (2016: 198) affirms this point and highlights the case of sight at a distance and details Cavendish's claim that Hobbes's pressure model should not cause perceptions at a distance when, clearly, we are able to see things far from us. This means that for Cavendish, pressure in the form of light does not need to strike the eye to cause visual perception.

The second role that light plays for the mechanical philosophers is in the explanation of colors, correlating kinds of light and the colors perceived. Hobbes and, to a larger extent Descartes, made light responsible for our sensory perception of color. Descartes argues that light's interactions with our optic nerves produces the colors we see.¹⁵ He writes,

Among the latter, again, some bodies cause the [light] rays to be reflected without bringing about any other change in their action (*viz.* bodies we call 'white'), and others bring about an additional change similar to that which the movement of a ball undergoes when we graze it (*viz.* bodies which are red, or yellow, or blue, or some other such color). (*Optics I*, AT VI 92/CSM I 156)

13. In EW VII, Hobbes indicates that when a perceiver rubs their eye, light is produced (1662: 27).

14. Adams (2016: 210) affirms this point claiming that Cavendish's diversity of motions (i.e., composition, division, dilation, and contraction) provide a greater explanatory potency than Hobbes's simplistic model.

15. It was brought to my attention by an anonymous reviewer at *Ergo* that Cavendish mentions nature's geometry and mathematizing perception (OEP 2001: 77, 87) which could be an allusion to theories of refraction that make visual perception a function of geometric calculation.

Colors—or, better, our experiences of colors—are caused when light rays strike a body, are reflected at differing angles, and enter the optic nerve. In the case of black, light is not reflected to our eyes, and since this does not occur, we do not have a visual perception (*Optics I*, AT VI 92 CSM I 156). Hobbes takes a similar view in the EW I writing that white is the presence of light and black is the absence of light (1656: 464). He admits, however, that his account gives no detailed information about the formation of other colors. They both agree that black is privation: we see the color black when either no light is reflected off a body or when there is no light present.

Light as responsible for our visual perception of colors, however, is not a role that light can play in Cavendish's theory, either. For her, bodies are typically colored as they appear to be.¹⁶ She writes, "colour is as much a body as place and magnitude, which are but one thing with body" (OEP 2001: 81). For her, our visual perception of color uses external bodies as literal patterns. The copy or representation of color which occurs in our visual experience resembles the actual object in a kind of naïve realism. The world exists for her, as Chamberlain (2019: 299) puts it, in *Technicolor*.

One of Cavendish's main arguments for why light cannot be responsible for colors concerns how the mechanical philosophers explain black and darkness. Hobbes's and Descartes's view that light is causally necessary for visual perception implies that there cannot be any visual perception in the dark. For Cavendish, when it is dark, we do have a visual perception: we visually perceive the body of darkness (OEP 2001: 77).¹⁷ Her claim has the interesting conclusion that not only is light not the cause of perception, but it is also not necessary for visual perceptions in general. But here I want to focus on her argument that the perception of black is, in fact, a positive visual perception. Cavendish affirms this point in the OEP by arguing against the claim that we have no visual perceptions in the absence of light. She writes,

They will say, We perceive darkness only the absence of light: I answer, if all perception of the optic sense did come from light, then the perception of night or darkness would be no perception at all; which is a paradox, and contrary to the common experience, nay, to sense and reason; for black requires as much perception as white, and so doth darkness and night. (OEP 2001: 77)

For her, the color black or darkness is an object of visual perception. This is more in line with our common locution as she indicates (i.e., "I see black"). Relatedly,

16. This point is affirmed both in Allen (2019: 61) and Chamberlain (2019: 299).

17. See Allen for a helpful discussion of this argument (2019: 70).

a perception of black, then, does not necessarily entail an absence of light.¹⁸ Cavendish writes, “But if a fair white lady should bruise her arm, so as it did appear black, can anyone believe that light would be more absent from that bruised part than from any other part of her arm that is white?” (OEP 2001: 75). Cavendish holds that there is just as much light on the bruised part of her arm as opposed to the unbruised part.¹⁹

While light cannot be either the cause of perception or responsible for the color of bodies, Cavendish acknowledges that light has some role in visual perception. She writes, “but light only doth present exterior objects to our view, so as we may the better perceive them” (OEP 2001: 77); “the property of Light is to divulge Objects” (GNP 1668: 213); and “the sensitive Motions cannot find the outward objects to pattern out without exterior light” (PL 1664: 67). Light’s role is to divulge or present objects to our visual perception and to aid our sensitive matter in finding the objects, but what this means given Cavendish’s commitments to occasional causation is not straightforward. To explain what she means, we must first look at what light is for Cavendish, and the other bodies that could affect visual perception such as the medium.

2. The Nature of Light, Darkness, and the Medium

Cavendish acknowledges a few different bodies that might affect visual perception and they each have their own features. Imagine this scenario: you are sitting at your computer at night and your desk is illuminated by a lamp. There are several elements in this scenario: you, your computer, the lamp, its light, the darkness in the background, as well as whatever exists between yourself and your computer. You as the perceiver are a material body, as is your lamp and computer.²⁰ But, perhaps surprisingly, the light, the darkness, and the stuff between you and your computer are also material bodies for Cavendish.²¹

The claim that all these are bodies is consistent with her view that the world is a material plenum: there are no empty spaces, only material bodies.²² Cavendish

18. This distinction between Cavendish’s arguments that 1) light is not necessary for perception and 2) the perception of black should entail an absence of light for Descartes was indicated to me by an anonymous reviewer at *Ergo*. This distinction also appears in Allen (2019: 71).

19. We might worry that Cavendish is not entirely clear about the ways in which objects reflect and absorb light. But she was certainly not alone in this in the 17th century.

20. Cavendish is clear that all matter perceives and so all the entities in this scenario do have perceptions, but I focus on the visual perceptions of humans and animals here.

21. Kenelm Digby (1644: 41) argues in TT that light is a body as well. He claims that light is the purest version of fire.

22. See Cuning (2016: 141–80) for a reconstruction of Cavendish’s arguments that the world is a material plenum.

claims that light is itself a material body, not simply bare motions or a property of another body.²³ She writes, “I desire you to consider, Madam, that light is a very subtil, rare, piercing and active body” (PL 1664: 203). Similarly, she writes, “But were not Light a Body, it would not be subject to Sight, for although all Bodies are not subject to Sight, yet Sight cannot possibly see what is not a Body” (PPO 1663: 183).

Indeed, Cavendish argues that if we can perceive something such as light, then it must be a body.²⁴ This is true of darkness as well. She writes, “darkness has a being as well as light has, and that it is something, and not nothing, by reason we do perceive it” (OEP 2001: 77). Not only is darkness a material body, but this argument implies that we have visual perceptions in the absence of light, contra Descartes and Hobbes. She writes, “Dark and Black Clouds will obscure the Sun’s light, not only by Grossness of the Body, but the Dark or Blackness of the Body, for a Thin, Dark substance will obstruct the Bright piercing Light; but the Motions of Darkness seem to be Intermixt, or Intangled, or Troubled motions” (PPO 1663: 185). The motions of the body of darkness give it the ability to obscure. The thinness or perhaps intangible nature of darkness does not affect its ability to hinder our visual perception of light or other bodies: the nature of its body is to obscure or conceal things from our vision. Cavendish describes the motions of light as the opposite: “but, as the Figurative Motions of Light, in my opinion, are rare, straight, equal, even, smooth Figurative Motions” (GNP 1668: 213). The nature of these bodies affects how visual perception occurs.

This brings us to the last element in the above scenario: the stuff between you and your computer, which is the medium. For Cavendish, the medium is a heterogenous, mixed body formed of several different bodies, the mixture of which varies depending upon the situation. It may consist of air, light, darkness, and to some extent water or water vapor.²⁵ This makes the nature of the medium somewhat complex for Cavendish since it consists of multiple bodies that form a heterogenous body.²⁶ It is important to note that Cavendish describes it as heterogenous rather than homogenous since for her the bodies that make up the medium retain their own natures. So, for example, the medium is more like oil mixed with water than salt mixed with water. She writes,

Natural Air seems to be made by such Kind of Motions, as Spiders make Cob-webs, for the Animate matter’s motions Spin from a Rare degree of

23. Adams (2022: 5) affirms this claim.

24. West (2022: 466) explores Cavendish’s commitments that relate existence to perceivability, arguing that nature is perceivable so if it cannot be perceived then it does not exist.

25. Cavendish acknowledges water vapor in the air (see PPO 1663: 221 and GNP 1668: 211). In GNP, Cavendish claims that when smoke and vapor join the air, we think of it as corruptible air (1668: 111).

26. This claim is different than someone like Descartes who also holds a plenist view but on his view, the medium is “absolutely subtle” matter (Bennett 2003: 14).

Inanimate matter, small Lines, interweaving those Lines into a Clear substance [. . .] also this sort of Air is the Chief substance, that the Sun-beams spread and dilate upon, or through, I say upon, for the Sun-beams do not Intermix, for what is Intermixt, doth nor cannot suddenly Separate, besides it would make a Confusion between the Light and Air, insomuch as the Light and Air would be so Perturbed, as all the Region or Hemisphere would be of millions of several Colours, and not any Pure, Clear light, for that which makes the natural Light so Pure and Clear, is, that it is not of a Mixt substance, nor hath Perturbed motions in it self. (PPO 1663: 183–84)

In this quotation, Cavendish claims that the body of light is distinct from the body of air which means that these bodies can easily separate from each other. The purity of the bodies of light and air explains their clearness or transparent nature: more homogenous mixtures for her lead to disrupted motions which lead to colors and darkness. This is most likely how Cavendish explains light being blocked through clouds or shade: the body of light retracts, and the body of darkness takes its place.

Importantly, in the above quotation, when the medium is light and air, it is a material, transparent body just like glass or a clear stone. While we can see and touch a transparent stone, it is much more difficult to notice the medium, with perhaps the exception of darkness. Cavendish writes that air is subjected mostly to our respiration rather than our other senses, making part of the medium difficult to detect (GNP 1668:188). This seemingly gives us the ability to see through it while mostly being unaware of its presence. When I hold a stone and look through it, that is something I consciously do.

But there is a difficulty with Cavendish's commitments for using the locution of "looking through". Transparency as we understand it generally means that a body allows light to pass through. Light, however, is itself a transparent, material body, not simply motions in the medium, which means that it cannot pass through other bodies any more than water or earth can pass through other bodies. I explain in more detail how light's inability to pass through bodies affects visual perception in Section 3. But a second, distinct problem for Cavendish is that, for her, transparent bodies should not exist in the first place.

2.1. The Problem of Transparent Bodies

As previously mentioned, colors inhere within bodies for Cavendish, so they are as colored as they appear in our visual perception. When I look at

a red apple, the red I see is not just in my mind, but is within the apple as well.²⁷ Allen (2019: 62) and Chamberlain (2019: 302) both consider colors to be a mind independent quality of bodies for Cavendish. Indeed, she argues that this must be the case because we cannot even conceive of a body that isn't colored.²⁸ Allen (2019), Chamberlain (2019), and West (2022) all note that Cavendish's argument for the inconceivability of colorless bodies has one rather important inconsistency: Cavendish herself discusses the existence of transparent or clear bodies.²⁹ She even gives a cause of transparency in the PL: "As for Transparency, it is caused through a purity of substance, and an evenness of parts: the like is glossiness, onely glossiness requires not so much regularity, as transparency" (1664: 464). Transparency or clearness here seems to entail colorlessness. As I noted earlier, she considers light and air to be transparent based on their respective purity. She does not, however, attempt to reconcile the existence of clear and transparent bodies with that of her commitment to all bodies being colored. This seems to suggest that Cavendish holds competing claims: (1) all bodies are colored, and (2) colorless or transparent bodies exist.

Chamberlain (2019) hesitantly offers a solution to this problem. He posits that transparency does not entail colorlessness (Chamberlain 2019: 309). The transparent body rather takes on the colors of other bodies like a chameleon in what I will term the *chameleon effect* (Chamberlain 2019: 308). On this model, when I look at a transparent body, I see the bodies on the other side as patterned by the transparent body.³⁰ I do not, in fact, see through a transparent body at all. I see the copies of other bodies in the transparent body. For example, I look out my window and see my lawn. What I am seeing is not the green color of the lawn itself, but a copy of the green lawn in the glass of my window. This copy in the glass changes: if a black dog ran across my lawn, I would see the copy of the black dog in the glass of the window. The window reveals to my eyes whatever

27. There is more work to be done on precisely what it means for colors to inhere within bodies for Cavendish. As West (2022: 472–73) notes, colors are figures for Cavendish. Whether this is a reductive or non-reductive account remains unclear.

28. See Allen (2019), Chamberlain (2019), and West (2022) for reconstructions of Cavendish's conceivability argument.

29. For Cavendish, inconceivability entails impossibility. For example, she will claim that we cannot conceive of motion without body (OEP 2001: 194; PL 1664: 97). See West (2022: 462–63) for a helpful discussion of Cavendish's commitment to the claim that inconceivability entails impossibility.

30. Chamberlain (2019: 308–9) bases his interpretation off Cavendish's discussions of reflections OEP page 147, PL 80–81, 88–89. He also mentions that Aristotle's similar view appears in Thomas Stanley's *History of Philosophy*, which Cavendish was likely familiar with (Chamberlain 2019: 308 f-n 30).

is on the other side. Since these copies are very accurate, this makes transparent bodies reliable patterners for Cavendish.³¹

If the chameleon effect holds, transparent bodies like light and glass have a color but not necessarily an inherent color or unchanging color. Whether the chameleon effect is Cavendish's answer to the conceivability argument as Chamberlain (2019) proposes is an issue for those discussing her color theory. For my purposes, it provides a clue as to what role light plays in visual perception for Cavendish. The important questions I will take up in the next section are: 1) does light have this chameleon effect and 2) does this explain why we see external bodies in the presence of light whereas we only see the body of darkness when light is absent? In the next section I give reasons to believe that this is indeed the case for Cavendish.

3. The Veil of Light

3.1. *The Chameleon Effect*

I argue that light is a chameleon or reliable patterner, and that light's role in visual perception is to present patterns of external objects to our optic nerves or, in other words, to help us find those objects. Light patterns objects and we see these patterns. My argument consists of three stages. The first is to show how Cavendish describes this process in two other transparent bodies: glass and air. This description applies to light since she is explaining how transparency works *in general* in her system. Secondly, I indicate where in Cavendish's works she appeals to patterns of patterns to explain perceptual phenomena. Lastly, I discuss some nuances with her theory of color such that this role of light as a reliable patterner allows her to explain color constancy as well as its failures, namely, color inconstancy.

Cavendish describes how transparent bodies operate when light and air themselves are material bodies. She writes,

Since I write in my last [letter] that Light did disturb the figures of External objects presented in Transparent bodies; you were pleased to ask, Whether light doth penetrate Transparent bodies? I answer, for, anything

31. West (2022: 472) argues that bodies which appear transparent are not, in fact, without color but rather we cannot see the color because the color is too subtle or too small for human optic perception. West (2022: 472) admits that Chamberlain's proposal would make Cavendish's view more consistent but ultimately argues this is not the view that Cavendish holds. Regardless, the chameleon effect does not negate her view that bodies are sensuously colored, and I leave the details of her conceivability argument for those working Cavendish's theory of color.

I know, it may; for when I consider the subtil, piercing and penetrating nature of light, I believe it doth; but again when I consider that light is presented to our sight by transparent bodies onely, and not by duskish and dark bodies[. . .] I am half perswaded that transparent bodies, as Glass, rather present the Light by patterning it out, then by giving it passage. (PL 1664: 88)

One point I highlighted in the previous section is that the medium is a heterogeneous body of light, air, and sometimes water. One question this might elicit is how these bodies interact with each other. Does the body of light penetrate the body of air or vice versa? This seems to be just the question Cavendish addresses in this quotation: do transparent bodies give passage to other bodies, or do they rather pattern out other bodies? Today, we generally think that light comes from a source like the sun and penetrates certain bodies making them transparent.

Here Cavendish seems to admit of a possible inconsistency in her work: if a body is as subtle and piercing as light, then it would make sense for light to penetrate or pass through other bodies. This, after all, is what “piercing” implies. However, light would then be able to pierce or penetrate all bodies. This is not the case with something opaque like a dark or “duskish” body.³² What Cavendish appears to give up is the idea that bodies pass through other bodies in this way rather than claim that light can pass through some bodies but not others. The important part to note at the end of this quotation is that the transparent bodies pattern out other bodies rather than let the bodies pass through.

In the same letter, Cavendish similarly describes how light interacts with glass. She writes,

Also I am of a mind, that the air in a room may pattern out the Light from the Glass, for the Light in a room doth not appear so clear as in the Glass; also if the Glass be any way defective, it doth not present the Light so perfectly, whereas, if it were the penetration of light through the glass, the light would pass through all sorts of glass alike, which it doth not, but is more clearly seen through some, and more obscurely through others, according to the goodness or purity of the glass. (PL 1664: 88)

In this passage, not even glass allows light to pass through. For Cavendish, bodies do not pass through other bodies. This quotation shows that she is committed to the idea that transparent bodies do, in fact, exhibit the chameleon effect

32. An immediate objection might be that the nature of the body is the issue since a hard body like a book might be more difficult for light to penetrate. A pane of glass, however, is hard and dense but light seems to penetrate it while a dark cloud is not quite as hard and dense, but light has a difficult time penetrating that.

by patterning out the bodies around them. The argument is this. Consider the experience of seeing light through a transparent body, as when we see a light shining through a window. Either the transparent body allows light to pass through, or it patterns the light. But bodies cannot pass through bodies. Therefore, the transparent body patterns the light. If transparent bodies pattern the light we see in them, they thereby exhibit the chameleon effect.

What holds for one transparent body holds for another. When there is light in front of the glass, we see the light present the glass to our visual perception. She admits as much at the end of the same letter. She writes, “But you may say, that the light divulges the imperfection or goodness of the glass; I answer, so it doth of any other objects perceived by our sight; for light is the presenter of objects to the sense and perception of sight” (PL 1664: 88–89). Light is the patterner here of glass and any other objects that we might see.

Light is especially suitable for making copies of external bodies because it can move freely, or, in other words, it can pattern many objects. Cavendish describes light in two ways to satisfy this criterion. First, she describes light as a rare body, not something dense and potentially immovable like granite. She writes, “also Light being a very Rare body, can Dilatate and Contract with facility, and with an Extraordinary agility” (PPO 1663: 184).

Second, Cavendish describes light as subtle in PL. She writes, “I desire you to consider, Madam, that light is a very subtil, rare, piercing and active body” (PL 1664: 203). What this means is that light can figure itself freely.³³ Cavendish employs the same term in her descriptions of rational matter, the abilities of which she indicates more clearly. She writes “for sense and reason doth plainly perceive, that some parts are more dull, and some more lively, subtle and active: the rational parts are more agile, active, pure and subtle than the sensitive” (OEP 2001: 25). Rational matter is defined by its activity and ability to operate voluntarily, unlike sensitive matter which must be occasioned by an external object. For example, in sensory perception, I am bound by what I encounter, while in imagination I have the freedom to think of all sorts of things which I have never perceived. In Cavendish’s terms, thoughts are figures in rational matter.³⁴ My rational matter has the freedom to figure itself in ways that my sensitive matter

33. She goes on in GNP to contrast air with water in its ability to change its properties. She writes, “Also, Natural Air is not apt to change and rechange, as Water: for, though it can (as all the Elements) divide and join its Parts, without altering the Property of its Nature: yet, it cannot readily alter, and alter again, its Natural Properties, as Water can” (1668: 103). For Cavendish, water can do many things from taking different shapes to changing into snow, ice, or vapor while retaining its own nature. Air, however, cannot change its properties as much and remains for the most part itself.

34. See Chamberlain (2022) for a discussion of how rational and sensitive matter can take on different figures.

is unable to.³⁵ “Subtlety” is a quality or ability of a thing to be figured seemingly without constraint. This ability is shared by rational matter and light: where rational matter is the most subtle of the three degrees of matter, light is the most subtle body of nature. Light can figure itself into all kinds of properties of visual perception like color, shape, etc. whereas something like wood does not have a similar subtlety. Subtlety gives it the ability to imitate other external bodies such that it provides a reliable copy.

On my reading of Cavendish, then, we are directly acquainted with light rather than bodies themselves. In other words, we see through a veil of light. This might explain why Cavendish mentions that sight must occur at a distance. She writes, “As for example, in the animal perception, taste and touch are only perceptions of adjoining objects, whereas sight and hearing do perceive at a distance; for if an object be immediately joined to the optic sense, it quite blinds it” (OEP 2001: 184). This is just how visual perception works: in the case of tactile perception, our hand must contact a body while in visual perception, the eye must be some distance from a body so there is enough room for the body of light.

3.2. *Examples of Patterns of Patterns*

The idea of patterns of patterns is not an invention of my own but already exists within Cavendish’s works. She appeals to patterns of patterns as an explanatory mechanism for other forms of sensory perception. Cavendish claims that we perceive patterns made in other objects in two specific instances.³⁶ The first is in the case of echoes. She writes, “The same with Ecchoes; for the air patterns out the copy of the sound, and then the sensitive corporeal motions in the ear pattern again this copy from the air, and so do make the perception and sense of hearing” (PL 1664: 81). Here she is explaining how we can come to hear an echo if an echo cannot be something like motions propagated through the medium. Instead, the body of air patterns the sound made from the source and our ears pattern this pattern.³⁷

35. She writes “for the Rational Animate matter makes millions of Figures and Motions in the like Time, Place, or Space of Sensitive Creation Figures or Motion, being Purer, Agiler and Freer” (PPO 1663: 90).

36. There might be a third instance in which we see the patterns of patterns. Cavendish briefly mentions rainbows in the PL. She claims that these are reflections in watery bubbles (PL 1664: 263). Her argument here is more that rainbows have a natural cause rather than being a pattern in water.

37. Cavendish writes earlier in the same work: “The same doth the Ear, by patterning out Ec-choes, which is but a pattern of a pattern” (PL 1664: 74). Here she uses the locution “pattern of a pattern.”

The second instance in which we perceive the patterns of patterns is in the case of reflections.³⁸ She writes,

But to cut off tedious and unnecessary disputes, I return to the expressing of my own opinion, and believe, that the glass in its own substance doth figure out the copy of the face, or the like, and from that copy the sensitive motions in the eyes take another copy, and so the rational from the sensitive; and in this manner is made both rational and sensitive perception, sight and knowledg. (PL 1664: 81)

This quotation suggests that patterns of patterns occur in the entire process of perception. In the case of seeing a reflection in a glossy substance such as a glass, we see, in a manner of speaking, the glass's perception of an object. This makes the reflection the glass's own perception which we then perceive. The process continues: the sensitive matter of the perceiver makes a pattern, and the rational matter of the same perceiver makes a copy of that pattern. Here, patterns of patterns explain two phenomena: reflections and how sensory perceptions are transmitted from the sense organs to the mind or rational matter of the perceiver.³⁹ My suggestion is that patterns of patterns occur throughout the visual medium as well.

3.3. *The (In)constancy of Color*

The view that light is a reliable patterner has payoffs for Cavendish's color theory and her explanation for the diverse appearance of colors. Allen (2019) and Chamberlain (2019) focus on Cavendish's arguments that constancy of colors suggests that bodies are sensuously colored. An orange, for example, can appear to have a constant color through various changes in illumination. At the same time, changes in illumination *can* make a difference to the colors the objects appear to have. Philosophers who argue that bodies are not sensuously colored often take the inconstancy of color to mean that bodies cannot really have the

38. Cavendish also writes that we can see reflections in the eyes of other creatures like humans and some animals (OEP 2001: 174).

39. Cavendish goes on in the OEP to affirm this point using the term "copy" instead of "pattern". She writes, "which if so, then a looking glass, that patterns out the face of a man; and a man's eye, that patterns again the copy from the glass" (OEP 2001: 141). This is again a description of a reflection in glass. She gets more specific when she writes, "for the reflexion of the sun in water or glass, is but a copy of the original, made by the figurative perceptive motions in the glass or water, which may pattern out an object as well as we do; which copy is patterned out again by our optic perception" (OEP 2001: 147). The important point to note in this quotation is that these objects (water and glass) may pattern out bodies as well as our own optic nerves.

colors they appear to have.⁴⁰ We might worry that Cavendish has simply overlooked this phenomenon.

Neither Allen (2019) nor Chamberlain (2019) discuss how Cavendish might account for the apparent inconstancy of colors. It seems clear to us that in different lighting situations, objects do appear to have different shades of the same color. For example, in the lighting departments of home improvement stores there is often a display showing how the same picture appears under florescent bulbs, incandescent bulbs, LED lights, and even sunlight. Cavendish can easily explain this, however, because we see not just the patterns in light, but we see the body of light itself. This body has its own motions and does not just take on the motions of other bodies when it creates a pattern. Cavendish claims that our visual perception patterns out light as well as the pattern of the object.⁴¹ This is most explicit in her descriptions of the different kinds of light. Cavendish claims that light from the sun is not the only kind of light. She lists several kinds. She writes,

But there be as many several Lights and Airs as of other Creatures, as some I will express; for Example, as Sun-light, which I name Natural light, then fixed Stars light, then ordinary Fire-light, Meteor-light, Glow-worm light, Rotten wood-light, Cats eyes-light, Fish scales-light, and Fish bones-light, Diamond light; also there be many Reflected lights, as from the Planets, and several Lights that are not known to Men. (PPO 1663: 183)

When we visually perceive these bodies, we also perceive light. Since these examples do not use the sun as their source, these lights are made by their own motions (PL 1664: 64). For example, when we see a glowworm in the dark, we pattern out the light of the worm. This holds for other types of light as well: they have their own motions not just the motions which make patterns of objects. She writes, “These Shining Bodies, as Water, Metall, or the like, are not perceived in the Dark, but when Light is cast thereon, we do not onely perceive the Light, but their own natural Shining Quality by that Light” (PPO 1663: 121–22). Here she is explicit that we see the qualities of the objects of perception as well as the body of light itself. For example, if I see a reflection of an apple in a mirror and the same apple in a reflection on a body of water, my eyes pattern the mirror, the water, and the two different reflections of the apple. The reflections will make

40. Chamberlain (2019: 322) reconstructs Walter Charleton’s argument against inherent color. Allen (2019: 62) mentions that mechanical philosophers like Boyle appeal to color inconstancy but can allow for some constancy.

41. Cavendish also has the resources to explain why we might be blinded by light: in the presence of too much light, we can only pattern out the body of light and not its pattern of other bodies.

the apple appear slightly different since different mediums (i.e., water or mirror) are doing the reflecting. The same phenomenon occurs when viewing an apple in different types of light, for example, sunlight as opposed to candlelight. Under different lighting conditions, then, I pattern out the different bodies of light such as the candlelight or sunlight, as well as the pattern of the apple.

This recognition in her account of our ability to pattern light as well as the patterns of objects in light allows her to account for the effects of illumination. Sometimes light itself appears to make colors, a phenomenon which Cavendish acknowledges. She writes, “light is not essential to colours [. . .] but those colours that are made by light are most inconstant, momentary, and alterable, by reason light and its effects are very changeable” (OEP 2001: 80). This provides an explanation for the richness of our visual perception by acknowledging the light we see as well as the patterns of objects in the body of light.

4. Possible Difficulties

4.1. *Light vs. Air*

Of course, my proposal is not without its difficulties. The first potential problem is interpretive. Cavendish is often inconsistent and noncommittal about the nature of the medium. This might be attributed to the material composition of the medium at a given time. In some portions of the medium, light will be the dominant body, in others water, and in still others air or even darkness. And she does not consistently ascribe the role of reliable patterner to light. Sometimes she will claim that air patterns external objects and the patterns in air are the patterns we see.⁴² She writes, “But yet it seems also probable to mee, that the parts of the Air may onely pattern out the figure of light, and that the light we see in the Air may be onely patterns taken from the real figure of the light of the Sun” (PL 1664: 202). In this case, the mechanism seems correct: part of the medium is patterning another body and it is the pattern that we see not the body itself. This is also consistent with her claims about transparent bodies as patterning other bodies such as when glass patterns light. Cuning (in press) argues that percep-

42. Cuning (in press) argues that air plays this role in all sense perception. He writes, “In sense perception and other cases of occasional causation, information passes through the air from one body to the next, but not in the form of (unintelligent) light that stamps an impression on passive and inert sense organs.” I take him to mean that the medium consists of air and that air is then necessary for all perception and occasional causation. This gives a larger role to the medium than Cavendish endorses and seems to place her more in the realm of Hobbes: interaction is through contiguous bodies. Visual perception, however, must occur at a distance for Cavendish.

tion at a distance such as in visual perception occurs like Newton's Cradle:⁴³ in a material plenum the patterns of external objects must be patterned by the medium whatever that medium happens to be.

However, Cavendish more consistently identifies light as the object of visual perception over air. In the GNP, she claims, for example, that air is not susceptible to our visual perception. She writes, "Light is not so Rare and Fluid, as pure Air is, because it is subject to that sort of Human Perception we name *Sight*; but yet, it is not subject to any of the other Perceptions: and, pure Air is only subject to the Perception of Respiration, which seems to be a more subtil Perception than *Sight*" (GNP 1668: 212).⁴⁴ Earlier in the PPO, she writes of the different knowledge of sense organs. She claims, "we imagine by the Touch the Interior nature of Fire to be composed of Sharp Points, yet our *Sight* hath no knowledge thereof; so our *Sight* hath the knowledge of Light, but the rest of our Senses are utterly ignorant thereof" (PPO 1663: 115). She goes on to suggest that air might be visible but only because of its interaction with light. She writes,

Air is not a Shining Body of it self, but as the Lines of Light shine upon it; it is Smooth, and may be a Glossie Body, but not a Shining; for though there are Infinite several sorts of Brightness and Shining, yet two I will describe. As there are two sorts of Shining figures, some that Cast forth Beams of Light, as bright shining Fire, and likewise from some sorts of Stones, Bones and Wood, so there are some sorts of Figures that onely Retain a bright shining Quality in themselves, but Cast forth no Beams there from, or else so weak and small, as not useful to our *Sight*, but what is represented to us thereon by other Lights. (PPO 1663: 121)

Here the air's shining quality is only visible through the interaction with light. I take her to mean in these passages that light is the object of our visual perception. Air can be patterned out in certain circumstances with the assistance of light. Light is the reliable patterner since it has the subtlety to take on many and multiple figures of external bodies but is not so rare a body that it is beyond our ability to visually perceive.

43. Newton's Cradle is a small device which has five balls individually suspended in a row. When one ball at one end strikes the row of balls, the ball at the other end is the only one which moves. As that ball swings back and strikes the row, only the ball at the other end moves. This continues until friction causes the motion to stop. The device is used to show conservation of energy and momentum.

44. Air is, however, subject to hearing because of echoes (PL 1664: 81).

4.2. *Microscopes and Telescopes*

The second difficulty with my reading arises from Cavendish's own arguments. Her work, OEP, is a critique of the experimental philosophy that was gaining traction during her day. In OEP and its accompaniment, BL, she argues against the use of microscopes and telescopes for investigating the natural world. But the way microscopes and telescopes operate is very similar to how I argue that light operates: by presenting the perceiver with a pattern of an object via a lens which is a transparent body.

For Cavendish, the idea of an instrument providing a pattern of a pattern invites error. She writes,

I say, the picture, because it is not the real body of the object which the glass presents, but the glass only figures or patterns out the picture presented in and by the glass, and there mistakes may be easily committed in taking copies from copies. (OEP 2001: 51)

This quotation suggests that all bodies presenting the pattern of another body are subject to error and that copies of copies are not reliable. We might worry, then, that my reading makes visual perception similarly unreliable, given that we perceive patterns in the veil of light.

Given all the examples that Cavendish offers of patterns of patterns (or copies of copies) in the natural world, her arguments against microscopes and telescopes need further clarification.⁴⁵ Why in one instance are patterns of patterns acceptable and in another they are epistemologically untrustworthy?⁴⁶

There are a few possible answers that Cavendish could offer. The first deals with the more specific mechanism at work. In the case of microscopes and telescopes, the objects are magnified or, to use her term, dilated.⁴⁷ This is an alteration of a figure and Cavendish appeals to dilations and contractions as an explanatory mechanism for other natural phenomena. For example, the contraction and dilation of the figure of water changes it from liquid to solid ice to

45. It is unclear what she might think of natural magnifiers such as rain drops or translucent stones like amber. She might be committed to the idea that a natural pattern and an artificial pattern is a matter of degrees. For instance, a natural magnifier still distorts a figure, but it might be more truthful than an artificial one.

46. In BL, Cavendish's Empress dismisses telescopes immediately and orders their destruction (1668: 27). Microscopes, however, do not receive such treatment. The Empress engages with her subjects on their uses although she is still hesitant to proclaim they are epistemically truthful (BL 1668: 31–32).

47. Dilation and contraction are changes in motion or changes in figure, not the addition or subtraction of parts (OEP 2001: 125).

snow (OEP 2001: 110).⁴⁸ It is possible that dilations of a natural figure such as the figure of a louse would lead to a completely different figure. Light, however, does not tend to distort a figure in such a manner. The cup that I see on my desk thanks to the body of light retains its shape and size; light does not magnify or dilate my cup.

The second justification that she could give for treating microscopes and telescopes differently is that natural bodies are superior to artificial bodies. Cavendish reiterates this point throughout her works: what is artificial is less “perfect”, “wise”, or “effective” than what is natural.⁴⁹ She writes, “Wherefore the best optic is a perfect natural eye, and a regular sensitive perception; and the best judge, is reason” (OEP 2001: 53).⁵⁰ This encompasses all manner of artifice from logical and arithmetic to instruments and aided sensory perception. She writes, “and therefore that particular sensitive knowledge in man, which is built merely upon artificial experiments, will never make him a good philosopher, but regular sense and reason must do it; that is, a regular, sensitive, and rational inquisition, into the various actions of nature” (OEP 2001: 100). If we desire the truth of nature, we must use our own natural means of investigation. Thus, Cavendish could simply claim that microscopes and telescopes are unnatural bodies whereas light is a natural body and therefore a more reliable patterner.⁵¹

4.3. *Skepticism*

There is one last difficulty with my reading: the threat of skepticism. The idea of patterns of patterns might appear to commit Cavendish to skepticism. If we only see the veil of light and not the objects themselves, how do we know our sensory perception is veridical? Cavendish is not shy about embracing some skepticism. She writes, “And although it do sometimes err, (for there can be no perfect or universal knowledge in a finite part, concerning the infinite actions of nature) yet it may also probably guess at them, and may chance to hit the truth”

48. Here she writes, “which motions in the congelation of water, do not alter the interior nature of water, but only contract its exterior figure into the figure either of ice, snow, hail, hoarfrost, or the like” (OEP 2001: 110).

49. Cavendish claims that “all such Arts prove rather ignorant Follies, than wise Considerations; Art being so weak and defective, that it cannot so much assist, as it doth hinder Nature” (GNP 1668: 294).

50. She makes the same claim regarding artificial means throughout her works. See PPO 1663 “A Preface Concerning the Rules of Art, and Explaining the Nature of Infinite, together with some other Terms, for the better Understanding of this Philosophical Work.”; OEP 2001: 178; BL 1668: 58; Appendix to GNP 1668: 294.

51. Shaheen (2022: 10) defines artifacts for Cavendish as bodies that do not come together through the natural sympathy of self-love.

(OEP 2001: 100). By virtue of being a finite part of matter, human and animal knowledge will always be imperfect. Boyle (2015: 444–45) discusses Cavendish’s general epistemological views and concludes that according to Cavendish, even perfect sense perception and reasoning capacities in creatures fall short of perfect knowledge.

This is not to claim, however, that our sense perception is systematically deceptive as it can be for Descartes. For Cavendish, if we perceive something red, we can be reasonably certain that the object is in fact a shade of red, whereas Descartes holds that bodies are *never* colored in precisely the way they appear to be. Cavendish also acknowledges that the senses can provide us with information. She writes,

I say, many times, because reason cannot be always assured of knowing the truth: for, particular reason may sometimes be deceived as well as sense; but when the perceptions both of sense and reason agree, then the information is more true. (OEP 2001: 226)

In other words, when our sense perception and our cognition affirm that a situation is the case, we can, according to Cavendish, believe that it is the case.

5. Conclusion

Cavendish’s views about visual perception give rise to a possible difficulty: how does light figure into visual perception? She claims that light “presents”, “reveals”, or “helps to find” objects. I argue this means that light plays the role of reliable patterner by way of the chameleon effect, and that we perceive these patterns of bodies in the body of light. For Cavendish, we see a veil of light rather than the objects themselves. This claim that we see by the veil of light is consistent with her explanations of other sensory phenomena such as echoes and reflections which are also instances of our sense organs patterning copies of objects in other bodies. One upshot of this view is that Cavendish can explain the inconstancy of colors as well as their constancy. When we visually perceive something, we also perceive the body of light and so in different lighting conditions, colors can appear as different shades.

Since light is not necessary for visual perception, we can entertain a hypothetical situation for Cavendish. If there were no bodies (i.e., light, air, the medium, etc.) between my optic nerves and a red apple, what would perception look like? My eyes would likely just pattern the apple directly. Perception operates through occasional causation and so no other bodies are necessary for perception, unlike the mechanists, who must posit local motions and contact.

However, Cavendish is a plenist, so this hypothetical situation would never exist. There will always be a body between a perceiver and external objects, and for her, that body is material. Here she shares similar commitments to Hobbes: the world consists of material bodies. If there were no body of the medium, then my optic nerves would be occasioned by the object of perception, not the body of the medium. But since these bodies exist, Cavendish must explain how they fit into her perceptual system. As bodies, they are available for our perception. Light, specifically, is available for our visual perception and so when we pattern out objects in our visual field, we pattern them from the veil of light.

Acknowledgments

I would like to thank Colin Chamberlain, Jonathan Shaheen, Iulia Mihai, Yining Wu, Hans Shenk, Clara McNight, Manasa Gopakumar, and the anonymous reviewers for their generous comments and suggestions on this paper.

References

Primary Sources

- GNP Cavendish, Margaret. *Ground of Natural Philosophy Divided into Thirteen Parts: With and Appendix Containing Five Parts*. 1668.
- OEP *Observations Upon Experimental Philosophy*. Eileen O'Neill (Ed.). Cambridge University Press. 2001.
- PF *Margaret Cavendish's Poems and Fancies: A Digital Critical Edition*. Liza Blake (Ed.). Website published May 2019. <http://library2.utm.utoronto.ca/poem-sandfancies/>
- PL *Philosophical Letters*. London. 1664.
- PPO *The Philosophical and Physical Opinions*. Marcy P. Lascano (Ed.). 1663. <https://cavendish-ppo.ku.edu/>.
- BL *The Description of a New World, Called the Blazing World*. 1668.
- AT/CSM Descartes, René. *The Philosophical Writings of Descartes* (Vol. 2) John Cottingham, Robert Stoothoff, Dugald Murdoch (Eds.). Cambridge University Press. 1984.
- TT Digby, Kenelm. *Two Treatises in the One of Which the Nature of Bodies, in the Other, the Nature of Man's Soule Is Looked into in Way of Discovery of the Immortality of Reasonable Soules*. Paris. 1644.
- EW I Hobbes, Thomas. *The English Works, vol. I (De Corpore)*. William Molesworth (Ed.). John Bohn. 1656.
- EW VII *The English Works, vol. VII (Seven Philosophical Problems)*. William Molesworth (Ed.). John Bohn. 1662.

Secondary Sources

- Adams, Marcus (2016). Visual Perception as Patterning: Cavendish against Hobbes on Sensation. *History of Philosophy Quarterly*, 33(3), 193–214.
- Adams, Marcus (2022). Natural Philosophy, Abstraction, and Mathematics Among Materialists: Thomas Hobbes and Margaret Cavendish on Light. *Philosophies*, 7(44), 44–59.
- Allen, Keith (2019). Cavendish and Boyle on Color and Experimental Philosophy. In Alberto Vanzo and Peter R. Ansley (Eds.), *Experiment, Speculation and Religion in Early Modern Philosophy* (58–80). Routledge.
- Bennett, Jonathan (2003). Space and Subtle Matter in Descartes' Metaphysics. In Rocco J. Gennaro and Charles Huenemann (Eds.), *New Essays on the Rationalists* (3–25). Oxford Scholarship Online.
- Boyle, Deborah (2015). Margaret Cavendish on Perception, Self-Motion and Probable Opinion. *Philosophy Compass*, 10(7) 438–50.
- Boyle, Deborah (2019). Informed by Sense and Reason: Margaret Cavendish's Theorizing About Perception. In Brian Glenney and José Silva (Eds.), *The Senses and History of Philosophy* (231–48). Routledge.
- Chamberlain, Colin (2019). Color in a Material World: Cavendish against the Early Modern Mechanists. *Philosophical Review*, 128(3), 293–336.
- Chamberlain, Colin (2022). What Is It Like to Be a Material Thing? Henry More and Margaret Cavendish on the Unity of the Mind. In Donald Rutherford (Ed.), *Oxford Studies in Early Modern Philosophy* (97–136). Routledge.
- Cunning, David (2016) *Cavendish*. Routledge.
- Cunning, David (in press). Ways of Knowing. In Karen Detlefsen and Lisa Shapiro (Eds.), *The Routledge Handbook of Women and Early Modern European Philosophy*. Routledge.
- Lascano, Marcy (2021). Cavendish and Hobbes on Causation. In Marcus Adams (Ed.), *A Companion to Hobbes* (413–30). New York.
- Michaelian, Kourken (2009). Margaret Cavendish's Epistemology. *British Journal for the History of Philosophy*, 17(1), 31–53.
- Shaheen, Jonathan (2022). A Vitalist Shoal in the Mechanist Tide: Art, Nature, and 17th Century Science. *Philosophies*, 7(5), 111–31.
- Simmons, Alison (2015). Perception in Early Modern Philosophy. In Mohan Matthen (Ed.), *The Oxford Handbook of Philosophy of Perception* (81–99). Oxford University Press.
- West, Peter (2022). Margaret Cavendish on Conceivability, Possibility, and the Case of Colors. *British Journal for the History of Philosophy*, 30(3), 456–76.