

# Reason and Freedom Margaret Cavendish on the Order and Disorder of Nature

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*Abstract:* According to Margaret Cavendish the entire natural world is essentially rational such that everything thinks in some way or another. In this paper, I examine why Cavendish would believe that the natural world is ubiquitously rational, arguing against the usual account, which holds that she does so in order to account for the orderly production of very complex phenomena (e.g. living beings) given the limits of the mechanical philosophy. Rather, I argue, she attributes ubiquitous rationality to the natural world in order to ground a theory of the ubiquitous freedom of nature, which in turn accounts for both the world's orderly and disorderly behavior.

## I. Introduction

On 30 May 1667, Margaret Cavendish (ca. 1623–1673) became the first woman to attend a meeting of the Royal Society. The meeting began on time, but Cavendish was late, and so she missed the business of new memberships to the Society, the reminder to Robert Hooke that he owed the Society an experiment in magnetism, the discussion of Walter Pope's speculations that the worms in the stomachs of cormorants may be responsible for their excessive greed, and the reading of a report submitted by Dr. Turbervill describing a man who survived an operation during which his spleen was removed. Then Cavendish arrived in time to witness Robert Boyle's experimental demonstrations "appointed for her entertainment"<sup>1</sup>. The first was one of his now-famous experiments with the air pump – the weighing of air.<sup>2</sup> This was followed by several

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<sup>1</sup> Birch 1766, II 177f. For social commentary on the visit see the 30 May 1667 entry in Pepys *Diary* (Pepys 1976, VIII 242f.). For a more recent account of Cavendish's visit, see Mintz 1952. A briefer description of the visit also appears in Phillips 1990, 57f.

<sup>2</sup> For the significance of the air pump experiments as background to the dispute between Boyle and Hobbes on the proper role of experiment in science, a topic of especial interest to Cavendish, see Shapin/Schaffer 1985.

more experiments, including one chosen, perhaps, for its special appeal to the ladies – the mixing of colours.<sup>3</sup> According to reports of the visit, Cavendish voiced nothing but admiration for the work of the Society and the experiments of Boyle,<sup>4</sup> a notable fact given that she had published her repudiation of experimental natural philosophy, *Observations on Experimental Philosophy* (hereafter, *Observations*), just one year earlier. Both Boyle and Hooke were among her principal targets in that book.

Cavendish's stated preference is to rely primarily on reason, not experimentation, in the investigation of nature:

[...] most men [...] consider not so much the interior natures of several creatures, as their exterior figures and phenomena; which makes them write many paradoxes but few truths; supposing that sense and art can only lead them to the knowledge of truth; whenas they rather delude their judgments, instead of informing them. But nature has placed sense and reason together, so that there is no part or particle of nature, which has not its share of reason, as well as of sense: for, every part having self-motion, has also knowledge, which is sense and reason; and therefore it is fit that we should not only employ our senses, but chiefly our reason, in the search of the causes of natural effects: for, sense is only a workman, and reason is the designer and surveyor; and as reason guides and directs, so ought sense to work [...]. [F]or my part [...] leaving to our moderns, their experimental, or mode philosophy, built upon deluding art, I shall addict myself to the study of contemplative philosophy, and reason shall be my guide (*OEP* 99).

In this passage, Cavendish refers to both sensation and reason in two distinct but related ways. First, epistemically, we must rely primarily upon our reason and not our senses to lead us to “the knowledge of truth”, which is, Cavendish notes, “the search for the causes of natural effects”. Second, metaphysically, all of the natural world is infused with reason as well as with sense, and so all of nature has knowledge and life as well as self-motion.<sup>5</sup> According to Cavendish, the epistemic and metaphysical

<sup>3</sup> Mintz 1952, 174, notes that Boyle's demonstrations of “mixing colours” were likely those described in his *Experiments and Considerations Touching Colours*. In the preface of that work (Boyle 1664, A3v-A4r), the author remarks on “the wonder, some of these Trifles have been wont to produce in all sorts of Beholders, and the access they have sometimes gain'd ev'n to the Closets of Ladies”.

<sup>4</sup> Pepys 1976, VIII 243.

<sup>5</sup> Throughout this paper, I intend the term ‘nature’ to refer to all that is not supernatural. Moreover, given that in her mature philosophy (which can be dated at least as early as the mid-1660s) the non-supernatural world is wholly material, I generally take ‘nature’ and ‘matter’ to be co-extensive. It is important however to acknowledge Cavendish's own equivocations in her usage of the term ‘nature’. This equivocation is sometimes due to the development of her philosophical

points are related in that precisely because reason occupies a superior *metaphysical* role in the natural world – it guides and directs the sensing part of nature which does its bidding – reason ought to take *epistemic* primacy over the senses in our investigation of nature (cf. *OEP* 196).

Cavendish's metaphysical claim that nature is ubiquitously rational and sensitive is among her most original contributions to early modern natural philosophy.<sup>6</sup> She is not alone in conceiving nature in this way; both Leibniz after her and Spinoza roughly contemporaneously would understand the world to be essentially perceptive, and Cavendish's affinities with these two metaphysicians has not gone unnoticed.<sup>7</sup> One need not appeal to the authority of her better-known contemporaries, however, in order to redeem what may be viewed as a peculiar claim to make about the natural world. In fact, Cavendish puts this doctrine to quite different use than do either Leibniz or Spinoza. Moreover, Cavendish's belief that all of nature senses and reasons seems considerably less implausible when we understand how broadly she conceives of sense and reason. To have reason, for example, is to have the immanent capacity to behave in a regular and orderly manner, and so "[...] that every part [of nature's body] has [...] rational matter, is evident [...] by the regular, harmonious, and well-ordered actions of nature" (*OEP* 207; cf. *PL* 160f.; *OEP* 16, 258; *GNP* 7, 29).

This paper aims to elucidate Cavendish's philosophical motivations for believing that material nature is primitively perceptive. After a consideration of some of the essential features of her matter theory (sec-

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thought from her early atomism which permits a vacuum along with matter in nature (1653) to her later material plenism according to which there is only matter in the created (natural) world. At other times, the equivocation is due to the fact that she uses 'nature' to refer to the whole of the material world taken as a single being that acts, in some sense, as an externalized guide to the various material parts. This conception of nature is acknowledged in section V below, and it is crucial to the arguments put forth in that section. My gratitude to an anonymous referee for drawing this issue to my attention.

<sup>6</sup> I call this a metaphysical claim about matter because it is a claim about matter's essence, and because it goes beyond what senses tell us about the physical world, and so might well be considered metaphysical. I also call it so in order to distinguish it from the epistemic claim Cavendish also makes about sense and reason. Whether or not Cavendish would consider this a metaphysical as opposed to a physical claim would depend upon what she takes metaphysics to be, and she does not explicitly provide her own ideas on this question. Philosophers in the seventeenth century differ on what they take metaphysics to be. See Gabbey 2001.

<sup>7</sup> The affinity (and also differences) between Cavendish and Leibniz is dealt with by Wilson 2007. For the affinities between Cavendish and both Spinoza and Leibniz, see James 1999 219, 242.

tion II), I turn to the usual reason given for why Cavendish supposes matter to be primitively perceptive (section III). According to this explanation, Cavendish supposes the perceptiveness of matter in order to account for orderly natural phenomena. This is especially clear in the case of complex phenomena (e.g. those of living beings) that cannot be easily explained by appeal to a few simple laws of motion as per the new mechanical philosophy.<sup>8</sup> But it applies even in the case of very simple orderly phenomena that cannot be easily explained once we recognize that God's wisdom plays no role in her natural philosophy and so cannot be the source of manifest order.<sup>9</sup> This interpretation is partially correct, as Cavendish's own words just quoted attest. But it is not the full story for Cavendish also makes use of the concept of perceptive matter to account for nature's disorders as well as its order. To show this, I turn to Cavendish's epistemic uses of sense and reason to present some crucial features of her method of explanation in natural philosophy (section IV) – a method, which places a premium upon reason but which nonetheless, must leave a key role for sensed experiences.<sup>10</sup> This, then,

<sup>8</sup> James 1999, 226.

<sup>9</sup> O'Neill's account of the role played by perceptive matter given Cavendish's theory of occasional cause (O'Neill 2001, xxxii-xxxv) brings us to a conclusion somewhat like this as I will explicate below in section III. I acknowledge that close investigation of Cavendish's position on the role that God plays in her natural philosophy is not as straightforward as she usually presents it (see footnote 32). For the purposes of this paper, I start from Cavendish's most constantly presented position, according to which we must make no rational reference to God in natural philosophy.

<sup>10</sup> Lewis 2001, 354, notes the lack of commentary on the relation between Cavendish's metaphysics and epistemology, and this paper aims to fill that lacuna by focussing on Cavendish's unique theory of freedom which both emerges from her metaphysical supposition that matter is primitively perceptive, and which best explains certain natural phenomena (notably natural disorders) that Cavendish believes we are forced to acknowledge as true of the world due to the relation between sense and reason in her epistemology. Other commentators have paid heed to Cavendish's theory of freedom, even in connection with Hobbes', including notably Sarasohn 2003 and Rogers 1996. Sarasohn, however, applies the lessons learned from Cavendish's metaphysics of freedom to political, rather than natural, philosophy. My position has much more in common with Rogers' as he too notes that free choice of parts of matter are the source of natural disorders (194). Still, there are notable differences between our positions. First, Rogers believes (*pace* Sarasohn and myself) that Cavendish's theory of freedom is like Hobbes' (187f.). More crucially, Rogers locates Cavendish's motivations for attributing sense and reason (and therefore freedom) to material bodies in her rejection of "the mechanist reduction of agency to a simple matter of bodily collision" (186). I think her motivations are quite different as will come clear below.

allows me to offer an interpretation, which says that Cavendish believes in matter's perceptive qualities in order to ground a theory of material nature's ubiquitous freedom. This interpretation gains force when we consider her philosophy in the context of Hobbes' views on freedom and evil. It is probable, as I argue below, that Cavendish was well aware of Hobbes' theory of freedom and framed her own distinctive theory with his in mind. It is this freedom of the natural world, which explains both the order *and the disorder* that we find in both human and non-human nature (section V).<sup>11</sup>

## II. Cavendish's Theory of Matter

Cavendish spent the years between 1644 and 1660 in exile in Paris and Antwerp, first as Maid of Honour in the court of Queen Henrietta Maria, and then as wife to William Cavendish, a royalist also in exile. During these years, Cavendish met and occasionally communicated with a number of natural philosophers of the mid-seventeenth century, including Hobbes, Descartes, Gassendi, Glanville, Charleton, and Huygens. Her husband and his brother, Charles, were tutored by Hobbes in the early 1630s, and Margaret herself discussed metaphysics and natural philosophy extensively with her husband and brother-in-law – the latter conversations taking place primarily while the two were in England during several months in 1651–1652 attempting to secure family property. By her own almost prideful admission, we know Cavendish read only English (*PF* A6r; *PL* C1v) and so was able to read only a subset of available works by natural philosophers. Between this

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<sup>11</sup> Throughout this paper, I pay heed to Cavendish's own approach in her last book published during her lifetime, *The Grounds of Natural Philosophy*, where she sets out to provide a terser, more systematic account of her natural philosophy than one finds elsewhere in her *oeuvre*. I agree with Susan James that "Cavendish outlines a reasonably coherent programme, designed to improve on mechanism" (James 1999, 243), and this paper highlights that coherence. However, my focus on the general coherence of Cavendish's program is not aimed at ignoring the development of her philosophy from her early atomism through to her eventual embrace of material plenism since my primary focus in this paper is on her mature natural philosophy which I do take to be reasonably coherent when considered in itself. I deal with some aspects of the transition from her early atomism to her later plenism in Detlefesen 2006. The passages from Cavendish's early *Philosophical and Physical Opinions* to which I refer in this paper all reflect positions on natural philosophy which survive the transition to her mature philosophy.

first-hand acquaintance and second-hand knowledge through conversations with those friendly to her philosophical ambitions, she was able to dispute others' work and locate her own theories in the landscape of seventeenth-century natural philosophy.<sup>12</sup>

Much of Cavendish's matter theory can be easily explicated in terms of her acceptance or rejection of certain aspects of the philosophies of her contemporaries.<sup>13</sup> After early dabbling in atomism, Cavendish endorses both a thoroughgoing materialism and plenism, according to which there is no vacuum within the material world nor beyond it, and so nature is spatially infinitely (*OEP* 130f.). Her motivations for materialism are much the same as Hobbes'. Substances, as real things, cannot be immaterial since reason tells us that the immaterial is not real and therefore cannot be substantial (*PL* 239; *OEP* 137; *GNP* 1f. and 237f.). Her materialism, however, applies only to the created world and not to God who is not subject to investigation by rational means (*OEP* 17; *PL* 139, 141, 186f.); theology and natural philosophy are two distinct spheres of inquiry (*PL* 201f.).<sup>14</sup> Cavendish's motivations for plenism rest primarily on both her rejection of a vacuum which she takes to be incomprehensible and naturally impossible (*PL* 7, 452), and her assertion of the unending divisibility of

<sup>12</sup> For details on Cavendish's life and acquaintances, see recent intellectual biographies by Battigelli 1998, Rees 2003, and Whitaker 2002. Cavendish's letters are a further source for the range of her acquaintances. See, for example, *A Collection of Letters and Poems: Written by Several Persons of Honour and Learning, Upon Divers Important Subjects, to the Late Duke and Duchess of Newcastle* (London 1678); *Letters and Poems in Honour of the Incomparable Princess, Margaret, Duchess of Newcastle* (London 1676); and Huygens 1911–1917, vol. V. We can get a good idea of what books Cavendish read or heard about from others given her explicit references to those books in her own works, often including quotations. The works with which Cavendish demonstrates direct or indirect familiarity include (most relevant for our purposes) Boyle 1664 (see footnote 3 above); Descartes' *Principles of Philosophy* (1644, Latin), *Optics* (1637, French), and *Passions of the Soul* (1649, French); Hobbes' *On the Citizen* (1642, Latin), *Concerning Body*, the first section of *Elements of Philosophy* (1655, Latin; English translation 1656), and *Leviathan* (1651).

<sup>13</sup> For sustained work on Cavendish's relations with her contemporaries, see the growing body of secondary literature on this, including Broad 2002, chap. 2; Lucas 1994; Hutton 1997a, 1997b, 2003; James 1999; O'Neill 2001; Sarasohn 2003; and Strauß 1993.

<sup>14</sup> At the opening of *De Corpore*, Hobbes similarly narrows the scope of philosophy or rational inquiry (*EW* I, 10). Both Hobbes' and Cavendish's positions on God and theology are somewhat more complicated than suggested here, but we need not consider this for present purposes. A thorough treatment of the role of God in Cavendish's philosophy is yet to be undertaken (see footnote 9). Broad 2002, 46f., and Hutton 1997a both deal with Cavendish's relation to Hobbes' natural philosophy, and Sarasohn 2003, *passim*, deals with Cavendish and Hobbes on both natural philosophy and politics. Battigelli 1998, chap. 4, and Ankers 2003 both deal with the influence of Hobbes' political works on Cavendish.

matter (*OEP* 125 and 263; *GNP* 239).<sup>15</sup> Cavendish obviously rejects Descartes' belief in the immaterial, rational soul (*PL* 111), and she is also opposed to his (and Hobbes') mechanical account of natural change.<sup>16</sup> Motion, as a mode, cannot transfer from body to body but must rather always adhere in material substance (*PL* 97f).<sup>17</sup> And so, in order to explain the brute phenomenon of bodies in motion and collision, Cavendish attributes to matter itself the capacity for self-motion. Cavendish's metaphysics, then, includes a commitment to materialism, plenism, the spatial boundlessness of the natural world, and the inseparability of motion from matter (though not the converse), and so the inherent self-motion of (at least some) matter (*GNP* 2f.).

Other aspects of her matter theory have their origins in much more elusive motivations than direct responses to her contemporaries. There are two further elements of that theory to be presented here, the motivations for which will emerge throughout the following sections. First, she believes that there are three aspects of the single type of matter that fills all of nature: matter is inanimate and animate, with the latter as-

<sup>15</sup> Clucas 1994, 259f., Kargon 1966, 73f., and Stevenson 1996, 536f., all support an atomistic interpretation of Cavendish. I argue in favour of Cavendish's anti-atomism elsewhere (see Detlefsen 2006).

<sup>16</sup> For example, James 1999, 222f., and O'Neill 2001, xxix f. Broad 2002, 44f., provides a discussion of the relation between Cavendish's rejection of Descartes' dualism and her rejection of mechanical change.

<sup>17</sup> Cavendish's rejection of change through mechanical transfer of motion has led some commentators to call Cavendish a 'vitalist' materialist. See, for example, Broad 2002, 44; Clucas 1994, 261; James 1999, 219; and Lewis 2001, 345. I have no objection to the *conceptual* point that seems to be suggested by the term 'vitalism', especially if it is defined explicitly in much the way Hutton does. Hutton 1997b, 226, identifies Cavendish's specific form of vitalism as one according to which "life, motion and mental powers [are imputed] to body itself". Something like this is also implied by Clucas 1994, 263, who likens Cavendish's matter theory to that of the chemical corpuscularians such as Daniel Sennert for whom matter is self-active. (I dissent from the implication that Cavendish is an atomist; see Detlefsen 2006). Whitaker 2002 also discusses Cavendish's links with the work of contemporary chemists (114f., 157, 169), links which seems to have urged her toward a theory of self-active matter. Cavendish's associations with the chemists of her day and the manner in which these associations may have shaped her matter theory would be an interesting line of inquiry in itself. – Nonetheless, I resist using the *term* "vitalist" to describe Cavendish's matter theory for two reasons. First, the relatively long history of vitalism has produced so many distinct and incompatible theories, all labelled 'vitalist' that the term invites confusion. For just two incompatible accounts of vitalism, see those of Hein 1972, 164, and Driesch 1914, 2f. Second, Cavendish herself uses the term to describe a subset of natural phenomena (namely, the phenomena associated with organic individuals) that occur within the whole of perceptive, moving material nature (*PPO* 412f., 437f.; *GNP* 106). This indicates that she herself takes vitalism to be a theory about certain sorts of visible bodies and not about matter in general, and so not descriptive of her matter theory.

pect coming in two varieties: sensitive and rational (e.g. *OEP* 23f.). Inanimate matter is not equated with motion but animate matter is. Each aspect of matter is distinguished by its degree of agility, fineness, and purity as well as by its function. Rational, animate matter is the most pure and agile, while inanimate matter is the least so. Inanimate matter functions as a limit upon unfettered activity, while animate matter is responsible for all motion (and therefore change) that a being undergoes. While both sensitive and rational matter move, sensitive matter's function is to move the dense, animate matter (*GNP* 3ff.). Rational, animate matter's prime functions is as the planner or regulator of the actions performed by sensitive, animate matter, and so is less occupied with the task of moving the inanimate matter. In one metaphor, Cavendish portrays the rational animate matter as the architect or designer, the sensitive animate matter as the labourer, and the inanimate matter as the materials out of which a product is made (*OEP* 161 ff.).

Animate matter (both sensitive and rational) is also "perceptive" (*OEP* 156; *GNP* 7f.). In its most general sense, perception is associated with the capacity for self-motion: "there is perception in every action [...] [and] all self-moving parts are perceptive" (*OEP* 173; cf. 39). More specifically, perception of sensitive animate matter is the representation through self-motion of an external bodies' surface characteristics (*OEP* 47) and this perception takes place in sense organs (*OEP* 150). Sensitive perception will vary enormously from creature to creature depending upon the material construction and organization of their parts. In the case of humans, for example, sensitive perception would be the perception of bodies outside ourselves through the self-motion of the five external sense organs (e.g. *OEP* 29, 142). Perception of rational animate matter is the representation through self-motion of an external body's interior nature (*OEP* 47). At the least, this amounts to the ability to pose suppositions about the un-sensed interior motions of a body (*OEP* 175). It might also well be the source of, for example, the human's ability to reach metaphysical conclusions not based upon sense about the basic structure of the world – the conclusions that it is wholly material and self-moving, for example. Rational perception also gives the perceiver general information about bodies (*OEP* 151), rather than merely particular information of a given body right now before the perceiving individual.

One difficulty now before us is how Cavendish can claim both that matter is self-moving and that some matter is inanimate (not self-moving), and this is solved by the second additional element of Cavendish's matter theory to be considered here. All three aspects of matter are "inseparably commixt" such that no portion of material nature, regardless of how small it is, lacks any of the three aspects, and so every portion of material nature is self-moving, sensitive, and rational as well as limited in its abilities. This applies to all beings (*PL* 35f.; 40), and so it applies to stones no less than to humans, and it applies to a human's liver and bones no less than to her brain. Nature is thoroughly self-moving, and this is because each part of nature is either intrinsically motive or carried along by matter that is intrinsically motive. Thus, when Cavendish occasionally says that "[...] none of nature's parts can be called inanimate, or soulless, I [Cavendish] do not mean the constitutive parts of nature, which are, as it were, the ingredients whereof nature consists, and is made up of; whereof there is an



inanimate part or degree of matter, as well as animate; but I mean the parts or effects of this composed body of nature, of which I say, that none can be called inanimate” (*OEP* 16). In addition to being ubiquitously animate, nature is thoroughly sensitive and rational. So to refine the depiction provided above, as humans, sense perception occurs in the sense organs and rational perception occurs in the brain. But the human liver, as a liver, has its capacity to sense and reason too, and in a way appropriate for the kind of thing it is and how it must relate to its environment.

Given Cavendish’s motivations for positing the self-motion of matter – the facts that motion cannot transfer from part to part, that there is no incorporeal substance to act as motive force, and that God does not act in the world – it is understandable that she would posit both animate matter as the source of motion as well as inanimate matter as the limit. It is less clear however why she would suppose that every part of the material, natural world – dogs, ferns, and stones, along with humans – are animate in a perceptive way (are sensitive and rational too), and are so because of the inseparable co-mixture of all three aspects of matter. Another way of stating the issue takes heed of Cavendish’s dissent from Hobbes’ theory of human cognitive activities. Cavendish rejects the idea that sense and reason are an effect of the human’s causal interaction with the external, material world. This is an off-shoot of her more foundational rejection of causal interactions that depend upon the transfer of motion from one body to another. The theory that sensations, for example, arise from the impact of external material particles upon the perceiver’s sense organs seemingly requires that motion be transferred to the sense organs thus stimulating sense perceptions. Rejecting this (*PL* 18, 22f.), Cavendish suggests that sensation (and reason, too) must arise from within the perceiver herself, specifically, from the sensitive (or rational) matter that comprises her body. Now, this seems to follow from Cavendish’s need to explain the brute, phenomenological fact of our ability to sense and reason given the explanatory lacuna left once she abandons the mechanical proposal suggested by Hobbes. However, since she does not need to explain the stone’s ability to sense or reason (there is no brute, phenomenological fact to be explained), there seems to be no warrant to her extension of sensitive and rational matter to beings that do not appear to have psychological, perceptive states. Why does she suppose that matter is ubiquitously rational and sensing?

### III. Occasional Causation and Perceptive Matter

One answer to this question, already well-argued by Cavendish commentators, is that she needs to suppose this in order to explain orderly causal interactions given her own theory of causation. I sum that argument in this section, showing what I take to be possible unwelcome implications of this reasoning. I then turn (in the remainder of the paper) to a fuller explanation, one which accounts not only for orderly causal interactions but also for nature's disorders, while avoiding the pitfalls of the usual explanation for Cavendish's belief in thorough-going perceptive matter.

According to Cavendish, many changes in the natural world come about as a result of occasional causal interaction.<sup>18</sup> It is crucial here to make a distinction between occasional causation and occasionalism, since the latter posits the utter impotence of the natural world and God's will as the sole efficacious cause in that world, and Cavendish denies both premises (*OEP* 208f.). As Steven Nadler shows, occasional causation is a more general theory than occasionalism and does not specify God as the principal source of causal change. "In simple terms, a relationship of occasional causation exists when one thing or state of affairs brings about an effect by inducing (but *not* through efficient causation [...]) another thing to exercise its own efficient causal power [...]. Thus, the term denotes the entire process whereby one thing, *A*, occasions or elicits another thing, *B*, to cause *e*. Even though it is *B* that *A* occasions or incites to engage in the activity of efficient causation in producing *e*, the relation of occasional causation links *A* not just to *B*, but also (and especially) to the effect, *e*, produced by *B*"<sup>19</sup>. Cavendish's theory of causation is a theory of occasional causation in this more general sense.

One motivation she has for accounting for material interaction by occasional causation stems from her criticism of the theory, noted above, that bodies interact by transfer of motion. Motion can transfer from body to body, but only if it transfers together with the matter with which it is necessarily associated. Employing the example of a hand throwing a bowl, Cavendish shows why this cannot be: "I cannot think it probable, that any of the animate or self-moving matter in the hand, quits the hand, and enters into the bowl; nor that the animate matter, which is in the bowl, leaves the bowl and enters into the hand"; "if it did, the hand would in a short time become weak and useless, by losing so much substance [...]" (*PL* 445; cf. *PL* 77f.; *OEP* 200).<sup>20</sup>

<sup>18</sup> For an outstanding account of Cavendish's theory of causation and its historical context, see O'Neill 2001, xxix-xxxv.

<sup>19</sup> Nadler 1994, 39.

<sup>20</sup> Not all natural change is due to occasional causation, and this argument against causal interaction by influx of motion applies in only some cases of change (e.g. *PL* 428). In fact, the generation and corruption of natural beings – as in, for example, the conception, growth, and death of living beings – does depend upon causal interaction by the influx of animate matter (e.g. *PL* 420). For a discussion of these different types of change – alteration (often by occasional causation) and generation (by the transfer of motion and matter) – see James 1999, 231 f.

In her *Letters*, Cavendish explains to her fictional interlocutor that in many examples of efficient causation, transfer of motion by itself cannot be considered the source of causal change, and she then provides her own theory of causation as the appropriate substitute. Using the example of a body falling on snow, she says that it is not the body that leaves its impression behind in the snow, but rather, “the snow [...] patterns out the figure of the body [...]. [It] patterns or copies it out in its own substance, just as the sensitive motions in the eye do pattern out the figure of an object” that it sees or perceives (*PL* 104f.). To pattern out means to frame figures “according to the patterns of exterior objects” (*OEP* 169), and most often in her writings, Cavendish seems to mean this very literally – the physical figure of the body falling upon the snow is physically printed out into the snow’s matter from within the snow itself; bodies “put themselves into such or such a figure” as the principal cause intended (*PL* 79; cf. *PL* 539f.). So, according to Cavendish’s theory of occasional causation, for a natural effect there is an occasional cause – the body eliciting the effect in another body – and there is a principal cause – the affected body itself bringing forth from within itself (patterning out) the appropriate effect. The fact that at least some causal interaction must occur by occasional causation because it cannot occur by transfer of motion shows us why any matter that may ever be involved in such interactions must be self-moving – so that the bowl, for example, can move itself upon the occasion of the hand’s tossing it. Even if one believes that Cavendish is not especially devoted to occasional causation (though I do believe she is, and will cite texts at the end of this section as evidence), the fact alone that she rejects the transfer of motion in many cases of causal interaction, and replaces the causal influx theory with occasional causation, is all I need to establish why she supposes matter is self-moving.

But it does not explain why all matter must be perceptive too. To see why this must be, we must recognize that Cavendish is faced with the problem of having to account for the brute fact of order or harmony or regularity in nature. Simply put, given that the principal cause of any given effect comes from within the body being supposedly acted upon, what accounts for bodies correctly patterning out the appropriate effect upon any given occasion which happens in the vast majority of cases? After all, in principle, the occasion is neither necessary nor sufficient for the principal cause to act. This is implicit in the first three of the following features of an occasion or occasional cause to which Eileen O’Neill draws our attention:

- (1) the occasion has no intrinsic connection with the effect; (2) it is not necessary for the production of the effect; [...] (3) it has no direct influence on the production of the effect [...]. [but;] (4) an occasion has an indirect influence on the production of the effect by inducing the primary cause to act, and (5) insofar as it exerts this sort of influence, it counts as a partial efficient *moral* cause of the effect.<sup>21</sup>

Precisely because occasional and principal causes seem to have a significant degree of independence from one another, and because Cavendish cannot appeal to God as the

<sup>21</sup> O’Neill 2001, xxx.

mediator between occasional and principal causes in their interactions, she needs some other way of explaining nature's order.

Her alternative explanation for natural order alerts us to why matter has reason and sense inherent to it. Although it is true that there is no transfer of motion between bodies in cases of interaction by occasional causation, there is still some sort of causal interaction as implied by O'Neill's fourth and fifth points just cited. How is this possible if nothing is physically transferred? One possibility would be to suppose that every body has perceptive qualities. The causal efficacy among natural bodies on a model of occasional causation takes the form of bodies *sensing* others around them and *knowing* how to react to these other bodies or rationally *suggesting* to another how to act. This is Cavendish's approach. Further, bodies can have sympathy or antipathy for one another. That is, once one body is perceptually aware of another, it may feel a love and desire for it (*PL* 292), or conversely, a hatred, and this encourages the body to either approach the agreeable, pleasant object or withdraw from the disagreeable (*PL* 156). A body's unity is explained by the sympathy among its parts (*PPO* 75; *PL* 167), for example, and its rejection of bad food, as another example, would be explained by the antipathy it feels for the food. Thus, to explain the order and harmony in nature's interactions, Cavendish posits the sensing and knowing capacities of all parts of nature, and the sympathy and antipathy that follows on those perceptive states. Still, in an important sense, Cavendish has not answered the problem of order or harmony. How does a body come to sense another nearby itself given that the sensation arises entirely from within the sensing body and not from the body sensed, and how does it know what is the right (as opposed to the wrong) reaction to the body that it encounters? As both O'Neill and Susan James point out, Cavendish still needs to explain why one distinct (and significantly independent) body has the right kind of sense perception and knowledge for exactly the right body at the right time so as to have the sympathy or antipathy required to bring about the orderly cause-effect relationship that we undoubtedly witness between the two individual bodies.<sup>22</sup>

One way of blunting this concern is to heed the fact of the infinite divisibility of matter coupled with Cavendish's theory of complete mixing or complete blending, the last point in Cavendish's matter theory noted in the previous section. O'Neill indicates that Cavendish's theory of mixture is much like the Stoic theory of "the complete blending of the *pneuma* with matter [*making*] nature a unified organism [...]"<sup>23</sup>.

<sup>22</sup> O'Neill 2001, xxxiv; James 1999, 238.

<sup>23</sup> O'Neill 2001, xxxii, emphasis added. O'Neill points to other elements of Cavendish's metaphysics that have an affinity with Stoicism, but especially interesting is this doctrine of complete blending. Given that there is just one kind of thing in the world – matter – Cavendish must have a somewhat different approach to co-mixture than that which requires the existence of multiple substances each with its own distinct essence. The following is the best sense I can make of Cavendish's approach. The world is made up of matter which essentially has bulk and magnitude and is extended. Because all matter shares these elements, everything in nature shares a fundamental essence. But matter can be further differentiated, ac-

This idea of all of nature being a single unified whole is extremely instructive, both for how it allows a solution to the problem of natural order, and for alerting us to how we *ought not* to read Cavendish's holism if we are to preserve essential features of her natural philosophy. Here is how one might use Cavendish's theory of complete blending and the holism it implies to account for natural order. However small a piece of material substance gets, it can always be split, and because each piece of substance has all three aspects of matter in it, each infinitely small piece of matter has all three aspects in it. And so Cavendish writes in the *Observations*: "although I make a distinction betwixt animate and inanimate, rational and sensitive matter, yet I do not say that they are three distinct and several matters; for as they do make but one body of nature, so they are also but one matter" (*OEP* 206). One could argue that for Cavendish, the infinite divisibility of matter "all the way down", so to speak, has a parallel in matter's unlimited composition "all the way up" too. What appear to be distinct individuals are really just parts of larger and larger parts, and so on *ad infinitum*. There is only one whole: all of infinite nature itself; all of matter makes "but one body of nature" (*OEP* 206). Moreover, this one nature itself is indivisible precisely because it is spatially infinite and has no limits. That is, since there is no vacuum, neither within nor beyond infinite nature, no distinct part can be separated off from the rest of nature – there is no empty space or vacuum to separate nature into the divided parts, and there is "no place [for a part] to flee to" (*OEP* 48). Furthermore, just as each part has all three aspects of matter thoroughly blended, so too does the whole. Crucial to this picture is the fact that while each finite part of nature has its own finite portion of knowledge and sense, it does not have a thorough-going knowledge of the whole of nature (*GNP* 19f.). But as more and more parts unite into bodies of greater organization conspiring toward a common end, the degree of knowledge increases (*PL* 534; *OEP* 138), and nature as an infinite whole has infinite reason. Since this is reason that belongs to the one indivisible whole, it produces a thorough-going, unified knowledge of itself and all its parts (*GNP* 11).

This is the juncture at which we might understandably go wrong in suggesting a solution to Cavendish's problem of order and harmony. I present this erroneous solution to show both how (given the texts) one might be tempted down this route, and why this route must be avoided. So, one might solve the problem of order and harmony by saying that the knowledge that explains orderly causal relations should not be seen as the result of knowledge that one independent part of nature has of another part. Rather, it should be seen as the result of knowledge that

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ording to kinds of perceptive capacities. What gets completely inter-mixed are the inanimate, animate sensitive, and animate rational aspects of matter with their respective perceptive capacities being preserved in this intermixture. Wilson 2007 also acknowledges that Cavendish uses complete blending to solve the problem of how sensitive matter acts appropriately in its work upon inanimate matter.

the whole of nature has of itself and of each of its parts, a knowledge that guides, from the top-down, all the parts in their causal interactions among themselves thus explaining why two seemingly distinct and independent parts of nature are able to express the correct sympathy or antipathy necessary for orderly interactions. This interpretation is especially tempting in light of passages such as the following: “Nature having Infinite parts of Infinite degrees, must also have an Infinite natural wisdom to order her natural Infinite parts and actions, and consequently an Infinite power to put her wisdom into act [...]” (*PL* 8f.; cf. *PL* 144, 161; *OEP* 121, 138, 214); and “it is more easie, in my opinion, to know the various effects in Nature by studying the Prime cause, then by the uncertain study of the inconstant effects to arrive to the true knowledge of the prime cause; truly it is much easier to walk in a Labyrinth without a Guide, then to gain a certain knowledge in any one art or natural effect, without Nature her self be the guide, for Nature is the onely Mistress and *cause of all*” (*PL* 284; cf. *OEP* 414).<sup>24</sup>

This quasi-Spinozistic approach<sup>25</sup> could address Cavendish’s motivation, identified above, for endorsing occasional causation – the motivation grounded in the non-transfer of motion – by acknowledging that a finite, natural individual does not in fact transfer motion together with matter to another finite individual upon causal interactions. Rather the whole of nature as the single, principal cause reduces the quantity of motion in one of its own parts while increasing motion in another part and so forth in order to produce orderly causal interactions among those parts. This approach could also explain the ubiquitous presence of sense and reason throughout the parts of matter – this is the character of the whole of material nature, and thus, it is the character of the parts as well. Notice, however, the potential consequence of this proposed solution to the harmony problem. It assumes that all of nature with its infinite knowledge acts as the principal source of all orderly causal conduct among parts. Finite individuals are explicitly

<sup>24</sup> James 1999, 238, identifies another solution to the harmony problem that Cavendish considers once or twice: each body contains eternally the figures it will require in order to pattern out the appropriate figures of bodies that it will encounter (*PPO* 94f.).

<sup>25</sup> Of course, this would not be full-fledged Spinozism for at least two reasons. First, Cavendish reserves a place for a transcendental God in her ontology (e.g. *PL* 8f.; *OEP* 199f., 251). Second, the whole of Cavendish’s nature is not just ubiquitously powerful but thoroughly rational in a way that suggests that nature as a whole intentionally orders its parts according to standards of *good* order, *pace* Spinoza’s conception of nature as a whole.

called “effects” of this whole (e.g. *OEP* 141) not causes themselves. That is, the theory of occasional causation, premised on finite individuals acting as principal causes, gives rise to the problem of harmony which is solved, seemingly, by denying that finite individuals act as principal causes and asserting rather than nature as a whole acts as sole principal cause. In short, the solution to the problem that emerges from occasional causation seems to be to reject occasional causation itself.

Whatever virtues this interpretation might have, it runs roughshod over several and significant elements of Cavendish’s overall philosophy, not least of which is the theory of occasional causation to which she is devoted.<sup>26</sup> It also does not take proper heed of her epistemology and method, and relatedly, it cannot account for natural disorders in a way amenable to Cavendish’s thinking about disorders. It is true that Cavendish posits that matter senses and reasons in order to explain the order and harmony of the natural world, but not in the manner just suggested – it is not the perceptive powers of nature *as a whole* working from the top down that achieves this. Rather, a more satisfactory solution than that just posed is found in her theory of freedom, specifically, her use of freedom as a source of both order and disorder in nature. To set the scene for a discussion of this solution, I consider first her epistemology and method.

#### *IV. Cavendish’s Epistemology and Method*

Cavendish can fairly be called a rationalist. After all, her *Observations*, as noted at the outset of this paper, was written as an extended attack on the approach of the experimentalists in the Royal Society. Reason – as that faculty that can act independently of sense, presenting nonsense based ideas to the perceiving subject (*OEP* 150) – takes precedence over sense in our “search for the causes of natural effects” most specifically, the nature of matter (*OEP* 99). Senses cannot lead us to the

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<sup>26</sup> She appeals to occasional causation to explain a number of specific phenomena, including: action at a distance in, for example, the case of magnetism (*OEP* 56f., 235); the shadow of a tree upon the ground or a wall (*PL* 204); the moon’s reflection of the light of the sun (*PL* 205); the different results when two different bodies are thrown into a fire to burn (*PL* 311); the coldness or hotness of winds coming from, respectively, colder or hotter regions (the wind patterns out the coldness or heat of the objects found in the location from which the wind comes) (*OEP* 121); and echoes (*PL* 74).

conclusion that there is no empty space or a vacuum – it is because this is inconceivability *to reason* that we conclude this is impossible. The denial of immaterial substance also follows upon the inconceivability to reason that substance be immaterial. And it is the rational, and not the empirical, concept of motion as mode being dependent upon matter as substance that leads to her belief that motion cannot transfer from body to body in causal interactions without matter also transferring; sense (or common sense, at least) would tell us something quite different.

However, like other rationalists in the seventeenth century (who believe that reason provides us with first and foundational truths), Cavendish also believes that the senses can nonetheless provide us with important information about the natural world.<sup>27</sup> She has a particular motivation for this: since each of us is a mere finite part of the metaphysically rational and sensitive matter, each of us has a finite epistemic ability to reason (*OEP* 137). As a result of our finite rational capacity, we cannot fully know the nature of the infinite cause of effects, and so we must turn to the effects themselves for much of our knowledge of the natural world. So, once our faculty of reason has led us to an initial understanding about the essence of matter, we must turn to our sensed experience of nature's effects in order to gain fuller understanding of the nature of the causes which produced those effects. Reason is not entirely sidelined at this juncture – there is still a role for reason to speculate about which exact interior motions of nature would give rise to sensed effects (*OEP* 175). But reason can only speculate at this juncture *because* sense has presented effects, the cause of which only reason can suppose. “[T]he best study, is rational contemplation joined with the observations of regular sense [...]” (*OEP* 53).

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<sup>27</sup> Wilson 2007 believes that Cavendish has an affinity for common-sense, or naked-eye, empiricism. For a discussion of such empiricism in light of the development of the microscope, see Wilson 1995, 215–256. It is true that Cavendish urges empirical investigation through unaided sense experience rather than senses aided by instruments such as microscopes and telescopes. Still, I do not believe Cavendish is first and foremost committed to empirical investigations over knowledge about the natural world delivered to us by reason. Despite her ontological materialism and her denial of an immaterial soul, Cavendish nonetheless is still primarily a rationalist with respect to how we gain knowledge of foundational truths about the natural world. My evaluation of Cavendish's epistemology is, therefore, more in line with that of Broad 2002, 41 (who notes her “reverence for reason”) and Lewis 2001, 356 (“Cavendish's rationalist agenda rings clear”).



Most crucial for my purposes is to note the way in which Cavendish's rationalism diverges from Spinoza's since this will demonstrate why we cannot describe her philosophy in proto-Spinozistic terms (as suggested at the close of the previous section) without doing excessive damage to her philosophy. Spinoza proceeds, in the first part of the *Ethics*, for example, by deducing from definitions and axioms, the sole existence of one infinite, extended and thinking thing, God (*E I P14*), which fully necessitates all natural things (*E I P29*) which are mere modes of the one substance, God. Natural things could not have been or acted differently without changing the nature of God, a conceptual impossibility given that God, as perfect, could not have been other than as he is (*E I P33*). The conclusions about nature that Cavendish reaches through reason are considerably less robust than these. She concludes that the whole of material nature is infinitely extended and has infinite reason, but she cannot deduce from this that infinite nature necessitates all its parts. Indeed, her separation of God (who is perfect and unchanging) from nature (which is neither perfect nor unchanging) precludes Spinoza's necessitarian conclusion. Moreover, we shall find that she reaches conclusions about nature and freedom that are incompatible with Spinoza's conclusions. To show this, I will examine two specific kinds of sense experiences that she believes give us true information about the natural world.

As suggested by the quotation above which makes appeal to "regular sense", one sort of sense experience Cavendish relies upon to increase our beliefs about nature is that which can alert us to patterns or regularities in the material world. She herself frequently appeals to our experience of repeated patterns and kinds (or species) as telling us something importantly true about the orderly structure of the world (e.g. *PL* 359f.; *OEP* 197, 202f.; *GNP* 166f., 234f.), and therefore about the character of nature's overarching wisdom. In fact, nature must dictate that there be specific kinds, defined simply as specific shapes or figures. Otherwise, precisely because nature is self-moving matter extended in a plenum, there would be no limit to the variety of figures and shapes (species) that its parts might take. So, "Nature is necessitated to divide her Creatures into Kinds and Sorts, to keep Order and Method [...]" (*GNP* 166f.; cf. *PL* 173f.). We do not *know* this through exercise of rational capacities because our finite reason cannot know infinite nature and the natural kinds that nature's wisdom dictates will obtain. But it makes sense to suppose that nature as a whole acts in this orderly fashion – and not chaotically by allowing unlimited natural kinds – because the former accords with our sensed experience of the effects of

self-moving, rational matter. Of course, our suppositions about the exact natural kinds that nature as a whole produces will always be provisional because we cannot know nature's kinds (*PL* 507; *OEP* 214). Cavendish's emphasis on sense experience of regularities may help make sense of her criticisms of empiricists as, for example, the one found in the opening quotation of this paper. Her primary targets in her anti-empirical statements are the contemporary microscopists whose observations provide data that does not help us discern natural patterns.<sup>28</sup>

The second sort of experienced effect relevant to Cavendish's method is the flip-side to the first: disorders, both within human nature and non-human nature. Cavendish spent sixteen years in exile due to civil war in Britain between the reigns of Charles I and Charles II. She was a Royalist. Her family lost much property and her brother Charles was executed for his role as a Royalist fighter. Without a doubt, she considered war in which a monarch is disposed by his subjects a true disorder, perhaps even evil (*NBW* 75; *ODS* 135f.). But it is not just within human societies that we find disorders. Cavendish clearly extends this to non-human nature as well, as we see most clearly in the case of disease portrayed as an example of deviation from the regular patterns that we witness as usually obtaining in nature. In fact, she often writes of diseases, or the disturbance of normal or regular 'mental' and 'physical' health, in social-political terms (e.g. *GNP* 157f.), suggesting the parallel between human and non-human disorders.

[W]hen a man recovers from a disease, although the regular motions have conquered the irregular, and subdued them to their obedience, yet they are not so quite obedient as they ought, which causes weakness: Neither do the regular motions use so much force in Peace, as in War [...]. And as for Health, why it is sooner lost than recovered, I answer, That it is easier to make disorders then to rectify them: as for example, in a Common-wealth, the ruines of War are not so suddenly repaired, as made [...]. [D]iseases are occasioned many several ways; for some are made by a home Rebellion, and others by forreign enemies, and some by natural and regular dissolutions, and their cures are as different; but the chief Magistrate or Governors of the animal body, which are the regular motions of the parts of the body, want most commonly the assistance of foreign Parts, which are Medicines, Diets, and the like (*PL* 408f.; cf. *PPO* 43f.).

<sup>28</sup> Two of her primary criticisms of the microscopists and telescopists are these: First, the empirical data they provide are distortions of the true external shapes of things (*OEP* 50f.), and second, they tell us nothing about the interior nature of matter – that it is self-moving, for example – for which we must rely upon reason (*OEP* 69f.). For one account of Cavendish's reaction to microscopy, see Wall-work 2001.

Diseases often result in the disturbance of the stable, regular figure of a natural kind or species, and in the extreme, disease is death which is the total destruction of the stable figure (*PL* 343; *OEP* 81; *GNP* 28f.). Disease and civil wars are thus examples of disorder in the natural world.<sup>29</sup>

This second point is worth emphasis. There are some effects in nature that Cavendish holds to be truly disharmonious, and perhaps even evil; they do merely *appear* to be so from our finite perspective. I believe this is *the* key premise in understanding Cavendish's philosophy of nature, and it is another crucial way in which she differs from Spinoza (*E I* appendix), a difference grounded in Cavendish's (but not Spinoza's) conception of infinitely-extended and rational nature as *intentionally* rational and wise, and not merely powerful. There are norms and standards of appropriate behaviour; some actions fall short of these standards and are thus wrong. The first class of experienced sense data – nature's orderly behaviour exhibited, for example, in specific and unchanging natural kinds (e.g. *GNP* 234), already implies this existence of standards distinct from human convention, as does her claim that these kinds and their proper natures (e.g. flight is proper to a bird) come about as a result of the designs and reasons of the whole of infinite nature (e.g. *PPO* 128 f.), and that beings which are not of a kind prescribed by nature itself (e.g. a human who can fly) are monsters (*PPO*

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<sup>29</sup> One would have to argue, it seems, for the normalcy of death after a certain number of years (our senses tell us that this is how nature regularly and ordinarily works), and therefore, the rationally-motivated rightness of a body's disintegration after a certain time. Only some, especially early, deaths, therefore would represent a violation of a normal, healthy body. Some forms of natural disorders about which Cavendish is ambiguous are 'monsters' or mal-formed fetuses, or deviant species. In her more 'philosophical' works, she does tend to regard radical deviations from the natural kinds we witness as true disorders that represent a perversion from nature's good and proper order. But in her more literary works, she is much more willing to acknowledge the possible existence of a much wider range of natural kinds in other (fictional) worlds than the kinds we experience in our world. Examples include the bird-men and fish-men of *The New Blazing World*, and the fictional creatures that grace many of the stories in prose and verse in *Nature's Pictures*. Because of matter's rationality, sensitivity, and capacity for self-motion, there is the *possibility* of a wider range of kinds of beings than those we *actually* find do obtain in our world. My thanks to an anonymous referee for drawing my attention to Cavendish's nuanced position on monsters. That Cavendish clearly treats disease as a natural disorder on par with the social disorder of civil war is adequate for the point I make here.

131; *OEP* 64, 240).<sup>30</sup> There is a non-accidental conceptual parallel between non-human nature and human societies on this score. Just as nature as a whole has infinite wisdom which guides, from the top down, what all its parts *ought* to do, so too, human communities ought to follow the model of a monarch guiding his subjects (*ODS* 266f.). After all, in the case of the civil war with which Cavendish had first-hand and bitter acquaintance, the monarch's subjects dissented from the rational, order-giving command of the monarch. It is precisely the disharmony that threatens to follow from the dissent of society's members that leads Cavendish to denounce democratically-organized societies and favour the hierarchy of a monarchy (*NBW* 95).<sup>31</sup> One may push Cavendish to justify her belief that there are norms and perversions from norms independent from our conventions, but here I think the best defence of Cavendish is to acknowledge her methodology, specifically the fact that we learn important facts about nature by

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<sup>30</sup> For another endorsement of Cavendish's essentially teleological view of nature, see Broad 1999, 43 and 62. This depiction of the teleological nature of Cavendish's philosophy may run into interpretive problems. One might, for example, choose to focus on passages such as the following to argue that she believes that 'norms' are merely human conventions imposed upon nature from our limited point of view: "what Man calls Sickness, Pain, and Death, are nothing else but the Motions of Nature, that is, nothing but meer Matter in Nature [...]. [W]hen they [men] will express the motions of Production of their [body's] Figure, they call them Health; but when they will express the motions contrary to these, they call them Sickness, Pain, Death, and the like [...]. [But] there is no such thing in Nature, as Death, Sickness, Pain, Health, &c. but onely a variety and change of the corporeal motions [...]" (*PL* 331f.; cf. *PPO* 129f.; *PL* 538f.). However, this text could be read as saying that matter itself cannot be characterized as healthy or sick, but this does not mean that a body made up out of matter ought not to have a specific figure in order to count as a well-made and healthy example of a kind of being (e.g. a bird), with too much variation from that figure counting as a defect or as illness. Moreover, one might well argue that Cavendish's seemingly anti-teleological statements are really comments about the limits of human knowledge and not comments about nature itself. That is, she is saying that there are norms and kinds in nature, but we can only guess at them, and cannot know conclusively what they are, and so any such guesses will always be just provisional human conventions which may or may not happen upon the truth. The latter interpretation coheres with more texts than does the former, and, more crucially, it makes sense of Cavendish's overall philosophy of nature much better than does the former interpretation. This will come especially clear in the next section of the paper.

<sup>31</sup> For three commentators who deal with Cavendish's defence of aristocracy, see Rogers 1996, 199f.; Holmesland 1999, 466; and Schiebinger 1989, 58.

turning to effects, and that we believe war and disease as experienced are truly evil.<sup>32</sup>

The fact that Cavendish believes there are true disorders independent of the human perspective – and so there are true norms, digressions from which define disorderly behaviour – is so crucial because it shows how seriously Cavendish pays heed to experienced effects in her philosophy of nature. She could have started with the conception (reached by reason) of infinitely wise nature acting as intentional cause to produce finite effects (all the individuals and events we witness). But with this starting point, it would make much more sense for her to dismiss apparent evils as exactly that – only apparent and erroneously perceived as evil by us because we are finite – than it would make sense for her to claim that infinitely *wise* nature orders her parts mostly harmoniously, but also in a disharmonious and in a disorderly fashion. Given, however, her belief that events such as civil wars and disease are true evils, this implies a belief that natural beings often act in ways that are perversions from nature's norms. This has important implications for her conception of nature. For example, if perceived disorders are real disorders, then we can no longer as easily attribute nature's orderly behaviour to the over-arching wisdom of nature acting as principal cause to order her parts harmoniously; if this were true, there would be no disorders. We must rather develop a different understanding of Cavendish's conception of nature in order to accommodate her belief that disorders are real.

Here is a suggestion of how we might understand the source of both nature's orders and disorders on Cavendish's system. It is important to note that I here diverge from Cavendish's own explicit argumentation, but I do not diverge either from her basic philosophical commitments or from the general spirit of her philosophy. What I offer here, then, is a Cavendishean proposal, and further, one with heavy evidence in favour of its being one that Cavendish herself would embrace.

One obvious upshot of Cavendish's particular brand of materialism is that there is no difference in kind between human beings and every other kind of being. That all beings sense and reason, albeit in radically different ways (e.g. *GNP* 18), attests to this. This essential commonality

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<sup>32</sup> In a clear example of her appealing to God in substantive ways, despite the fact that she says we ought not to do so in natural philosophy, Cavendish suggests that God created the order of the world even if he did not create the matter of it. He communicates order to the world not through any physical efficacy (this is impossible) but by a rational command, by a "Let it be done" (*OEP* 212). Given this, God may be the source and justification of nature's norms.

between human and non-human beings allows Cavendish to draw very strong parallels between events in human, social interactions and events in non-human, natural interactions, even to the point of allowing her to extend conclusions reached regarding the former realm to the latter. Consider the cases of social harmony and of civil war. One clear source of these sorts of interaction is society's members either assenting to or dissenting from the prescriptions the social overseer, the monarch. How, *causally*, does this occur? The most that can be said about this on Cavendish's causal account is that we know *that* we causally interact through rational suggestion and response. We can go no further to explain *how* or to identify the precise material mechanism by which we thus bring about effects in others.<sup>33</sup> Cavendish is in a position to legitimately extend this general claim to other parts of nature which are *essentially just like us* because comprised of sensing, reasoning matter. We can say *that* all beings causally interact through rational suggestion and response, each being exercising its own specific sort of rationality: an overseer rationally suggests a course of action ("produce some work and I will pay you for it") that the worker may or may not follow; the body rationally suggests a course of action (pattern out a shadow) that the pavement may or may not follow; the pinching fingers rationally suggest a course of action (pattern out the feeling of pain) that the arm may or may not follow; and so forth. Cavendish is not being metaphoric at this point in her philosophy. If she were being so, she would undermine the foundations of her natural philosophy, that is, her matter theory which necessitates that all natural beings be conceived of as essentially the same – as essentially capable of sensing and of engaging in rational interaction with other natural beings. Her frequent insistence that we not equate reason with speech is telling in this context (e.g. *PL* 151; *ODS* 118). Speech is an effect of the rational aspect of matter, an effect found in only certain creatures (humans, most obviously). But rational matter causes all sorts of effects, most of which humans cannot understand precisely because we do not have phenomenological acquaintance with the non-human effects of rational matter.

So we can say *that* non-human beings interact through rational suggestion and response, but just as in the case of humans, we cannot make

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<sup>33</sup> O'Neill 2001, xxxiv, suggests that, for Cavendish, the mechanism of causal power cannot ultimately be explained because it, itself, is the bedrock of explanation. This is, I think, quite true. The suggestion currently under consideration helps to show how Cavendish might convincingly hold this position: we simply extend to nature what we know (phenomenologically) to be true of ourselves.

any positive claim about *how*, or through what causal mechanism, natural beings are able to interact with one another. Still, in assuming *that* causal interaction occurs in this way, we are able to account for the fact that nature is, by and large (but not unfailingly), orderly and harmonious even though God does not mediate natural interactions, and even though some interactions occur as a result of occasional causation according to which there is significant independence between occasional and principal causes. Better still, the fact that natural disorders are taken as real disorders encourages an account of causation like the one currently suggested much more readily than it encourages the sort of top-down causal account suggested in the previous section. If nature were considered only orderly, my account here may not be as strong an interpretation of Cavendish as the quasi-Spinozistic account. But once we admit disorders as true perversions from the norm, the proposed interpretation is much stronger than the quasi-Spinozistic interpretation. Disorders in nature come about just as they come about in human societies – by a part within nature refusing to obey the rational suggestion of another and having the power to disobey because nature as a whole is not exercising through-going control over its parts.<sup>34</sup>

This suggested reading of Cavendish's theory of causation among natural creatures not only fits well conceptually within her philosophy. There is also textual evidence in its favor.

“[T]hough she [Nature] is infinitely naturally wise in her self, yet her parts or particular creatures may commit errors and mistakes: the truth is, it is impossible but that parts or particular Creatures must be subject to errors, because no part can have a perfect or general knowledg, as being but a part, and not a whole” (*PL* 509f.; cf. *OEP* 144).

And:

Thus the sensitive and rational motions do oftentimes cross and oppose each other; for, although several parts are united in one body, yet they are not always bound to agree to one action; nor can it be otherwise; for, were there no disagreement between them, there would be no irregularities, and consequently no pain or sickness, nor no dissolution of any natural figure (*OEP* 145).

<sup>34</sup> It must be acknowledged that there remains a significant tension between Cavendish's claim, cited in section III above, that “Nature is the onely Mistress and *cause of all*” (which certainly encourages the quasi-Spinozistic reading), and the current suggestion that finite natural parts act as causes often dissenting from the norms nature imposes from the top-down upon its parts. This tension is significant in Cavendish's philosophy, but there is an interesting and satisfying way to deal with it by drawing upon resources found within her philosophy itself. See Detlefsen 2006.

In sum, because Cavendish has bracketed God from natural explanations, and because her theory of occasional causation implies that finite individuals are significantly independent from one another, she requires some way of explaining the orderly and harmonious nature of the interactions among finite individuals. One way of explaining such order would be to go with a broadly Spinozistic solution to the problem, but this would both necessitate a rejection of occasional causation and ignore important aspects of her epistemology and method. So, given her epistemology – reason is limited (because we are materially limited) and thus depends upon sense – her method (as practised, if not stated) is to start with initial limits set by reason on the nature of matter, and then to turn to sensed effects in the world to help reason in its speculation about the nature of the causes that must have given rise to those effects. These sensed effects indicate most crucially that some events in the world are truly disharmonious or evil. This tells against the argument above for why nature is ubiquitously rational – the argument that says nature is so because the one, whole nature is infinitely wise and so its parts bear this character too. Rather, this method suggests that nature's parts are perceptive in order to be able to interact with one another (in both orderly and disorderly ways) through sense and rational suggestion as we do in our own social interactions. Moreover, this approach allows her to explain natural disorders in a way that the nature-as-principal-cause approach cannot as easily do. In the next section, we see further how attributing reason to matter aids in this explanation of disorders, and that Cavendish's method is, indeed, to start with the human and to extend her phenomenological findings to the rest of nature.

#### *V. Freedom and Nature's Disorders*

Order and harmony, then, are explained in terms of nature's parts knowing how they ought to proceed and doing so. Likewise, nature's disorders are explained by nature's parts either knowing how they ought to proceed and refusing to comply, or simply not knowing how to proceed due their limited rationality and thus ignorance, and so proceeding erroneously by accident. This could not happen if infinitely wise nature had complete, determining control over all its parts, and indeed, as Cavendish's account of freedom proves, it does not have such control.



In 1645, the year that Margaret and William married, Hobbes and John Bramhall, fellow Royalist exiles in Paris, arrived in the Cavendish household at the invitation of William to conduct a debate on human freedom.<sup>35</sup> Whether or not Cavendish herself was present at the debate, it is almost certain that she discussed the issues later with either her husband, his brother, or both. There are enough suggestive passages scattered throughout her writings to indicate that she was aware of at least the main lines of argument in the debate. While Cavendish herself never directly tackles the metaphysics of human freedom – she thinks that delving into the matter leads to blasphemy (*PL* 349), and one gets the sense that she is impatient with the subtlety of the details in the debate (*PL* 492) – there are enough helpful comments on the issue in her work to allow us to reconstruct her basic position and thereby show the connection with occasional causation and natural disorders. Before turning to these comments, it is useful to present a few central points of the Hobbes-Bramhall debate to serve as a foil.<sup>36</sup>

Hobbes is a compatibilist – human freedom is compatible with the necessitation of human action that follows from our wills being necessitated – and Bramhall is an incompatibilist – humans are free but only because our actions are not necessitated because our wills are free. The divergence between Hobbes and Bramhall on the necessity of human action can be traced to their divergence on human psychology which in turn is founded upon their differences regarding the metaphysics of the human. Hobbes assimilates the will to appetite – “the will is appetite; [man can no more] determine his will than any other appetite, that is, more than he can determine when he will be hungry and when not” (*EW* V, 34) – and the will is simply the last appetite before action, and that which necessitates a given action (*EW* IV, 273f.). The will is necessitated for Hobbes because it is causally-determined by antecedent appetites. Conversely, Bramhall is in line with tradition in distinguishing between appetites or desires on the one hand and will on the other. According to Bramhall, it is “to dishonour his own nature” when a human equates “fancy with understanding, or the sensitive appetite with the reasonable will”<sup>37</sup>.

This difference in their conceptions of the nature of the will is rooted in their different metaphysics of the human. Hobbes is a materialist, and accordingly there is no

<sup>35</sup> Sarasohn 2003, 43, claims that Cavendish targets Hobbes’ *Of Liberty and Necessity* along with the *Leviathan* and other works in her *Letters*. Sarasohn identifies a passage in Cavendish’s *Letters* in which she challenges Hobbes’ conception of the voluntary (*PL* 45f.), and while Sarasohn does not provide the textual evidence for the position that Cavendish must have read Hobbes’ *Of Liberty and Necessity*, I think Sarasohn’s general interpretation of Cavendish’s reaction to Hobbes on freedom is more or less correct, and that, even if Cavendish did not explicitly cite the Hobbes-Bramhall debate, she was probably well aware of it. It does not seem likely that Cavendish was actually present at the debate as she and William married later in the year than the time of the debate, and she would have likely been ensconced in the Queen’s court until her marriage to William.

<sup>36</sup> See also Vere Chappell’s rich and concise introduction (Chappell 1999, ix–xxiii).

<sup>37</sup> Bramhall 1655, 171.

immaterial, rational soul to which the will, but not appetites, can belong. Bramhall, again in line with tradition, allows that the human alone has an immaterial soul which is the seat of the rational will but not of the sensitive appetite. Thus, according to Bramhall, our wills are not necessitated because “the elective power of the rational will”<sup>38</sup> is not determined by anything antecedent and extrinsic to it (such as sensitive appetites); the rational will itself determines itself to action.<sup>39</sup> Freedom, for Bramhall, is thus the self-determination or autonomy of the will; it is due to the fact that whatever sensitive appetites influence us, our wills can act or not act according to those appetites. Freedom, for Hobbes, must be something quite different and, obviously, compatible with the necessitation of the will and of action. And so he defines freedom (or liberty) as “the absence of all the impediments to action that are not contained in the nature and intrinsic quality of the agent” (*EW IV*, 273). That is, the will may be determined by appetites, but it is free as long as it can act in accordance with that determination without being prevented from acting by something outside of the person acting.

One may think that whatever Cavendish does say about freedom and necessity, it would be basically in line with Hobbes’ approach because of their shared materialism which lies at the foundation of Hobbes’ departure from Bramhall. This is, however, not the case. In her *Letters* she takes issue with Hobbes’ claim that voluntary motions “depend upon a precedent thought”.

[I]t doth imply a contradiction, to call them Voluntary Motions, and yet to say they are caused and depend upon our Imagination [...]. [H]ow can they be voluntary motions, being in a manner forced and necessitated to move according to Fancy or Imagination? (*PL 45f.*)<sup>40</sup>

The crucial point of departure is the exact nature of her materialism, specifically the fact that matter is self-active or internally-moved. “[B]y voluntary actions I understand self-actions; that is, such actions whose principle of motion is within themselves, and doth not proceed from such an exterior agent, as doth the motion of the inanimate part of nature” (*OEP 19*; cf. *PL 225*). If something material (such as the will) is moved due to the fact that other material “parts do drive or press upon” it, then “those are forced and constraint actions; whenas natural self-motions are free and voluntary” (*OEP 127*; cf. *PL 95*). Hobbes’ materialism, according to which motion is externally-imposed upon matter and is not intrinsic to matter itself, can only result in actions of matter that are extrinsically and antecedently determined, and so can-

<sup>38</sup> Bramhall 1655, 9.

<sup>39</sup> Bramhall 1655, 13.

<sup>40</sup> Here, she cites Hobbes’ *Leviathan* (*EW III*, 48f.).

not allow freedom of the (material) will on Cavendish's model. Despite the materialism she shares with Hobbes, Cavendish's conception of freedom as the ability to determine oneself to action is akin to that maintained by Bramhall.

But Cavendish's materialism does distinguish her theory of freedom from Bramhall's in some ways. She associates freedom more readily with rationality, not because reason belongs to an immaterial substance and is thus exempt from a chain of physical, causally-determined events (as for Bramhall), but because rational matter is "purer, and so more agil and free than the other [sensitive matter]" (*GNP* 4), which is "incumbred with the Inanimate parts, [and so] is obstructed and retarded" (*GNP* 9). Rational matter is freer than sensitive matter because of its function as instructor of sensitive matter which means that rational matter is "not necessitated to labour on, or with any other parts" (*OEP* 181). Both animate, self-moving aspects of matter are in their essence free (because self-acting), but rational matter is more so than sensitive. Cavendish maintains the greater freedom of rational matter even while occasionally noting that sensitive matter is capable of an unruly freedom to refuse to follow the commands of rational matter (e.g. *OEP* 144f., 242). This implies three points. First, Cavendish's theory of freedom is actually an amalgam of elements from both Hobbes' and Bramhall's theories. There is a difference in kind between that which is free (animate matter) and that which is not (inanimate matter) just as there is a difference in kind between that which can determine itself to action (the rational will) and that which cannot (anything material, including sensitive appetite) for Bramhall. Within the class of free beings, however, Cavendish allows a further distinction between that which is less free because constrained and that which has greater freedom because there is lesser constraint upon self-motion, thus showing somewhat of an affinity with Hobbes' notion of freedom as actions which are unconstrained.<sup>41</sup> Second, she has a strongly libertarian account of freedom. Rational matter can act entirely according to its own reasons without

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<sup>41</sup> Rogers 1996, 187f., thinks that Cavendish's and Hobbes' theories of freedom are basically the same, and it is the absence of constraint – or negative liberty – to which Rogers points as evidence for this position. While I believe that Rogers is mistaken in so far as the metaphysics of freedom in Cavendish and Hobbes is concerned, Rogers' interest is more with the social-political account of freedom at work in these two thinkers. It is quite possible that a case can be made for the convergence of Cavendish and Hobbes on their conception of citizens' freedom within a polity despite what I take to be their distinct metaphysical conceptions of freedom, but I do not pursue this here.

regard for rational suggestions made by other rational matter, and so a natural part can act as another part suggests, but it can also do otherwise.

Third, she is a naturalist, but in an unusual way. While Cavendish assimilates the human and nature (*OEP* 49), she does not thereby believe that the human is causally necessitated in the way that we generally think nature is. Rather, the converse holds, we assimilate nature to how we think of humans, and no part of nature is necessitated (*OEP* 109): “if man (who is but a single part of nature) hath given him by God the power and a free will of moving himself, why should not God give it to Nature?” (*PL* 95). While this passage might well be read as indicating that nature as a whole should be considered a free being, it is also true that Cavendish believes that all parts of nature in and of themselves are free. “That by reason every Part [of nature] had Self-motion and natural Free-will, Nature [as a whole] could not foreknow how they would move [...]” (*GNP* 102). Cavendish’s account of freedom – grounded in nature’s self-motion and its perceptive qualities, especially its ability to reason and capacity to choose – supports the interpretation of her method suggested in the previous section; she starts with the human and the phenomenology of our own freedom, and extends what is taken to be true of humans to the rest of nature.

This account of the role of freedom in Cavendish’s philosophy requires an explanation of the nature of freely-acting parts: what might a part be, for her, such that it both belongs to the one, infinitely-extended material plenum of nature, and is also free to act independently of that whole (such that the whole does not determine it, and indeed, does not foreknow what it will do, as the quotation above suggests)? Here is one suggestion that finds at least some textual evidence and so may be put forward as a plausible Cavendishian position. First, conceived of purely physically, the part is a figured portion of matter within the one whole that is nature, a figure that more or less maintains itself through motions that lend it stability (e.g. *OEP* 130f.; *GNP* 51). This stable figure, as a unity of matter, achieves a certain type of rationality and ability to sense (human figures have human sense and reason), and as long as it retains its figure, it retains its own reason and sense, and thus individuality. But precisely because these stable figures belong to the single body that is all of nature and that is in constant, destabilising motion, they cannot endure forever and so disintegrate only to re-organize with other matter into other stable figures of other creatures (*PPO* 17). As this answer implies, the part is a being that endures for

some period of time, but not forever.<sup>42</sup> Second, the individual is a centre of phenomenological awareness and memory, or a centre of unified sense and reason that recognizes itself as one. It also gives and responds to rational suggestion, and it is free to respond to such suggestions about norms and standards to follow as it sees fit. It is thus also a centre of moral contemplation and action.

Once again, we see the function of reason and sense, in both their metaphysical and epistemic roles, in Cavendish's philosophy. James points out that one of Cavendish's arguments against a theory of matter that deems it devoid of inherent activity and of psychological states, and that rather takes matter to be moved by externally-imposed motion, is that matter so conceived could never be individuated into unified beings (e.g. *PL* 60).<sup>43</sup> Rather, matter must hold itself together by its own internal motion *and* by the special desire or love – sympathy – that the parts feel for one another, thus indicating that sense and reason, taken metaphysically, are responsible for the individuation of beings insofar as they retain a specific, stable figure (*PPO* 75; *PL* 167). But sense and reason taken epistemically also play a role in individuation because these epistemic states alert the individual herself to her individual existence and, most crucially, they locate the moral centre of rational thought (in the diverse ways in which rationality is found in the world) and free action. As humans, we have clear phenomenological experience of this, and our similitude with others beings in the rest of nature justifies our extending these conclusions to them as well.

Nature thus conceived as an extended plenum of freely-acting parts would allow Cavendish to do two things that she could not do with the top-down approach, according to which nature acts as single principal cause. First, she can easily explain nature's disorders as the result of nature's parts freely acting against the orderly behaviour suggested by other parts. She does precisely this in explaining disease (*PPO* 43f.; *PL* 408f.). Second, she is able to retain the theory of occasional causation, and in fact connects freedom with that theory of causation, even explicitly – “the action of self-figuring [patterning] is free” (*PL* 24; cf. *PL* 18). This is to be expected. Hobbes' theory of causal change, according to which effects are brought about by the antecedent cause of externally-imposed motion, grounds his necessitarian account of action,

<sup>42</sup> Spinoza would call these so-called individuals ‘modes’: “Particular things are nothing but affections of God's attributes, *or* modes by which God's attributes are expressed in a certain and determinate way” (*E I P25Cor*).

<sup>43</sup> James 1999, 223.

which in turn shapes his theory of freedom. Similarly, Cavendish's theory of change by occasional causation, according to which effects are brought about from within the affected body itself acting as self-moving, principal cause, grounds her non-necessitarian account of action, which in turn allows a different conception of freedom from that found in Hobbes. These two points go hand in hand. The freedom of one part to not follow rational suggestion shows that the suggesting part (the occasional cause) is not sufficient for the principal cause to act. Likewise, the freedom of parts to act in accordance with their own reasons that they give to themselves – ideally (but not necessarily) reasons in line with nature's wise order (*OEP* 109) – shows that occasional causes are not necessary for the principal cause to act. Importantly, while not externally-determined, these are not random acts, but rather, acts that are self-determining according to reasons a natural part has given to itself. Freedom of nature's parts together with occasional causation explain nature's mistakes: mistakes are the result of parts not paying due heed to a rational command to act in accordance with nature's norms.

Earlier, I noted one way in which Cavendish's non-mechanical materialism manifests itself – that is, in her denial of the theory of cause by transfer of motion from part to part. Here is a second manifestation of that non-mechanical materialism. Material parts are not determined to act as they do in accordance with descriptive (and, for us, predictive) laws. Material parts determine themselves to act as they do, freely in accord (or not) with prescriptive norms of order and harmony. Boyle is helpful when he writes: "I cannot conceive how a body devoid of understanding and sense, truly so called, can moderate and determinate its own motions, especially so as to make them conformable to the laws, that it has no knowledge or apprehension of", thus betraying his understanding of "law" as a pre-modern understanding, that is, as prescriptive. It is an understanding that Cavendish shares, but she can assimilate this conception of law into her theory of nature given that bodies, on her account, are not devoid of understanding and sense.<sup>44</sup>

What are we to make of nature's overwhelming order and harmony on this new interpretation of nature as ubiquitously rational, sensing, *and free*? Ought not we to expect nature to be significantly more chaotic on this account? In fact, we can have no preconceptions or expectations of this whatsoever. Our finite, and specifically human, reason can tell us

<sup>44</sup> Boyle 1686, 457. For some helpful discussions of the development of the concept of law, especially as it applies to nature, see Milton 1981; Ruby 1986; and Zilsel 1942.

nothing about the rational choices that non-human parts of nature make in their interactions with others, though our experience of natural effects tells us nature is significantly more prone to orderly free behaviour than are humans who often freely behave in a disorderly fashion. I think it no accident that for both editions of her *Observations* – a work in natural philosophy – Cavendish attached it to a utopian fantasy of an ideal social-political world, *The New Blazing World*. What we can learn from our study of the non-human, natural world is important for teaching us how we ought to behave in our social relations within the human world, and there is therefore a value to studying together a work in natural philosophy and a work that presents an ideal, utopian social and political world.<sup>45</sup>

#### VI. Conclusion: Cavendish's Naturalism and Anthropomorphism

In trying to make sense of Cavendish's extraordinary claim to nature's thorough-going freedom, John Rogers writes that her attribution of freedom to all of the natural world runs counter to the empirical evidence given that the "substitution [of choice for compulsion] runs counter to the perception of colliding objects in the empirical world of post-Galilean physics, the world in which force and not free will seemed so clearly to provide the dominant impetus for motion"<sup>46</sup>. As a result, says Rogers, Cavendish must confine her discussion of freedom of matter to the subvisible parts of matter. But as we have seen, appealing to the free choices made by material beings does not run counter to *all* visible empirical evidence available to her which includes natural errors (especially within living beings) in addition to nature's uniformities. The prevalent model of deterministic compulsion is less capable than is Cavendish's model of explaining disorders if we take them to be true errors.

<sup>45</sup> Wilson 2003, 325, notes that Cavendish disadvantaged herself by "yoking" the *Observations* "with a fantasy work". While it may have been academically wiser for Cavendish to present her social-political vision in academic form, it is nonetheless instructive to read the two pieces in tandem precisely to see the tight connection Cavendish sees between the rational, free, and yet more or less orderly behaviour of non-human beings in nature, and the rational, free, and frequently disorderly behaviour of human beings, given that the former serves as a normative model for the latter.

<sup>46</sup> Rogers 1996, 190.

Cavendish's philosophy of nature does represent an extraordinary break from her tradition. She is committed to occasional causation as the theory of interaction appropriate for many kinds of causal relations. But this requires seemingly inanimate, non-perceptive objects to be both self-moving and rational simply to account for *any* causal interaction at all, even the simplest, most ordinary and constant, of causal interactions. A tossed bowl must move itself and it must know how to do so in an appropriate fashion. It may be true that some natural philosophers of the seventeenth century felt compelled to propose more elaborate and richer ontologies than bare, extended matter in order to explain the sometimes unpredictable phenomena of life (but not of bodies falling off trees) for example.<sup>47</sup> Cavendish's case is different. She requires a more elaborate and richer ontology – perceptive matter – to explain *any* orderly interaction that occurs by occasional causation given the independence among natural bodies that this theory implies, and the absence of God in explanations of natural events. But once she has attributed self-motion and reason to material parts, she has attributed freedom (in a strong, libertarian, sense) to them as well, and has thus located a causal source of natural errors.

Cavendish is a naturalist, but a remarkable one. Like Hobbes, she is a materialist, and she eschews appeals to the supernatural in natural philosophy. But unlike Hobbes, she does not explain the phenomena of human perception, reason, and freedom in terms of the more foundational matter, or body, defined simply as “that, which having no dependence upon our thought, is coincident or co-extended with some part of space” (*EW* I, 102). Rather, for Cavendish, matter itself embodies traits typically associated with humans: it moves, it senses, it reasons, it is free, and its freedom allows choices to agree or dissent from the good. Cavendish, then, might be called an “anthropomorphic naturalist” who permits significant teleology into her natural philosophy. This has widespread implications for her overall philosophy. It serves as a useful contrast with both Hobbes and Spinoza with whom she also has much in common. More notably, her anthropomorphic naturalism has significant implications for a contrast with Hobbes on political philosophy. Cavendish's occasional comments on how humans ought not to subordinate ourselves to artificial government and ought not to

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<sup>47</sup> James 1999, 226, alludes to this when she writes “many English writers basically sympathetic to mechanism nevertheless maintained that there were certain types of natural phenomena it could not explain [...]”.



become artificial beings but rather ought to strive for our natural state (*PL* 47f.) is ripe for study especially in relation to Hobbes' views.<sup>48</sup> But that is work for another occasion.<sup>49</sup>

The works of Margaret Cavendish are cited by the following abbreviations:

- GNP* *Grounds of Natural Philosophy*. London 1668 (facsimile reprint West Cornwall, CT 1996).
- NBW* *New Blazing World*. Second edition of 1668. In Margaret Cavendish: *Political Writings*. Ed. Susan James. Cambridge 2003.
- NP* *Nature's Pictures*. Second edition. London 1671.
- ODS* *Orations of a Divers Sort*. In Margaret Cavendish: *Political Writings*. Ed. Susan James. Cambridge 2003.
- OEP* *Observations upon Experimental Philosophy*. Second edition. Ed. Eileen O'Neill. Cambridge 2001 (based upon the 1668 edition).
- PF* *Poems, and Fancies*. London 1653.
- PL* *Philosophical Letters, or Modest Reflections upon some Opinions in Natural Philosophy*. London 1664.
- PPO* *Philosophical and Physical Opinions*. Second edition. London 1663.

Other abbreviations:

- EW* Hobbes: *The English Works of Thomas Hobbes of Malmesbury*. Ed. William Molesworth. 11 vols. London 1839–1845 (facsimile reprint Aalen 1966), cited by volume and page number.

<sup>48</sup> Ankers 2003, *passim*, goes a good distance in this study. He is especially effective at investigating the relation between the natural and the artificial in human societies in the work of both Hobbes and Cavendish.

<sup>49</sup> My appreciation to the audiences at the University of Pennsylvania's colloquium series and the University of Toronto's Nature and Necessity Conference for questions and discussion on this paper in its earliest form. I am especially grateful for questions posed by or discussion with Christia Mercer (and also for her editorial guidance on a much later version of the paper), Lisa Shapiro, and Catherine Wilson (who has also been very generous in sharing her own, forthcoming, work on Cavendish). I owe special debts to Donald Ainslie's for his particularly helpful line of questioning on Cavendish's views about freedom, to Gary Hatfield for posing the question that became the primary one of this paper, to Susan James for discussion on the connection between Cavendish's natural and political philosophies, and to Steven Gross for his written comments on Cavendish's matter theory. Thanks also to Leni Robinson for allowing me to read her wonderful work on Cavendish and More, to Michael Ryan at Penn's library for so thoughtfully sending me literature on Cavendish, to Tan Kok Chor for comments on a later version of this paper, and to two anonymous referees of this journal for very useful comments. I am grateful to Eileen O'Neill for general discussions on Cavendish and for inspiration.

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