

Minds Everywhere: Margaret Cavendish's Anti-Mechanist Materialism

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Margaret Cavendish presented and defended a distinctive materialist approach in her publications of the 1650s and 1660s. Even among materialists, Cavendish's views stand out, especially if one is inclined to think of early modern philosophy in terms of mechanism's replacement of Aristotelianism.<sup>1</sup> If that's the way one thinks about it, then something like Hobbes's materialism will be one's paradigm case.<sup>2</sup> Cavendish however, despite being a thoroughgoing materialist about the natural world, avoided, and indeed reversed, Hobbes's explanation of the mental in terms of the mechanical. For Cavendish, matter is fundamentally and irreducibly thinking.

Cavendish developed these views in two groups of books on natural philosophy. The first is a series of related works in which Cavendish focuses on presenting her own views.<sup>3</sup> The second group is a pair of books from the mid 1660s – the 1664 *Philosophical Letters* and the 1666 *Observations upon Experimental Philosophy* – in which Cavendish engaged directly and critically with the views of other philosophers.<sup>4</sup> I focus here on Cavendish's *Philosophical*

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<sup>1</sup> Thus, for example, Garber and Ayers single out mechanism's replacement of Aristotelianism as a central theme of their *Cambridge History of Seventeenth-Century Philosophy*: "in the seventeenth century one competitor came to rival and, eventually, to eclipse the philosophy of the schools: the mechanistic, or 'corpuscularian', philosophy, a descendant of ancient atomism and the ancestor of present-day physics. A main theme of the present volumes is the emergence and establishment of the different versions of this 'new philosophy'" (Garber and Ayers 1998, 3).

<sup>2</sup> There are certainly interesting relationships between Cavendish's view and Hobbes's. See Detlefsen (2006, 212-6), Detlefsen (2007, 181-3), Hutton (1997), Sarasohn (2010, 85-93), and Duncan (2012).

<sup>3</sup> These are the *Philosophical Fancies*, two editions of the *Philosophical and Physical Opinions*, and the *Grounds of Natural Philosophy*.

<sup>4</sup> The *Philosophical Letters* might also be paired with another 1664 volume, the *Sociable Letters*.

*Letters*. Here we see her explicit engagement with the early modern mechanist philosophies of Hobbes and Descartes. These are, indeed, the main topic of part 1 of her book.<sup>5</sup>

Cavendish believed that the natural world was wholly material, and that nature was one infinite material thing (PL 1.2).<sup>6</sup> Thus she was a sort of materialist about nature, though not about God, whom she called in contrast a spirit, not a body (PL 1.2). The materialism about nature is surprising itself, in her context, for there don't seem to have been many materialists in 1660s England. But the really distinctive features of Cavendish's materialism come out when one asks what that one material thing is like.<sup>7</sup>

Most basically, Cavendish held that matter is fundamentally and irreducibly thinking. Details aside, the answer to how matter can think is that matter always and everywhere can think. So the common materialist puzzle of how one can make large thinking things out of small unthinking things does not arise. Of course, the related panpsychist puzzle of how large thinking things can be made out of small thinking things does arise, so all is not entirely straightforward. Still this, very generally, is the picture: materialism, with thinking everywhere. More specifically, Cavendish took there to be three "degrees" of matter. The first two of these degrees are animate: they are the rational and the sensitive matter. The third degree is the inanimate matter. Moreover, matter of each of the three degrees is thoroughly mixed together, so that in any given piece of matter, no matter how small, one

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<sup>5</sup> Part 2 focuses on Henry More, and part 3 on J.B. van Helmont, while part 4 considers various other figures. More was aware of Cavendish's criticism. Indeed, she sent him a copy of the *Philosophical Letters* (Conway 1992, 234, 237). Hobbes presumably knew of it too. Though there is, I believe, no written record of this, there is one of Cavendish's having earlier sent him a volume of her plays (Hobbes 1994a, 524).

<sup>6</sup> I give references to the *Philosophical Letters* (Cavendish 1664) using the abbreviation 'PL' followed by the part and letter numbers.

<sup>7</sup> Cavendish's view is distinctive, at any rate, among those usually identified as philosophers. But see Fallon (1991, 79-100) on Milton's "animist materialism", and Hill (1991, 142) saying of Winstanley that his "philosophy which started with a vision seems to have ended in a kind of materialist pantheism" (142).

will find matter of each of the three degrees.<sup>8</sup> Thus although in a sense there are places where there is no thinking stuff – those are just the places where the inanimate matter is – there’s also a sense in which there is thinking stuff everywhere.

We might thus say that Cavendish believed in a version of materialism in which there are minds everywhere. A view on which there are minds everywhere might well seem a curious oddity at best, for despite some historical and recent interest, panpsychism remains very much a minority position.<sup>9</sup> However, Cavendish’s belief that there are many more minds in the world than one might ordinarily suspect was part of a significant trend in seventeenth-century philosophy. Several prominent philosophers responded to early modern mechanists – to Hobbes in particular, but also to Descartes – by postulating minds everywhere, or at least in many surprising places in the world.

Hobbes aimed to explain the natural world using a minimal ontology of matter in motion. Consider some of the critics of that approach: Cudworth, More, Leibniz, and Cavendish. Their views differ, but they agree that Hobbes’s minimal materialist ontology is not enough to explain the workings of the natural world.<sup>10</sup> They also all respond to that situation in the same way: they supplement Hobbes’s minimal ontology with a belief that there are many more minds in the world than one might ordinarily think. Their views about those additional minds differ significantly: Cudworth’s plastic natures, More’s spirit of

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<sup>8</sup> See for example PL 1.30 (“there is no Part that has not a comixture”) and PL 1.35 (“there being a thorow mixture of animate, rational and sensitive, and inanimate matter”).

<sup>9</sup> For recent discussions, see for example Freeman (2006). For an overview of seventeenth-century panpsychist views, see Skrbina (2005, 65-100).

<sup>10</sup> The point is differently expressed. Cudworth and More focus on the inadequacy of mechanical material explanations of various natural phenomena, and more generally of the regular workings of the material world. See for example Cudworth’s argument for plastic natures (Cudworth 1651, 146-74) and More’s for a spirit of nature (More 1659, 449-70). Leibniz argues that one needs to involve active force in one’s explanations. Leibniz’s arguments apply to Hobbes (Duncan 2010, 13) but were more often directed at Cartesians, as in sections 17-8 of the “Discourse on Metaphysics” (Leibniz 1989, 49-52).

nature; Cavendish's animate matter; and all the complications of Leibnizian ontology. But these views all fill the same role, of adding in minds, which think in some sort of irreducible way, to supplement the allegedly inadequate ontology of inanimate matter in motion.

Cavendish was thus far from alone in thinking, in response to Hobbes, that there are minds everywhere. Moreover, this was not just a response to Hobbes. It was also a response to Descartes's version of mechanism. For though Descartes, unlike Hobbes, believed that human beings had immaterial souls, these did not fill the role that plastic natures are the like were intended to fill. His mechanical explanations of natural phenomena were thought to have similar gaps to Hobbes's. For example, More's arguments for a spirit of nature target "*that admirable Master of Mechanicks Des-Cartes*" (More 1659, Preface, section 11) as well as Hobbes. And Cavendish – like More and Cudworth and Leibniz – was responding as much to Descartes as to Hobbes, as is clear from part 1 of the *Philosophical Letters*.

There is, to be sure, something curious about a philosopher taking this sort of line while also remaining a materialist. That oddity is only partially reduced by noticing the ways in which More, for example, was sometimes suggested to be closer to materialism than he would like to admit.<sup>11</sup> But perhaps the felt oddity results, in large part, from an implicit attachment to the notion that materialists – at least early modern ones – should be some sort of mechanists. It is just that notion that Cavendish's view challenges. While Hobbes's materialism was in a way the apotheosis of mechanism, Cavendish showed how one might retain the materialism while rejecting the mechanical project.

Sections 1 and 2 below fill out the picture of Cavendish's anti-mechanical materialism, by looking at what she has to say about the individual souls of finite beings, and the soul of nature. The third section then digresses briefly to examine Cavendish's apparent

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<sup>11</sup> See Henry (1986).

deviation from materialism in her views about supernatural, immaterial souls. Section 4 then returns to the anti-mechanist materialism, and argues that at its core is a disagreement with the mechanist over what is to be the basic causal model in terms of which all other natural change is to be explained. Where the mechanist's basic models involve impact and the workings of clockwork, Cavendish turns things on their head, and takes the individual human being, their thoughts and decisions, as the basic model.

### 1. The natural souls of finite individuals

Cavendish does seem to think there are such things as the minds of individuals, such as the minds of individual human beings. That is, she believes there is such a thing as “natural mind and soul” (PL 1.35). That's despite an occasional tendency to saying there is just one thing, nature, and therefore no individual humans or minds of such.<sup>12</sup> And also despite the puzzle about panpsychist materialism, of how one can construct big thinking things out of little thinking things.

Cavendish thinks, indeed, that that there are minds of many things, not just humans. Thus there are minds of animals, minds of rocks, indeed minds and knowledge of artifacts. “Sense and Reason are in other Creatures as well as in Man and Animals” (PL 1.11). Indeed, even artifacts have knowledge, according to Cavendish:

though the Bell hath not an animal knowledg, yet it may have a mineral life and knowledg, and the Bow, and the Jack-in-a-box a vegetable knowledg; for the shape and form of the Bell, Bow, and Jack-in-a-box, is artificial; nevertheless each in its

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<sup>12</sup> See Detlefsen (2006, 227-40).

own kind may have as much knowledge as an animal in his kind; only they are different according to the different proprieties of their Figures (PL 2.13).<sup>13</sup>

Focusing on humans, however, Cavendish thinks that each human being in the natural world has a natural, rational soul. It also has sensitive matter, and thus sensitive perception, but only, it would seem, one soul. That is, there are in each of us two sorts of perception: “it is not only the Mind that perceives in the kernel of the Brain, but that there is a double perception, rational and sensitive, and that the mind perceives by the rational, but the body and the sensitive organs by the sensitive perception” (PL 1.37). However there is in each of us only one (natural) soul, the rational one: “natural mind or soul is of one kind ... being made of rational matter” (PL 1.14). There is not a sensitive soul, at least not in name. There is a rational one. It looks like we can pick it out just as being the rational matter within the human being.<sup>14</sup>

I do not here pursue the issue of how Cavendish thinks we ought to individuate human beings. In the *Philosophical Letters*, she does say that the cause of the distinctions between finite creatures is motion.<sup>15</sup> She seems however to have little or nothing to say about the criteria of individuation.<sup>16</sup> That might seem a frustrating gap. But one ought to remember that Cavendish’s concern is very much with natural philosophy rather than

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<sup>13</sup> Although Cavendish talks of knowledge here rather than of minds, she seems happy to move between talk of minds and talk of sense, reason, and knowledge. See for example PL 1.36.

<sup>14</sup> Thus talk of “the Rational matter, which is the Mind” (PL 1.8); of “the mind or the rational matter” (PL 1.20); and of “the rational part in Man, which is the Mind or Soul” (PL 1.35).

<sup>15</sup> For, “though Matter is one and the same in its Nature, and never changes, yet the motions are various, which motions are the several actions of one and the same Natural Matter; and this is the cause of so many several Creatures” (PL 2.11).

<sup>16</sup> For further discussion of Cavendish on individuation, with reference in particular to her discussion of resurrection in the second appendix of the *Grounds of Natural Philosophy* (Cavendish 1668, 257-6), see Lascano (2014).

metaphysics. Here her attitude seems to parallel Hobbes's – do just as much metaphysics as you feel you need to do to get on with the rest of philosophy, then get on with the rest.

Overall then, the story about souls of humans seems at this stage to be basically what one would expect from the overall story. The (rational, natural) soul of an individual human is made up of (perhaps, identified with) the rational matter in that individual human.<sup>17</sup> These natural souls of humans and other finite individuals are not, however, the only souls that Cavendish identifies in the world.

## 2. The soul of nature

In addition to the souls of finite beings, Cavendish thinks there to be a soul of nature. In the *Observations* she explicitly denies that this is incorporeal: the soul of nature must be corporeal, as well as the body, for an incorporeal substance cannot be mixed with a corporeal (Cavendish 2001, 251). In the *Philosophical Letters*, the issue arises in arguing against More's incorporeal spirit of nature. Cavendish says against More against that:

he that thinks it absurd to say, the World is composed of meer self-moving Matter, may consider, that it is more absurd to believe Immaterial substances or spirits in Nature, as also a spirit of Nature, which is the Vicarious power of God upon Matter; For why should it not be as probable, that God did give Matter a selfmoving power to her self, as to have made another Creature to govern her? For Nature is not a Babe, or Child, to need such a Spiritual Nurse, to teach her to go, or to move; neither is she so young a Lady as to have need of a Governess, for surely she can

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<sup>17</sup> An unanswered question: does any arbitrarily chosen piece of matter have a rational soul made up of the rational matter within it? If not, why do some have souls and some not? A bell has knowledge – does it have a soul, and if so what about the top half of the bell? It is hard to see why Cavendish should not say 'yes' to such questions, though she tends to focus on the souls of more often recognized creatures and artifacts.

govern her self; she needs not a Guardian for fear she should run away with a younger Brother, or one that cannot make her a Jointure (PL 2.6).

Still, despite all this, Cavendish does explicitly say that there is such a thing as a soul of nature. Indeed there are even hints in the text of the view that this is the one and only soul, though that is not usually her view, granting as she does that there are souls of finite individuals.

Note first a text from a year before the *Philosophical Letters*: “I meddle not with the Particular Divine Souls of Men, but only the General Soul of Nature, which I name the rational Matter” (Cavendish 1663, Epistle to the Reader). I will return to the divine souls of men in section 3. For now, note that not only is there said to be a general soul of nature, but it is identified with the rational matter, presumably all the rational matter in nature, and it is said to be the only soul Cavendish talks about, as if it is the only natural soul there is.

The same themes are present, if slightly less clearly, in this text from the *Philosophical Letters* itself:

That these sensitive and rational parts of matter are the purest and subtilest parts of Nature, as the active parts, the knowing, understanding and prudent parts, the designing, architectonical and working parts, nay, the Life and Soul of Nature, and that there is not any Creature or part of nature without this Life and Soul; and that not onely Animals, but also Vegetables, Minerals and Elements, and what more is in Nature, are endued with this Life and Soul, Sense and Reason (PL, Preface to the Reader)

Here again, there is such a thing as the soul of nature, which is a material thing, not an immaterial one. Again it is to be identified with some of the matter in nature, but here it is perhaps identified with all the animate matter, rational and sensitive, rather than just the

rational matter. As in the previous text though, the soul of nature is to be spread throughout the world. Thus one wonders how this soul of nature relates to the souls of finite individuals that are in – indeed, are parts of – nature.

We might also ask how the soul of nature relates to the thoughts of the personified female ‘nature’ that appears at times in Cavendish’s work, as for instance in PL 1.2: “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 natural power to put her wisdom into act; and so of the rest of her attributes, which are all natural”. I take it that the soul of nature is nature’s soul, so the soul of nature thinks what nature thinks. But what does it think? We get an example in the first letter of Cavendish’s discussion of the work of Henry More:

I think there is no such atheistical belief amongst man-kind, nay, not onely amongst men, but also, amongst all other creatures, for if nature believes a God, all her parts, especially the sensitive and rational, which are the living and knowing parts, and are in all natural creatures, do the like, and therefore all parts and creatures in nature do adore and worship God, for any thing man can know to the contrary; for no question, but natures soule adores and worships God as well as man’s soule; and why may not God be worshipped by all sorts and kinds of creatures as well, as by one kind or sort? (PL 2.1)

Here Cavendish appears to claim that (a) (the soul of) nature believes in God, (b) that all the sensitive and rational parts of nature, such as the rational matter in some individual human, believe in God, and (c) that (b) is true because (a) is true.<sup>18</sup> This suggests a surprising principle: *if a soul  $s_1$  believes  $p$ , then any smaller soul  $s_2$  that is part of  $s_1$  also believes that  $p$ .* One

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<sup>18</sup> Similar claims are made at the end of PL 2.4.

might try to soften that surprising claim in various ways, say by noting the hesitations in the above text, or by pointing to Cavendish's discussion of difficulties associated with thinking of God: e.g., having an idea of God but not of his essence.<sup>19</sup> None of this shows Cavendish giving up on the surprising claim though.

Souls, in Cavendish's view, are bodies and thus stand in a part-whole relationship. My rational soul is thus literally part of the soul of nature. It is thus no shock to see Cavendish thinking there is some important relation between these souls' beliefs. The idea, perhaps, is that a belief of a soul is somehow suffused throughout it: it is not held by one part and not others. A soul's possession of a belief is certainly not to be explained mechanically, in terms of parts. Cavendish may seem, indeed, to lack resources to deny the principle.<sup>20</sup>

What about the opposite direction? Cavendish seems to have no inclination to assert that a soul *s*<sub>1</sub> must believe something just because its smaller part *s*<sub>2</sub> does. That would saddle the soul of nature with all the partial, indeed contradictory, beliefs of all the creatures of the world. But this sensible enough view does leave Cavendish holding that some parts of the world's rational matter believe *p* while others believe *not-p*, and thus that beliefs can to some extent be located within the rational matter of the world.

However exactly this is to be resolved, however, the overall picture remains clear. Natural souls are all to be identified with matter. The soul of nature is all the rational matter

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<sup>19</sup> “[N]aturally we may, and really have a knowledge of the existence of God ... but I dare not think, that naturally we can have an Idea of the essence of God, so as to know what God is in his very nature and essence; for how can there be a finite Idea of an Infinite God?” (PL 2.2).

<sup>20</sup> Are there, instead, positive reasons Cavendish might have why nature's belief in God cannot be located? Any suggestions here seem speculative. One might offer an argument from sufficient reason: there is no sufficient reason for the belief to be in one part of the soul of nature rather than another, so it is everywhere. Or it might alternatively just be that God has decreed that the belief in God will be one held by nature and all parts of nature.

in the world. The soul of some individual is all the rational, or perhaps all the animate, matter in them. Cavendish's view may have been anti-mechanist. But her view of natural thinking things was thoroughly materialist.

### 3. The divine and supernatural soul

There is, however, a sort of deviation from materialism in Cavendish's work. Though she maintained that the natural world is wholly material, she nevertheless also held that human beings are not wholly material. For, in the *Philosophical Letters* and in some other texts of the mid-1660s, Cavendish asserted that humans had two souls: not only the natural souls discussed above, but also other souls, which she called supernatural and divine. Thus, for example:

And all this I understand of the Natural Soul of Man; not of the Divine Soul, and her powers and faculties, for I leave that to Divines to inform us of; only this I say, that men not conceiving the distinction between this natural and divine Soul, make such a confusion betwixt those two Souls and their actions, which causes so many disputes and opinions (PL 2.20, 192).

Key features of the divine soul are that it is supernatural; it is incorporeal; it is known by faith; it, like other incorporeal things, is inconceivable by corporeal ones; and it is said to be in nature but not part of nature.<sup>21</sup> The only parts of nature are corporeal parts, and this soul can't be one of those, because it is incorporeal. It has, nevertheless, has some special relation to a part of nature, namely the body of which it is the associated soul.

The view that there is such a soul is most prominent in the *Philosophical Letters* and *Observations upon Experimental Philosophy*. In early work, such as the *Philosophical Fancies*, there

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<sup>21</sup> There are references throughout the *Philosophical Letters*, but see in particular PL 2.29-31.

seems to be no mention of a divine or supernatural soul. The mind, as it is discussed there, is material (Cavendish 1653, 93). The same view, indeed the same passage about the mind, appears in the first edition of the *Philosophical and Physical Opinions* (Cavendish 1655, 173). In “An epistle to the reader” of the second edition of the *Opinions*, however, Cavendish explicitly mentions a divine soul, only to say she won't talk about it: “I meddle not with the Particular Divine Souls of Men”. So by 1663 she seems to have been acknowledging that there was such a thing, which she would then discuss in the 1664 *Letters* and 1666 *Observations*. However, as Eileen O’Neill notes in her edition of the *Observations* (Cavendish 2001, 287) it appears that Cavendish argues against the divine soul view in the 1668 *Grounds of Natural Philosophy* (Cavendish 1668, 239). Thus the divine souls of humans appear and disappear from Cavendish's texts over time, and it looks indeed as if she changed her mind about this issue, albeit not for obvious reasons.

Despite describing the divine soul in the *Philosophical Letters*, Cavendish is reluctant to say too much about it, as being outside the proper realm of natural philosophy. Thus she hopes to avoid the problems that others have because they mix up divine and natural souls.<sup>22</sup> Talking about More is a particularly apt place to discuss divine souls though, given his belief in an incorporeal spirit of nature – this is just the sort of mixing of souls that Cavendish decries. One of the few extended discussions of divine souls thus comes at the end of part 2 of the *Philosophical Letters*.

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<sup>22</sup> The main alleged problems are in natural philosophy. But there can be related problems on the religious side too: “I fear the opinion of Immaterial substances in Nature will at last bring in again the Heathen Religion, and make us believe a god Pan, Bacchus, Ceres, Venus, and the like, so as we may become worshippers of Groves and shadows, Beans and Onions, as our Forefathers” (PL 2.4).

One important question about divine souls is how an individual's natural rational soul and their supernatural divine soul relate to one another. About that, Cavendish says the following:

there may be supernatural spiritual beings or substances in Nature, without any hinderance to Matter or corporeal Nature. The same I may say of the natural material, and the divine and supernatural Soul; for though the divine Soul is in a natural body, and both their powers and actions be different, yet they cause no ruine or disturbance to each other, but do in many cases agree with each other, without inroachment upon each others powers or actions; for God, as he is the God of all things, so the God of Order. Wherefore it is not probable, that created Immaterial or Incorporeal beings should order Corporeal Nature, no more then Corporeal Nature orders Immaterial or Incorporeal Creatures (PL 2.31)

One way to account for the relationship between the two souls would be to deny the causal efficacy of the divine soul in the natural world. But this is not what Cavendish does. Though the two do not disturb one another, this non-interference is a matter of “agreeing”, rather than of being unable to interfere with one another. That suggests that the divine soul could have effects in the natural world. Indeed, Cavendish says that the two souls “in many cases” agree, implying that they do not always do so.

What happens when the two souls do not agree appears to be a mystery. Cavendish does allow for mysteries in this realm: the natural philosopher should not stray into the realm of the church, let alone mix the immaterial world into the natural one in her explanations. So perhaps this is a mystery in the system, not just a mystery of interpretation.

The divine soul, in any event, is a finite immaterial being. As such it may seem not to belong in Cavendish's materialist system. But as she thought of the divine soul as a

supernatural, rather than a natural, being, she managed to maintain her materialism about the natural world, even during the period in which she asserted the existence of the divine soul. This materialism about the natural world, for all the curious form it took, was something to which Cavendish continued to have a strong attachment.

#### 4. Causal models

I turn back, now, to my central topic of Cavendish's anti-mechanist materialism. I focus in this section on issues related to causation.<sup>23</sup> This allows me to explore some central aspects of Cavendish's disagreement with other views, mechanist and materialist.

Though it is difficult to give a full and accurate characterization of mechanism, one central mechanist idea is that many natural phenomena are to be explained as the results of mechanical interactions. The shapes, sizes, and motions of the small parts of things explain, the mechanists argued, more than one might otherwise think. The mechanism of a clock provided a useful example: its apparently non-mechanical ability to tell the time is explained by the shapes, sizes, and motions of the parts inside. The mechanist project was to explain more and more of nature in this sort of way. Descartes provides an obvious example of someone taking this sort of approach. Hobbes provides an even better one, for he thought that this sort of mechanical explanation applied to human cognition as well.

That Hobbes and Descartes were wrong in this area is one of the themes of the first part of Cavendish's *Philosophical Letters*. Here I want to draw attention to two aspects of this explicit rejection of mechanism. First, there is the rejection of particular proposed

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<sup>23</sup> There is already considerable, helpful work on Cavendish on causation: see James (1999), O'Neill (2001), Detlefsen (2006; 2007), Michaelian (2009), and Cunning (2012). My main aim here is not to disagree with that, but to explore a different way of framing Cavendish's project in this area.

explanations. Secondly, there is a broader rejection, connected to how Cavendish thinks about explanation and causation.

One sort of disagreement, then, is with various particular explanatory claims. Cavendish's discussion of Hobbes's account of perception provides a useful example. Hobbes's account of sense involves a pressure outside the perceiver, which then leads to a reaction on the inside. Thus, in the version of *Leviathan*:

The cause of Sense, is the Externall Body, or Object, which presseth the organ proper to each Sense, either immediately, as in the Tast and Touch; or mediately, as in Seeing, Hearing, and Smelling: which pressure, by the mediation of the Nerves, and other strings, and membranes of the body, continued inwards to the Brain, and Heart, causeth there a resistance, or counter-pressure, or endeavour of the heart, to deliver it self: which endeavour because *Outward*, seemeth to be some matter without.

And this *seeming*, or *fancy*, is that which men call *sense* (*Leviathan* 1.4).<sup>24</sup>

Cavendish characterizes that as an account in terms of pressure and reaction. She responds by reversing the order of explanation: where Hobbes thought that pressure and reaction explained perception and thought, Cavendish thinks that perception and thought explain pressure and reaction. Thus she comments: "I will not say, that there is no pressure or reaction in Nature, but pressure and reaction doth not make perception, for the sensitive and rational parts of matter make all perception and variety of motion" (PL 1.18).

That's just one of many examples of Cavendish's criticisms of particular explanatory claims. Others are more narrowly concerned with relatively internal problems in the views of Hobbes and Descartes. This one, however, also points towards the second aspect of

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<sup>24</sup> I refer to *Leviathan* by chapter and paragraph number, using Malcolm's edition (Hobbes 2012). Hobbes tells similar stories, which appear to differ more in the argumentative context than in the underlying view, in chapter 2 of the *Elements of Law* (Hobbes 1994b) and chapter 25 of *De Corpore* (Hobbes 1999).

Cavendish's rejection of the mechanist approach. For Cavendish does not just disagree with Hobbes about which are the correct natural philosophical explanations. She also approaches the search for explanations in a different way, with a different basic model in mind. For the mechanist, the basic models are provided by examples like the workings of a clock, or perhaps the collisions of billiard balls, or even the motions of screws (as in Descartes's explanation of magnetism). To explain other, seemingly quite different, phenomena, one looks for processes of these mechanical sorts, often in the small parts of the things involved.

For Cavendish, in contrast, the human being provides the basic causal model. The basic model of a causal process is one in which someone perceives, considers, decides, and acts. Cavendish too, like the mechanist, needs to explain phenomena that do not obviously fit her basic causal model. But for her, they are the very cases that the mechanists take as basic. Thus the explanation of a collision between two billiard balls will fundamentally involve the second ball's perceiving the first, deciding what to do in response, and moving off as a result.

Thus when Cavendish talks in a general way about motion, she repeatedly talks about the knowledge in bodies, as well as the motion she thinks is in all of them. For example, in a discussion of More on the nature of matter: "Matter is self-moving, and very wise" (PL 2.8).<sup>25</sup> It's not just that every body happens to be moving and thinking: there is an explanatory connection here. In addition, and strikingly, Cavendish explains phenomena in terms of the psychological states of bodies: "some of her Parts are pleased and delighted with other parts, but some of her parts are afraid or have an aversion to other parts; and hence is like and dislike, or sympathy and antipathy, hate and love" (PL 2.10).

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<sup>25</sup> See also PL 1.30 on Descartes on motion.

These psychological processes in bodies are not all, perhaps, supposed to be exactly the same as those in human beings: one reads of things such as “mineral life and knowledge” and “vegetable knowledge” (PL 2.13). But the human is what we know. And the human agent is the model for thinking about everything else.

For both Cavendish and her mechanist opponents, groups of commitments are bundled together. Explanations in natural philosophy, ontological commitments to what sorts of things there are in the natural world, and methodological commitments to sorts of explanations to look for, are all interconnected. Often one is not obviously prior to the others. But Cavendish’s rejection of mechanist views did not just involve a disagreement on the natural philosophical explanations, but also, I suggest, a disagreement on this issue of what one’s most basic models for understanding the world are.

Cavendish’s use of this new model leads her to attribute many human features in surprising ways and places. Thus, in explaining the perception of sound, Cavendish considers some ways it can be inaccurate:

if it be, that the motions are tyred with figuring ... then they move slowly and weakly, not that they are tyred and weak in strength, but with working and repeating one and the same object, and so through love to variety, change from working regularly to move irregularly, so as not to pattern outward objects as they ought (PL 1.22).

Note this: “motions are tyred with figuring”. It’s not just a thinking thing that is the model here, but a human being who can become tired with things because they are repetitious, perhaps tediously so.<sup>26</sup>

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<sup>26</sup> How exactly this is supposed to work when the inanimate matter is moved around by the animate, is a thing I find puzzling. It is as if the inanimate is a burden the animate carries around. So in that way one can use the terms of the model. But then the notion that everything is self-moving, and all causation internal, seems to disappear.

Seeing this new model can also help us understand something that has seemed puzzling to readers of Cavendish: an apparent lack of explanation of central aspects of her views about causation. Thus O'Neill, after discussing Cavendish's explanation of causal interactions in terms of perceptions, says that

It may look as if Cavendish's explanation in terms of the perceptions of the sympathetic parts of nature just pushes the initial question back a stage. Now we can ask: how does an occasional cause induce the primary cause to have the perceptions that it does, if there is no direct physical causation at work between the occasion and the primary cause? (O'Neill 2001, xxxiv).<sup>27</sup>

The thought that there is a missing explanation depends, however, on thinking that perception and other psychological processes can't be the most basic processes in the world. But if one wholeheartedly accepts Cavendish's reversal of what is basic and what is derivative, there is just nothing more to be explained. The thoughts and actions of agents, such as humans, are the most basic things, not susceptible of further explanation.<sup>28</sup>

In arguing that this change of causal model is at the heart of Cavendish's view, I have focused on the psychological states of individuals. But there is another model at work in Cavendish's texts, which might seem to be more important. This is the model of a society. Thus James (1999, 222) talks of Cavendish's "[a]rguing from the polity to the natural world, as she frequently does". Detlefsen (2006, 221-6) discusses Cavendish's use of an analogy between the human body and the body politic, in a way that does not just involve thinking of a state or society on the model of a living body, but also "seems to take human society as

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<sup>27</sup> See also the discussion of Michaelian (2009).

<sup>28</sup> One might still say that there is a lack of detail in Cavendish's view here. Her explanations of this issue are not, perhaps, as thorough as, say, Leibniz's explanations of the pre-established harmony. (See Wilson (2007) on Cavendish and Leibniz.) But there is a question for which there is for Cavendish no possible answer.

the physically explanatory starting point, making the elements of the state – human beings as social beings – the explanatory model for the elements of the living body” (Detlefsen 2006, 224). Indeed, Detlefsen says “Every finite individual being is analogous to a living body or a commonwealth in this way” (225). This emphasis on human societies as an explanatory model may seem to be in conflict with my emphasis on human individuals as an explanatory model. If there is any genuine conflict of interpretations here, it is quite minor, however. Clearly Cavendish does in various places compare a human individual to a society. But the society here is a society of thinking beings, themselves modeled on people. Thus even the parts of people are thought of as like people. Cavendish’s use of an analogy to society thus, if anything, further confirms the thought that she takes thinking agents as her basic causal model in explanation.<sup>29</sup>

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<sup>29</sup> [Acknowledgments removed for review.]

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