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It is fair to say that the new ‘it’ person in early modern philosophy is Margaret Cavendish. Recent scholarship examines her views on human beings, mathematics, matter, motion, color, parthood relations, and experimental philosophy. Cavendish is also the subject of a new volume in Routledge’s ‘Arguments of the Philosophers’ series (Cunning 2016). In this flurry of scholarship, Deborah Boyle’s *The Well-Ordered Universe* is a much welcome addition. Boyle’s experience with Cavendish’s texts dates back at least 14 years and her knowledge of Cavendish’s metaphysics, epistemology, social, political, and moral philosophy are all presented in this masterful work.

Boyle’s thesis is simple: ‘Cavendish’s natural philosophy (including her medical theories) and her ethical and political views were all informed by an underlying concern with order’ (p. 8). While Boyle’s thesis is simple, the arguments and views contained in the study are rich and complex. It is impossible to do them all justice in a review. However, I will provide brief summaries of the main concerns of the chapters while focusing on Boyle’s most controversial claims in the book – that according to Cavendish, Nature is ‘unabashedly teleological’ and has ‘natural rules’ that the parts may either obey or not by means of their libertarian freedom. Boyle argues that, for Cavendish, it is only through parts of nature acting in regular ways (viz., acting as they *ought*) that peace and order are achieved. While I believe that the textual ground for ‘natural rules’ is shaky and the claim of strong normativity in Cavendish’s system is unnecessary, I find much else to admire in Boyle’s interpretation of Cavendish’s system of nature.

After a brief introductory chapter in which Boyle presents her main thesis, she turns to order and regularities in Chapter One. Here, Boyle begins with Cavendish’s early life and her experience during the civil war. She rightly compares Cavendish’s resulting concern for peace to Thomas Hobbes, and discusses the influence of this concern on her philosophical system. Boyle then turns to the heart of her systematic interpretation of Cavendish’s philosophy arguing that the fact that there is irregularity and regularity in Nature shows that normativity is built into Cavendish’s natural philosophy.

Cavendish defines irregular motions as ‘those motions which move not after the ordinary, common, or usual way or manner’ (p. 23; Boyle cites Cavendish 1664, p. 360). Boyle concludes from this that regular motions are those that are consistent with the usual and common way that nature moves, but that current scholarship is divided as to whether these claims are normative. The ‘True Disorders’ view that Boyle holds, following Karen Detlefsen, is that disorder in the world is independent of human perspective, and occurs when an entity fails to move in a way that is ‘proper and natural’ (p. 23). So, according to Boyle, when Cavendish speaks of irregular and regular motions, she is doing more than simply describing Nature’s motions. Boyle writes, ‘Cavendish says that “each part must have such proper and natural motions and actions as Nature has designed for it”; each item has “Natural Rules” for how items of its type are supposed to move and behave’ (p. 23; Boyle cites Cavendish 2001, p. 64 and 1668, pp. 246-7, respectively.). She makes this claim several times in early chapters even though an argument for how normativity or ‘Natural Rules’ come into the world will not be presented until Chapter 4.

According to Boyle, on the other side of this debate, David Cunning (2016) and Lisa Walters (2014) hold the ‘No True Disorders’ view. This view claims that irregularity is either due to the ‘necessary aspects of how matter is balanced into a peaceful order,’ according to Walters, or as Cunning holds, that what we call ‘irregularities’ occur when our human expectations or concerns are thwarted (p. 25). Boyle argues that the No True Disorders view fails to capture passages where Cavendish uses ‘normatively laden terms’ like ‘proper’ and ‘fitting’, and argues that passages used by Cunning can be read in a normative way. However Boyle does not discuss Walters’ more moderate view. I think that Boyle is correct to say that irregularity is not a *mere* product of human concern, as Cunning claims. However, it this does not mean that Cavendish holds that

there is strong normativity in nature and that Cavendish's use of the term 'irregularity' indicates a purposive violation of norms. Walters' view is the middle ground that is not explored. After all, if Nature is balanced, and part of that balance requires the dissolution of parts or individuals so that new parts and individuals may compose, certain 'irregularities' may be required so that new regularities may be born. If we consider individuals (plants, non-human and human animals) as systems, the breakdown of a system will be a sort of irregularity in the way the system ordinarily, commonly, or usually runs. This understanding of what Cavendish means by 'irregularity' is in keeping with her descriptive definition of the term. It would not require any strong normativity in nature, but merely an acknowledgement of the growth and decay cycle of individuals in Cavendish's system of nature.

One of the basic features of Cavendish's natural philosophy is that matter is self-moving. While Boyle does talk about the fact that matter is self-moving, she does not spend any time discussing what Cavendish means by 'motion,' 'matter,' or the ways that matter moves (for the importance of understanding these concepts in Cavendish, see Peterman 2018, pp. 195-6). Cavendish claims that Nature's primary motions are composition and division. Since she denies the possibility of a vacuum, she holds that when bits of matter divide they immediately compose with other bits of matter. In addition, she holds that all of Nature is in continual motion. So, Nature's self-motion is an ongoing process of composition and division. Bits of matter unite and move as a whole, while other matter divides. This basic feature of Cavendish's ontology shows that all individuals are temporary and that change and division are necessary features of the world. Cavendish claims that sense and reason make for regularity and peace in the world, while self-motion 'is the cause of the variety of nature's parts and actions' (Cavendish 2001, p. 39). These basic features of Cavendish's ontology fit well with the view that 'irregularity' is a descriptive term that picks out the consequences of division in an individual.

Chapter 1 ends with a discussion of the role of free will in Cavendish's philosophy. Boyle rightly notes that Cavendish did not seem overly concerned with the issue of freedom. Cavendish never gives a clear account of what freedom is and claims to leave the controversy of freedom and necessity 'to Divines to decide it' (Cavendish 1664, p. 225). However, despite the fact that the textual evidence for a Cavendishian account of freedom is far from conclusive, Boyle argues that Cavendish holds that parts of matter and individual entities have a libertarian freedom of will. She claims that there is both textual evidence and philosophical grounds for attributing this view to Cavendish. As noted above, the textual ground for libertarian freedom is tenuous. I will address Boyle's main philosophical reason for ascribing free will to parts or individuals – Cavendish's theory of occasional causation – below.

After these preliminary discussions of Cavendish's mature natural philosophy, Boyle concentrates on how Cavendish developed her philosophical system. Chapter 2 focuses on Cavendish's early philosophical discussion of atoms in *Poems and Fancies*, and places Cavendish's views in their historical context alongside Descartes, Bacon, and Charleton. While Cavendish's early atomism has received some scholarly attention, as Boyle notes, Cavendish's next published book, *Philosophicall Fancies*, and her following works in natural philosophy, develop her view of vitalist materialism, which Chapter 3 chronicles in precise detail. In this chapter, she discusses the doctrine of complete blending – that constitutive matter is a complete blend of animate rational, animate sensitive, and inanimate matter such that every bit of matter contains all three degrees of matter – and Cavendish's claim that Nature is eternal.

Chapter 4 is the chapter that delivers on promissory notes from the earlier chapters concerning normativity and free will and the relations between them. I will focus on three issues in this chapter: 'Natural Rules,' Self-knowledge, and Occasional Causation.

As part of her claim that Cavendish's system of nature is normative, Boyle relies heavily on a passage where Cavendish discusses 'Natural Rules.' This passage is cited, or mentioned as 'Natural Rules,' at least 15 times in the book. I note here two things. First, the passage that Boyle cites concerning 'Natural Rules' is in the Appendix to the *Grounds of Natural Philosophy*. I note that it is in the Appendix only because Boyle implies in Chapter 8 that a passage that is suggestive of a commitment to vegetarianism should be given less credence

because it concerns Cavendish's speculation on other possible worlds from the Appendix. Second, the 'Natural Rules' passage is in the first appendix, which is completely devoted to matters concerning spirits, God, and religion. Given that Cavendish repeatedly claims that we cannot know anything about the nature of God or spirit, as they are not part of Nature, these chapters have to be read with caution. The Chapter preceding the passage is called 'Of Several Religions' The passage Boyle cites is in CHAP. X. 'Of Rules and Prescriptions.' I cite the chapter in full just to be clear:

AS Saint Paul said, We could not know Sin, but by the Law; so, we could not know what Punishment we could or should suffer, but by the Law; not only Moral, but Divine Law.

But, some may ask, What is Law?

I answer: Law is, Limited Prescriptions and Rules.

But, some may ask, Whether all Creatures in Nature, have Prescriptions and Rules?

I answer: That, for any thing Man can know to the contrary, *all Creatures may have some Natural Rules: but, every Creature may chuse whether they will follow those Rules;* I mean, such Rules as they are capable to follow or practise: for, several kinds and sorts of Creatures, cannot possibly follow one and the same Prescription and Rule. Wherefore, Divine Prescriptions and Rules, must be, according to the sorts and kinds of Creatures; and yet, all Creatures may have a Notion, and so an Adoration of God, by reason all the Parts in Nature, have Notions of God. But, concerning particular Worships, those must be Prescriptions and Rules; or else, they are according to every particular Creature's conception or choice. (Cavendish 1668, pp. 246-7, Boyle cites only the portion in italics)

It is clear that when the 'natural rules' are put in their context that they are rules concerning adoration of God (which Cavendish claims all the constitutive parts do), or Divine prescriptions (Cavendish writes in the following chapter that "The Human Notions of GOD, Man calls Conscience"), or particular worships (religions). These are not natural norms in nature. Rather, it is clear in the context of the first appendix that Cavendish is discussing the reasons why there are a multitude of religions, whether God is spirit or matter, and how punishments and rewards are likely material (here following Hobbes' Latin Appendix to *Leviathan*). Even if we thought that Cavendish were giving an account of law in general, as opposed to religious law, the tentative language she uses ("for any thing Man can know") does not lend strong textual support for Cavendish's commitment to such laws.

Of course, Boyle does not hold that this passage alone indicates normativity. She also claims that Cavendish's account of self-knowledge includes not only knowledge of God's existence, but also knowledge of norms. Boyle writes, 'part of what it is for a creature to know of God's existence is for that creature to know the norms and "natural rules" governing the behavior for things of its sort' (p. 109). Boyle does immediately follow this claim by saying, 'This is speculative; Cavendish does not explicitly say this' (p. 109). However, Boyle goes on to argue that God is the source of norms in nature, again following Karen Detlefsen's arguments (Detlefsen 2009, p. 431). Detlefsen argues that God creates by rational suggestion to eternal Nature. Boyle strengthens this claim by saying that God *commands* nature to be orderly. Boyle quotes Detlefsen's view that God is 'the ultimate source of nature's overall harmony as well as of the normative standards through which creatures come to have ends and purposes proper to the kinds of things they are' (p. 110). What are the ends and purposes of individuals according to Cavendish? At the close of Chapter 4 Boyle raises this question, to which the reader will have been expecting an answer. But here Boyle seems to falter. She discusses order, balance, and peace, but, finding no answer in Cavendish's texts, seems to conclude that God may have some plan that is incomprehensible to humans. It is unclear that the sort of normativity that both Boyle and Detlefsen posit can be gotten out of the combination of the 'Natural Rules' passage and Cavendish's use of terms like 'fitting' and 'proper' and phrases like 'knowing one's own work' given that the latter could simply be referring to rules of religion and the former to claims about natural kinds and their abilities.

Boyle rightly notes that Cavendish claims that order and regularity would not be possible if the parts of nature did not have perception and knowledge, and for this they must have self-knowledge. Boyle argues that self-knowledge has three components (1) a creature's knowledge of how it is moving, (2) a creature's knowledge

of how it is *supposed* to move, given the type of being that it is, and (3) that God exists and is the author of nature (pp. 105-106). I want to take issue with (2), which is not stated in Cavendish's texts. In support of this claim, Boyle cites one passage where Cavendish compares parts of animals to a commonwealth where every part 'knows its own duty' (p. 106; Boyle cites Cavendish 1666, p. 63). She also cites several other passages where parts 'know their own work.' While I grant that 'duty' certainly has normative import, the more frequent phrase of knowing one's own work does not. It is not clear that from Cavendish's explicit discussions of self-knowledge that parts have anything more than a knowledge of their current capacities or powers, which are due to their current figurative motions. It also is interesting to note that in many passages where Cavendish discusses what the parts must know she often uses a phrase from Hobbes – 'knowing what they do, or why and whither they move' (Cavendish 1668, p. 139, 207, 258; and 1666, p. 308). This phrase is one that Hobbes uses in his discussion of voluntary actions. The echoing of this language is surely intentional on Cavendish's part and belies an affinity with Hobbes' account of liberty – where one is at liberty if one is able to move as one desires, rather than will as one pleases.

As noted earlier, Boyle cites Cavendish's account of occasional causation as a reason for thinking that Cavendish held a libertarian view of freedom of the will. In Chapter 4, Boyle lays out Cavendish's solution to the problem of transient causation. Boyle acknowledges two types of causation in Cavendish's system: (1) what I will call 'substantial causation' where there is contact between parts and an exchange of substance, and (2) 'occasional causation' where an individual's perceptive organs pattern an external object and move according to their own internal motions, which may or may not involve contact.

For Cavendish, occasional causation involves perception. The ball perceives the motions of the hand and moves itself in accordance with this perception. But what role does the hand, as the occasional cause, really play in this? Cavendish will not resort to calling upon God to perform or set up causal relations in the world as Malebranche or Leibniz did. Nor need she since she has self-moving matter. But if things are simply moving as they will, it is hard to understand what the relation between the hand and ball is, and Boyle offers no solution to this worry.

Moreover, Cavendish notes that we could have the perceptions we have without any exterior object being present, as in delusions or dreams. In addition, an exterior object's presence is no guarantee that we will have a perception of it, as we might be distracted or our sensory organs might be irregular. These claims seem to make the exterior object neither necessary nor sufficient for perception. However, I believe that Cavendish's account of what occurs in cases of delusion or dreaming can help us to understand the role of the occasional cause. In these cases, Cavendish tells us that the external sensitive organs of the perceiver do not pattern an external object; rather they move by 'rote' or memory. This motion comes from the interior parts of the perceiver rather than moving from the exterior sensitive organs inwardly. She writes,

...yet the sensitive corporeal motions having their proper organs, as Work-houses, in which they work some sorts of perceptions, those perceptions are most commonly made in those organs, and are double again; for *the sensitive motions work either on the inside or on the outside of those organs, on the inside in Dreams, on the out-side awake...* (Cavendish 1664, p. 19, emphasis mine; see also 1668, p. 20)

In this and other passages, Cavendish explains that when we dream or have other non-veridical sensory experiences, our sensitive parts move by rote. This motion begins in the interior parts of the individual and is patterned on the sensitive organs in a way that causes the (false) perception. This account is in contrast to normal cases of perception where the exterior object causes the patterning of the exterior sensitive organs, which information is relayed to the interior parts of the perceiver. Thus, we can conclude that the existence of the exterior occasional cause determines the direction of causation from exterior to interior. Without the occasional cause, the perceptive motions, if any, would move in the opposite manner. In this way, we can claim that the occasional cause does do something. It does affect the perceiver, as it brings about a direction of causality within in the perceiver that would not occur if it were absent. If the external object does determine the direction of causation, it would seem then that the individual is not completely self-determining

with respect to their perceptions. Nor would it follow from this account of causation/perception that individuals must have libertarian free will.

Chapter 5 focuses on the one way in which Cavendish thinks that human beings are different from other creatures – our desire for fame. Cavendish was notoriously desirous of fame, but not for being infamous. Rather, she desired to be remembered for her philosophical works. Boyle does an excellent job in this chapter of explaining that a desire for fame comes from self-love and our desire for an afterlife. Human beings realize that they will not live forever, so they desire to be remembered for their good works. Fame is to be contrasted with infamy, which is the product of a corrupted form of self-love and leads to vice, while a healthy desire for fame leads one to virtue. While Cavendish thinks that human beings can be led to virtue through self-love, she thinks that human societies need a government in order to achieve lasting peace and stability. These human societies are the subject of Chapter 6. Here, Boyle notes the difficulty of trying to interpret Cavendish's *Sociable Letters* and *Orations*. Cavendish often presents differing viewpoints and conflicting speeches in these works. Boyle explains that she seeks to resolve the inconsistencies, and when differing viewpoints are presented she takes as good evidence that a view is Cavendish's own when it is presented elsewhere in her works. Boyle argues that while Cavendish's Nature has an orderly government, human societies are much less orderly due to our inordinate desires for fame. Boyle helpfully presents Cavendish's views in comparison to Hobbes's views.

Chapter 7 discusses gender roles. Boyle argues that Cavendish largely upheld the gender roles that were common in seventeenth century England and did not think that women should seek to become more like men. Though it is true that Cavendish complains about the lack of educational opportunities for women, she at times seems to claim that women's brains are different from men's brains and that this makes them less capable. The last section of the chapter focuses on Cavendish's views on marriage. Boyle argues that although Cavendish seems to think that marriage is not good for women, she held that it was simply unavoidable.

In Chapter 8, Boyle takes on claims that Cavendish was an early defender of animal rights and vegetarianism. Boyle argues that Cavendish's concerns lie mainly in human beings displaying intemperate behavior in hunting or feasting, and not with animal welfare. It is interesting to note that Boyle fails to cite what I take to be Cavendish's most explicit statement of concern for animal and plant welfare from the Third Part of the Appendix to the *Grounds of Natural Philosophy*. In this passage Cavendish acknowledges a problem for every vitalist – if every part of Nature has life, no matter what we feed on, we will be eating something alive. She writes,

The Minor Part's [of Cavendish's mind] opinion, was, That, since all the Creatures in Nature, had Life; then, all Creatures that did feed, did destroy each other's Life.

The Major Part's [of Cavendish's mind] Opinion, was, That they might be assisted by the Lives of other Creatures, and not destroy their Lives: for, Life could not be destroyed, though Lives might be occasionally alter'd: but, some Creatures may assist other Creatures, without destruction or dissolution of their Society: as for example, The Fruits and Leaves of Vegetables, are but the Humorous Parts of Vegetables, because they are divisible, and can encrease and decrease, without any dissolution of their Society; that is, without the dissolution of the Plant. Also, Milk of Animals, is a superfluous Humor of Animals: and, to prove it to be a superfluous Humor, I alledg, That much of it oppresses an Animal. The same I say of the Fruits and Leaves of many sorts of Vegetable Creatures. Besides, it is natural for such sorts of Creatures to have their Fruits and Leaves to divide from the Stock.

The Minor Part's Opinion, was, That the Milk of Animals, and the Fruits of Vegetables, and the Herbs of the Earth, had as much Life as their Producers.

The Major Part's Opinion, was, That though they had as much Life as their Producers; yet, it was natural for such off-springs to change and alter their Lives, by being united to other sorts of Creatures: as for example, An Animal eats Fruit and Herbs; and those Fruits and Herbs convert themselves into the nature of those Animals that feed of them. The same is of Milk, Eggs, and the

like; out of which, a condition of Life is endeavoured for: and, for proof, such sorts of Creatures account an Animal Life the best; and therefore, all such superfluous Parts of Creatures, endeavour to unite into an Animal Society; as we may perceive, that Fruits and Herbs, are apt to turn into Worms, and Flies; and some Parts of Milk, as Cheese, will turn into Maggots; so that when Animals feed of such Meats, they occasion those Parts they feed on, to a more easie Transformation; and not only such Creatures, but Humans also, desire a better Change: for, what Human would not be a glorious Sun, or Starr?

After which Discourse, all the Parts of my Mind agreed unanimously, That Animals, and so Human Creatures, might feed on such sorts of Food, as aforesaid; but not on such Food as is an united Society: for, the Root and Foundation of any kind and sort of Creature, ought not to be destroyed. (Cavendish 1668, pp. 273-5)

In this passage, Cavendish does seem to offer reasons for not destroying societies (individuals). While she claims that it is inevitable that we feed on something, she seems to make the moral claim that we ought not destroy the roots or foundation of any living creature. While I doubt Boyle's claim that there is a thoroughgoing normativity in nature for Cavendish, it is clear that Cavendish allows moral claims based on considerations of the well-being of individuals. After discussing human relations to other parts of the world, the concluding Chapter 9 deals with sickness, health, and Cavendish's Galenism.

The *Well-Ordered Universe* is a book that is well written and argued, and which covers many interesting aspects of Cavendish's philosophy. The notes and the index are helpful and accurate. Boyle does a remarkable job of displaying the ways in which Cavendish's philosophy develops over the course of her writings, and this will be of much use to scholars. Her discussion of Cavendish's views on gender and marriage are quite nuanced and portray the complicated, and somewhat contrary, ways in which Cavendish viewed women as well as the tensions between these portrayals and her own behavior. In addition, Boyle opens up new avenues of scholarly debate in her discussions of Cavendish's views on medicine and the relation of humans to other parts of nature. There is much to admire in this book. It cannot be doubted that order and peace are central concerns for Cavendish and play an important role in her philosophy. While it is clear that scholars will disagree with some of Boyle's claims, *The Well-Ordered Universe* is the most important study in Cavendish scholarship to date, and will be discussed for many years to come.

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