
The Legacy of Margaret Cavendish¹

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By all accounts Margaret Cavendish occupies a unique but difficult to define position as a critic of early modern experimental philosophy. As a woman of prominence by both birth and marriage, she obtained a certain degree of access to the leading intellects of her day; and consequently, she has been often portrayed as an intellectual insider. She is said to have dined with Gassendi, Descartes, and Hobbes, the latter for whom her husband was patron. Yet her works, as audacious as they sometimes are, depict their author as defensive, isolated, and struggling to overcome barriers of education, language, and gender. At times she is compelled to squelch rumors of plagiarism and defend her works as her own. Even her friendly critics tend to be glib about the fruits of her pen. Despite her literary and philosophical works being widely ignored and more often rejected as incoherent than relevant when reviewed by her contemporaries, the past three decades have witnessed a revival of interest in her scholarship and the birth of new narratives concerning her intellectual importance.

Until recently Cavendish's work generated little attention by historians of philosophy and literature. Perhaps ironically, the Duchess's literary rep-

1. This article surveys scholarship about Margaret Cavendish and reviews several recent attempts to understand Margaret Cavendish's critique of empirical science in terms of her commitment to a feminist social agenda. The publications under review here are: Anna Battigelli, *Margaret Cavendish and the Exiles of the Mind*, Lexington: University Press of Kentucky, 1998; Eve Keller, "Producing Petty God's: Margaret Cavendish's Critique of Experimental Science," *English Literary History* 64, 1997; Sylvia Brown, "Margaret Cavendish: Strategies Rhetorical and Philosophical Against the Charge of Wantonness, Or Her Excuses for Writing So Much," *Critical Matrix: Princeton Working Papers in Women's Studies* 6, 1991; and Lisa Sarasohn, "A Science Turned Upside Down: Feminism and the Natural Philosophy of Margaret Cavendish," *Huntington Library Quarterly* 47, 1984.

utation survived mostly because she authored the biography of her husband *The Life of the Thrice Noble High and Puissant Prince William Cavendish, Duke, Marquess, and Earl of Newcastle* (1667), a source typically scoured for information about the political fortunes and liabilities of the Duke.² William Perry, however, helped lift Margaret Cavendish from her relative obscurity in his book, *The First Duchess of Newcastle and Her Husband* (1918). Despite the title, Perry devotes the first part and major portion of his work to discussing the Duke. His commentary on the Newcastles centers around their literary contributions, and he marginalizes Lady Cavendish by calling her “most famous and important single work” her ‘historical’ biography, referring to the biography of her late husband.³ He claims that the author “emerges from the text a fallible mortal like the rest of us, only a trifle more warped and lopsided than modern psychology tells us that we all are” (p. 4). Further, Perry claims “all her work looks insignificant next to the *Life of Newcastle*” (p. 315). This critique of Lady Cavendish’s literary talents epitomizes how she is remembered by historians of literature and science for half a century: She deserves recognition in spite of the substance of her labors because she enters an intellectual world monopolized by men.

Lady Cavendish’s scientific exploits fare little better at the hands of later historians. If her scientific methodology is not suspect or considered severely hampered by circumstance, it is written off as outside her interest. Samuuel Mintz (1952) comments that Cavendish, unlike many of her more famous contemporaries, could not rise above the stature of a virtuoso and that she “would never submit to the discipline of scientific procedure, because she saw no value in it” (p. 168). Worse still, he claims that she had no interest in scientific methodology at all. Yet given her explicit critique of Hooke’s microscopic work and her critical emphasis on observation and technology as employed by the Royal Society, we could instead read Mintz as saying that *her* methods were not those of science.⁴ Perhaps slightly

2. Perhaps realizing that her own intellectual fate would be tied to the fortunes of her husband, Cavendish does not hide her own persona in the biography.

3. On page one of the introduction Perry claims that Margaret’s biography “purports” to be historical, but suggests rather that it should be considered “an embryonic novel.”

4. The first two of the three dedicatory letters and the first preface to *Observations* (1666) contain explicit denunciations of the methodology employed by Robert Hooke in *Micrographia*. Her fanciful *New Blazing World* (1666) hides nothing when satirizing the emphasis on experiments (especially using optical equipment) by members of the Royal Society. These two works are lucid criticisms of the empirical methods employed (and sometimes lavishly displayed) by the new Society. Perry’s further claims that Cavendish did not consider knowledge of the natural world “a tool to be placed in the service of mankind” (p. 168) hides the purpose of these two works and her interest in the medical implications of matter theory. To the contrary, her criticism of the novel technologies celebrated by

more sympathetic to Cavendish's philosophical exploits, Douglas Grant (1957) could not help but conclude: "her fancy was irrepressible." Consequently, in her most explicitly scholastic work in natural philosophy (*Grounds of Natural Philosophy*, 1668), her fancy "revolted as irresponsibly against the discipline she had tried to impose upon it as it had done in the *Blazing World*" (p. 211). This earlier work is a utopian fantasy novel published jointly with her *Observations upon Experimental Philosophy* in 1666. But Grant is willing to contribute at least some of Cavendish's fanciful ways to circumstance. He muses: "as she was unable to check her conjectures by experiment, she could never proceed to firmer conclusions" (p. 195). Given the radically anti-empirical nature of *Observations* and *Blazing World*, Grant seems to miss the point: Cavendish would not have checked her results using the methods she so resolutely rejected.

Not until Robert Kargon's discussion of Cavendish's atomism is her natural philosophy treated in its own right without prefaces or apologies. Unfortunately, Kargon portrays the Duchess as controversial because of the atheistic implications of her atomism.⁵ Cavendish's commitment to atomistic matter theory, however, is here overplayed. Despite verses apparently sympathetic to such matter theory in *Poems and Fancies* (1653) and *Natures Pictures Drawn by Fancies Pencil to the Life* (1656),⁶ the Duchess later rejects the theory that bodies are composed of irreducible atoms "of the selfe same matter; as Fire, Earth, and Water" to which all motion and change can be attributed (1653, p. 10). Kargon's commentary on Cavendish's participation in the English venture into atomic matter theory is itself too narrowly confined to make headway into her later philosophical exploits. Nevertheless, the absence of critical commentary about Cavendish's role as natural philosopher marks a distinct break from her earlier

many of her contemporaries ridicules the waste of time and effort of their use. She writes: "The inspection of a Bee, through a Microscope, will bring no more honey, nor the inspection, of a grain more Corn; neither will the inspection of dusty Atomes . . ." (*Observations*, "Preface to the Ensuing Reader").

5. Sheehan and Tillery (2001) also exaggerate the threat of these 'novel' views: "Mechanism and atomism were often considered dangerous, even heretical, to a society that retained long-held organic conceptions of reality" (p. 16). They also claim that during the civil war and "Puritan rule," England was a "land that tried to keep out Enlightenment ideas" (p. 8). While it is true that Hobbes (the most dramatic example) and others were criticized for the atheistic implications of their work, there is little evidence to suggest a real threat of censorship, much less "danger" to the purveyors of these ideas. Indeed a good argument can be made that Protestant England was more open to these 'novel' views than Catholic France, given the centrality of religious authority in the later.

6. Given the style of discourse, Cavendish's brief commitment to atomic matter theory even in the early works remains undetermined, though the verses quoted by Kargon are often cited as evidence of her early adherence to atoms.

biographers who seemed more interested in extolling the tribulations of her thought.

Lately, historical interest in Margaret Cavendish has begun to focus on her unique role as a woman critic of the new mechanistic philosophies and emerging Royal Society. By linking her rationalist methodology, vitalistic metaphysics and lamentations about women's plight in society, a portrait of an early pioneer in feminism and critic of modern science emerges. Hilda Smith, for instance, considers Cavendish one of the first feminists and a member of a very small group of late seventeenth-century women who "shifted the arena of the debate from qualities of individual women to the natures of men and women" (1982, p. xiii). Smith, however, writes cautiously about the ties between Cavendish's interest in science and her feminist political aspirations. "The duchess was fascinated by science because it promised both new ways of looking at things and new answers. She was finally frustrated with it because both methods and answers varied so widely from the things that concerned her" (p. 61). Smith does not try to make sense of Cavendish's specific doctrines, including atomism, and later vitalistic matter theory, royalism, or rationalism. Nor does she attempt to link these doctrines except vaguely to Cavendish's feminism. Rather, she says that though the seventeenth-century produced rich variation in political thought, none was specifically appealing to feminist thinking. Smith addresses Cavendish's rationalism noting: "Feminists linked their faith in reason to a distrust of custom, which perpetuated both ignorance and women's domestic status" (1982, p. 63). Given the Duchess's vehement criticisms of Robert Hooke's microscopic works, telescopic research and general methods employed by the Royal Society, the lack of specific connections between her metaphysical and epistemic claims, and her social/political commitments remains wanting in Smith's account.

Others interested in Cavendish's unconventional role as philosopher and critic of the emerging science and its institutionalization draw direct ties with her feminism. Sylvia Brown (1991), Lisa Sarasohn (1984) and Eve Keller (1997) view her taking a position against a male dominated science. Brown describes her acting defensively through her adoption of skepticism. Sarasohn and Keller argue that the Duchess takes an offensive role. Sarasohn claims Cavendish was forced to use a "full-scale" skepticism in her attack: "on the authority of a male-dominated science, and, by implication, an attack on male authoritarianism" (p. 294). Keller says that Cavendish's natural philosophy "suggests tentative moves toward a feminist science being sketched by Evelyn Fox Keller." Eve Keller claims further: "Cavendish's work relentlessly deconstructs the supposedly stable epistemological categories that service the masculinist science she derides"

(p. 466). John Rogers (1996) joins this choir of voices linking Lady Cavendish's philosophy—in this case her early brand of vitalism—to her feminism. “Her architect atoms are forever engaged in the process of building a secularized and feminized version of the radical Puritans’ holy community, an ideal community that was, at least for Milton, grounded on the subordination of physical force to the force of reason” (p. 203).⁷ These attempts to describe Cavendish's anti-institutional and anti-empirical commitments in terms of her pioneering feminist motivations, however, conflates her anti-empiricism with her more unconventional literary ‘fancy’, isolating her from the more conservative social and scientific goals.

In life and literature, the Duchess's dedication to the monarchy and to the restoration of social order cannot be questioned. Even at her most fanciful, the Duchess imagines her utopian “new blazing world” in terms of a benign monarchy (though led by a Queen and her female advisor). Moreover, Cavendish derides the Royal Society (and specifically its emphasis on observation and the use of novel technologies), not for unconventional reasons, but rather for the intellectual mischief created by so many participants and the failure to produce any *useful* results. Cavendish's social agenda, with the exception of women's education and perhaps their broader participation in society, looks thoroughly conservative and not inconsistent with her critique of science. Even her vitalistic response to the novel mechanical matter theories of Descartes, Hobbes, and perhaps Gassendi, does not seem driven by any desire to usurp an existing order. They rather appear to be an unschooled attempt to find a niche that incorporates essential elements of materialism and vitalism.⁸ Cavendish never explicitly states that mechanistic matter theory (or for that matter the empiricism being employed by the early Royal Society) should be rejected because of its ‘masculine’ quality or association. If her motivation is implicit, she hides it well. As we should expect, her philosophy instead

7. Rogers draws significantly from works prior to *Observations* (1666) to make the apparently implied link between gender and matter, and does not make sense of her abandonment of atomism for a radically different form of vitalist matter theory later within this descriptive context. He nevertheless argues that rational matter (as feminine) subjugates itself to the “masculine” (non-rational) matter in her natural philosophy. He concedes that Cavendish fails “to extend (her text's) revolutionary conclusions from the world of material particles to the world of human beings” (p. 204).

8. Recent scholarship has demonstrated the hybrid nature of mid to late seventeenth-century philosophy, especially concerning matter theory. Margaret Cavendish should be understood in a similar light—one seeking compromise between several competing views of nature. She is, however, essentially different from many other attempts to marry theories from different sources because she lacked specific training in Aristotelian hylemorphic matter theory, and, consequently, did not share much of the technical vocabulary common to others attempting to address the ‘novel’ philosophies.

struggles with the intellectual problems wrought by Cartesian dualism, atomism and the materialism of Hobbes. These problems are also discussed by her contemporaries who often sought compromises between scholastic hylemorphic matter theory and the Cartesian or Gassendist mechanistic theories. Thus 'epistemic categories' were anything but stable in the mid-seventeenth century when Cavendish began her attack on empiricism (and the novel mechanistic philosophies)—an attack designed precisely to reestablish the epistemic stability she considered lost as a result of an over-reliance on observational evidence.

Further, Cavendish's vision of women's role in society proves difficult to expose. Her most extensive discussion of the plight of women occurs in *Orations of Divers Sorts* (1662) under the heading "Female Orations." But here her personal perspective disappears into the fragmented dialogues. Smith rightly claims "it is hard to be sure when she was being serious and when merely argumentative" (p. 82). Nevertheless, the work contains a radical perspective. The opening speaker of the dialogue says:

we [women] Live and Dye, as if we were produced from Beasts, rather than from Men; for Men are happy, and we Women are miserable; they possess all the Ease, Rest, Pleasure, Wealth, Power, and Fame; whereas Women are Restless with Labour, Easless with Pain, Melancholy for want of Pleasures, Helpless for want of Fame. Nevertheless, Men are so unconscionable and Cruel against us, that they endeavour to bar us of all sorts of Liberty (pp. 238–240).

But the various dialogues also present several opposing views with no obvious resolution among the participants.

The Duchess' own history does not reveal an obvious source for the severity of her speaker's lament. Her bleak description of women's plight does not appear related to her personal circumstance. Despite the hardships of life in exile, where the Cavendish's were separated from their fortune, she did not bear many of the burdens so common to her gender. By all accounts the Duchess did not suffer a repressive marriage. She lauded her husband and he her. The Duke encouraged Lady Cavendish's writing and published her works at his own expense. Yet she wrote in "A Funeral Oration for a Young-Married Wife," that marriage "is displeasing; like Meat which is sweet in the Mouth, but proves bitter in the Stomack." She never bore a child, yet she wrote of the great pain, risk and suffering endured by women (and unappreciated by men) in childbirth. Sara Hutton (1997) concludes: "In spite of everything Margaret Cavendish said about the educational and social disadvantages suffered by women—and most of her charges ring true—both she and Anne Conway were undoubtedly

blessed by opportunities which very few of their contemporaries enjoyed” (p. 231).

The “Preface” to *Orations* (1662) further obscures her own voice. Among the various “places” she invites the reader, one is the oration on “the Liberty of Women.” However she gives it no special priority saying: “but if you regard not what Women say, you may Ride to a Country Market-Town, and hear a Company of Gentlemen associate together their Discourse and Pastime” (*Paper Bodies*, p. 90). Thus she provides no guide for her reader, instead portraying *Orations* as simply snapshots of dialogue.

To make matters more complicated, her earlier work *The World's Olio* (1655) begins: “It cannot be expected I should write so wisely or wittily as Men, being of the Effeminate Sex, whose Brains Nature hath mix'd with the coldest and softest Elements” (*Paper Bodies*, p. 136). A page later in the Preface she continues: “But to speak truth, Men have great Reason not to let us in to their Governments, for there is great difference betwixt the Masculine Brain and the Feminine, the Masculine Strength and the Feminine” (*Paper Bodies*, p. 137). Yet she concludes her argument by saying that some women, by education, may become more learned than some “Rustick and Rude-bred” men. Her argument for “some” women’s education is thus embedded in a traditional sexist claim about the differing humors (and thus inferiority) of women’s minds. There is little evidence to show that she did not endorse the explanation of gender difference based on humors.⁹

Thus in her brief treatment of the Duchess in *The Death of Nature* (1980), Carolyn Merchant initially calls Cavendish a “feminist” and concludes that she “presented one of the earliest explicitly feminist perspectives on science” (p. 272). Certainly Cavendish presented arguments for women’s education in natural philosophy and she also presented a perspective that decried women’s suffering within marriage. Yet it remains difficult seeing through the “often inconsistent, contradictory, and eclectic” ideas and theories (p. 270) to find her proper persona—to differentiate between her feminism and her presentation of a feminist perspective.¹⁰

9. Cavendish’s argument in favor of women’s education, at least as presented here, is significantly different from Poulain de la Barre’s claim in *The Woman as Good as the Man* (1677). Poulain argues that women and men are essentially equal in reason, a position he claims is implicit in Descartes’ rationalism.

10. Cavendish’s ‘feminism’ may not be as unique or radical as we would expect in her context. Participants of the popular Parisian conferences organized by Théophastrate Renaudot often discussed issues pertaining to gender relations. At the conference held on March 17, 1636 the second question for discussion was “whether it be expedient for women to be learned.” The first speaker said many husbands “unjustly deprived women of education” and then claimed that women’s circumstance, memory, curiosity and wit pro-

Margaret Cavendish has sometimes been portrayed incorrectly as an insider in the intellectual scene referred to as 'the Newcastle Circle'. Londa Schiebinger (1989) claims: "Entry into European philosophical networks gave Margaret Cavendish the background necessary for her work on natural philosophy" (p. 47), though Schiebinger is careful to point out that Cavendish's ties to Thomas Hobbes, Mersenne, Descartes and Gassendi (considered members of the circle) were tenuous. Richard Sheehan and Denise Tillery (2001) apparently concur with Schiebinger on this issue, nevertheless, they quote William Petty's *Discourse made before the Royal Society* (1674): "For about that time in Paris, Mersennus, Gassendy, Mr. Hobs, Monsieur Des Cartes, Monsieur Roberval, Monsieur Mydorge and other famous men, all frequented and caressed by your Grace and your memorable brother Sir Charles Cavendish, did countenance and influence my studies" (Sheehan and Tillery 2001, p. 7). Sheehan and Tillery also feel compelled to claim that Margaret, along with the two Cavendish brothers, "formed the nucleus of that 'Newcastle Circle'" (p. 7). They say that she "would listen intently to their (Perry's above list of 'frequenters') discussions, then later ask her husband and brother-in-law to clarify concepts" (p. 7).¹¹

The weakness of Cavendish's ties, however, should not be under-stressed, as the Duchess makes clear in the several prefaces to *Philosophical and Physical Opinions* (1655). She defends herself against accusations that she had taken ideas from 'professed philosophers'. She writes: "for three or four visits do not make an intimacy, nor familiarity, nor can much be learned therefrom, for visiting and entertaining discourse, for the

vided them with educational advantages. He concluded: "If women joyn'd together with Men in the discovery of (sciences), who doubts but a feminine Curiosity would serve to exacuate the point of Mens wits, distracted by extraneous Affairs, and make marvellous progresses, and find out sundry rare Secrets, hitherto unknown." The third and last speaker indicated that women were in more need of education than men: "were the Minds of Women weak and imperfect, as is pretended, it would follow, that they have more need of the Sciences to cover their defects" (*Another Collection of Philosophical Conferences*, 1665, pp. 35–37).

11. Sheehan and Tillery go beyond claims that Cavendish was an 'insider', but also suggest that her works were widely influential. "Again, Cavendish's works enjoyed a wide readership among social circles in England" (p. 15). They also say that her views had a "broad appeal" (at least those found in *New Blazing World*). Consequently, they skirt the issue that her contemporaries who admit exposure to her ideas (quite few) generally denounce them as incomprehensible: "If people of her time found Cavendish hard to understand, it was probably because they conceptualized reality from a quite different perspective/paradigm" (p. 16). If it is true that Cavendish could have been widely influential, much less that she was so, it would seem she would have shared the so called "paradigms" of her day. Indeed it is Sheehan and Tillery's claim that Margaret struggled "to reconcile two competing paradigms, organicism and mechanism" (p. 13).

most part are either cautionary, frivolous, vain, idle, or at least but common and ordinary matter" (1655, "To the Reader"). She distances herself further from her contemporary philosophers in the "Epilogue" to the same work. "I never spake to monsieur DeCartes in my life, nor ever understood what he said, for he spoke no English, and I understand no other language, and those times I saw him, which was twice at dinner with my Lord at Paris, he did appear to me a man of the fewest words I ever heard" (1655, "Epilogue"). Likewise she claims no more than a superficial relationship with Hobbes and his work. She writes: "I never heard Master Hobbes to my best remembrance treat, or discourse of Philosophy, nor I never spake to Master Hobbes twenty words in my life" (1655, "Epilogue"). Cavendish also claims little to no familiarity with the work of Descartes and Hobbes, saying simply that she does not have time to read their work.

We should consider Cavendish's claims in context of her defense against plagiarism and recognize the potential exaggeration in her denials. But her denials are consistent with other evidence. The historical record shows only two occasions where Hobbes interacted with Cavendish. The first is his refusal to dine with Margaret during a trip she took to London in 1653, a story she tells in *Philosophical Opinions*. In a 1662 letter, Hobbes responds to receiving a copy of Cavendish's plays with surprise saying: "For tokens of his kind are not ordinarily sent but to such as pretend to the title as well as to the mind of Friends."¹² There is little further evidence to suggest that Margaret Cavendish carried on an extended correspondence with any important philosophers of her day.¹³ She did meet and exchange letters with Constantijn Huygens, and she gave him a copy of her poems in 1653. Huygens responded in a private correspondence to a compatriot: "(her) extravagant atoms kept me from sleeping a great part of last night" (Grant 1957, p. 193). The Duchess and Huygens exchanged several letters on the phenomenon of Rupert's drops, molten glass that explodes when dropped into water. But this discussion was short-lived when Huygens rejected her claim that the glass must contain an explosive (see

12. Letter, "Thomas Hobbes to Margaret Cavendish," 9 Feb. 1662.

13. Despite the tale of Margaret dining with Descartes, Gassendi, and Hobbes, we know that this was highly unlikely. Collectively, the three never dined together. Descartes spent very little time in France after 1628. Baillet's *La Vie de Monsieur Descartes* (1691) mentions two trips to Paris; in 1644 and again in 1648. The only mention of Descartes dining with Gassendi occurs during the later Paris trip (1648) where Baillet tells us that due to Gassendi's illness they didn't actually dine together but "embraced" later in the evening. Given Descartes' less than friendly relations with his atomist contemporary in 1644, a meeting then seems doubtful. Of course had Margaret been at the table with Descartes or his illustrious French contemporaries, Margaret's "intent" listening would have been of little use given her admitted lack of understanding French or Latin, an admission that occurs more than once in her works.

Grant 1957, pp. 193–196). Cavendish also had limited contact with Henry More, but there is scant evidence of any significant intellectual exchange between the two. Descartes' surviving letters do not mention the Duchess, and the Frenchman's few correspondences to Charles and William Cavendish are "virtually transparent."¹⁴ Her name is significantly absent from the correspondence of Henry Oldenburg. The historical record is also largely silent about any possible relationship Cavendish could have had with Gassendi or Mersenne. Margaret's claims of isolation thus seem quite reliable.

The scientific environment in early modern England gave no favors to women; however, gender alone did not exclude Cavendish from the scene. The Duchess suffered the rejection of her peers most directly as the result of her lack of education in the field she chose to criticize. Obviously her gender prohibited her from obtaining a university education, something she points out. Nevertheless, in *Philosophical Opinions* (1655), she shuns education as corrupting ("I have heard that learning spoils the natural wit"). She also claims not to have time for either the study of ancient philosophy or other languages: "likewise an objection for my saying I have not read many Books; but I answer, for not reading many Authors, had I understood several languages, as I do not, I have not had so much time; had I endeavored to have been so learned therein, for learning requires close studies, long time, and labor" (1655, "To the Reader"). Later she writes: "my head was so full of my own natural phancies, as it had not roome for strangers to boord therein, and certainly natural reason is a better tutor then education" ("To the Reader"). Cavendish asks the reader to overlook her gender when considering the merit of her work. However, her defensive posturing in *Philosophical Opinions* largely reacts against accusations of incoherence and the dubious authenticity of her earlier publication *The World's Olio* (1655) and *Philosophical Fancies* (1653)—works that are themselves highly critical of learning. Her reactionary style taints the work itself and has led Sylvia Bowerbank to conclude: "mostly her natural philosophy consists of passages excusing and flaunting her ignorance" (1984, p. 400). Bowerbank's characterization of Cavendish's natural philosophy may be a bit severe, but then so is Cavendish's condemnation of all philosophical scholarship and book learning more generally. Though the anti-scholasticism is significantly absent from *Observations* and later work, in *Philosophical Letters* (1664), Cavendish attacks the diverse theories of Hobbes, Descartes, Van Helmont and Henry More. Her assault on schol-

14. Mordechai Feingold notes that issues raised in Descartes' correspondence with the Cavendish brothers "could be discussed independently of their recipients" as they acted primarily as "conveyors of letters" (Feingold 1998, p. 698).

arship old and new, as well as university learning, characterizes her early work.

Cavendish's own rationalization of her peer rejection reflects those criticisms made by her opponents. Referrals to her philosophical works speak in the least flattering terms. After reading Cavendish's *Philosophical Fancies* in 1653, Dorothy Osborne concluded "that there [were] many soberer People in Bedlam."¹⁵ Samuel Pepys' notorious diary calls Margaret a "mad, conceited, ridiculous woman." John Evelyn called her "a mighty pretender to Learning, Poetrie, and Philosophy," and his wife Mary claimed never to have met someone so "full of herself" regarding her wit and learning.¹⁶ Personal attacks combined with criticism of both Cavendish's philosophy and poetry, and lasted though her publishing career.

Even Cavendish's friend and Latin translator of her biography *Life* (1668), the eclectic natural philosopher Walter Charleton, tactfully attempted to decline comment on her work. "For your Natural Philosophy; it is ingenious and free, and may be, for ought I know, Excellent: but give me leave Madam, to confess, I have not yet been so happy, as to discover much therein that's Apodictical, or wherein I think my self much obliged to acquiesce."¹⁷ Charleton's lukewarm reception of Cavendish's natural philosophy is significant. He helped popularize the work of Descartes and Gassendi in England, offering the first translation of the later in English. Previously he had translated the vitalist and controversial works of Van Helmont—supposedly shifting his allegiance to the mechanist/atomist philosophy of Gassendi. Both Battigelli and Robert Kargon consider Charleton's cool reception of Cavendish's philosophy an attempt to avoid the atheistic implications of her work. But they give no evidence that he considered her work as such. Cavendish's own profuse defenses of herself and her work barely mention the accusation of atheism. Charleton willingly defended the far more controversial work of Van Helmont, and later sought to resurrect the atomism of Epicurus, who often suffered religious ire. It therefore seems unlikely that Charleton would have been concerned that certain aspects of Cavendish's philosophy might have proved theologically controversial. Charleton, nevertheless, remained a friend and correspondent with Margaret.

William Cavendish, Margaret's husband, is the rare defender of his wife's philosophical work. He wrote a dedication in verse to Margaret: "Were the old Grave Philosophers alive, how they would envy you, and all would strive who first should burn their books" (*Philosophical Opinions*

15. Osborne, *Letters to Temple*, p. 79.

16. See Battigelli 1998, pp. 4–6.

17. See Battigelli 1998, p. 56.

1655, “To the Lady Marquesse”). He makes a similar dedication, which sadly acknowledges her contemporary dismissal, in *Observations*:

Book is Book of Books, and onely fits
Great searching Brains, and Quintessence of Wits;
For this will give you an Eternal Fame,
And last to all Posterity your Name:
You conquer Death, in a Perpetual Life;
And make me famous too in such a Wife.
So I will Prophesie in spite of Fools,
When dead, then honour'd, an be read in Schools.
And Ipse dixit lost, not He, but She
Still cited in your strong Philosophy (*Observations* 1666, “To Her
Grace the Duchess of Newcastle”).

Margaret Cavendish had dedicated this later work to “The most Famous University of Cambridge,” changing her anti-scholastic tone from *Philosophical Opinions*, in which (oddly enough) she had also made a dedication to “the two Universities.” Even though *Observations* was written in direct response to Hooke’s *Micrographia*, she appears to have taken the contemporary rejection of her philosophy for given.

Cavendish did acknowledge that her husband and her brother-in-law Sir Charles Cavendish discussed philosophy with her; and it may be through Charles that she gained much of her limited understanding, though direct evidence is lacking. In *Philosophical Opinions*, she says that she learned the ‘names and terms’ of science “from my nearest and dearest friends as from my brothers, my Lords brother, and my Lord” (“To the Reader”). But by her own admission, she gathered this information “by piece-meals” and not by “methodological education”—emphasizing the constructive nature of her own ‘fancy’ upon the information given her. If someone provided the Duchess with any sort of systematic training, it would most likely have been Charles. Charles, unlike his brother, took a more active interest in science, and William claimed that Charles ‘tutored’ Lady Cavendish. Also, Lady Cavendish dedicated *Poems and Fancies*, as well as *Philosophical Fancies* (both 1653) to Charles, not her husband. But any active interest taken by Charles in Lady Cavendish’s philosophy, as well as the extent of her conversations with him, is largely speculative.

Margaret Cavendish’s natural philosophy reflects the uniqueness she claims. While in exile in France, she apparently adopted some form of mechanistic atomism; however, by 1655 she had rejected atoms in favor of a hybrid vitalist/mechanistic metaphysics, though she retained atomism’s associated political metaphor. Anna Battigelli (1998) makes a convincing case that Cavendish used atoms as an explanation for the civil war and po-

litical chaos that forced her and her Royal party into exile, resulting in their relative poverty during the nearly two decades of dislocation. *Poems and Fancies* (1653) is full of references to atoms, chaos, war and the associated epistemic uncertainty of 'other worlds':

factionous Atomes will agree; combine,
They strive some form'd Body to unjoyne.
The Round beate out the Sharpe: the Long
The Flat do fight withall, thus all go wrong (p. 16).

This early work has a decidedly skeptical view of knowledge. Lady Cavendish portrays the mind as restless, and reason in torment as it tries in vain to seek an understanding of nature. Authority 'perswades the Mind to live in Peace and quiet' and thus avoid the chaotic dispare of philosophic endeavor. Despite vivid metaphors, however, *Poems and Fancies*, as its title suggests, does not present any consistent epistemology or metaphysics.

The chronological succession of Cavendish's titles actually shows a consistent move away from her more radical skepticism, and a solidification of her natural philosophy: *Poems and Fancies* and *Philosophical Fancies* (1653), *Philosophical and Physical Opinions* (1655), *Observations upon Experimental Philosophy* (1666) and finally, *Grounds of Natural Philosophy* (1668).¹⁸ Yet as early as 1655, Cavendish attempts to divulge a consistent metaphysics, and reject the atomism she had previously espoused. Following the plethora of dedications and introductions (one of which is a "condemning treatise of atomes"), *Philosophical Opinions* presents an explicit ontology: "Nature is matter, form, and motion, all these being as it were but one thing; matter is the body of nature, form the shape of nature and motion" (p. 4). This rarified ontology is not unlike Descartes—the physical world consists simply of matter in motion devoid of real qualities. Cavendish also shares Descartes' and Hobbes' plenism. She claims vacuum to be an impossibility because of the infinite degrees of matter. Indeed it is the infinite degrees of matter that allow her to explain all phenomena. Her metaphysics is reductionary, though not obviously quantifiable, from an ontological hierarchy of matter, motion and figure. But from the start of her text, her hierarchy becomes convoluted by undifferentiated terms. The infinity of 'figures' supposedly reduces to a more basic 'infinite of parts', from 'figure' comes 'sizes' and so on:

And although there is but one matter, yet there are infinite parts in that matter, and so infinite sizes; if infinite sizes, infinite degrees of bigness, and infinite degrees of smalnesse, infinite thickness,

18. Mendelson (1987), makes this same claim.

infinite thinness, infinite lightness, infinite weightness; if infinite degrees of motion, infinite degrees of strengths; if infinite degrees of strengths, infinite degrees of power, and infinite degrees of knowledge, and infinite degrees of sense (p. 1).

Cavendish's metaphysics is apparently monistic materialism. Even knowledge and sense are just a degree (rarification?) of matter. But at some level motion becomes innate in certain material substances ("it turns to spirits"), though she denies such matter is essentially different from grosser matter ("tis but different degrees"). "Dull" matter and "Spirits" are apparently differentiated by the former's inertness and the latter's "innate motion," though the very term "innate" seems to imply a difference in kind or quality. Consequently, the simple clarity of her reductionist scheme quickly loses out to an odd mixture of otherwise technical philosophic terminology and common vocabulary. This has led some modern scholars to abandon attempts to follow the philosophic lineage of Cavendish's work: "Margaret's expression of her theories is so obscure and contradictory that it would be a fruitless enterprise to try to trace their ultimate origins or their precise analogies among other seventeenth-century thinkers" (Mendelson 1987, p. 43). No current scholarship has attempted to explain the precise relationship between Cavendish's epistemology and metaphysics.

Cavendish compounds the confusion within *Philosophical Opinions* by including metaphoric terminology with her technical vocabulary. The work is composed of over two hundred 'chapters', each of which is about one paragraph long. Following the discussion of vacuum (Chap. 14), the division of matter (Chap. 16) and the unity and order of nature (Chap. 15 and 17), Cavendish gives an explanation "of War, and no absolute Power" (Chap. 18). What she means by "war" is apparently contrary motion, or disagreement of the parts of matter, but one senses the treatise is tacitly concerned with political order. Virtually all Cavendish's explanations of phenomena are couched in terms of order and chaos, or the more vitalistic vocabulary of sympathies and antipathies. In her discussions of malady and medicine she gives causal explanations based on the four humors. Yet her commitment to this terminology is not consistently ontological (or qualitative). She often reduces humors and sympathies to motions of matter ("mixt motions makes mixt humours, and mixt tempers inclining to each side, as the motions predominate"). At other times she speaks as if humors and their related elements (air, earth, fire and water) are natural kinds, not just degrees of matter. Her use of vitalistic vocabulary, therefore, cannot be explained in terms of a theoretical eclecticism, but rather as borrowed rhetoric without the explanatory context of its normal use.

This may explain much of the criticism heaped upon her by her peers. Nevertheless, order and disorder of particles in motion does most (if not all) of the explanatory work in her natural science, suggesting a political analogy of order and chaos made more explicit later.

In *Observations*, Cavendish continues her obsession with order, though the tie between politics and natural science becomes overt. In the “Preface” her conservatism shows through when she claims that modern philosophers “confounded both Divinity and Natural Philosophy, Sense and Reason, Nature and Art, so much as in time we shall have rather a Chaos, then a well-ordered Universe by their doctrine” (p. C2). She continues her attack by claiming that these unnamed philosophers have done nothing but taken ‘parcels’ of the ancients, comparing them to “unconscionable men in Civil Wars, which endeavour to pull down the hereditary Mansions of Noble-men and Gentlemen, to build a Cottage of their own; so do they pull down the learning of Ancient Authors, to render themselves famous” (p. C2). Indeed, she defends the entire institutional structure. “But this Age does ruine Palaces, to make Cottages; Churches, to make Conventicles; and Universities to make private Colleges; and endeavour not onely to wound, but to kill and bury the Fame of such meritorious Persons as the Ancients were, yet, I hope God of his mercy will preserve, State, Church, and Schools, from ruine and destruction” (p. C2). Cavendish had, of course, suffered the destruction of her own family estate at the hands of Parliamentary forces during the Civil War, so her war references are clear. Instead of criticizing learning and the ancients for the obscurity of their ideas (and as a waste of her time), here she complains that her own lack of education made her unable to penetrate their vocabulary. Nevertheless, *Observations*, written after the Restoration and her return from France argues for an old order recently reinstated and apparently still threatened by novel ideas. Philosophy, therefore, must preserve order by reinforcing the purity of the ancients, eschewing eclecticism and adhering to a rationalistic methodology.

One can debate the historical legitimacy of the claim that early modern science in England practiced an inductive methodology based on observation and experiment. The fledgling Royal Society, however, believed that it inherited the recent legacy of Bacon and understood itself to be practicing science in a novel way.¹⁹ In particular, Robert Hooke celebrated the

19. The frontispiece drawn about 1666 and found in some additions to Sprat’s *History of the Royal Society* shows three figures in the foreground: Lord Brouncker, president of the Royal Society; the King; and Francis Bacon. In the background and surrounding the figures are instruments of many sorts and a near full bookshelf. This frontispiece can be juxtaposed against that of Cavendish, from *Philosophical and Physical Opinions* (1655) in which she sits behind a banister, isolated from the viewer. A table sits next to her void ex-

advantages of novel instruments that apparently proved the viability of the new mechanistic philosophy and experimental method. Hooke dedicated *Micrographia* (1665) to the Royal Society and its methods: “The rules you have prescrib’d yourselves in your philosophical progress do seem the best that have ever been practiced. And particularly that of avoiding dogmatism, and the espousal of any hypothesis not sufficiently grounded and confirm’d by experiment” (p. 16). He attacked the ‘Peripateticks’ for basing their natural philosophy on the “useless” categories of matter and form, and claimed that the microscope and telescope demonstrated the success of the new mechanick philosophy “to which this age seems so much inclined” (p. 16). But Hooke also blamed novelty for the disorder in society and philosophy. For him “the work of the Brain and the Fancy” led science astray, and the methodology based on observation was a return to the correct practice of old. Nonetheless, Hooke understood his work as a contribution of “the great Philosophies of this Age.”

Cavendish’s *Observations* reads as a near word for word response to Hooke’s *Micrographia*, and one should suspect her title is carefully chosen for its irony. Where Hooke had praised the greats of his age, Cavendish calls them “dead and withered leaves.” Where Hooke had claimed the practical benefits of ‘micrography’ and presented elaborately drawn sketches of natural entities, Cavendish lists sundry discoveries and inventions not made with the aid of the microscope or telescope. She claims that observations through these instruments will “bring no more honey” from the bee, nor another grain from corn. But the philosophic basis of her criticism takes aim at the foundation of experimental science:

The truth is, most of these Arts are Fallacies, rather then discoveries of Truth; for Sense deludes more then it gives a true Information, and the exterior inspection through on Optick glass, is so deceiving, that it cannot be relied upon: Wherefore Regular Reason is the best guide to all Arts, as I shall make it appear in this following Treatise (“Preface to the Ensuing Reader,” p. D).

Cavendish’s rationalist agenda rings clear, and it links her conservative social agenda with her metaphysical emphasis on order.

The metaphysics of *Observations* are apparently a revision of her earlier work, but they are not explicit. Instead, she deals topically with the claims and demonstrations of *Micrographia*. Cavendish’s main theme becomes the epistemic limits of human scientific enquiry. Because nature is purely material, and this matter is composed of infinite varieties, it cannot be known

cept for a pen, ink and paper. Over and beside her head are winged cherubs. An inscription reads: “Her library on which she looks/ It is her Head her Thoughts her Books.”

in its totality. She seems to retain her position that matter is all of one kind, though she continuously refers to it as either animate or inanimate. Contra Hooke's empirical claims about knowing nature, Cavendish argues that the infinite degrees of matter prohibit an absolute understanding of it: "Nature being Material, and consequently dividable, her parts have but divided knowledges, and none can claim a Universal knowledg" (p. E2).²⁰ Human science, she argues later, offers no privileged epistemic position; nevertheless, knowledge is possible and sense should be subordinated to reason. In "Further Observations upon Experimental Philosophy," an appendage to *Observations*, she asserts: "Wherefore Reason will more truly discover so much of Nature as is discoverable to one kind or sort of Creatures, then Art can do; for Art must attend Reason as the chief Mistris of Information" (p. 12).²¹ In a following chapter Cavendish claims both the sceptic and dogmatist to err, again arguing that nature cannot be known in its entirety because of its infinite degrees. But since "Nature never doth actually run into Infinite in her particular actions and parts" (p. 8), it is possible using reason and sense together to understand 'her' in part.

Cavendish's rationalist epistemology is unique not for its radical skepticism, but rather for its link with an incredible metaphysics (where reason itself is just matter of some degree found in all natural bodies). Cavendish can at best be described a mitigated skeptic—taking the middle road between dogmatism and skepticism "where otherwise their disagreement will cause perpetual quarrels and disputes both in Divinity and Philosophy, to the prejudice and ruine of Church and Schools" ("Further Observa-

20. The criticism that matter cannot be fully understood because of its infinite degrees, or infinite varieties, makes sense within the context of a debate between Hooke, Henry Power and Dr. Highmore concerning the potential ability of the microscope to settle certain metaphysical questions. The possible visibility of "subtle matter," atoms, and "magnetical effluvioms" seemed a very real question for some early users of the microscope. Power is critical of Highmore, for instance, in *Experimental Philosophy* (1664): "Some with a Magisterial Confidence do rant so high as to tell us, that there are Glasses, which will represent not onely the Aromatical and Electrical Effluxions of Bodies, but even the subtle effluvioms of the Load-stone it self" (p. 57). Given Cavendish's commitment to plenism (of a sort), her criticism of microscopy is sound with regard to its epistemic limitations.

21. It is not clear whether the Duchess meant "Further Observations" to be a separate book or an appendage to *Observations*. *Observations* mimics Hooke's work in many ways while "Further Observations" contains a variety of loosely related discussions concerning natural philosophy. It is page-numbered separately. Following "Further Observations" Cavendish published "Observations upon the Opinions of some Ancheint Philosophers." This work too is independently paginated. She completed *Observations* by adding yet another essay: "An Explanation of some obscure and doubtful passages occurring in the Philosophical Works, hitherto published by the Authoresse." This third addition is page-numbered in sequence with her "Opinions of some Anchient Philosophers." Finally, *New Blazing World*, was published jointly with the collection.

tions," p. 34). *Observations*, however, was published in conjunction with a novel reputedly presenting a subjectivist epistemology.²²

Cavendish's *New Blazing World* tells a fantastic tale about imaginary peoples and worlds. Attached to *Observations*, at times it systematically treats issues of natural science, epistemology and metaphysics within its winding plot. Parodying the Royal Society, Cavendish tells of bird-men and bear-men obsessed (among other man/animal combinations) with their microscopes and telescopes and bickering over their countless observations. Told to rid themselves of the instruments by their empress, these natural philosophers beg to keep their looking glasses, although convinced of their uselessness. "Besides, we shall want employments for our senses, and subjects for arguments; for were there nothing but truth, and no falsehood, there would be no occasion for to dispute, and by this means we should want the aim and pleasure of our endeavors in confuting and contradicting one another" (p. 142). The empress allows them to keep their toys, assuming their arguments do not go beyond the walls of the schools. *Blazing World* treats, in similar tone, issues ranging from the motion of the earth to syllogistic logic. Inquiring into specific topics, the empress convinces the expert animal-men, through rational argument, that their experimental/observational methods have led them astray, and created disorder and error. This work of 'fancy' becomes pedantic as it moves from issue to issue demonstrating the superiority of a rationalist methodology over observational science. It thus offers a sort of critique consistent with *Observations*. Nevertheless, one must ask what this work adds to the former arguments, if anything.

The recurrent theme of *Blazing World* is the relationship between epistemology, as indebted to empirical practices espoused by Hooke and the Royal Society, and its subsequent impact on social order. *Blazing World* thus allows Cavendish to extend her internal criticism about the 'new' scientific methodology into the domain of politics, something perhaps not quite proper in a treatise about natural philosophy. The stability of the social hierarchy, and particularly the monarchy, is her chief concern. The Duchess becomes a character in her own novel as advisor to the empress of the Blazing World. She tells the empress that she must secure her authority against societies of learning: "dissolve all their societies; for 'tis better to be without their intelligences, than to have an unquiet an disorderly Government. The truth is, she said [the Duchess], wheresoever is Learning, there is most commonly also Controversie and Quarrelling" (p. 122). The criticism of empiricism is implicit as she concludes that

22. See Anna Battigelli's *Margaret Cavendish and the Exiles of the Mind* (1998).

these societies “will never yield to Reason.” Social order of a particular kind (“the body should have only one head”) thus justifies the censorship of any group adhering to principles of knowledge that generate multiple explanations—a rationalist methodology presumably lacking this effect.

It is difficult to see that Cavendish could be interpreted as a subjectivist. Rather, her mostly undefined rationalism is used to argue against an empirical science that leads to a multiplicity of world views and, consequently, social and political chaos. Nevertheless, Cavendish’s claims that all matter is inherently rational (a thesis seemingly contradicted within her own work), and that man’s observational status is essentially different, but not superior to other perspectives (animals and even inanimate kinds of things), appear remarkable. Further, the Empress of the Blazing World asks a group of spirits if the Duchess could have a world of her own to govern. The spirits respond that there are “infinite worlds”: “for every human creature can create an immaterial world fully inhabited by immaterial creatures and a populous of immaterial subjects . . . and that he may create a world of what fasion and government he will, and give creatures thereof such motions and figures, forms, colours, perceptions, etc. as he pleases” (p. 185). But this often quoted passage explicitly notes that the Duchess can only command an immaterial world. The passage follows a discussion in which the spirits claim that the Duchess may *not* inherit a material world, since there are “none without government already.” The implication is that the material world is but one, and follows specific rational rules. Nature, being purely material according to Cavendish’s own words, should be subject to one epistemology—presumably the correct one. Cavendish never admits to multiple ‘truths’ in nature, and is especially keen to allow epistemic access to nature itself. She states this clearly in her preface to *Blazing World*.

If you wonder why I join a work of fancy to my serious philosophical contemplations; think not that it is out of a disparagement to philosophy; or out of an opinion, as if this noble study were but a fiction of the mind; for though philosophers may err in searching and enquiring after the causes of natural effects, and many times embrace falsehoods for truths; yet this doth not prove, the ground of philosophy is merely fiction, but error proceeds from the different motions of reason, which cause different opinions in different parts, an in some more irregular than in others; for reason being dividable, because material, cannot move in all parts alike; and since there is but one truth in nature, all those that hit not truth do err, some more, some less; for though some may come nearer the mark

than others, which makes their opinions seem more probable and rational than others; yet as long as they swerve from this only truth, they are wrong ("To the Reader").

Battigelli supposes that Cavendish's interest "lay not in the nature of the physical universe but rather in the nature of the human mind" (1998, p. 114). However, it is not the mind's exile, but her own physical/political exile as a result of social instability that is the key to understanding Cavendish.

Blazing World is a political treatise. Only by ignoring the conclusion can one claim otherwise. Ultimately the Empress and her adviser the Duchess decide they must conquer the world from which the Empress originally came. Summoning a navy they travel by submarine to the other world. Allied with her native country, the Empress destroys her enemies and "did not only save her native country, but made it the absolute monarchy of all the world" (p. 214). Cavendish thus creates an analogy between the rational order of the *Blazing World* and reason itself. Conflict is resolved in the novel when rational political order is reinstated. Reason, likewise, is necessary to solve the problem of conflicting observations. Even the council of the Empress' own country receives ridicule: "Great councils are most commonly slow, because many men have several opinions: besides, every councillor striving to be the wisest, makes long speeches, and raises many doubts, which cause retardments" (p. 209). If we extend this critique to science by committee, where experiments are replicated in front of multiple observers, the potential for conflicting opinions is increased and resolution difficult. *Blazing World* thus extends the critique of observational science from the purely academic realm into a discussion of political order more generally—all the while maintaining a strictly hierarchical methodology designed to prevent diversity of observation and likewise opinion.

The relationship between Cavendish's epistemology and her metaphysics remained obscure until she refined her view with the publication of *Grounds of Natural Philosophy* (1668), her most scholastic-style work in both title and form and her last attempt at a philosophical treatise. In *Grounds*, Cavendish drops her insistence on matter being of only one type (though she remains a strict materialist claiming that in nature one cannot talk of the non-material "because a corporeal part cannot have an incorporeal perception"). Instead she explicitly claims that two natural kinds of matter exist: self-moving and not self-moving. This division allows Cavendish to imbed all knowledge (both the senses and intellect) in motion, while adding a third sort of matter.

Neither can there be more than two sorts of matter, namely, that sort which is self-moving, and that which is not self-moving. Also, there can be but two sorts of the self-moving parts; as, that sort that moves intirely without burdens, and that sort that moves with the burdens of those parts that are not self-moving: So that there can be but three sorts; those parts that are not moving, those that move free, and those that move with some parts that are not moving themselves: Which degrees are (in my opinion) the Rational Parts, the Sensitive Parts, and the Inanimate Parts; which three sorts of parts are so join'd, that they are but as one Body (p. 3).

While one may worry about the distinction between parts and matter in this passage (why then are there not three types of matter?), Cavendish clearly believes she avoids the problem of mind/body interaction to which Cartesian dualism was subject.²³ Nevertheless, she justifies her claims concerning rational thought over sense knowledge through her divisions of matter.

The rational perception is more subtil and penetrating than the sensitive; also, it is more generally perceptive than the sensitive; also, it is a more agil perception than the sensitive: All which is occasioned not onley through the purity of the rational parts, but through the liberty of the rational parts; wheras the sensitive being incumbered with the inanimate parts, is obstructed and retarded (p. 9).

This link between metaphysics and epistemology therefore provides the basis for a philosophical criticism of observational science, though the foundation is nowhere explicit in her earlier response to *Micrographia*. Quite simply, reason is free from the distortions of the senses because it is a pure something (distortions evidently are a result of the inanimate).²⁴ If the senses react more crudely because of their encumbered status, adding a machine (microscope or telescope) composed of still more 'not self-moving' parts presumably can only make matters worse.

Cavendish's philosophical grounds for her critique of observational/experimental science only explicitly appears in *Grounds of Natural Philosophy*, where she modifies her view of matter to make sense of reason's priority. The corpus of *Grounds* is also less indebted to political metaphor than

23. Of course Cavendish owes an explanation of how those 'parts that move free' interact with those 'parts' that do not, especially given her previous commitment to plenism.

24. The ontological difference between the two types of matter remains problematic. Cavendish later denies that something can be pure motion, yet she indicated that rational matter is 'pure' in the sense it does not have non-self-moving matter attached.

her earlier work. However, she concludes the treatise with an appendix that mixes discussions of regularity of motion, religion, and other worlds. Here she refers to 'parts' as 'societies', relates happiness to regularity of motion, and finishes with a description of the internal battle within her own mind. The internal battle is waged where the 'dullest and unbelieving parts,' having sought refuge in her brain, are "pull'd out of their Pulpit, the Grandula; and not only so, but put out of their Society, believing they were a Factious Party, which, in time, might cause the Society's Dissolution" (p. 311). Like *Observations* before it, *Grounds for Natural Philosophy* ends with a military analogy—conquering irregularity and diversity.

Cavendish's natural philosophy underwent a refinement consistent with the chronological progression of her works. Initially reactionary, her critique of science only received its philosophical foundations in 1668 with the publication of *Grounds for Natural Philosophy*. By this time, she had been ostracized from the community of natural philosophers. However, like Hobbes, Cavendish's failure to separate her rationalist epistemology from its political commitments did not fit the emerging methodologies of the Royal Society. A growing commitment to technology, experiment and mathematical physics excluded her as easily as gender barriers. In short, Cavendish's arguments were directed equally against science by committee and against those pressing an empirical agenda on the Royal Society. Her initial refusal to acknowledge the ancients and to learn the language of science,²⁵ and her systematic attacks on virtually all her contemporaries could only have shocked her peers. Her mixing of literature ('fancies' and poems) and philosophy and the self-admitted structural disorganization of her early work could only prove equally problematic for her acceptance.²⁶

Any attempt to extract a postmodern criticism of science from Cavendish's work must ignore her staunch royalism and her consistent concern for maintaining the old social order. Her works are extended arguments for obedience to King, Country and Church. Even her husband's desire she calls "as powerful on me, as the powerfulllest authority of states to particular persons" (1664, p. 297). Cavendish does not expound a strong skepticism, defending instead rationalism (minus comprehensive knowledge of nature) over a science of the senses.²⁷ Her multiple mental worlds, touted

25. Here again the conferences of Renaudot prove interesting. Participants debated whether natural science could be adequately described in the vulgar tongue, most of them expressing a belief in Latin's superiority.

26. In *Philosophical Opinions* Margaret complained that printer's mistakes sometimes altered her intended meaning in *Philosophical Fancies*. She also apologized for misplaced chapters in the *World's Olio*.

27. Cavendish's rationalism is generalized here. The internal consistency of her epistemology within any given work, not to mention within her corpus, is difficult to establish.

as representative of radical subjectivism, she forcibly subdued in the name of unity and order. Her deconstruction of male-dominated science only attempts to prevent the contagious spread of multiple perspectives. Cavendish saw scientific society fragmenting opinion rather than “colonizing others’ minds” with any unified fact; and thus she took up pen, prose and philosophy against. This endeavor added to her brief fame in her own life, and has revived, among those seeking to identify her ideas with our own, interest in her scholarship today.

The flamboyant yet painfully shy Duchess of Newcastle desired little more than to enter into the philosophical dialogues that circled closely around her and to establish an intellectual legacy by which she would be remembered. She tells her reader in her autobiographical memoir: “for I am very ambitious, yet tis neither for Beauty, Wit, Titles, Wealth Or Power, but as they are steps to raise me to Fames Tower” (*Paper Bodies*, pp. 61–62). In both private letters and her published work the Duchess admits that her fear of death is rather a fear of historical obscurity than pain or suffering. Her attempts to establish an intellectual legacy by forced entry into the community of natural scientists are consistent with her admitted end. Perhaps paradoxically, her failing to obtain the recognition of her “Idea” in her own age has of late precipitated a small degree of success in her goal to live “as Memory in Future Life” (1664, XC, CXLII).

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