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A Science Turned Upside Down: Feminism and the Natural Philosophy of Margaret Cavendish

by Lisa T. Sarasohn

In Margaret Cavendish's play *Love's Adventures*, the heroine dons male clothes, saves her intended and the Republic of Venice from the Turks, and lectures the College of Cardinals on theology to universal acclaim.¹ This literary echo of the famous "world turned upside down" topos of early modern European culture reverberates often in the work of the wife of the "arch-conservative" duke of Newcastle.² It is a potent symbol. As Natalie Davis has shown, the reversal of male-female roles in early modern culture, during those strange times in either fiction or fact when women were on top, not only represented a safety valve for releasing the tensions and preserving the order of hierarchical society, but also provided a tool for criticizing, challenging, and sometimes even changing the dominant values and powers of society.³ Margaret Cavendish believed that the social order could expand to accommodate the intellectual equality of women, without its structure fragmenting from this innovation. Thus, it comes as no surprise to see her embrace the ambiguity of a world turned upside down.

In the seventeenth century, the traditional intellectual values of society also were being challenged by the revolutionary findings of the new science.⁴ When Copernicus reversed the places of the sun and the earth, and Galileo and Descartes substituted motion for rest as the basic fact of physics, the universe itself was turned upside down. Margaret Cavendish's work unites the dual assaults on traditional authority implicit in both feminism and the new science.

Joan Kelly has argued that "every learned tradition was subject to feminist critique, since all were dominated by men and justified male subjection of women."⁵ In this paper it will become clear that Cavendish used the skeptical methodology of the new science not only to attack traditional natural philosophy, but also as a weapon in her battle for the recognition of female intellectual equality.⁶ We shall see, however, that this skepticism became a two-edged sword, both damning and justifying female subservience.

Cavendish fused revolutionary scientific ideas and an underlying feminist ideology in her conception of a living universe, infused with motion, and ordered by a female spirit, which could best be understood from the empathetic viewpoint of a female scientist. Thus, both the substance of her philosophy and its exposition justified a revolution in the interpretation of the traditional female role. Cavendish's work shows how the radical implications of one area of thought can reinforce and strengthen the subversive tendencies of another, quite different attack on authority.

Cavendish urged "learned professors to free their minds from the prejudice that nothing coming from the pen of a woman could be worth serious attention."⁷ She realized that women were kept in "a hell of subjection" because of the suppression of their natural faculties and intelligence by men. Thus, for Cavendish, the exposition of natural philosophy became a conduit for a reappraisal of the position of women, in which her actions spoke as loudly as her words. Her husband, who was her staunchest ally, wrote in the preface to one of her books of philosophical opinions, "but here's the crime, a lady wrote them, and to entrench so much on the male prerogative is not to be forgiven."⁸

The duchess met the philosophic and scientific geniuses of the age—René Descartes, Thomas Hobbes, and Pierre Gassendi—while in exile in France in the mid-1640s. Her husband had been Hobbes's patron for many years, and both Descartes and Gassendi dined with the Newcastles.⁹ It is likely that the duke's enthusiasm for the Scientific Revolution and its proponents originally awakened Cavendish's interest in natural philosophy.¹⁰ The duchess incorporated several themes of the new science into her own enormous corpus of literary works: poems, plays, essays, orations, and disquisitions on natural philosophy.¹¹

The duchess's writings are a curious combination of scientific speculation and fantasy, largely uncritical and hopelessly repetitive. Nevertheless, her natural philosophy is no more fantastic than that of some of her male contemporaries, like Kenelm Digby and Johannes Van Helmont, who were considered scientific prodigies in their own time and are now accorded a position of respect as pioneers of science.¹²

Cavendish first elaborated her scientific theories in a book of poetry, *Poems and Fancies*, published in 1653. It is dedicated to her brother-in-law, Charles Cavendish, who with her husband was her main source of information on natural philosophy. Sir Charles was the duchess's companion on a journey to England in 1651. Undoubtedly they discussed the various systems of philosophy at some length, and this is one of the reasons she determined to attempt to develop a system of her own.¹³

In *Poems and Fancies* the duchess advocated an atomistic cosmology which Robert Kargon, the historian of English atomism, characterizes as "so extreme and so fanciful that she shocked the enemies of atomism, and

embarrassed its friends."¹⁴ Her atomism was indeed very extreme and reflects her rejection of all kinds of intellectual authority. According to Cavendish, the world is composed of four differently shaped kinds of atoms: square atoms which constitute earth, round atoms which make up water, long atoms which compose air, and sharp atoms which compose fire. The various concatenations and motions of these different atoms, and the void, make up all the variety of forms and change we find in nature; their motion in the brain constitutes our understanding and emotions as well; their harmony produces health, their disharmony, sickness.¹⁵

To this extent, the duchess's system, although it may sound strange to modern ears, is not very different from the corpuscular philosophies advocated by Descartes, Hobbes, and Gassendi.¹⁶ The shocking element of Cavendish's atomism was the almost complete lack of theological qualifiers necessary to dissociate mechanism from the charge of atheistic materialism, a complaint often made against Hobbes himself. The duchess's atoms are eternal and infinite, two attributes which the proponents of corpuscular philosophy were careful to separate from their doctrines of matter, because in a Christian cosmology only God can be eternal and infinite. Furthermore the atoms, as the duchess described them, seem to act out of their own volition; whether they are ordered by God is left a very open question:

Small atoms of themselves a World may make
As being subtle, and of every shape:
And as they dance about, fit places find,
Such forms as best agree, make every kinde. . . .
And thus, by chance, may a new world create;
Or else predestined to worke my Fate.¹⁷

This casual attitude toward divine providence is complemented by similar neglect of the concept of the immortal soul: the soul the duchess describes is material, although she suggests it can somehow continue after death. Since ancient atomism was already considered atheistic because it denied divine providence and the immortality of the soul, Cavendish was treading on very dangerous ground here. This heterodoxy was emphasized when she suggested that there are an infinity of worlds, probably populated, not only outside our world but inside it as well, for instance within a lady's earring: "And if thus small, then ladies well might weare/ A world of worlds, as pendants in each eare."¹⁸ It is difficult to understand how Christ's revelation might be preached within an earring.

The underlying methodological premise of Cavendish's natural philosophy is a form of extreme skepticism about the possibility of absolute knowledge of nature, which she shared with her husband and brother-in-law, who in turn were influenced by the natural philosophers they associated with

in France.¹⁹ Cavendish felt that our senses cannot penetrate nature's mysteries, and, since every age believes something different, "all opinions are by fancy fed/ And Truth under opinion lieth dead." While skepticism led other natural philosophers to develop new methodologies based on experimentation and the careful use of reason, the duchess used skepticism to justify wild flights of imagination: "Who knowes, but in the braine may dwell/ Little small fairies who can tell?"²⁰

Cavendish's skepticism was, in part, the consequence of her sex and upbringing. Like most women in the Stuart period, she was relatively uneducated. Although she had tutors in "reading, writing, working, and the like," she was not "kept strictly thereto, they were rather for formality than benefit," since her mother preferred that her daughters be virtuous rather than cultivated.²¹ The duchess never learned any foreign language, and her command of English grammar and spelling was at best rudimentary, even given seventeenth-century conditions. Because of these factors, Cavendish was unable to develop a systematic understanding of the work of others.²² She was very aware of these shortcomings, and on several occasions complained that university education was denied to women, and their minds consequently were underdeveloped: "I will not say, but many of our sex may have as much wit, and be capable of learning as well as men; but since they want instructions, it is not possible they should attain to it. . . ." ²³

Just as the old learning had denied educational opportunities to women, likewise the new learning was largely a male prerogative. Although the duchess was the only woman in the period ever to be invited to a session of the Royal Society, she was invited only to observe a few experiments; it was inconceivable that she could ever become a member. Pepys was afraid that even this small courtesy would cause scandal for the Society.²⁴ Not surprisingly, Cavendish treated the empirical methodology of the Royal Society with great scorn, claiming that the microscopes and telescopes of experimental science could never discover the interior secrets of nature. In *Observations on Experimental Philosophy* she wrote:

But seeing that in this age, sense is more in fashion than reason, it is no wonder there are so many irregular opinions and judgments amongst men. However, although it be the mode, yet I for my part shall not follow it, but leaving to our moderns their experimental or mode-philosophy built upon deluding art, I shall addict myself to the study of contemplative philosophy, and reason shall be my guide.²⁵

Thus, Cavendish had no choice but to advocate a full-scale skepticism; the path to conventional knowledge was closed to her. She argued that if no one can know anything absolutely, then there was no reason why her

speculations might not be as correct or more correct than anyone else's.²⁶ In this case, skepticism became a warrant for extravagant imagination and uncritical thought, but the very fact that Cavendish could adopt a radical skeptical epistemology and use it to justify her own work demonstrates her abilities and substantiates the claim that the new science had radical implications for areas far beyond the purview of science.

Carolyn Lougee has argued, in her recent book on women in seventeenth-century France, that feminists, both male and female, were attracted to skepticism because it denied customs prevalent in a society at any one time; thus, the subjection of women was not natural and inevitable, but rather circumstantial and malleable. In rejecting custom, tradition, and religious authority, feminism and modernism became one.²⁷

Skepticism, however, was a two-edged sword. As Richard Popkin has shown, skepticism could coexist with conservatism: since there are no absolutes in politics, religion, or custom, the customs of the past have as much validity as those of the present, with the added advantage of proven stability and safety.²⁸ The inherent ambivalence of skepticism toward tradition, seeing it as both destroyer and conservative apologist, was reflected in Cavendish's ambivalent attitude toward traditional institutions. She fervently defended the superiority of monarchy and hierarchy, reflecting class rather than gender solidarity, but realized all forms of political association were a tyranny of men over women.²⁹

Another factor underlying the duchess's radical natural philosophy is a fideism so pervasive that it approaches eighteenth-century deism, and is the theological counterpart of her skepticism. Whenever God is mentioned in any of her works, she insists that he cannot be known in any way whatsoever by his creatures. Her theology is completely negative; we can only know that God is not at all like us. In her *Orations*, she wrote, "whatsoever is Infinite and Eternal, is God; which is something that cannot be described or conceived; nor prescribed or bound: for it hath neither beginning nor ending."³⁰ Consequently, she believed that faith and reason should be entirely separate, explaining the almost complete lack of theological motifs in her work.³¹ While other natural philosophers also advocated the autonomy of faith and reason, Cavendish adhered to this policy much more consistently than they did. It is interesting in this regard to compare her with Walter Charleton, the major English atomist of her time, whose natural philosophy is one long paean of praise to God's providential ordering of the universe.³²

While the duchess may have borrowed many of her ideas and preconceptions from the general intellectual climate of her day, she believed that her system was entirely unique. The desire for originality was the driving force of her creativity and the impetus for the development of her own unique natural philosophy.³³ In the introduction to her work *Philosophical and*

Physical Opinions, she proclaimed, "as for the ground of this philosophical work, as matter, motion, and figure, 'tis as old as eternity it self, but my opinions of this ground are as new as my first conception," and she begs the reader to acknowledge her originality.³⁴ This plea is echoed in all her writings, where she disparages any kind of imitation.

In *Observations on Experimental Philosophy*, the duchess argued defensively that her philosophy was different than anything taught before, and indeed,

were it allowable for our sex, I might set up a sect or school for my self. . . . But I, being a woman, do fear they would soon cast me out of their schools, for though the Muses, Graces, and Sciences are all of the female gender, yet they were most esteemed in former ages, then they are now; nay could it be done handsomely, they would now turn them all from females into males; so great is grown the self-conceit of the masculine, and the disregard of the female sex.³⁵

The only option left to the duchess, since she could not be admitted into the male preserves of learning, was to develop her own speculative philosophy, rejecting not only the teachings of the ancients, but the system of the moderns as well, at least in theory. If the Scientific Revolution can be considered an attack on the authority of Aristotle and the medieval worldview, the natural philosophy of Margaret Cavendish was a further attack on the authority of a male-dominated science, and, by implication, an attack on all male authoritarianism. In adopting the role of the female scientist, Cavendish implicitly turned the world upside down.

Thus Cavendish abandoned atomism by 1661, instead developing a scientific theory where a hierarchy of matter, integrated into an organic whole, composed the entire natural world. According to her theory the universe is composed of matter and motion, which are inseparable. There are three kinds of matter, differing in figure and type of motion, but inextricably integrated in composed forms of matter: rational matter, the most excellent, which is self-moving, the seat of conception, and the director of the rest of matter; sensible matter, which carries out the commands of rational matter, and is the vehicle for sensual perception; and inanimate matter, which is the least excellent because it lacks perception, although it is self-conscious and the material substratum of all being. All of matter is to some degree animate, but this does not cause divisive or natural anarchy because all types of matter are essentially one; diversity is resolved in unity. Self-moving matter is the principle of the world. This materialism is no less extreme than the duchess's atomism, because in it matter remains eternal and infinite, and the soul is considered material.³⁶

Did Cavendish's gender affect the content of her science itself? We have

seen that the roles which women filled in the seventeenth century circumscribed the duchess's education and influenced the development of her epistemology and methodology. In addition, Cavendish's gender may have acted as an heuristic device, causing her to be sympathetic toward those ideas which substantiated and supported a fuller role for women in the social and natural cosmos. Thus, whenever there is a choice, Cavendish chose the more organic and nurturing view of nature, not necessarily because these ideas are inherently attractive to women, but perhaps because the psychological presuppositions of the early seventeenth century associated the roles of women and nature.³⁷ Many of Cavendish's male contemporaries were equally attracted to the notion of an organic universe, which had been a dominant world-view for centuries, but most of the proponents of the new science had rejected organicism for the mechanistic model of the universe.³⁸ The duchess was unusual in her attempt to integrate some of the basic axioms of the new science, for example the pervasiveness of matter in motion, within an organic and vitalistic universe.

Thus matter is animistic, eternal, and a unity in the most far-reaching sense: "Nature is a body of a continued infiniteness, without holes or vacuities." The conservation of matter, the empathy of its parts for one another, and the transformation of constantly changing forms, results in an ordered, harmonious universe: "And since Nature is but one body, it is entirely wise and knowing, ordering her self-moving parts with all facility and ease, without any disturbance, living in pleasure and delight, with infinite varieties and curiosities, such as no single part or creature can ever attain to."³⁹

While Cavendish sometimes treats nature as the totality of matter, which is immanently self-ordering, in other parts of her work nature is considered as an ordering principle, somehow transcendent as well as immanent in matter. She considered this principle to be female.⁴⁰ Since the duchess had abstracted God so thoroughly from her metaphysics, nature was left with an extraordinarily large sphere of action:

Tis true, God is the first Author of motion, as well as he is of Nature; but I cannot believe, that God should be the prime actual movent of all natural creatures, and put all things into local motion, like as one wheel turns all the rest; for God's power is sufficient enough to rule and govern all things by absolute will and command, or by a Let it be done, and to impart self-motion to Nature to move according to his order and degree, although in a natural way.⁴¹

Once God has infused nature with the power of regulating motion, nature operates in an almost entirely autonomous manner, "Nature is neither absolutely necessitated, nor has absolute free-will . . . and yet hath so much

liberty, that in her particulars she works as she pleaseth. . . .⁴² This autonomous and almost independent nature is functionally equivalent to a seventeenth-century housewife:

Nature, being a wise and provident lady, governs her parts very wisely, methodically and orderly; also she is very industrious, and hates to be idle, which makes her employ her time as a good huswife doth, in brewing, baking, churning, spinning, sewing, etc. . . . for she has numerous employments, and being infinitely self-moving, never wants work but her artificial works are her works of delight.⁴³

This remarkably pragmatic and industrious nature is as far as an entity could be from the ethereal plastic spirit that some of Cavendish's male contemporaries envisioned.⁴⁴ By the end of this disquisition, the duchess tied her robust concept of nature directly to her own feminism: women may be particularly apt as experimental philosophers because they are experienced in the creation of artificial constructs, like "sweetmeats, possets, . . . pyes, and puddings." Moreover, if women became experimental philosophers, they could release men from the burden of "useless experiments," thus enabling them to devote their time to fundamental studies. In this case, Cavendish revealed an ambivalent attitude toward women; they are intellectually equal to men, but nevertheless should be socially subservient to men. Paradoxically, they are good only for those tasks Cavendish most despises. She concluded, "woman was given to man not onely to delight, but to help and assist him."⁴⁵

In fact, woman's relationship with man seems analogous to nature's relationship with God. Just as a good wife orders her household and produces children, nature regulates the world and produces an infinite variety of creatures: "in all figures, sizes and actions is apparent the curious variety of Nature, and the omnipotency of the Creator, who has given Nature a self-moving power to produce all these varieties in her self." Cavendish adopted the principle of the great chain of being, which she infused with vitalistic meaning: God's plenitude, expressed through Nature's fecundity, fills every place in the universe with living matter.⁴⁶ The duchess revealed her belief in the matrix of living creation in a strong appreciation of natural beauty and a profound sympathy for animals, most apparent in one of her best poems, *The Hunting of the hare*, which ends with a denunciation of hunting and human carnivores:

As if that God made Creatures for Mans meat,
To give them Life, and Sense, for Man to eat;
Or else for Sport, or Recreations sake,
Destroy those Lifes that God saw good to make:

Making their Stomachs, Graves, which full they fill
With Murther'd Bodies, that in sport they kill.⁴⁷

The organic and vitalistic quality of Margaret Cavendish's natural philosophy distinguished it from the mechanistic systems of Hobbes and Descartes. While the duchess shared their fascination with matter and motion, she denied that insensible matter, without self-movement, could produce an ordered universe. Likewise, she rejected the argument of the Cambridge Platonists who claimed that the universe was animated and moved by an immaterial spirit. It was impossible in her view that an immaterial spirit could affect and cause alteration in material being.⁴⁸ Cavendish's natural philosophy is more closely related to the organic theories of the Renaissance natural magicians and the vitalistic thought of the chemists of the sixteenth and seventeenth century, and to some aspects of the thought of Pierre Gassendi, with whose works she was probably familiar through the intermediacy of Charles Cavendish and Walter Charleton.⁴⁹

As a scientific philosophy, Margaret Cavendish's materialism is an interesting, but unimportant by-product of the Scientific Revolution. Many of her ideas, like vitalistic matter, the great chain of being, or a female and fecund nature, were part of the intellectual currency of her day, even if they were not usually associated with the new science. Thus, her philosophy had no influence in her own time, and most scholars who study Cavendish's work, such as Virginia Woolf, deplore the stultifying effect natural philosophy had on her poetic genius: "Under the pressure of such vast structures, her natural gift, the fresh and delicate fancy, which had led her in her first volume to write so charmingly of Queen Mab and fairyland, were crushed out of existence."⁵⁰ While this may be the case from a literary point of view, her natural philosophy is significant in what it reveals about the female, or at least one female, attitude toward nature and cosmology. Repeatedly in her work, in the least metaphorical way possible, Cavendish claims that her philosophy is her child. Not surprisingly, she envisions a universe that lives.⁵¹

One of the reasons which may have led Cavendish to abandon her original atomism in favor of organic materialism was the political implications of corpuscular natural philosophy. In *Philosophical and Physical Opinions*, she explained that it was impossible that all effects could arise from atoms, unless they possessed a kind of consciousness. However, if each separate part of matter was endowed with consciousness, "they would hardly agree in one government, which is as unlikely as several kings would agree in one kingdom, or rather as men, if every one should have an equal power, would make a good government. . . ."⁵²

The implicit unity of her own system circumvented the anarchy of pure atomism: hierarchy therefore replaces egalitarianism as the best ordering

device in both nature and society. Nevertheless, Cavendish realized that the principle of hierarchy which she so eagerly embraced in her natural and political philosophies, had dire implications for the status of women. Thus, in *The World's Olio*, the duchess proclaimed,

True it is, our sex makes great complaints, that men from the first creation usurped a supremacy to themselves, although we were made equal by nature: which tyrannical government they have kept ever since; so that we could never come to be free, but rather more and more enslaved. . . . Which slavery hath so dejected our spirits, that we are become so stupid, that beasts being but a degree below us, men use us but a degree above beasts. Whereas in nature we have as clear an understanding as men, if we are bred in schools to mature our brains. . . .⁵³

This strong statement of radical feminism arose from Cavendish's despair at her own position and that of her sex. In fact, this despair paradoxically often resulted in long diatribes against women interspersed in her work, perhaps reflecting her own insecurity. Although the duchess realized the condition of her sex was due to historical circumstances, she sometimes lost sight of this perception and blamed women for their own innate inferiority.⁵⁴

Thus, all through her work, Cavendish vacillates between the defense and condemnation of women. There is a debate in her book of *Orations* between different women on the subject of whether women should "unite in prudent counsels, to make our selves as free, happy, and famous, as men," where some of the speakers argue that women are equal to men, and others that men are far wiser than women. The orator, who perhaps best represents Cavendish's own opinion, declares that there is not sufficient evidence to decide the issue one way or the other. If women are without wit and strength, it is because they "neglect one and make no use of the other." The only option is for women to strive to improve themselves, through speech and exercise "all which will make our strength and wit known, both to men, and to our selves: for, we are ignorant of our selves, as men are of us. And how should we know our selves, when we never make a trial of our selves?"⁵⁵

Cavendish believed that the current unenlightened state of most of her female contemporaries made them incapable of intelligent political action or even rational thought: "neither doth our sex delight or understand philosophy, for as for natural philosophy, they study no more of Nature's works than their own faces . . . and for moral philosophy, they think that too tedious to learn, and too rigid to practice."⁵⁶ On some level, Cavendish realized that this female incapacity was the result of the traditional

roles women filled in marriage. Although her opinion sometimes wavered, Cavendish often denounced marriage as a vehicle for male immortality, in which women lost all identity and independence. She even went so far as to attack motherhood, which she believed benefited only the husband and his family, while only endangering the health and life of the wife.⁵⁷ While Cavendish did not explicitly recommend the destruction of traditional social norms as the vehicle for female emancipation, as did her peers in the French salons, she realized that equality could only be found when women rejected marriage as the totality of life, and sought to develop their intellectual capabilities.⁵⁸ For most women of her age, however, Cavendish seemed to realize this was an impossible ideal. Thus, Cavendish's radicalism sometimes splinters into social conservatism: the unenlightened woman can only improve herself by virtuous behavior within the traditional framework of home and family.⁵⁹

The duchess was not unique in her ambivalent attitude toward herself or her sex. Margaret L. King has argued that "the ambitions of the learned women of the Renaissance were thwarted in part because, being women, they were vanquished from within: by their own self-doubt, punctuated by moments of pride; and by their low evaluation of their sex. . . ." Although King is describing the intellectual women of the early Italian Renaissance, she could have been speaking of Margaret Cavendish. King shows that many of the women responded to their sense of social incompatibility with the rest of their sex, and to "fragile self-confidence," by retreating to the isolation of abbeys or "book-lined cells."⁶⁰ The duchess treasured nothing more than the solitude of her own study, which she sometimes did not leave for weeks on end. Apparently she had some good reasons for her retreat, since she was not received sympathetically by her own sex when she met them. The wife of John Evelyn commented icily, "I was surprised to find so much extravagance and vanity in any person not confined within four walls."⁶¹ Cavendish seems to have taken some pride in exaggerating her alienation from her sex through her unusual attire and offensive language. She also took her revenge by an almost obsessive denunciation of the mores of the Restoration court and the lewdness of most women in general.⁶² When she adopts this mode of exposition, no Puritan divine could have been more fervent in defence of traditional morality and social values.

As we have seen above, Cavendish's skeptical epistemology was also congenial to social conservatism. Skepticism could be quite negative about the human condition as a whole. Cavendish's attack on feminine rationality sounds like a minor chord in Montaigne's symphony on human perversity and self-delusion. The concluding chord for both sometimes was a paean in praise of tradition and stability. In this case, the sophistication of Cavendish's critique undermined her innate radicalism, and contributed to the ambiguity of her attitudes toward gender and social structure.



Frontispiece portrait of Margaret Cavendish, inserted in Huntington Library copy of *The Life of . . . William Cavendish . . .* by Margaret, Duchess of Newcastle (1667), engraved by von Schuppen from original by Diepenbek

Cavendish's ultimate answer to the ambivalent position she found herself in was recourse to fantasy to express her ideas, to assert her equality with men, and to receive the adulation and fame she believed she deserved. Attached to *Observations on Experimental Philosophy*, her most mature and sophisticated scientific work, is a strange romantic fantasy, *The Description of a New Blazing World*. Douglas Grant, the duchess's most recent biographer, accounts for its presence because Cavendish "had become restive under the discipline increasingly imposed on her by natural philosophy."⁶³ *The Blazing World* is not the result of restlessness. Rather, it is a prime example of a world turned upside down, where Cavendish could fulfill her wishes on the grand scale.

According to the story, a beautiful young maiden is kidnapped by a lascivious merchant, but after he and his crew have died in the polar wastes, she escapes by transversing the poles between her world and the "Blazing World," so-called because of the brightness of its stars. There she meets its strange inhabitants, all sorts of anthropomorphic beasts and many-colored humans, and eventually marries the emperor of the Blazing World. He gives her an absolute dominion over his realm and his subjects worship her as if she were a divinity. This is a classical reversal of male-female roles, and an expression of Cavendish's desire for dominance within a traditional hierarchy.⁶⁴

However, the story does not end there. The first thing the empress does is to call a meeting of all the natural philosophers in the land: fish-men, worm-men, ape-men, bird-men, fox-men, etc. Then ensues a wonderful satire of seventeenth-century science with all the various beings arguing abstruse points of both ancient and modern science. The worm-men largely reiterate Cavendish's own natural philosophy, which the empress emends and approves. The discussion ends by "the Empress having thus declared her mind . . . and given them better instructions than perhaps they expected, not knowing that her Majesty had such great and able judgment in natural philosophy."⁶⁵ In the Blazing World, at least, the duchess's science has triumphed as she triumphs over all other natural philosophers.

Moreover, Cavendish was not content in her Blazing World merely to overawe mythical scientists. Later in the story, the empress decides to write a "caball," and wants to use either the soul of Galileo, Descartes, Gassendi, Helmont, or Hobbes as her scribe.⁶⁶ The immaterial spirits, who are her advisors in this enterprise inform her "that they were fine ingenious writers, but yet so self-conceited, that they would scorn to be scribes to a woman." Instead, they suggest she use the soul of the duchess of Newcastle, who, "although she is not one of the most learned, eloquent, witty, and ingenious, yet she is a plain and rational writer; for the principle of her writings is sense and reason. . . ." ⁶⁷ Thus, by the curious device of introducing herself as a character in her own fiction, Cavendish not only castigates the pre-

judice male philosophers feel for women, but repudiates them in taking refuge with herself. Nothing could speak more eloquently of the duchess's sense of isolation and forced reliance on herself.⁶⁸

Margaret Cavendish's feminism consisted of a flanking attack on traditional authority. Rather than calling for the destruction of social hierarchy and institutions, which she supported for class and personal reasons, she advocated everything that was intellectually subversive within traditional society. She developed a natural philosophy that could not be restrained by either method or authority, repudiating both the old and new system of thought. In her own life, she scandalized social mores with her outlandish dress and eccentric behavior, proclaiming the independence of intellectual women, not from fundamental societal norms, but from cultural conformity. In the *Blazing World*, the soul of the duchess of Newcastle explains to her alter ego, the empress, "I endeavor, said she, to be as singular as I can; for it argues but a mean nature to imitate others . . . for my nature is such, that I had rather appear worse in singularity, than better in the mode."⁶⁹ Margaret Cavendish achieved her aim.

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NOTES

1. Margaret Cavendish, *Love's Adventures, in Playes written by the thrice Noble, Illustrious and Excellent Princess, the Lady Marchioness of Newcastle* (London, 1662).
2. Lawrence Stone, *The Crisis of the Aristocracy 1558-1641* (London, 1967), 277. The duke (then the marquis) had been a commander in the royalist armies until the defeat at Marston Moor in 1644, when he escaped to France. Cavendish (1623-1673) came from an established gentry family of Colchester, Essex, who were staunch royalists. In 1644 she became a maid-in-waiting to Queen Henrietta Maria, whom she followed into exile in France, where she met her husband, William. They were married in 1645. Cavendish was Newcastle's second wife and the marriage was a love match, perhaps confirming Lawrence Stone's contention that the aristocracy were much freer in their choice of partners in second marriages in the seventeenth century (Stone, 279-284). Newcastle never blamed Cavendish for her subsequent childlessness and encouraged her in her literary and scientific pursuits. They returned to England in 1659, to live the rest of their lives in quiet retirement in the country.

The most important biographical source for the duchess and her husband is Cavendish's *The Life of William Cavendish, Duke of Newcastle*, edited by C.H. Firth (London, 1886), to which is added her own autobiography, "A True Relation of my Birth, Breeding and Life." Firth's introduction is excellent. A detailed but distorted picture of the duchess is found in Henry Ten Eyck Perry, *The Duchess of Newcastle and her Husband as Figures in Literary History* (Boston, 1918). She is also discussed by Myra Reynolds, *The Learned Lady in England 1650-1760* (Boston, 1920); and Virginia Woolf,

"The Duchess of Newcastle," *The Common Reader* (New York, 1925), but almost entirely from a literary point of view. More objective and broader assessments of her work include the following: Douglas Grant, *Margaret the First* (London, 1957); Robert Kargon, *Atomism in England from Hariot to Newton* (Oxford, 1966); Natalie Z. Davis, "Women as Historical Writers," in *Beyond Their Sex*, edited by Patricia H. Labalme (New York, 1980); Jean Gagen, "Honor and Fame in the Works of the Duchess of Newcastle," *Studies in Philology*, 56 (1959): 519-538; Gerald D. Meyer, *The Scientific Lady in England* (Berkeley, 1955); Jerome Nadelhaft, "The Englishwoman's Sexual Civil War: Feminist Attitudes Towards Men, Women, and Marriage 1650-1740," *Journal of the History of Ideas*, 43 (1982): 555-579; and Dolores Paloma, "Margaret Cavendish: Defining the Female Self," *Women's Studies* 7 (1980): 55-66; Hilda Smith, *Reason's Disciples* (Urbana-Champaign, 1982).

3. Natalie Davis, "Women on Top," *Society and Culture in Early Modern France* (Stanford, California, 1965), 130-131. For more on the world turned upside down topos, see Christopher Hill, *The World Turned Upside Down* (London, 1972), and Peter Burke, *Popular Culture in Early Modern Europe* (New York, 1978). Nadelhaft also comments on the female implications of this theme, "The Englishwoman's Sexual Civil War," 558.

4. On the implications of the Scientific Revolution, see Thomas S. Kuhn, *The Copernican Revolution* (New York, 1957), and Herbert Butterfield, *The Origins of Modern Science* (New York, 1957).

5. Joan Kelly, "Early Feminist Theory and the *Querrelle des Femmes*, 1400-1789," *Signs: Journal of Women in Culture and Society*, 8 (1982): 19.

6. Kelly ("Early Feminist Theory," 4-12, 19-21) also argues that the initial and essential response to misogynist attack was to vindicate the rational and intellectual equality of women. See also Nadelhaft, "The Englishwoman's Sexual Civil War," 564.

7. Quoted in Gagen, "Honor and Fame . . ." 530. I have modernized the spelling and capitalization to clarify Cavendish's meaning.

8. Quoted in Samuel Mintz, "The Duchess of Newcastle's Visit to the Royal Society," *Journal of English and German Philology*, 51 (1952): 168-176, 169.

9. Kargon, *Atomism in England*, 54-76. Also see Helen Hervey, "Hobbes and Descartes in the Light of some Unpublished Letters of the Correspondence between Sir Charles Cavendish and Dr. John Pell," *Osiris*, 10 (1952): 67-91; Jean Jacquot, "Sir Charles Cavendish and his Learned Friends," *Annals of Science*, 8 (1952): 13-27, 175-194; Frithiof Brandt, *Thomas Hobbes' Mechanical Conception of Nature* (Copenhagen, 1928), 9ff.

10. Grant, *Margaret the First*, 95. Although the duchess met and dined with these philosophers, she only learned of their work through her husband and brother-in-law since she could not understand either French or Latin.

11. See Grant, *Margaret the First*, 240-242, for a complete list of Cavendish's works.

12. Grant, *Margaret the First*, 117. Digby attempted to combine Aristotelianism, Cartesianism, and atomism in a curious, unsystematic mélange, but he was especially interested in medical cures by sympathetic magic. He was among the founders of the Royal Society. Kargon remarks, "the great reputation which Digby enjoyed among those engaged in the establishment of the mechanical philosophy . . . is difficult to explain" (*Atomism in England*, 70-73). Van Helmont was a hermeticist and an experimenter, since science and pseudo-science were still closely related in the seventeenth century. See Richard

- S. Westfall, *Science and Religion in Seventeenth Century England* (New Haven, 1958).
13. Sir Charles was at the heart of intellectual life in Europe, see Jean Jacquot, "Sir Charles Cavendish and his Learned Friends," 175-192.
 14. Kargon, *Atomism in England*, 73. Cavendish's works produced considerable interest and some of them went through several editions.
 15. Cavendish, *Poems and Fancies*, (London, 1653), 5-46.
 16. Perry, *The Duchess of Newcastle and her Husband*, 188. Descartes, Hobbes and Gassendi all advocated theories of matter where matter was differentiated by figure and motion. The major difference between this kind of materialism and Cavendish's is that the duchess denied the subjectivity of sense qualities, while the others made this point integral to their philosophies. See E. J. Dijksterhuis, *The Mechanization of the World Picture* (London, 1961), 409-433, and Kargon, *Atomism in England*, 57-60. The duchess's atomism actually seems closest to that of Lucretius, but since *De Rerum Natura* was not yet translated into English, this influence had to be indirect.
 17. Cavendish, "A World made by Atomes," *Poems and Fancies*, 5.
 18. Cavendish, "Of many Worlds in this World," *Poems and Fancies*, 45.
 19. On the skeptical tradition, see Richard H. Popkin, *The History of Scepticism* (New York, 1964).
 20. "Of Stars" and "Of Small Creatures, such as we call Fairies," *Poems and Fancies*, 36, 162.
 21. Cavendish, "A True Relation . . .," 157-158. The Stuart period was a nadir in societal attitudes towards women, with a decreased emphasis on their education and intellectual potential, especially when compared with the Tudor age. However, the legal position of women improved slightly. See Stone, *Crisis of the Aristocracy*, 297-302; Reynolds, *The Learned Lady*, 46; and Roger Thompson, *Women in Stuart England and America* (London and Boston, 1974), 5.
 22. Grant, *Margaret the First*, 195-196.
 23. Margaret Cavendish, "To the Reader," *Observations on Experimental Philosophy* (London, 1666).
 24. Grant, *Margaret the First*, 195-196; Firth, introduction to *Life of William Cavendish*, viii; Mintz, "The Duchess of Newcastle's Visit to the Royal Society," 168-176.
 25. Cavendish, *Observations on Experimental Philosophy*, 87. Cavendish believed that "sense and reason" might chance to hit the truth" (93).
 26. *Observations on Experimental Philosophy*, 93.
 27. Carolyn C. Lougee, *Le Paradis des Femmes* (Princeton, 1976), 16-18.
 28. Popkin, *History of Scepticism*, 44-55.
 29. See, for example, *Sociable Letters* (London, 1664), 137: "Wherefore the Commons should be kept like cattle in enclosed grounds . . ., this would keep the Commons in awe, and the Nobles in power to uphold royal government, which is certainly the best and happiest government, as being most united. . . ."
 30. Cavendish, *Orations of Divers Sorts* (London, 1668), 322-323. Popkin has pointed out the intimate relationship between fideism and skepticism (*History of Scepticism*, 57-66).

31. Cavendish, "To the Reader," *Philosophical and Physical Opinions* (London, 1663).
32. Kargon, *Atomism in England, 77-92*. Charleton's *The Darkness of Atheism dispelled by the Light of Nature* (London, 1652) contains a detailed and sometimes verbatim exposition of the physical and ethical thought of Pierre Gassendi, including the French philosopher's emphasis on divine providence. See chapter eight of my unpublished dissertation, *The Influence of Epicurean Philosophy on Seventeenth Century Ethical and Political Thought: The Moral Philosophy of Pierre Gassendi* (Ph.D. Dissertation, Los Angeles, UCLA, 1979). Charleton knew Cavendish, and it is probably through this medium that Gassendist atomism influenced the Duchess's later work.
33. Gagen argues that the chief motivation for all of Cavendish's actions was the desire for fame in the Renaissance sense of honor and renown ("Honor and Fame . . .," 520-521). Without doubt, this did underlie her desire for originality and her attraction to what she calls "à-la-mode" philosophy, although she might have denied it herself.
34. Cavendish, "Another Epistle to the Reader," *Philosophical and Physical Opinions*.
35. Cavendish, "Observations upon the Opinions of Some Ancient Philosophers," *Observations on Experimental Philosophy*, 1-2.
36. A summary of Cavendish's materialism can be found in "An Argumental Discourse," *Observations on Experimental Philosophy*, and in the preface to *Philosophical and Physical Opinions*. Cavendish suggested that motion is in some manner the animating soul of matter: "if nature has self-motion, then none of her parts can be called inanimate or soulless; for motion is the life and soul of nature, and of all her parts" (*Observations on Experimental Philosophy*, 47). Apparently, the self-moving, material soul is common to humans as well as other forms of matter: "Of all the opinions concerning the natural soul of man, I like that best which affirms the soul to be a self-moving substance; but yet I will add a material self-moving substance; for the soul of man is part of the soul of nature, and the soul of nature is material; I mean only the natural, not the divine soul of man, which I leave to the Church" (*Observations on Experimental Philosophy*, 45). We see here how the Duchess's fideism could be interpreted as a screen for atheistic materialism.
- Also, it is interesting to note that in Cavendish's earlier atomistic natural philosophy, she distinguished between the souls of men and women. Men's souls are composed of sharp atoms, which are hot and dry, while women's souls are composed of round atoms, which are moist and cold ("To Poets," *Poems and Fancies*). This is a curious juxtaposition of atomism and Aristotelianism. In Epicurean thought, round atoms, which Cavendish associates with women, are superior: round atoms, because of their fineness, compose the soul. According to Aristotle, however, coldness and moistness, also female for Cavendish, are accidents of water, which ranks second to the bottom in his hierarchy of matter. The same ambivalence prevails in our hot, dry, sharp male atoms. Cavendish implicitly leaves the "natural" superiority of male and female confused. (See also Elizabeth Hampsten, "Petticoat Authors: 1660-1720," *Women's Studies*, 7 (1980): 21-38). In her later work this problem is resolved by the unity of all matter.
37. Sherry B. Ortner, "Is Female to Male as Nature is to Culture?" in *Women, Culture and Society*, edited by Michelle Zimbalist Rosaldo and Louise Lamphere (Stanford, 1974), suggests a variety of psychological, physiological, and sociological reasons why women in all cultures are considered closer to nature by both sexes: "Women's physiological functions, I have just argued, may tend in themselves to motivate a view of women

as closer to nature, a view she herself, as an observer of herself and the world would tend to agree with" (76-77).

38. Carolyn Merchant, *The Death of Nature* (San Francisco, 1980), 1-41, 192-193. Cavendish's vitalistic and monistic materialism is certainly different from Cartesian dualism. See E. A. Burt, *The Metaphysical Foundations of Modern Science* (New York, 1954), 111-129.

39. Cavendish, *Observations on Experimental Philosophy*, 4, 137.

40. Merchant, *The Death of Nature*, 2ff. Nature has always been considered female.

41. Cavendish, *Observations on Experimental Philosophy*, 30. Notice the explicit rejection of mechanistic deism in this statement. This is another example of Cavendish's rejection of pure mechanistic natural philosophy.

42. *Observations on Experimental Philosophy*, 108.

43. *Observations on Experimental Philosophy*, 102-103.

44. On the concept of "plastic nature" envisioned by the Cambridge Platonists, and especially Henry More, see *The Cambridge Platonists*, edited by C. A. Patrides (Cambridge, Mass., 1970), 26-27, 288ff.

45. Significantly enough, Cavendish equated her own work of composition with Nature's work of creation, highlighting the ambiguous status of both: "I imitate Nature, which works upon eternal matter; mincing, cutting, and carving it out into several forms and figures: for had not Nature matter to work upon, she would become useless. So that eternal matter makes Nature work, but Nature makes not eternal matter. Thus she is but a labouring servant" ("To His Grace the Duke of Newcastle," *The World's Olio* [London, 1655]). Ortner points out that the female often holds an ambiguous mediating position between nature and culture in symbolic thought, and therefore the female symbol can connote both positive and negative values depending on whether the association is closer to nature (inferior) or culture (superior) (Ortner, "Is Female to Male . . ." 86-87).

46. Cavendish, *Observations on Experimental Philosophy*, 45, 36-37, 57.

47. Cavendish, "The Hunting of the hare" in *Poems and Fancies*, 112.

48. Cavendish, *Observations on Experimental Philosophy*, 44.

49. Kargon, *Atomism in England*, 60. Harald Höffding, *A History of Modern Philosophy*, (New York, 1955), vol 1: 92-102; Merchant, *The Death of Nature*, 103-126; Olivier René Bloch, *La Philosophie de Gassendi* (The Hague, 1971), 445-456. Gassendi developed a hylozoic theory of matter, which he integrated within a mechanistic framework that is similar to Cavendish's natural philosophy. See his "Physics," *Opera Omnia*, I (Lyon, 1648), 311-337.

50. *The Common Reader*, 76.

51. "Condemn me not for making such a coil about my book, alas it is my child" ("An excuse for so much writ upon my verses," *Poems and Fancies*).

52. Cavendish, "Another Epistle to the Reader," *Philosophical and Physical Opinions*. Cavendish was one of the first to make the express analogy between the autonomous action of atoms in the universe and the free action of individuals in the state.

53. Cavendish, "The Preface," *The World's Olio*.

54. Gagen, "Honor and Fame . . ." 527; Nadelhaft, "The Englishwoman's Sexual Civil War," 563; Paloma, "Margaret Cavendish: Defining the Female Self," 60, all also comment on this aspect of Cavendish's thought.
55. Cavendish, *Orations*, 242-243. This debate no doubt reflects the late sixteenth and seventeenth century *querrelle des femmes*. See Kelly, "Early Feminist Theory," 6-7.
56. Cavendish, *Sociable Letters*, 38.
57. *Sociable Letters*, 183-184.
58. Her antagonism towards marriage is more apparent in her plays, where marriage is often compared unfavorably to the pleasures of a single life, although the heroines do inevitably marry at the end of the play. See Paloma, "Margaret Cavendish: Defining the Female Self," 63-64.
59. Cavendish, *Sociable Letters*, 12, 38, 156.
60. Margaret L. King, "Book-Lined Cells: Women and Humanism in the Early Italian Renaissance," in *Beyond Their Sex*, 71ff. Gagen remarks that Cavendish realized her own radicalism, which "plunged her into a deep and pervasive conflict with herself and with the society in her time" ("Honor and Fame . . ." 521).
61. Quoted in Perry, *The Duchess of Newcastle and her Husband*, 299.
62. This theme runs throughout her *Sociable Letters*. For example, see 16-18.
63. Grant, *Margaret the First*, 206.
64. *The Description of a new Blazing World*, appended to *Observations on Experimental Philosophy* (London, 1668), 13. As Grant and Gagen both point out, all of Cavendish's heroines are herself in disguise (Grant, *Margaret the First*, 154; Gagen, "Honor and Fame . . ." 533).
65. *Blazing World*, 49.
66. During the seventeenth century, most students of the cabbala (or Kabbala), used the term "cabbala" to refer to any philosophy which was "particularly enlightening." See Allison Coudert, "A Cambridge Platonist's Kabbalist Nightmare," *Journal of History of Ideas*, 36 (1975): 633-652.
67. *Blazing World*, 88-89.
68. Cavendish felt alienated from both the male intellectual world and from female society. She equated the two together in her *Sociable Letters*: "The truth is, scholars and women quarrel much alike as after the same manner, wherein is more noise than danger, and more spite than mischief. . . ." (84). In the *Blazing World*, Cavendish creates a confidant for herself in the figure of the empress; in the *Sociable Letters*, she creates an imaginary friend to whom she addresses her thoughts, and to whom, in a *cri de coeur*, she writes, "But women's minds or souls are like shops of small-wares, wherein some have pretty toys, but nothing of great value. I imagine you will chide me for this opinion, and I should deserve to be chidden, if all women were like you; but you are but one, and I speak of women, not of one woman . . ., but I wish with all my heart, our whole sex were like you" (14-15).
69. Cavendish, *Blazing World*, 349-350.