

THE CONTRIBUTION OF MARGARET CAVENDISH TO SCIENTIFIC KNOWLEDGE¹

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Margaret Lucas Cavendish (1623-1673), Duchess of Newcastle, was a scientist, a philosopher, and prolific writer, who lived in the last part of the seventeenth century, and who was widely known – although not taken very seriously in her time – as an intellectual lady who encouraged knowledge in British, Flemish and French learned circles. A maid of honour at the court of Queen Henrietta Maria, and married with William Cavendish, Marquess, and in 1645 Duke of Newcastle-upon-Tyne, she was a practitioner of various literary genres including plays, fictional texts, poems and an autobiography. She also excelled as a spokesperson for science dissemination by means of writing, thus being a representative of the intelligentsia who advocated the intimate relationship between science and letters. As an educated inheritor of the Renaissance and a precursor of the so-called Age of Reason, she was widely interested in integrating the knowledge that reached Europe from classic Antiquity, and revising it in order to introduce experimental science, make scientific progress and spread knowledge (Keller).

Her prolific literary career has been related to that of William Shakespeare in that she wrote more than twenty-five plays in which she appropriated many Shakespearean images and topics in both comedies and tragedies, which included controversial issues such as moral philosophy, as well as cross dressing, sexuality and pleasure (Romack and Fitzmaurice 2006). Her publications are not only a statement of her intellectual activities on the new seventeenth-century science, but also of her role as an activist in disseminating knowledge (Nate). Her figure had an international high-culture dimension in the 1640s since eminent visitors in her Paris house were the philosophers Thomas Hobbes, René Descartes, and Pierre Gassendi, (Hutton, 219), known as members of the Cavendish circle, which also included her brother-in-law, the well-known

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mathematician Sir Charles Cavendish. The Cavendish family lived in exile in France during the Republican period. She had travelled there in the entourage of the English queen, and had married in the French capital. In organizing civilized conversational circles in her lodgings she emulated French and Italian women of letters who had salons in which intellectuals assembled in order to talk about their literary and cultural enterprises. Lisa T. Sarasohn has established her radical feminism in that while working on culture dissemination she was also carrying out a clear gender subversion (1984, 298; 2010). Her activities as a 'salonnière' together with her writings made her gain respect among learned and scientific circles in the city of London, being invited to attend a session of the Royal Society of London in 1667, although as a woman she was not admitted as a member (Mintz). Her contribution to science and to the development of this learned society, together with other contemporary women, is thoroughly contextualized, respectively, by Londa Schiebinger in *The Mind Has No Sex? Women in the Origins of Modern Science* (1991) and by Lynette Hunter and Sarah Hutton in *Women, Science and Medicine 1500-1700: Mothers and Sisters of the Royal Society* (1997).

According to the *Stanford Encyclopaedia of Philosophy* she is considered to have anticipated works by seventeenth- and eighteenth-century thinkers, as well as those by contemporary philosophers concerning our understanding of how matter thinks including David Chalmers and Colin McGinn, and "alternately as mad, pretentious, a curiosity, and a genius" (Cunning, n.p.). For instance, Samuel Pepys, in his *Diary* (1667), commenting on Cavendish states that 'it shows her to be a mad, conceited, ridiculous woman, and he [her husband] to be an ass to suffer [her] to write what she writes to him and of him' (Warrington III, 195). In this derogatory line, even Virginia Woolf, who wrote about her literary texts both in *The Common Reader* and *A Room of One's Own* considering positively her writings, was unable to give her full credit for her intellectual vocation considering her a "crazy Duchess" (Woolf 87). However, this insanity myth has been dismantled in modern times (Chalmers 323, Whitaker, 2003). While she was in a privileged position in life, which allowed her to meet both British and internationally recognized intellectuals in her house, in order to discuss and celebrate new works of art, she also suffered criticism for being prominent outside what was commonly known as "the province of women" due to her disseminating activities. Still, she had a long-lasting career and her main interest was discussing and writing about new ideas and particularly the examination of scientific issues. In this field her

writings anticipated the ideas to be presented by Thomas Hobbes, John Locke in *An Essay Concerning Human Understanding* (1689), and David Hume in *An Enquiry Concerning Human Understanding* (1748) (Cunning 118). She also argued against Descartes regarding the physical effects of the brain in *Philosophical Letters* (xxxvi, xxxviii, xlii, and xliii). Her arguments were highly innovative (James), are still valid today due to her emphasis on naturalistic and materialistic philosophy, and her study of the relationship of the brain and body in addressing mental health (Cunning, n. p.).

One of her most interesting scientific texts is *Poems and Fancies* (1653). Although when reading the title of this book nothing would indicate that we are before a scientific text, it includes in poetic form abundant logical and science speculation, particularly on the atom and its function in the composition of the matter in the world. Most interestingly, she resorted to the word ‘Fancies’ in the title as a lexical down toner for philosophical texts, which otherwise would be unacceptable for a lady to present before her readership. This edition includes a frontispiece in which her family appears in a parlour around a table, together with other ladies and gentlemen, with books in their hands and in a lively atmosphere of comfortable intellectual exchange of ideas. The frontispiece contains a quatrain that reads as follows: “Thus in this Semy-Circle wher they Sitt,/ Telling of Tales of pleasure & of witt,/ Heer you may read without Sinn or Crime,/ And how more innocently pass your tyme” (reprod. in *Sociable Letters* 10). These paratextual elements are present here both as a statement of the important functions of ‘salons,’ run by literary ladies in various European cities such as London, Paris, Madrid, Florence and Rome, as learned meetings, and – most interestingly – as a disclaimer against those who might be against these intellectual and scientific activities led by women, thus stating that they are morally harmless as well as instructive and entertaining (Spiller 220).

The impressions transmitted by both the frontispiece and the title-page were corroborated by her full explanations in the preface to this work. In it Cavendish argues that poetry was the linguistic refuge by means of which she would have been forgiven for writing scientific ‘impertinencies,’ because ‘poetry which is built upon Fancy, women may claim as a work belonging most properly to themselves’ (Cavendish “Dedication” *Poems and Fancies*, n. p.). Thus, at this stage poetry is for her a good way to express her intellectual anxieties in that it seems to allow her more freedom than other genres. In tune with her philosophical preoccupations concerning the relationships between the mind and the body, she uses a gender perspective in order to explain that

female brains 'work usually in a Fantasticall motion' and therefore 'go not so much by Rules and Methods as by choice' (Cavendish "Dedication" *Poems and Fancies*, n.p.). A mere list of poem titles included in this book gives a clear idea of her interest in scientific topics, particularly on the so-called atomic poetry: "A World made by Atomes," "The foure principall Figur'd Atomes make the foure Elements, as Square, Round, Long, and Sharpe," "Of Aiery Atomes," "Of Aire," "Of Earth," "The weight of Atomes," "The bignesse of Atomes," "The joyning of severall Figur'd Atomes make other Figures," "What Atomes make Change," "All things last, or dissolve, according to the Composure of Atomes," "Of Loose Atomes," "Change is made by several-figur'd Atomes, and Motion," "Of Sharpe Atomes." In this book Cavendish projects the mathematical attempt to square the circle onto men's attempt to take control over irrationalia. The impossibility of squaring the circle becomes a proof of the impossibility of controlling female nature and fancy in the poem entitled "All sharpe Atomes do run to the Center, and those that settle not, by reason of the straitnesse of the Place, flye out to the Circumference. Sharpe Atoms to the Center, make a Sun". The apparent extravagant novel use of mathematical language and concepts in the poem is part of a rather common seventeenth-century metaphorical conceptualization of reality by means of mathematics. Mathematical metaphors were a cultural choice, that is, the expression of a new way of understanding the world in the period here used by a female poet in a fruitful manner.

The interest of Margaret Cavendish in literature and science is proven in her use of various literary genres. Consequently, other texts to be considered when dealing with her philosophical cogitations are *Philosophical and Physical Opinions* (1656), *Orations of Diverse Thoughts*, *Philosophical Letters* (1664), *Observations upon Experimental Philosophy* (1666), and *Grounds of Natural Philosophy* (1668). In order to present her views on various issues, in these books she resorted to several literary genres, mostly to the essay form, including the classical epistle addressed to a fictional third person as a rhetorical device to discuss her approach to knowledge and science. It seems that she missed colleagues or pen pals with whom to have intellectual exchanges, and by means of the philosophical letters she was able to circulate her visions on learning and knowledge, and carry out intellectual debates unfeasible for women otherwise, for example to present her challenge to Descartes's observations which did not match with her views on how the matter thinks. *The Description of a New World, Called the Blazing World* (1666) is another case in point since, in the form of a utopia (Khanna). In

it Cavendish presents a fictional text in which she deals with further scientific considerations, particularly with political philosophy. One of Cavendish's favourite approaches is that of presenting controversial issues in a debate that would include speakers for and against a given problem or topic. Both in *Orations* and in *Blazing World* gender issues, as well as other social and political views on government, are presented from various intellectual or practical perspectives in such a way that none of the conflicting observations used in the text are necessarily endorsed by the narrative voice. However, the mere fact of bringing some issues to the fore marks her interest in marking them as interesting for intellectual debate in which both men and women could be heard. In fact, in *Blazing World* the ruling monarch is an empress, valued by the inhabitants of her world, who enjoys their respectful acceptance of her authority and opinions on science and the world irrespective of her sex. The inference is that it is only in a utopian world that a woman may experience positive attitudes to her mind and opinions, unthinkable in the real world in which Margaret Cavendish lived. Women are also empowered in other professions in the Cavendish literary corpus. An example is a female general leading an army of ladies in the play *Bell in Campo* (1662). She not only defeats the enemy in the theatre of operations but also saves the male army. This text allows a double reading as, on the one hand, women are presented as excelling in a male world and obtaining recognition for their positive attitudes, and on the other, the social double standard may continue to exist since heroic female actions are considered noticeable and extraordinary in a patriarchal society. Through the mere act of writing these scientific texts, Cavendish not only challenged the doctrine of female silence (Walters 34) but also depicts female wisdom and ladies at the top of the hierarchy who are able to perform all types of professions (Wiseman 162).

As far as the synchronic reception of her output is concerned, her philosophical and literary texts as well as her knowledge dissemination activities were not judged as relevant or pertinent in her age (Wilkins 260). She was considered mad or at least an eccentric, and as one would imagine for a lady in the seventeenth century, she was not completely successful in her philosophical and literary activities. These were not unanimously acclaimed or even worth considering, thus suffering the double standard for which the contribution of women to knowledge was to be deemed either as second-rate or directly not to be taken into account in serious circles. When examining her texts diachronically or from a contemporary perspective they are judged as relevant both from a scientific and philosophical perspective as well as from a literary one. While in

the domain of the sciences she is noteworthy for the dissemination of new knowledge in her period, namely the atom and its features and her support to experimentalism (Wilkins 255), in philosophy she has anticipated contemporary theories that put the emphasis in the study of the brain and body in addressing mental health (Cunning n. p.). When dealing with women writers, and particularly with those of the early modern period, literary critics have found difficulties in labelling them in terms of their writing activities or profession, since they covered different areas of knowledge. This is an emblem of the partial assessment made on their career by historians of thought or by literary history. Both gender studies and reception criticism have been instrumental in bringing these issues to the fore, and in presenting the importance of the literary canon, and how the relationship among the history of the book, the history of literature and literary criticism is that of being communicating vessels and not different disciplines. Thus, the result of the critical approach with which women's writings are studied determines their inclusion or absence in a particular discipline or genre. Likewise, the way in which women writers have been either received or neglected in literary histories is relevant for their fair-minded assessment as public figures in science or the arts. That is the reason why Margaret Cavendish is defined in histories of thought either as a literary writer and a scientist or as a historian and a philosopher, on occasions ignoring part of her works. Her career is that of a woman from the Renaissance, a passionate intellectual who wanted to discuss and write about knowledge in many fields. In that sense she is a good representative of a woman of learning, who devoted her time both to science and letters and who had an extraordinary the capacity for intellectual debate.

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