

Where Science Meets With Fancy: The Atomic Poems of Margaret Cavendish, Duchess of Newcastle

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Abstract

Margaret Cavendish, Duchess of Newcastle was in touch with the scientific world of the mid-seventeenth century being a member of the Newcastle family that was in close contact with the outstanding scientists and philosophers of the time. She had a deep interest in the scientific matters, but despite the fact that she was tutored by her husband and brother-in-law, she lacked the formal education essential for a full comprehension of the scientific matters and theories. The Atomic Poems in her first publication *Poems, and Fancies* (1653) reflect her interest in atomism. In these poems, Margaret Cavendish re-visions the universe and interprets existence and natural phenomenon in terms of atoms. However, other than a scientific theory she uses her fancy in writing these poems, and in a way reflects what she heard and knew about atoms as she perceives the atomic theory as a woman.

Key words: Margaret Cavendish, *Poems, and Fancies*, The Atomic Poems, fancy, natural philosophy.

Özet

Newcastle Düşesi Margaret Cavendish onyedinci yüzyılın ikinci yarısında seçkin düşünür ve bilim adamları ile yakın ilişkiler içinde bulunan Newcastle ailesinin bir bireyi olarak dönemin bilim dünyası ile temas içindeydi. Bilimsel konulara büyük bir ilgisi vardı. Gerek eşi gerekse eşinin erkek kardeşi tarafından bu konularda özel olarak eğitim görmüş olsa da bilimsel konu ve kuramları tam anlamıyla kavrayabilmesini sağlayacak temel eğitimden yoksundu. 1653'te basılan ilk eseri olan *Poems, and Fancies*'de bulunan Atom Şiirleri Margaret Cavendish'in atomizme olan ilgisini ortaya koyar. Bu şiirlerde Margaret Cavendish evreni, var oluşu ve doğa olaylarını atomları kullandığı yeni bir bakış açısıyla yorumlar. Ancak bunu yaparken bir bilim kuramı yerine hayal gücünü kullanır ve atomlar hakkında duyduklarını, bildiklerini ve bir kadın olarak atom teorisini nasıl algıladığını şiirlerinde yansıtır.

Anahtar Kelimeler: Margaret Cavendish, *Poems, and Fancies*, Atom Şiirleri, hayalgücü, doğa felsefesi.

In *The Death of Nature: Women, Ecology, and the Scientific Revolution* Carolyn Merchant defines Margaret Cavendish, Duchess of Newcastle, as “[a] feminist who between 1653 and 1671 wrote some fourteen scientific books about atoms, matter and motion, butterflies, fleas, magnifying glasses, distant worlds, and

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infinity” and adds that “her ideas and theories are often inconsistent, contradictory and eclectic” (1989: 270). Margaret Lucas Cavendish (c.1623-1673) lived and wrote in a period when there were great changes in the society due to the developments in the field of science. She was in touch with the world of Scientific Revolution being a member of the Newcastle family that was in close contact with the outstanding philosophers and the scientists of the time. It was in 1643 that Margaret Lucas joined the court of Queen Henrietta Maria and became a maid of honor. However, with the civil war in 1644, she with the court of Henrietta Maria went to France, into exile. There she married William Cavendish, Marquis (Later Duke of) Newcastle who had come to Paris after the defeat of his royalist troops (Battigelli, 1998: 11, Hobby, 1998: 84-85).

In the seventeenth century, the Newcastle Circle “had played a major role in the formation of mechanical philosophy” (Merchant, 1989: 270). In Paris Thomas Hobbes, William Cavendish and his brother Charles Cavendish, the leading figures of the group, were in close touch with Rene Descartes and Pierre Gassendi, “the French giants of mechanical philosophy,” called by Robert Kargon as such, whose views were very influential on the members of the Newcastle Circle (1966: 63,68). It was about 1645 that Margaret Cavendish entered into the world of scientific and philosophic ideas and had the chance of learning about them “directly from their expositors and indirectly from her husband and her brother-in-law, both of whom tutored her” and what she learned about the atomist systems in Paris provided her with a “rich and surprising vocabulary” (Battigelli, 1998: 39,45).

It is common to study Margaret Cavendish’s works on scientific matters and natural philosophy through an examination of her place in the seventeenth century scientific environment.¹ Lisa T. Sarasohn characterizes Margaret Cavendish’s natural philosophy as one “that could not be restrained by either method or authority, repudiating both the old and new system of thought” (1984:30). In line with what is stated, a great body of critical writings focus on how much she comprehended, and to what extent she borrowed and deviated from the philosophical and scientific ideas of the time discussing her place as a female who yearns to be a part of this scientific environment yet lacks the essential education. Robert Kargon, for instance in his book *Atomism in England from Harriot to Newton* allots some pages for Margaret Cavendish, and discusses her as the last member to be mentioned from the Newcastle Circle. Stating that Margaret Cavendish played an “interesting role in the

¹ Natural philosophy, in very brief terms, is “the objective study of nature and the physical universe before the development of modern science.” A natural philosopher “observed phenomena and came up with ‘philosophical’ conclusions” (“Natural Philosophy,” *Wikipedia*).

establishment of atomism in England” yet was overlooked due to the fact that she can hardly be taken seriously by the modern historian, Kargon as regards her first publication *Poems, and Fancies* (1653) and her second collection *Philosophical Fancies* (1653) characterizes Margaret Cavendish’s atomism as “so extreme and so fanciful that she shocked the enemies of atomism, and embarrassed its friends” (1966: 73). For quite a long time her works have been regarded as insignificant due to the fact that the scientific issues she discussed in her works were not based on a solid scientific theory. Bowerbank thinks that “her sex and her untamed method” were the two main reasons for “her exclusion from the intellectual community” (1984: 402). Her method as can be seen in *The Atomic Poems* is a combination of fancy and science; she attempts to re-vision the universe, and interprets existence and natural phenomenon in terms of atoms through the way she perceives atomism.

The universe that she created in *The Atomic Poems*, as Sarasohn states, is a living one “infused with motion, and ordered by a female spirit,” and her role as a “female scientist” in giving a new picture of the universe is a role that is not traditional but “revolutionary” and “quite different attack on authority” (1984: 290). The authority against which she produced her works was the male scientific world and also the society that did not offer the chance of proper education for women. Margaret Cavendish thinks that women are not inferior in terms of intellect, and she states: “In Nature, we have as clear an understanding as men, if we were bred in Schools to Mature our Brains” (“Margaret Cavendish Quotes”). Thus, due to her lack of education, in *The Atomic Poems* she places her fancy rather than scientific truth in the center of her argument, and reveals her conception of the universe through her fancifully scientific female point of view. In *The Atomic Poems*, her deep interest in science is evident and this contributes to the originality of the work. In these poems Margaret Cavendish unites what she knew and heard about atoms and her imagination in order to give a new definition of the world. She tries to formulate reasons for how fire burns, how bodies decay, how the brain works, how diseases come into being, but above all how the world is created. In the light of the so far discussed critical approaches on Margaret Cavendish, along with Cavendish’s own remark where she puts her trust in female intellectual capacities, *The Atomic Poems* display the power of Cavendish’s fancy, her attempt to define the world in terms of atoms, and her wish to participate in the male scientific world with natural philosophy seen by a female eye.

Despite the fact that she was tutored by Charles Cavendish, as Battigelli states, Margaret Cavendish frequently portrays herself as an “original and thus unlearned thinker” (1998: 46). In her epistle “To Natural Philosophers” where she states her intention in writing such poems, she underlines the fact that what she is to study is not original, because the “Philosophers” either through “*Thought*, and

Speculation, or other waies in Observation” discovered “these *Subjects*” (1-4).² Although her choice of subject matter is not original, the way she handles it as a woman is quite daring and original. Sarasohn thinks that “the desire for originality was the driving force of her creativity and the impetus for the development of her own unique natural philosophy” (1984: 293). The epistle opens with Cavendish’s apology for her attempt to write on matters which she cannot fully comprehend due to her lack of formal education. Then she humbly states her ignorance on these subjects and assures the reader that her discourse would not be authentic and challenging:

...I never read, nor heard of any *English Booke*
to Instruct me: and truly I understand no other *Language*; not
French, although I was in *France* five years. Neither do I un-
derstand my owne *Native Language* very well; for there are
many words, I know not what they signifie.

.....
But my *Ignorance* of the *Mother*
Tongues makes me ignorant of the *Opinions*, and *Discourses* in
former times; wherefore I may be *absurd*, and erre *grossely*. I can-
not say, I have not heard of *Atomes*, and *Figures*, and *Motions*
and *Matter*; but not throughly *reason’d* on: but if I do erre,
it is no great matter; for my *Discourse* of them is not to be ac-
counted *Authentick*.... (5-9, 15-21)

Stating her limited knowledge, that is due to the social conditions and tradition that prevented women from having the same education with men, she states the reason why she prefers poetry to prose in conveying her ideas on natural philosophy:

the Reason why I write it in *Verse*, is, because I thought *Er-
rours* might better passe there, then in *Prose*; since *Poets* write
most *Fiction*, and *Fiction* is not given for *Truth*, but *Pastime*....(25-27)

Cavendish’s preference of poetry to prose, as Richard Nate suggests, shows her “timidity” towards “the new Science” (2001). However, in regarding her works published between 1653 and 1668, Nate also states that in Cavendish’s later works, namely the ones published after the Restoration, she separates “philosophy from fiction” and these works reflect her “ambition to participate actively in scientific discourse” (2001). The reason for this timidity observed in her first collection is closely connected with her lack of formal education and her attempt to deal with

² All the references to the epistle “To Natural Philosophers” and to The Atomic Poems are to “The Atomic Poems of Margaret Cavendish”. Ed. Leigh Tillman Partington. 1998. 22pp. *Emory Women Writers Resource Project at the Lewis H. Beck Center*. 1996. Emory University. 19 June 2005 <<http://chaucer.library.emory.edu/cgi-bin/sgml2html>>

subject matters which are not seen proper for her gender. She assures the reader that what she is to talk about would not be original and challenging, it is fiction only, which suits verse.

Margaret Cavendish's generalization about the subject matter of poetry decreasing it to mere "pastime" and "fiction" is not indeed an attempt to disregard the high qualities attributed to it in the renaissance poetic tradition. The type of poetry that she is talking about is the poetry written by a woman who is not learned enough to cope with the current philosophical and scientific issues. Her concept of poetry as can be observed in these lines is quite different for it is not based on "opinions" and "discourses" of the earlier authorities (16). Poetry as she indicates in "To all Noble, and Worthy Ladies", *Poems and Fancies* (1653) "is the finest work that Nature hath made" and it plays "so well upon the Brain as it strikes the strings of heart with delight" ("Margaret Cavendish Quotes"). Poetry in this respect is the outcome of the delight felt by the heart, and an experience of this delight as the mind perceives it. It is highly subjective, and relies on the creative faculty of the brain, that is of the individual. In her concept, the female poet is not divinely inspired or guided by learning and reason, but 'fancy' plays an important role in the poetic composition, and it is her fancy that Cavendish recurrently refers as the source of her poetic composition:

Poetry, which is built upon Fancy, Women may claim as a worke
belonging most properly to themselves: for I have observ'd, that their
Braines work usually in a Fantastick motion. ("Margaret Cavendish
Quotes")

In *The Atomic Poems*, her fancy is what she substitutes for the male dominated scientific discourse. Her use of fancy, other than reason and scientific truth, makes Margaret Cavendish different from her contemporaries. As Bowerbank observes, the learned writer uses "true wit," that is, reason and knowledge in literary composition, but for Margaret Cavendish, who associates such writings with "sterile artificiality and labored imitation," "true wit" is "natural wit unrestrained" (1984: 393-394). Cavendish's *Atomic Poems*, in this respect, are the examples of how her unrestrained natural wit works. She does not put herself within the limits of reason and the rationality of scientific truth, instead offers a subjective picture of a world made up of atoms. Stevenson believes that in her writings, in *Poem, and Fancies* in particular, being aware of the distrust of female intellectual capacities, Margaret Cavendish suggests that her ideas are not "really philosophical" but "the fanciful products of her corporeal psyche" and thus she conceals the "philosophical content in fanciful guise" (1996: 529-530). This is indeed what is seen proper for a woman in an age that disregarded the creative and intellectual powers of women.

After stating the reasons for her choice of poetry and apologizing for her ignorance in such matters, Margaret Cavendish talks about her wish for fame in terms of atoms, and offers an explanation in terms of atoms for the fulfillment and contentment that she hopes to receive with the success of her work and sadness as an outcome of its failure. She desires that her verses “should please the *Readers*” with a desire that is “as big as the *World*” that the atoms make, but at the same time she is quite anxious as her “*Feares* are of the same *bulk*”. She shall remain as “an unsettled *Atome*” confused and sad, but if she were to get praise, all the atoms would be fixed and she would become a “*World*” (29-36). Cavendish also advises the ones who are not interested in “such small things as *Atomes*” to skip this part of her work and proceed with the rest (38-39). She knows that “the *Subject* is *light*” (40) and she wishes that her “*Braine* had been *Richer*” to give the reader a rich and “fine *Entertainment*” (48-49). Knowing her limitations, honestly and in a modest manner Cavendish states what she wishes to offer her readers, yet she knows what she can give;

But those that are poore,
have nothing but their labour to bestow; and though I cannot
serve you on *Agget Tables*, and *Persian Carpets*, with *Golden Di-*
shes, and *Chrystall Glasses*, nor feast you with *Ambrosia*, and *Nectar*,
yet perchance my *Rye Loafe*, and new *Butter* may tast more sa-
voury, then those that are sweet, and delicious. (58-63)

Instead of wonders she offers the readers the simplicity of “*Rye Loafe*” and “*Butter*” which as Elaine Walker states “is somewhat at odds with the rational scientific world towards which she claims to aspire” (1997: 342). In these lines it is evident that though she yearns for the things beyond her reach, the dishes for gods and goddesses, what she can give is only the ordinary. She wishes to discuss how atoms create a universe not through a scientific perspective, but through the way she perceives the atomic theory. Elaine Walker while further commenting on this particular section of the work puts forward the possibility that Margaret Cavendish “intends a pun on the word ‘wry’ which in the seventeenth century had connotations of swerving from the correct course, contrariness and perversity” stating that

Her book is undoubtedly wry in this sense, as it deviates from every accepted female norm of behaviour. She could be presenting not the simplicity of the rye loaf, but the subversion of the wry act, secretly offering her readers ambrosian richness, if only they have the cast of mind and intellectual appetite to enjoy it. Ambrosia and nectar are the food and drink of the gods: to consume them gives the immortality of the sort Cavendish desires. (1997: 343-344)

The Atomic Poems in that respect can be taken as a “wry” act of a seventeenth century noble woman who attempts to find herself a place in the male dominated

world of science. She knows that her aspirations are high, but does not hesitate to take this difficult task as can be observed in “To Natural Philosophers,” for she assures the reader that what she is to write does not aim at challenging the already existing body of work of “any Philosopher[s]” on the subjects that she is to mention, but present it from a woman’s point of view, shaped by her fancy. Her attempt to write on the atomic theory in the seventeenth century, as, Partington observes, makes her “unique” but moreover, “re-visioning her environment” as a woman gives the modern reader “a picture of a creative, and sadly under-educated, seventeenth-century mind” (1998).

It is this lack of education that Margaret Cavendish recurrently complains about in her works and it is also quite evident in her self-presentation. James Fitzmaurice refers to “a frontispiece” found in various books of Margaret Cavendish that illustrates her as a “solitary genius as melancholic”, a human condition that people of intellect in the seventeenth century were commonly thought to suffer from. However, in her melancholic portrait, as Fitzmaurice states, what is absent is “a shelf of books” (1990: 201-202). Metaphorically speaking, the absence of books denotes the difficulties that women encountered when they were to claim for themselves a place in literature, or in the world of intellect where the rules are determined by men. In her *Philosophical and Physical Opinions* (1655), in “To the Two Most famous Universities of England,” Margaret Cavendish discusses the secondary condition of women in the society and their lack of chance in having an access to the world of knowledge, not because they are not talented, but simply because they are not allowed. She states that because of “poor education, exclusion from public institutions” women’s subordinate condition at home, the responsibilities due to childbirth, and the common idea prevalent in the society that women are “incompetent, irresponsible, unintelligent, and irrational” women are “shut out of all power and authority.” She further suggests:

We are become like worms, that only live in the dull earth of ignorance, winding our selves sometimes out by the help of some refreshing rain of good education, which seldom is given us, for we are kept like birds in cages, to hop up and down in our houses, not suffered to fly abroad, to see the several changes of fortune, and the various humors, ordained and created by nature, and wanting the experience of nature, we must needs want the understanding and knowledge, and so consequently prudence, and invention of men. (qtd. in *Sunshine for Women*)

As a royalist, Cavendish had been in close contact with the court and it was her social status that gave her a chance to have access to a world the entrance of which was restricted to women. However, as can be observed in her self portrait and apologizing manner, Cavendish was aware of the fact that being a woman “disqualified” her and her works from a serious interest and public attention (Keller,

1997: 448). It is evident in her epistle “To the Two Most famous Universities of England” in *Philosophical and Physical Opinions*; Cavendish sent her works to Oxford and Cambridge not to be studied but to be kept, which she believes would please and encourage women. With the hope that she might gain recognition in the following ages, she states:

I here present to you this philosophical work, not that I can hope wise school-men and industrious laborious students should value it for any worth, but to receive it without scorn, for the good encouragement of our sex, lest in time we should grow irrational as idiots, by the dejectedness of our spirits, through the careless neglects and despisements of the masculine sex to the female, thinking it impossible we should have either learning or understanding, wit or judgment, as if we had not rational souls as well as men.... Wherefore, if your wisdoms cannot give me the bays, let your charity strew me with cypress; and who knows, but, after my honorable burial, I may have a glorious resurrection in following ages, since time brings strange and unusual things to pass. (qtd. in *Sunshine for Women*)

The two universities compiled her works, as Keller argues, probably due to her social status because otherwise it would have been an insult (1997: 448). Margaret Cavendish was also able to make a visit to the Royal Society, and it was indeed as Merchant states an “attempt to gain recognition for her achievements” (271). This visit was more recognized than her works and was accounted in Samuel Pepys’ diary at length, who concentrated more on her eccentric and unusual way of dressing and her appearance rather than her deep interest in scientific matters and determination to write on them. It was on May 30th, 1667 that Margaret Cavendish was invited to the Royal Society, “after much debate, *pro* and *con.*,” because many people were against this visit, and Pepys was sure that the whole town would talk about this (1887: 139). Pepys talks about her visit in detail and also offers a picture of her appearance:

The Duchess hath been a good, comely woman; but her dress so antick, and her deportment so ordinary, that I do not like her at all, nor do I hear her say any thing that was worth hearing, but that she was full of admiration, all admiration. Several fine experiments were shown her of colours, loadstones, microscopes, and of liquors; among others, of one that did, while she was there, turn a piece of roasted mutton into pure blood, which was very rare...After they had shown her many experiments, and she cried still she was full of admiration, she departed.... (1887: 139-140)

She was not liked by Pepys, but it is obvious that she was very much impressed with what she had seen in this male scientific community. However, it was not possible

for her to become a member of this so admired scientific community due to her sex (Merchant, 1989: 271). Woman's participation in the scientific world, as can be observed in Cavendish's attempts, assigns a passive role to women: they can only watch things from a distance and cannot be active participants. Richard Nate suggests that in the seventeenth century "the scientific enterprise was considered a masculine undertaking," and in this respect Margaret Cavendish's being an outsider to the world of science is not only because of her "seemingly peculiar philosophical opinions but also from her social status as a female author" (2001). In the face of all the difficulties, as a female author who wishes for a full participation in the world of science, Cavendish in her natural philosophy, as Keller suggests, follows "the simple guides of sense and reason" because these are "the only avenues open to her" (1997: 449).

In "A World made by Atomes" Cavendish gives her ideas on how the world may be created:

Small *Atomes* of themselves a *World* may make,
As being subtle, and of every shape:
And as they dance about, fit places finde,
Such *Formes* as best agree, make every kinde. (1-4)

Atomes "dance" and "finde places fit" and with their "severall *Motions*" and "*Formes*" they create "a *New World*" (11-17). Margaret Cavendish offers a new and different creation story, by presenting her atomic theory as Stevenson suggests "both as fiction and as theoretical argument" (1996:534). In her conception, the world is made up of four different shaped atoms: square, round, long and sharp atoms. These atoms make up the four elements:

THE *Square flat Atomes*, as dull *Earth* appeare,
The *Atomes Round* do make the *Water* cleere.
The *Long streight Atomes* like to *Arrowes* fly,
Mount next the points, and make the *Aiery Skie*;
The *Sharpest Atomes* do into *Fire* turne.... ("The foure principall Figur'd
Atomes make the foure Elements, as Square, Round, Long, and
Sharpe" 1-5)

Square atoms make earth, round ones make water, long ones make air and sharp ones make fire. Long atoms are "hollow" and thus give "softnesse" to air ("Of Aiery Atomes"). Air spreads equally because its long atoms which look like "a *Thread*" or "a *Spiders Web*" diffuses into all the empty spaces ("Of Aire"). "*Watry Atomes*" are round and similar to the air atoms, they are hollow and as Cavendish states "This makes us thinke, *water* turnes into *Aire*, / And *Aire* often runs into *water faire*" ("Of Aiery Atomes" 9-10). Earth, therefore, is made up of "slow," "flat" and "dull" atoms, and earth does not move because the flat atoms fit with no "hollow" space

between them (“Of Earth”). Fire atoms are “sharp” like “arrows” and with sharp motion they “mount up high,” and as they are “sharpe and swift” they can “passe through” other atoms, and with their swift motion they bring out fire (“Of Sharpe Atomes”). Atoms move like “stream” in flame and produce light that flows like a fluid (“What Atomes make Flame”). The fire atoms are also mobile and produce heat, they are “scatter’d all about” like “dust,” but as they neither “flame, nor shine” one cannot see but feel them for they warm “our Bodies” (“Of Fire and Flame”).

Among The Atomic Poems there are a number of poems on fire and flame because for Cavendish fire plays an essential part in life. Margaret Cavendish devotes some poems to find out reasons to explain certain natural phenomenon. In “What Atomes make Fire to burne, and what Flame,” for instance, she questions why the spark of fire burns quicker than flame. Fire is dry, she states, and it falls into parts. Sharp atoms keep the body hot, and it is for this reason that they fly forth to give heat. Then she continues with a personification, saying that “[s]ometimes for anger” or in other cases for “want of roome” the sparks do fly. Reminding the reader of the fact that the ants are small but altogether they can eat up a horse, Cavendish states that atoms can perform similar things if they are not weakened by other atoms. The spark is quicker than the flame. The fire atoms are sharp but their degree of sharpness may vary. Bees and flies have stings, but just as a bee’s sting is sharper than that of a fly, when the sharp atoms meet a body, the weak ones fly away and “turn *Aire to Flame*”. Only the strong ones can enter into “firmest *Bodies*” and the weak ones “quickly dye”.

The atoms are “small” but they had to agree in “*Quality, Quantity, and Weight*” (“The Weight of Atomes”). However, they might differ in “Figure” as in the case of water which is different in “Bulke” when it is in the form of “fluid” and “ice” (“The Bignesse of Atomes”). When these figured atoms come together they make up new forms, and as Cavendish states when the atoms join together in “severall waies, / The *Fabrick* of each severall *Creature* raise” (“The joyning of severall Figur’d Atomes make other Figures”). This is how Cavendish offers an explanation for the creation of things. Despite such variety of atoms, as stated in “Change is made by several-figur’d Atomes, and Motion” they are made up of the same matter, it is “motion” that creates the change:

IF *Atomes* all are of the selfe same *Matter*,
As *Fire, Aire, Earth, and Water*.
Then must their severall *Figures* make all *Change*
By *Motions* helpe, which orders, as they range.

Cavendish’s concern about motion, and its vital function in the formation of the world is evident even in the opening poem “A World made by Atomes” where she states that atoms may make a world with their “severall *Motions*” (15) , and it is also

repeated in most of the poems. Motion provides the continuity of life as stated in “Motion makes Atomes a Bawd for Figure”. It is only through motion that atoms make new forms, and it is a continuous process for the “*young ones take old's roome*” (12). On the importance of motion in Cavendish’s “Atomic Poems,” Robert Kargon states that “[t]he study of motion, Lady Margaret held, is the prime investigation for a natural philosopher” (1966: 74). In “Motion is the Life of all things” she puts emphasis on the vital importance of motion for existence stating that “*As Light can only shine but in the Eye, / So Life doth only in a Motion lye*” (5-6), and just as an eye when closed cannot see light, when motion leaves a body, life goes out. So as a natural philosopher in her own way, in “All things last, or dissolve, according to the Composure of Atomes” in the world that Cavendish depicts everything is made up of “*moving Atomes*”. The durability of a body is determined by the closely connected atoms. Unlike the atoms in the strong bodies, in vegetables, there are loose atoms, and it is for this reason that they die young. In animals, therefore, when compared with that of vegetables, the atoms are “much closer”. In some “strong *Trees*” for instance, the atoms are so close that they live long. In minerals, as she observes, the atoms are “so hard wedg’d in” that there is no space left for motion to enter in, so they are durable and do not die quickly as vegetables. Cavendish, then concludes that, if the atoms are loose in bodies, they are “*Soft, and Porous*” and thus such “*Porous Bodies* never do live long”. Motion “tosses” the loose atoms and “Keeps them from their right places”. Margaret Cavendish, just as she explains creation, offers an atomic explanation to death, decay and end, stating that when the atoms through the guidance of motion fail to occupy their right and proper places it is how “*Life goes out*” (23-28).

Life and death, and even the way one lives are determined by atoms. Life is determined by sharp atoms because it is stated that “*The Cause* why things do live and dye, / Is, as the mixed *Atomes lye*” (“What Atomes make Life” 9-10). Life is a fire formed with sharp fire atoms, but when the round watery atoms become more powerful, they “quench *Lifes Atomes* out”, but if they are mixed equally, they live in harmony (“What Atomes make Death”). Harmony of atoms is essential for existence and when this harmony is distorted it results in diseases and death. In “Motion directs, while Atomes dance” Cavendish talks about harmony of atoms in terms of dance. Atoms while dancing form a “round circle” and they “run in and out” as people “dance the Hay”. It is motion that directs them, and the harmony of the atoms as they dance is the sign of health. When this harmony is broken, when the dance stops, the motion ends and it is “death”. Similarly, diseases are caused by the “fighting” of atoms and a healthy state is established when atoms remain in peace (“What Atomes cause Sickness”). In discussing the sources of Cavendish’s medical implications, Kargon offers two possibilities of how she might be interested in

medicine; one is through her friend “Walter Charleton, a physician” and “an avowed atomist” who in 1668 translated Margaret Cavendish’s biography of her husband into Latin, the other is the possibility that Cavendish “arrived at these charming speculations without help” which he believes to be “quite likely” (1966: 75). Distortion of order, as in all other cases, is the primary cause of the diseases. The imbalance of “round,” “sharp,” “long” and “flat” atoms result in sickness and death:

*BUT in all other Diseases they are mix'd,
And not in one consisting Body fix'd.
But do in factions part, then up do rise;
Striving to beate each other out, Man dies.* (“In all other Diseases they
are mixed, taking parts, and factions”)

When round atoms come together and “swell” they become so powerful that they “overflow” all other atoms, and that causes “dropsie” (“What Atomes make a Dropsie”). “Consumption” is caused by the increase of the sharp atoms, and as they grow hot they dry “the moisture of life” and “make *motion dye*” (“What Atomes make a Consumption”). The excess of “long aiery Atomes” cause “wind” or “collick” thus give great pain (“What Atomes make the wind Collick”). “Palsey” or “Apoplexy” happens when “dull” and “flat” atoms “stop all passage[s]” of the body, if they were to come to the brain, “[t]hey choake the *Spirits*” and cause palsey (“What Atomes make a Palsey, or Apoplexy”).

After an atomic explanation to the creation, formation of the earth, how matter with motion finds life and then dies, Cavendish in “Of Loose Atomes” explores the working of the human brain in terms of atoms. She asserts that the human brain is made up of loose atoms, and human character is also determined by these atoms:

*IN every Braine loose Atomes there do lye,
Those which are Sharpe, from them do Fancies flye.
Those that are long, and Aiery, nimble be.
But Atomes Round, and Square, are dull, and sleepie.*

As Stevenson suggests, thoughts for Margaret Cavendish are “independent, physical entities” also they are “self-moving beings engaged in a struggle, not for the truth, but for representational preeminence within the kingdom or commonwealth of the brain” (1996: 530,529). This remark explains Cavendish’s recurrent emphasis on fancy, out of which she creates her works. From her brain fancies come and they reveal how Cavendish perceives things; things through the eyes of a female deeply interested in natural philosophy.

The political and social turmoil that Margaret Cavendish witnessed all through her life are also reflected in The Atomic Poems. Batticelli argues that

Cavendish envisions “the physical universe, the political world, the mind” each “as an atomist system,” however, she is not so much interested in atomism as “a theory of matter,” rather it is for her an “explanatory discourse for the political and emotional turmoil that surrounded her,” mainly a number of tragic events in her personal life like the consecutive deaths of her family members and the uncertainty she experienced during the years of exile (1998: 39-40). In this respect her recurrent emphasis on order and harmony can be interpreted within the context of political and social uncertainties that she witnessed. Margaret Cavendish talks about the idea of proportion, order and also disorder again in terms of atoms. If the atoms properly fit together as “one *Body*” they “agree,” but if they are not in the right order they result in “*disproportionable*” things (“What Atomes make Change”). Cavendish believes order and harmony are distorted when motion and atoms “*disagree*” (“Atomes and Motion fall out”). If motion were to beat the atoms there would be “*Thunder in Skies, and sicknesse in Men bee, / Earthquakes, and Windes which make disorder great*” (2-3). If motion would not organize the atoms, the atoms would run as “*Flocks of Sheepe*” scared from “*a Wolfe*”, that is motion. In “A warr with Atomes”, Cavendish uses the metaphor of war to explain what would happen if the atoms disagree, and “beat out” each other and “fight”. It would result in war, reminiscent of the conflicts she witnessed in the society during the years of political instability. But when the “*Motion Generall*” guides the atoms “*By his direction they much stronger are*” and thus order and unity is restored. Stevenson thinks that Margaret Cavendish in a “neutral manner” presents conflicts, adding that:

Cavendish uses atoms to explain, rather than to criticize, such political problems as war and revolution without taking sides as she would had she incorporated moral values into her cosmology. Instead, she understands and appreciates the desirability both of political autonomy and peaceful society, even while recognizing that these values are often in conflict. (1996: 535)

In the face of all conflicts, if there is unity in a formation, and if the atoms are closely connected, there would be no separation:

*JUst at the Center is a point that's small,
Those Atomes that are there are wedg'd in all;
They lye so close, firme in one Body bind'
No other Forme, or Motion can unwinde:
For they are wreath'd so hard about that point,
As they become a Circle without joint. ("In the Center Atomes never
Separate")*

In the world that Cavendish depicts, everything is ordered and governed by atoms. Life and death, human understanding and intellect, states of mind and everything related to human existence are determined by atoms and motion as indicated in “All things are govern'd by Atomes”:

*Thus Life and Death, and young and old,
Are, as the severall Atomes bold.
So Wit, and Understanding in the Braine,
Are as the severall Atomes reigne:
And Dispositions good, or ill,
Are as the severall Atomes still.
And every Passion which doth rise,
Is as the severall Atomes lies.
Thus Sicknesse, Health, and Peace, and War;
Are alwaies as the severall Atomes are.*

In “Of the Subtlety of Motion” Cavendish says that instead of taking “ourselves” “as petty Gods” in seeing life one “*should adore God more, and not dispute, / How they are done, but that great God can doe’t*” (3-4). Despite the fact that one should adore God in seeing the marvels he created, atoms and motion dominate The Atomic Poems. In these poems motion is the great force essential in the creation and order of the world, and other than God’s divine power it is only through motion that atoms determine life and death, the durability of animate and inanimate things. Similarly, as earlier discussed, in “A World made by Atomes” she claims that “chance” (17) may create a new world, an idea that challenges Christian concept of the creation of the universe. Kargon states that it was “near heresy” and with such remarks Margaret Cavendish “did not fear to tread upon dangerous ground” (1966: 75). Such remarks could easily bring along the charges of atheism, as stated by Partington, because unlike the other English atomists who were “carefully Christianizing their theories, Cavendish was not, either because she was oblivious to the consequences, or because she assumed everyone knew she was a pious woman” (1998). In making a general assessment of Cavendish’s works Sarasohn states that “wherever God is mentioned in any of her works, she insists that he cannot be known in anyway whatsoever by his creatures” and “the almost complete lack of theological motifs in her works” is due to her feeling that “faith and reason should be entirely separate” (1984: 293). It is also quite evident that Cavendish does not make great and sounding claims about her ideas on natural philosophy. She states that this work is the product of her “fancy” and she does not promise to offer challenging and controversial remarks, but instead the simplicity of rye bread and butter, the things which are more proper for a woman. Battigelli states that Margaret Cavendish

...reveals no interest in securing a place for God in the new atomist systems under discussion. Instead, she reveals her own speculative delight with what appeared to be the infinite number of possibilities and permutations of a natural order governed by atoms. (1998: 51)

In presenting all these possibilities about creation, life, health, death and natural order as a woman perceives them, Margaret Cavendish’s odd combination of

style and vocabulary is a noteworthy aspect of *The Atomic Poems*. Although Margaret Cavendish in the epistle “To Natural Philosophers” states that she does not aim at being “*Authentick*” the way she unites the masculine world of science and atomic theory with her modest observatory skill and her fancy contribute to the originality of these poems. While on the one hand she makes use of the scientific discourse, that she is familiar with being a member of the Newcastle Circle – yet an uneducated one, she on the other uses a figurative language with similes, metaphors and personifications that are very homely and taken from everyday life. In the world that Margaret Cavendish presents, the movements of the atoms are explained in terms of dance, and as for their forms they are resembled to a number of familiar objects as in the case with round atoms that look like “a *Ring*” and the long ones like “a *String*” (“What atoms make life”). Similarly, in “Motion makes Atomes a Bawd for Figure” the atoms are like “a *Batch of Bread*” made from the same “*Floure*” but differ in form due to “*Motion*”. In some cases the objects, sometimes the unusual ones, taken from everyday life contribute to her explanatory remarks. In “Motion and Figure” for instance a “*Shuttle-cocke*” is used to explain that the speed of the motion is related to the “*Figure*” and it is pointed out that the “*Motion*” of a “*Shuttle-cocke*” differs “*when it was full*” and when “*a feather*” was pulled (7-10).

Despite all their inconsistencies and lack of scientific basis *The Atomic Poems* of Margaret Cavendish appear as an attempt of a woman who in her own way enters into the world of science. In Sarasohn’s words Margaret Cavendish turns science “upside down,” but “her natural philosophy is significant in what it reveals about the female, or at least one female, attitude toward nature and cosmology” (1984: 289,297). Her *Atomic Poems* through its scientific vocabulary and fanciful handling of the atomic theory, in a way unites science and fancy in one body, and also reveals a woman’s attempt and determination to find herself a place in the male world of science thus giving a unique picture of a universe as she perceives.

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