A FIGURATIVE MATTER:
CONTINUITIES BETWEEN MARGARET CAVENDISH’S
THEORY OF DISCOURSE AND HER NATURAL PHILOSOPHY

by

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Abstract

This dissertation explicates the natural philosophy of Margaret Cavendish, the Duchess of Newcastle, and develops some source arguments. It concludes that Cavendish’s theory of discourse (which includes music, art, action, speech and reason) is central to her natural philosophy, that discourse as she theorizes it constitutes her natural world.

Mathematics and speculative music influence Cavendish’s adoption of animist materialism. The musical genre of playing divisions intersects with her vocabulary for natural processes, her aesthetic descriptions of Nature, and her theory of time. Declamatory song informs the presence of expressiveness and prosody within Nature and the mind. It also provides a model for natural sympathy.

Discursive arts surface in Cavendish’s doctrines of “figure” as shape. Figure defines and determines the nature of objects, and physical change is meaningful change of gesture and posture. The matter of the mind and the cosmos is written in a way that enables memory and the conservation of figure. Metaphors from needlework and textiles emphasize aesthetic expression and the significance of lines and surfaces in Nature.

Discursive action appears primarily through dance metaphors. The noble style of dance gives Cavendish the category of “figure” in the sense of dance steps performed along a geometrical trajectory. Dance metaphor is gradually naturalized into the language of her mature philosophy. It informs Cavendish’s discussions of causation and free will.

Speech production and hearing provide access to Cavendish’s tenets concerning perception. The evolution of her doctrine of visual perception through a trade-based model, to an impact-based one, and finally to a model of “patterning out” represents a change of
emphasis in a single model which connects perception to the use of the *camera obscura* by a painter.

Finally, mental discourse underlies divine, poetic and natural forms of creation. Sexual generation connects to literary translation, while spontaneous generation parallels poetic creation. Most forms of creation or production involve a tension between unified rational purpose and conversational collaboration. This tension stems from the details of Cavendish’s panpsychism, according to which rational matter never fully coalesces, even in sites of complex higher consciousness. Cavendish’s use of architectural metaphor highlights this tension.
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### List of Abbreviations

The following abbreviations are used to identify Cavendish’s works:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Year(s)</th>
</tr>
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<tbody>
<tr>
<td><strong>Blazing World</strong></td>
<td><em>The Description of a New World, Called the Blazing-World</em></td>
<td>1668</td>
</tr>
<tr>
<td><strong>Fancies</strong></td>
<td><em>Philosophicall Fancies</em></td>
<td>1653</td>
</tr>
<tr>
<td><strong>Grounds</strong></td>
<td><em>Grounds of Natural Philosophy</em></td>
<td>1668</td>
</tr>
<tr>
<td><strong>Life of William</strong></td>
<td><em>The Life of the Thrice Noble, High and Puissant Prince, William Cavendishe</em></td>
<td>1667</td>
</tr>
</tbody>
</table>
| **Observations**   | *Observations upon Experimental Philosophy. To which is Added the Description of a New Blazing World* 1666  
(On account of this book’s three sequences of pagination, the number prefixed to the page number indicates the section of the book in which that page appears.) | 1666          |
| **Olio**           | *The Worlds Olio*                                                           | 1655, 1671    |
| **Opinions**       | *The Philosophical and Physical Opinions*                                   | 1655, 1663    |
| **Orations**       | *Orations of Divers Sorts, Accommodated to Divers Places*                   | 1662          |
| **Philosophical Letters** | *Philosophical Letters: Or, Modest Reflections upon Some Opinions in Natural Philosophy, Maintained by Several Famous and Learned Authors of this Age, Expressed by Way of Letters* | 1664          |
| **Picture**        | *Natures Picture Drawn by Fancies Pencil to the Life*                        | 1671          |
| **Pictures**       | *Natures Pictures Drawn by Fancies Pencil to the Life*                       | 1656          |
| **Playes**         | *Playes*                                                                    | 1662          |
| **Plays**          | *Plays, Never Before Printed*                                                | 1668          |
| **Poems**          | *Poems, and Fancies*                                                        | 1653 (Unless stated to be 1664 or 1668) |
| **Sociable Letters** | *CCXI Sociable Letters*                                                   | 1664          |
To Mom and Dad,

for all of their love and support,

and to Peter,

for his faithful friendship.
Introduction

Margaret Cavendish has become the focal point of so much scholarly interest in recent decades that the details of her biographical information need only brief recollection. She was born as Margaret Lucas in 1623, and followed Queen Henrietta Maria into exile in Paris as one of her maids of honour in 1644. There she married William Cavendish, the Marquis, and later the Duke, of Newcastle. This marriage, together with her friendship with her brother in-law, Charles Cavendish, exposed her to the philosophical ideas and debates of her era. From 1653 until her death twenty years later she published some fourteen works in a broad range of genres. A number of these (the opening section of *Poems, and Fancies, Philosophical Fancies*, the two versions of the *Philosophical and Physical Opinions, Philosophical Letters, Observations upon Experimental Philosophy* and *Grounds of Natural Philosophy*) are devoted to the gradual elaboration, solidification and contextualization of a natural philosophical system. Others (*The Worlds Olio, Natures Pictures, CCXI Sociable Letters* and even Cavendish’s first collection of plays) include significant portions, sometimes in fictional contexts, addressing natural philosophical matters.

This dissertation proceeds with three interrelated goals. First, it seeks to thoroughly explicate the tenets of Margaret Cavendish’s natural philosophy while taking into account their development and coherence over time. Second, it suggests some new historical contexts and sources for these tenets, and it attempts to lay out some previously recognized ones in greater detail than has been done before. Finally, it uses its detailed understanding of Cavendish’s natural philosophy to argue that this philosophy is inseparable from her theorization of “discourse,” that the natural world as she imagines it behaves discursively, and
often linguistically.

Several scholars, beginning with Robert Kargon and his *Atomism in England from Hariot to Newton* (1966), have presented expositions of Cavendish’s natural philosophical doctrines.¹ Stephen Clucas has provided a nuanced revision of Kargon’s piece in his article “The Atomism of the Cavendish Circle: A Reappraisal.”² Eileen O’Neill has written the most systematic of these expositions in her introduction to the Cambridge University Press edition of Cavendish’s *Observations upon Experimental Philosophy*. O’Neill identifies five key doctrines in Cavendish’s mature natural philosophy: “Materialism,” a “Stoic-like theory of complete blending,” “Pan-Organicism and pan-psychism,” a “Continuum theory of matter,” and “Non-mechanical natural change.”³ Susan James has written a more extended description of Cavendish’s natural philosophy which includes discussions of her doctrines of perception and generation, all in relation to Cavendish’s rejection of mechanism and the connections of her ideas to those of many contemporary philosophers.⁴

The present dissertation embraces and seeks to build on these earlier accounts. It selects as the five main categories of its exposition of Cavendish’s doctrines the basic conditions of her universe (mathematicalness, variety and sentience), the significance of

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“figure” in the sense of shape to this universe, the role of figured motion (and related doctrines of causation), processes of perception, and processes of generation. Ordered in this way, these categories provide an ascent from the most elementary to the most complex attributes and behaviours of the natural world as Cavendish understands it. Because the dissertation emphasizes the exposition of Cavendish’s philosophical doctrines, it pays less attention than most literary criticism to the genres and structures of Cavendish’s works as wholes, and more to the collation and analysis of passages on related topics from across her writings.

In some respects, Cavendish makes the second goal of this dissertation, the furthering of source arguments about her natural philosophical ideas, an easy one. In the *Philosophical Letters* she explicitly responds at length to texts by René Descartes, Thomas Hobbes, Henry More and J. B. Van Helmont. In the *Observations upon Experimental Philosophy*, she critiques Robert Hooke’s *Micrographia* and comments on the relationship of her philosophy to those of ancient philosophers described in Thomas Stanley’s *History of Philosophy*. In short, she provides ample contexts in contrast with which she refines her mature philosophical ideas. These contexts have been examined in articles by scholars such as Anna Battigelli, Sarah Hutton, Lisa Sarasohn and Jo Wallwork. What is lacking in the scholarship on Cavendish’s natural philosophy is a sustained discussion of the sources that contributed in a

positive way to Cavendish’s system. The sources against which she formulated her ideas are well-known, but those which contribute to her ideas are not. Admittedly, identifying these is a much more difficult task. Cavendish does after all argue, “[I]f my Readers will take the pains to compare my writings to others, and throughly examine them, they will I make no question, finde great difference,” and she claims that her ideas are “New Opinions, never Broached but by Me.” Despite these claims to difference and originality, Cavendish inhabited a real historical milieu that had an effect on the natural philosophy she devised. Some of this effect came through reading, some was mediated by discussion with her husband and brother-in-law, some came from apparently unrelated historical phenomena such as the fine arts. This dissertation attempts to point out a few such influences on Cavendish’s ideas as it journeys through its exposition of her ideas and its literary argument.

The literary aspect of the dissertation, the argument that language and representation are intrinsic to Cavendish’s natural world, does have precursors in Cavendish scholarship. Jay Stevenson has described how Cavendish’s writing “performs” her “psychic materialism,” and therefore becomes evidence for her natural philosophical beliefs at least with regard to psychology. Stephen Clucas has described the emergence of Cavendish’s “probabilism and limited scepticism” from her natural philosophical doctrines, and he has indicated that these doctrines lead to Nature becoming for Cavendish “the foundation of a copious rhetorical

6. *Opinions* 1655, B4r.
7. *Opinions* 1663, b1v.
discourse, in the Erasmian sense.” Elizabeth Spiller has commented on Cavendish’s use of “a decidedly unmechanical image of art, ‘patterning’ and ‘tracing,’” in the context of her mature doctrine of perception. This dissertation aims to show more comprehensively that language and representation are at the very heart of all of Cavendish’s natural philosophy.

The dissertation considers language and representation in terms of Cavendish’s own theorization of “discourse.” In her play The Female Academy, a group of young women periodically give semi-public displays where they speak extemporaneously on a theme announced by their matron. One theme is explored twice: discourse. The first lady to speak declares,

there are two sorts of discourses, or manner of ways of discoursings, as there is a discoursing in the mind, it is to discourse to a mans self, as if they were discoursing to others, making Questions or Propositions, Syllogisms and Conclusions to himself. . . . As for discoursing with words, it is more difficult than to discourse with thoughts: for though words are as high and substantial as thoughts, yet the Mouth is not so ready in speaking, as the Brain in thinking, and the Brain can present more thoughts at one time, than the Mouth can deliver words at one time.

The second lady whom the matron commands, “[L]et the Theam of your discourse be of Discourse,” elaborates the definition of the first speaker, claiming,

As for Discourse, there is of four sorts; the first is discoursing in the mind, which is reasoning.
The second is discoursing with words, which is speaking.
The third is discoursing by signs, which is action or acting.

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12. Playes 1662, 368.
The last is discoursing by Figures, which is by Letters and Hieroglyphics, which is by Printing, Writing, Painting, and the like.\textsuperscript{13}

When she expands upon her definition she adds music as a fifth form of discourse, and in the end she concludes that “reasoning is the Souls Language, words the Language of the Senses, action the Lifes Language, Writing, Printing, Painting, Carving and Molding, are Arts several Languages, but Musick is the Language of the Gods.”\textsuperscript{14}

Cavendish’s notion of discourse is apt for my purposes because the five forms that the second Academy Lady enumerates are all related to language, but they exceed verbal expression and representation. They include the mental and logical reasoning which “is a discourse with things, not with words,”\textsuperscript{15} the concatenation of phonetic bits into words and of words into syntax and rhetoric, the gestural narration that is acting, the gestural intercommunication that is basic to conversation, and finally, the various forms of expression and representation in which both practical and fine arts engage. The notion of discourse includes the horizontal, sequential phenomena of logic and articulatory phonetics, and it also includes the depth-related phenomena of verbal, written and artistic representation.

Therefore, discourse, in Cavendish’s use of the term, refers to a much broader range of phenomena than it would in the context of linguistic pragmatics. In Geoffrey Leech’s \textit{Principles of Pragmatics}, for example, discourse is an “interpersonal transaction” which subsumes “ideational” and “textual” transactions.\textsuperscript{16} In my use of the term in relation to

\begin{thebibliography}{9}
\bibitem{13} Playes 1662. 666.
\bibitem{14} Playes 1662, 667.
\bibitem{15} Playes 1662, 666.
\end{thebibliography}
Cavendish’s thought, discourse is “interpersonal” in that it always takes place within a structure of communication between pieces of animate matter, even if, in a given manifestation of discourse, only the expression of this communication, and not its reception, is emphasized. Moreover, in the usage of the term that I have derived from Cavendish, discourse always subsumes “ideational content” or meaning (that is, discourse always encodes and involves the expression and transmission of meaning). However, the definition of discourse that I have derived from Cavendish differs from Leech’s definition with respect to the “textual” function of discourse. For Cavendish, and for the purposes of this dissertation, although discourse involves a form of “encoding,” this encoding need not be strictly linguistic.

The subcategories of discourse as they are defined in Cavendish by the Academy Ladies are suitable for drawing connections between Cavendish’s natural philosophy and her discourse theory. This is because these subcategories roughly align with the major elements of her natural philosophy. Music, “the Language of the Gods,” shares both in the mathematical qualities of Cavendish’s universe and in its relationship to affect. In Cavendish’s philosophy, Nature’s use of figure is an employment of “Arts several Languages.” “Lifes Language,” particularly the subcategory of this language constituted by dance, informs the prevalence of figured motion and occasional causation in Cavendish’s world. Speech, the “Language of the Senses,” is an inextricable part of Cavendish’s doctrines of perception. Finally, “the Souls Language,” reasoning, governs processes of generation, while rational processes in general parallel them.

The dissertation’s very central use of the passages on discourse from The Female
Involves the somewhat troubling assumption that the words of fictional characters articulate the author’s own philosophical doctrines. There is a class of characters in Cavendish’s works for whom this assumption seems relatively unproblematic. These characters are invariably female like their author. They, like her, present themselves sometimes as students of philosophy, but more often as teachers thereof. Whether by choice or fate, they have generally found themselves devoted at least for a time to a solitary life of contemplation. They are often victims of misfortune who heroically rise above their circumstances by means of courage, virtue and philosophical wisdom. They are idealized self-dramatizations of Cavendish, and, at least when they give philosophical speeches, they are quite straightforward mouthpieces for her developing philosophy. The Academy Ladies in *The Female Academy*, the Lady Sanspareille in *Youths Glory, and Death’s Banquet*, Travelia/Affectionata in “Assaulted and Pursued Chastity,” the She-Anchoreet in her “Description of her Life in Prose,” and of course the Empress and Duchess in the *Blazing-World* are among such characters whose natural philosophy is as credible as their moral philosophy.

There are other instances where the identification of a character’s opinions with Cavendish’s own is much more problematic. In “The Dialogue of the Wise Lady, the Learned

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18. These characters and their stories are found in *Plays* 1662, 653-79; *Plays* 1662, 121-80; *Picture* 1671, 395-514; *Picture* 1671, 544-706; *The Blazing World*. I simply do not see in these characters the kind of ambiguity and irony that Jay Stevenson detects in these characters when he argues that they are “analogous to the ‘rake heros’ of restoration drama” (Stevenson 3).
Lady, and the Witty Lady,” for example, the characters speak in accordance with Cavendish’s more explicit philosophy as long as they address matters related to their own respective domains of moral wisdom, natural philosophical learning and poetic invention. When they range onto each other’s territory, for example when the Witty Lady says that the “The mind is, like a God, an Incorporeal thing,” they no longer speak in accordance with Cavendish’s philosophy. This criterion, harmony with Cavendish’s straightforwardly philosophical works, is the one that I have applied when deciding whether or not to use a fictional character’s words as evidence for Cavendish’s actual philosophy. In *The Blazing-World*, where dramatic, structural and verbal forms of irony abound, this decision becomes even more complex. Would Cavendish really put genuine authorial opinions in the mouths of “immaterial spirits” whose very voice and behaviour are for her the height of absurdity? From the evidence of context, I would argue that she does. When I do use words from such dubious sources in my argument, I am careful to highlight the fact that my supporting evidence is complex and even ambivalent on account of its origins.

Finally, there are many instances where Cavendish or her characters present contrasting points of view and do not altogether resolve these. When, for example in the *Grounds of Natural Philosophy*, Cavendish portrays arguments between the various parts of her mind, I have used the conclusions drawn by the “Major Parts” as the evidence for her philosophy, and I have generally disregarded the opinions of the “Minor Parts.”" To do so is to impoverish the complexity of Cavendish’s opinions over the course of their development, but it is also to attempt to acknowledge the synthesis of ideas at which she arrives by the end

19. See *Grounds* 311.
of each of her published works. Particularly in her *Oration*, there are instances where no
synthesis is offered, only the clash of contrasting opinions. I have occasionally used
supporting evidence even from these orations when the choice to do so seems reinforced by
the similarity of specific opinions to Cavendish’s doctrines in her overtly natural philosophical
works.

Before I enter into the substance of my argument, I would like to comment on
Cavendish’s understanding of God, Nature and their relation to one another. Since Robert
Kargon’s remark that Cavendish “evinced a tenderness towards atheism which was dangerous
for one so closely tied to the suspect atomic philosophy,” scholars have frequently suggested
that her natural philosophy leans in the direction of atheism. Even Katie Whitaker argues in
her biography of Cavendish, “When other philosophers wanted to use the argument from
design as proof of the Christian religion, Margaret’s opinion that the order and beauty of the
world, and the origin of all the species, derived not from God’s ‘divine counsel and prudence’
but from ‘the wisdom of nature or infinite matter’ could only be seen as an encouragement to
atheism.” Whitaker further argues that if Cavendish “had any strong religious feeling, it was
towards the natural world and its manifold wonders, rather than towards a distant, invisible
God.”

This statement is demonstrably untrue. Why, for example, would Cavendish end the
*Philosophical Letters* with a prayer:

20. Kargon 75.
Eternal god, Infinite Deity,
Thy Servant, Nature, humbly prays to Thee,
That thou wilt please to favour Her, and give
Her parts, which are Her Creatures, leave to live,
That in their shapes and forms, what e’re they be,
And all their actions they may worship thee: . . . . . . . . . . . . . . . . . . . . .
Then let thy Servant Nature mediate
Between thy Justice, Mercy, and our state,
That thou may’st bless all Parts, and ever be
Our Gracious God to all Eternity.\(^{23}\)

Here Cavendish, as a part of Nature, prays to God in the name of Nature, much as Christians traditionally pray in the name of Jesus Christ. She prays that Nature might maintain her mediatory role between her creatures and the God who is ultimately Lord over all things including Nature. This prayer supports the conclusion that Cavendish’s religious sensibility is unorthodox, but not that it tends towards atheism. It also supports the conclusion that Cavendish is working within traditional Pythagorean and Platonic frameworks while resisting many of the trends of the natural theology of her day.

For Cavendish as for the ancient Platonists and Pythagoreans as they were understood in the seventeenth century, there is a radical discontinuity between the divine and the material. According to the seventeenth-century historian of philosophy Thomas Stanley, Plato embraced three principles: matter, Idea, and God. God can be understood only by “abstraction” or by “Analogie;” “He . . . is neither genus nor species, nor difference, neither can any accident be applied to him.”\(^{24}\) Cavendish is utterly opposed to the Cambridge Platonist Henry More’s idea that “the Idea or notion of God is as easie, as any notion else whatsoever, and that we may

\(^{23}\) Philosophical Letters 543.

know as much of him as of any thing else in the world.”

At the same time that God is inaccessible to human reason, however, there is a mediating entity between matter and God. In the poem at the conclusion of the *Philosophical Letters*, this entity is the nebulous “Nature” in whose name the writer prays. In Stanley’s account of Pythagorean doctrine, “there is a Soul intent, and commeant through the whole Nature of things, from which our Souls are pluck’d. She is immortal, because that, from which she is taken, is immortal; yet not a God, but the work of the eternal God.” In Stanley’s account of Platonic doctrine,

\[
\text{The parts of the World are all things therein, kept together by a Sensitive nature, wherein is likewise perfect reason; It is also sempiternal, for there is nothing more strong whereby it may be dissolved: This power they call the Soul of the World, God, a certain providence over all things subjected to him.}
\]

The World Soul surfaces in another form in Henry More’s Cambridge Platonism. More argues for the existence of an “Immaterial Principle, (call it the Spirit of Nature or what you will) which is the Vicarious Power of God upon this great Automaton, the World.”

25. Quoted by Cavendish from More’s *Immortality of the Soul* in *Philosophical Letters* 140. The worlds of reason and faith are for Cavendish utterly incommensurable; “Faith and Reason are two contrary things, and cannot fit together; according to the Proverb, Where Reason ends, Faith begins.” Natural theology, Henry More’s whole agenda of demonstrating God’s existing by rational argument based in part on empirical observation of the world, actually weakens faith, and contributes to schisms in the church and to enthusiasm. Cavendish writes that, “proving Christian Religion by Natural Philosophy . . . is the way to destroy them both.” As a genre, natural theology undermines its own legitimacy and becomes “meer Poetical Fictions, and Romancical expressions,” and “is nothing else but Moral Philosophy.” See *Philosophical Letters* 210-11, 220-21, 221, 13, 481.

26. Stanley 553.

27. Stanley 163.

While Cavendish vigorously mocks this intermediary entity of More’s, she does nonetheless transform the traditional Platonic entity into the altogether material and yet also sentient and rational entity that she calls Nature. “Nature,” she explains, “is Infinite, and the Eternal Servant of God: Next . . . she is Corporeal, and partly self-moving, dividable and composable; that all and every particular Creature, as also all perception and variety in Nature, is made by corporeal self-motion, which I name sensitive and rational matter, which is life and knowledg, sense, and reason.”

Cavendish’s natural philosophy is no more atheistical than those of Plato or Pythagoras or the Cambridge Platonists. Her Christianity is simply unorthodox because she raises Nature to the position of an intermediary, quasi-divine figure like a world soul, or even like Jesus Christ. The theme of Cavendish’s opinions on divinity will arise in connection with the discussion of speculative music and reason in the first chapter, and in connection with creation and reason in the final one. Despite the silence on the matter for much of the dissertation, Cavendish’s sense of awe for God and for Nature underlies her philosophy as a whole.

29. More’s doctrine, she exclaims, “will at last bring in again the Heathen Religion.” She explains that the Spirit of Nature resembles an absurd, gnostic demiurge, has no suitable means of interacting with matter, and worst of all, is an insult to women because it implies that Nature, which is female for Cavendish, is not self-sufficient and self-responsible. See Philosophical Letters 145, 195, 149-50.

30. Philosophical Letters b2v.
Chapter 1

“The Language of the Gods”: Music and the Basic Conditions
of Cavendish’s Discursive Natural World

The second speaker on discourse in Cavendish’s play The Female Academy adds music to her list of categories of discourse almost as an afterthought. The Lady Speaker refers specifically to music that recounts a narrative, but Cavendish’s writings and her historical context treat other musical genres as discursive as well, and these genres contribute significantly to the language and structures of Cavendish’s natural philosophy. Musical theory, which was called speculative music, informs the basic principles of this natural philosophy, while terminology and concepts associated with the musical genres of playing divisions and declamatory song influence her descriptions of variety and sentience in Nature.

1.1 Speculative Music and the Cosmos

Seventeenth-century writers divide music into the speculative and the practical. Near the beginning of the century, the composer Thomas Morley defines speculative music as “that kind of music which by Mathematical helps, seeketh out the causes, properties, and natures of soundes by themselues, & compared with others,” and he offers Saint Augustine’s definition of music as “A science of wel doing by time, tune, or number.”31 The same year that Cavendish published her first works of natural philosophy, René Descartes’s Excellent Compendium of Musick appeared in English. In it the stationer calls mathematics “the Melody

31. Thomas Morley, A Plaine and Easie Introduction to Practical Music (London, 1608) q1r.
of Numbers,”” and claims that a theorist of music must be

*An Arithmetician,* to be able to explaine the Causes of Motions Harmonical, by Numbers, and declare the Mysteries of the new Algebraical Musick. *A Geometrician;* to evince, in great variety, the Original of Intervalls Consonant, by the Geometrical, Algebraical, Mechanical Division of a Monochord.33

Cavendish too emphasizes the mathematical aspects of music. Although she usually does so in metaphorical contexts rather than in literal ones, an exception occurs in her chapter heading, “Musick is Number with Sound, as Opticks are Lines with Light.”34 The peculiarity of this heading lies in Cavendish’s failure to follow it with any explanation of the statement. Instead, she alludes indirectly to Pythagorean notions of pitch and harmony by comparing the human vocal and articulatory apparatus to a forge.35

An important historical context for Cavendish’s association of music and mathematics appears in the writings of Christopher Simpson. During Cavendish’s writing career, Simpson codified the art of the musical genre of playing divisions in *The Division-Violist: Or an Introduction to Playing upon a Ground.* In 1667 he dedicated an edition of *A Compendium of Practical Musick* to William Cavendish, praising “The Benign aspect which Your Grace [William Cavendish] doth cast upon this Science, by cherishing and maintaining such as are excellent in it; as also, your particular favours to my self, and your being pleased with some

33. Descartes a4v-b1r.
34. *Olio* 1671, 51.
35. According to legend, Pythagoras began to explore harmonics, because “As he past by a Smith’s shop, by a happy chance he heard the Iron Hammers striking upon the Anvile, and rendring sounds most consonant one to another in all combinations except one” (Stanley 532).
things which I formerly composed for your Grace’s recreation.”

Simpson professes a spiritual appreciation of the mystical and mathematical unities that underlie the “science” of music. At the conclusion to the very practical and didactic Part I of The Division-Violist, Simpson pauses to ponder the scale and its connections to the structure of the cosmos. He provides a circular diagram where the circumference represents the zodiac and the diameter represents the musical octave, and he shows that the two coincide at geometrically and mathematically significant points. He exclaims that harmonic thirds are “a Significant Embleme of that Supreme, and Incomprehensible Three in one, Governing, Composing, and Disposing the whole Machine of the World, with all its included Parts in a Perfect Harmony.” Simpson’s sensibility involves a Christianization of Pythagorean ideas. It is a sensibility that also appears, albeit without the mystical overtones, in Cavendish.

Although Cavendish repeatedly professes a lack of mathematical knowledge, she does, perhaps under the influence of her mathematician brother-in-law and good friend, Charles Cavendish, express considerable admiration for and interest in the discipline. In a defense of her choice to pursue natural philosophy, after dismissing a series of other disciplines, Cavendish uses syntax that leads the reader to expect that she will find cause to dismiss

38. Simpson, Division-Violist 17.
39. One of the instances in which Margaret expresses both her personal and intellectual admiration of her brother-in-law appears in the Life of William 74. She also dedicates the Philosophical Fancies to him. B. J. Sokol has argued that her relationship with Charles Cavendish, who transcribed Thomas Harriot’s mathematical works on infinity, led her to address ideas from these works in her Poems, and Fancies (“Margaret Cavendish’s Poems and Fancies and Thomas Harriot’s Treatise on Infinity,” A Princely Brave Woman, 156-70).
mathematics as well. Instead, she simply proceeds to her next comment:

_Indeed the Mathematicks brings both profit and pleasure to the life of man, it gives just measure and equal weight, it makes all odd reckonings even, it sets all musical notes, it brings concord out of discord, it gives diminution and extension; But as I said before, few or none but Monastical men . . . seek to be acquainted with nature, and to observe the course of her works._ 40

Mathematics allows for fair trade and accurate accounting, and also produces the aesthetic order and harmony both of music and the material world. Mathematics even produces the acoustic and dimensional potential that allow for musical and material being. For Cavendish, mathematics underpins reality.

In Cavendish’s romance “Assaulted and Pursed Chastity,” the beautiful young protagonist, Affectionata, beseeches the “old Bawd” who holds her captive to bring her “Play-Books, or Mathematical ones.” 41 She offers a three-fold explanation for her desire for mathematical works: first, mathematics inculcates good moral judgement by means of the cognitive skills it requires and the resources of analogy that it provides; second, mathematics teaches “all Arts useful and pleasant for the life of Man, as Musick, Architecture, Navigation, Fortification, Water-works, Fireworks; all Engines, Instruments, Wheels, and many such like, which are useful;” and third, mathematics shows how “to measure the Earth, to reach the Heavens, to number the Starrs, to know the Motions of the Planets, to divide Time, and to compass the whole World.” Moral life, the practical arts, and the most abstruse sciences are all mathematically structured.

In a culture that considered Nature God’s second book, Cavendish considers

40. _Opinions_ 1655, a2r.
41. The quotations in this paragraph are from _Picture_ 1671, 397 and 408.
mathematics Nature’s second book. In a society that thought of the human body as a microcosm of the universe, Cavendish thinks of mathematical theory as a similar kind of microcosm. Affectionata explains,

Mathemtucks is a Candle of Truth, whereby I may peep into the Works of Nature, to imitate her in little: It comprises all that Truth can challenge: All other Books disturb the Life of Man; this only settles it, and composes it in sweet Delight.

Nothing in the scene of the story in which this quotation appears suggests that there is a concrete book present which the protagonist indicates when she says “this only settles it.” The demonstrative pronoun, whether “Books” is taken as its antecedent or “Mathematicks,” must indicate a unitary body of mathematical theory, and this unitary body of theory has the very musical effect of inducing tranquillity and delight.  

Cavendish’s natural philosophy is musical in part because of the influence upon it of mathematically concerned Pythagorean and Platonic thought. By the time of the 1666


43. Lest it be objected that in her Observations Upon Experimental Philosophy she offers critiques of both Plato and Pythagoras (3.6-20) and that in the Blazing World the Duchess gives up trying to create mental worlds based on the doctrines of these philosophers (98), in neither case do her critiques eliminate the possibility of such influence. For example, her objections to Pythagorean thought centre not around the importance of number, proportion and harmony to the world, but rather around whether or not such things may be termed “principles” of the cosmos. In the Blazing World, her objections to Pythagoras, if the Duchess is indeed one of Cavendish’s self-incarnations in the story, are really about her own lack of mathematical skill. Her objections to Platonic philosophy focus on the concepts of Idea and Form, and their relationship to matter. Cavendish demonstrates her appreciation for Platonic and Pythagorean thought when, in the Blazing World, the Empress asks the immaterial spirits for “the Soul of some ancient famous Writer, either of Aristotle, Plato, Epicurus, or the like,” and the spirits reply, “That those famous Men were very learned, subtile, and ingenious Writers” (88-89). Moreover, in Picture 1671, when the gods “purge and cleanse their Library” the
publication of Observations Upon Experimental Philosophy, Cavendish had read Thomas Stanley’s History of Philosophy. In Stanley’s depiction of the genealogy of classical philosophies, there may be close ties between Pythagorean and Platonic thought. Stanley quotes Cicero as writing that Plato went to Italy, “where he addicted himself to the discipline of Pythagoras.” This report of a connection between the two schools of philosophy is not confined to Stanley. It also appears in other writers with whom Cavendish was familiar. Henry More, the Cambridge Platonist who is one of the four principal writers whose ideas Cavendish sets out to confute in her Philosophical Letters, dwells upon the connection between Plato and Pythagoras in his Conjectura Cabbalistica, which first came out towards the beginning of Cavendish’s writing career, and which she alludes to in the Blazing World. After a vindication of the “dignity” of Pythagoras, More writes, “And now I have said thus much of Pythagoras . . . there will be lesse need to insist upon Plato and Plotinus, their Philosophy being the same that Pythagoras’s was, and so alike applicable to Moses his Text.” Even more to the point of the influence of Pythagorean and Platonic thought upon Cavendish’s philosophy is More’s argument that Pythagoras had a strong intuition of the atomic nature of matter that descended through his followers into the thought of Democritus. This genealogy could have sanctioned

first two philosophers named whose works will be kept are Plato and Pythagoras (709, 710).

44. In the Observations, Cavendish writes, “I gave my self to the perusing of the works of that learned Author Mr. Stanly, wherein he describes the lives and opinions of the ancient Philosophers” (3.1).


46. Philosophical Letters 1.

Cavendish’s combination of Pythagorean and Platonic ideas with her own flirtations with different forms of corpuscularism. 48

True to the spirit of Affectionata who requests mathematical books and to others amongst Cavendish’s female protagonists who are similarly virtuous and devoted to philosophy, Thomas Stanley’s Pythagoras and Plato associate the pursuit of mathematics and music with self-purification. For Pythagoras, the objects of mathematical study are intermediary between corporeal and incorporeal things, and therefore mathematics leads the student away from that which is bodily. 49 According to a traditional story that Cavendish mentions in the CCXI Sociable Letters, 50 part of this purificatory process for Pythagoras’s students involved observing a five year long period of silence following which they would graduate from being acousmatici (mere hearers of the more general doctrines of the philosopher) to mathematici (privileged learners of the complete doctrines). 51 Stanley’s Plato holds that “the way to prepare [for godlike beatitude], and, as it were, to cleanse the Demon that is in us, is to initiate our selves into higher Disciplines, which is done by Musick, Arithmetick, Astronomy and Geometry.” 52 For Cavendish as for the ancient philosophers, those who seek to understand mathematics and speculative music have a particular kind of sanctity.

48. According to Stanley, Pythagorean doctrine held that, “They who maintain Atoms, or Homoiomeria’s or bulks, or intelligible bodies, to be the principles of all things, were partly in the right, partly not: As conceiving the principles to be unapparent, they are in the right; as holding them to be corporeal, they err” (548).
49. Stanley 522.
50. Sociable Letters 299.
51. Stanley 518.
52. Stanley 193. “Sphærick” is astronomy.
Stanley’s Proclus explains the connection among the four “higher Disciplines”:

“The whole science of Mathematicks, the Pythagoreans divided into four parts. . . . Arithmetic contemplates Multitude in itself: Music with respect to another: Geometry, unmoveable magnitude; Sphaerick, moveable.”

“Music,” by which Proclus means “harmonics” or “speculative music,” concerns the mathematical relations between things, and this is how many of Cavendish’s contemporaries likewise interpret it. Consequently, “Proportion” and its derivatives are important terms in the musical texts of the period. Descartes’s Compendium opens with a series of propositions related to proportion in music. These assert the importance of simple mathematical proportion between the object of sense perception and the sensitive faculties, as well as between the parts of the object of sense, in this case, the elements of the music.

From these aesthetic propositions Descartes proceeds to deduce rules for the numerous aspects of music that involve proportion.

This kind of understanding of music allows the cosmos to be spoken of as literally musical. The same arithmetic and harmonic means that govern musical harmony likewise describe the quantifiable spatial relationships between the celestial bodies. In Cavendish’s Poems, and Fancies, when the Earth cries out concerning her ravaged state, she contrasts her lot with that of the celestial bodies which dance and make music through their dances:

The Sun just in the Center sits, as King,
The Planets round about incircle him.
The slowest Orbes over his Head turne slow,
And underneath, the swiftest Planets go.
Each several Planet, several measures take,

53. Stanley 522.
54. Descartes 2.
And with their Motions they sweet Musick make.  
Thus all the Planets round about him move,  
And he returnes them Light for their kind Love.\textsuperscript{55}

A few pages later, Cavendish again articulates this Pythagorean or Platonic conception of the celestial music in a personification of Nature as an aristocratic woman who attends balls as a pastime: “The Spheres her Musick, and the Milkie way / Is, where she dances, whilst those Spheares do play.”\textsuperscript{56} The planets and the spheres in which they, according to Aristotelian doctrine, move are a consort of chamber musicians. Although this celestial music may not play an essential role in Cavendish’s philosophy, it does inform her aesthetic understanding of Nature.

Over the course of Cavendish’s writing career, her interest in “the wonderful order and harmony that is in Nature, and all her parts”\textsuperscript{57} does not diminish, but it does refocus on the harmonies of microcosms. For example, Cavendish teaches that in the human mind, “Musick hath a sympathie to the rational motions, because the rational spirits move in number and in measure, as musical instruments do.”\textsuperscript{58} Moreover, music does not only influence the mind. Rather, the mind itself continually functions according to musical patterns. The rational matter dances. It moves rhythmically, intricately and in an ordered fashion.\textsuperscript{59} As it moves “in number and in measure” it produces a “harmony” that is as much a quality of the horizontal dimensions of the unfolding of music and poetry in time (rhythm and melody in music, metre

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\textsuperscript{55.} Poems 106.  
\textsuperscript{56.} Poems 139.  
\textsuperscript{57.} Observations 3.25.  
\textsuperscript{58.} Opinions 1655, 168.  
\textsuperscript{59.} Opinions 1655, 107.
and euphony in poetry) as it is one of the vertical concord of simultaneous sounds.\textsuperscript{60}

Just as there is a harmony of the mind in Cavendish’s natural philosophy, so in and among the more obviously physical parts of the body and the medications that doctors use to influence them there is a melody-like patterning through time and a harmony-like patterning through space. Thus Cavendish, after the longest and most detailed chapter on music in her entire philosophical corpus, offers in an apparent non-sequitur a chapter on “The knowledge of diseases.” The connection between the chapters only becomes apparent when she argues,

[B]ut certain if Physitians would take pains to study the several motions of the diseases, and also of the drugs, and medicines they give, and would do as skilful musitians, which make a consort, where although every one plaies upon a several instrument, yet they all make their notes agree, there would follow a harmony of health in the body, as well as a harmony of musick in these consorts.\textsuperscript{61}

Because Cavendish teaches that three degrees of matter, the rational, sensitive and inanimate, are everywhere intermixed, movement in number and measure occurs both in the mind and in the coarser matter of the body.

The presence of harmony in the world becomes the premise from which Cavendish argues for the omnipresence of divine and material reason, and from which Cavendish reworks Platonic conceptions of a World Soul to arrive at her distinct form of materialist animism. The philosophically inquisitive and morally pure characters into whose mouths Cavendish frequently places natural philosophical opinions are fond of making the traditional

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\textsuperscript{60} Thomas Blount’s \textit{Glossographia} (London, 1656) attests to this horizontal and sequential dimension of “harmony” when he defines “Harmonical” as “melodious, harmonious, musical, proportionate,” and “Symphony” as “consent in tune or time, as tuneable singing without jarring, harmony.” Blount does not directly offer definitions for “harmony” or “harmonious.”

\textsuperscript{61} \textit{Opinions} 1655, 169-70.
\end{flushright}
natural theological argument that asserts that natural harmonies demonstrate the existence of
God. Mademoiselle Grand Esprit declares in her first speech in the play *The First Part of Natures Three Daughters, Beauty, Love, and Wit,*

[B]y the distinct degrees, qualities, properties, places and motions of all things, and to, and in every thing, by the exact form of this World; by the prudent separations, and situations of the Heavens and Earth; by the Circumferent lines, and poyzing of Centers; by their bounds and limits; by their orderly, and timely motions; by their assigned tracts, constant Journies, convenient distances; by their intermixing, and well tempering of the Elements; by the profitable Commerce, betwixt the Heavens and the Earth; by the different kinds, several sorts, various Natures, by their Sympathies, and Antipathies; by their warrs and parties; by the Harmony that is made out of discord, shews that there is onely one absolute power, and wise disposer, that cannot be opposed, having no Copartners, produces all things, being not produced by any thing, wherefore must be Eternall, and consequently infinite; this absolute, wise, and Eternal power Man calls God.  

The She-Anchoret makes a similar argument when the theological scholars approach her. “All that is good,” she teaches them, “is caused by Jove’s wise ordering and composing harmoniously”:

As for Life, said she, it is an Evil, were it not ordered wisely by Jove; and would be a perpetual torment, did not Jove by his Wisdom order Nature so, as to ease it with that we call Death; which is only as a change in Notes in Musick, or Harmonious Measures: and the several Measures Life danceth, are several Transmigrations, which Jove orders as it moves; and the Notes are the several Creatures that are made, which Jove’s Wisdom sets; and Health is the Cords that Jove’s Wisdom tunes; and the several Pleasures are the several Lessons that Jove’s Wisdom causeth Nature to play; and Peace is the Harmony that Jove’s Wisdom makes.

The harmony of the natural world manifests God’s presence.

In a twist of this conventional argument, for Cavendish natural harmonies also

63. *Picture* 1671, 618.
manifest the immanence of natural reason to the world. In her response to Stanley’s account of 
the Pythagorean teaching that “intellectual number” is “the principle, fountain, and root of all 
things, and . . . that which before all things exists in the Divine mind; from which and out of 
which all things are digested into order, and remain numbred by an indissoluble series,” Cavendish, like Reuchlin in the “Explication of the Pythagorick Doctrine” that Stanley 
includes, asserts that mind, not number alone, must be the principle of all things. “‘Tis true,” 
she writes, “regular compositions and divisions are made by consent of parts, and presuppose number and harmony; but number and harmony cannot be the cause of any orderly 
productions, without sense and reason.” A little before this she reasons,

[T]here can be no order, method, or harmony, especially such as appears in the 
actions of Nature, without there be reason to cause that order and harmony. 
And thus motion argues sense, and the well-ordered motion argues Reason in 
Nature, and in every part and particle thereof, without which Nature could not 
subsist, but would be as a dull indigested and unformed heap and Chaos.

Accordingly, “[S]ense and reason” are ubiquitous and they are the “Principles and Grounds” of Cavendish’s whole natural philosophy. She has come to this conclusion through a 
consideration of the presence of speculative music in Nature.

Other parallels with Pythagorean and Platonic doctrines connected to speculative 
music may be read into Cavendish’s theories. These surface in her discussions of the tension 
and equilibrium between principles of unity and difference in matter, and in the evolution of

64. Stanley 523.
65. Stanley 571.
68. Observations 2.23.
her doctrine of a plenist cosmos. They surface in her notion of “degree” and in her doctrine of a tripartite matter. However, the strongest parallels between the basic conditions of Cavendish’s universe and music relate not to speculative music, but to practical music.

1.2 Divisions and the Natural World

Cavendish’s natural world exhibits interconnections with the musical genre known as “playing divisions.” This genre, which is also called “breaking a ground,” surfaces repeatedly both in Cavendish’s explicit references to music and in the metaphors that she uses in her natural philosophy.

In her biography of her husband, Cavendish writes that aside from “the Exercise of Mannage and Weapons . . . . The rest of his time he spends in Musick, Poetry, Architecture and the like.”

Lynn Hulse has analyzed an inventory of William Cavendish’s collection of music and musical instruments that was made in 1636 by his secretary. The inventory contains a number of items which suggest his interest in playing divisions. These include, “One large booke, haueing a leather-couer guild: with diuers loose papers in itt, containeing, Pauans: fantasies, Grownds, &c with Deuisions vpon them, by M’ Webbster, M’ Nurcom, Alfonso ferabasco:, and others;’” two additional books “of M’ Websters”with “deuisions vpon grounds;” and “one booke with some pauans of M’ George pearsons and wayes vpon them.”

69. Life of William 1667, 152.
71. Quoted from the transcription in Hulse, “Apollo’s Whirligig” 234. The composers named include Maurice Webster, Daniel Norcombe and Alphonso Ferrabosco II (ibid. 225-26). Hulse details the association between William Cavendish and Christopher Simpson on pages 226-27.
With Christopher Simpson’s indication that William Cavendish played in “his younger years,” the latter’s engagement with the genre of divisions may be assumed.

Simpson describes the practice of playing divisions in the following way:

*Diminution*, or *Division* to a *Ground*, is the *Concordance of quick and slow Notes*. The Manner of expressing it is thus. A *Ground, Subject, or Basse*, (call it which you please,) is prick’d down in two severall Papers: *One*, for him who is to Play the *Ground* (upon an *Organ, Harpsecord*, or what other *Instruments* may be apt for that purpose;)* the *Other*, for him who Playes upon the *Viol*: who, having the said *Ground* before his *Eye*; (as his *Theme, or Subject,*) Playes such variety of *Descant*, and *Division*, thereupon; as his *Skill, and present Invention*, do then suggest unto him. In this *Manner of Play*, (which is the Perfection of the *Viol, or any other Instrument*; it be exactly performed;) a Man may shew, the dexterity, and excellency, both, of his *Hand, and Invention*; to the *Delight, and Admiration*, of those that hear him.

A standard configuration for playing divisions involved one or two bass viols accompanied by an organ or harpsichord. Simpson identifies three kinds of division: “*Breaking the Ground,* [which] is the *dividing its Notes into more diminute Notes,*** “*Descant-Diminution,* or, *Division, . . . which maketh another distinct, and concording Part unto the Ground,*” and a combination of the two. Ideally, divisions were improvised by players with sufficient skill, inventiveness and familiarity with their fellow players to do so, but as William Cavendish’s music collection and Simpson’s book attest, amateurs often played from scores.

Divisions are improvised or composed against the backdrop of “*Rules so perfect, that ‘twill be / Stil’d Simpson’s Grammar unto Harmony,*” but they emphasize variety. Frank

73. Simpson, *Division-Violist* 21.
74. Simpson’s preferred instrument is a “*Division-Viol,*” which closely resembles the bass viol (Simpson, *Division-Violist* 1).
75. Simpson, *Division-Violist* 1, 21, 28.
Traficante’s article on “Division” in *Grove Music Online* points to the closely related terms of “diminution,” “*diferencia*” (Spanish) and “breaking.”77 All three relate to the production of variety. Simpson “cannot choose but wonder, even to amazement; that from no more then *Three Concors*, and a few intervening *Discords*; there should proceed such an infinite Variety; as all the *Musick* that ever *hath*, or *shall be composed*, in *Concordance of diverse Parts*.78 He writes, “This *Breaking*, or *Dividing a Note*, admits *Diverse Wayes of expression*: according to the diverse ordering, and disposing, the Minute Parts thereof.”79 Throughout his instructions he emphasizes the importance of variety. Simpson suggests that after the initial repetition of the ground by the players and the successive divisions of its notes into more elaborate rhythms, the players “begin to Play some *Skipping Division*, or *Points*, or *Tripla’s*, or what your present *Fancy*, or *Invention* shall prompt you to; changing still frome one Variety to another: for Variety it is, which chiefly pleaseth.” The musicians must change “from This, to That Sort of *Division*, as may best produce Variety.” They may carry on a kind of conversational exchange of rhythmic patterns within the ground itself “so long as they please; which done, they may take themselves to *Another Point*, of a different *Length*, which will produce a *New Variety*.” Sometimes the players may join one another “*Both* together; sometimes in *Slow*, sometimes in *Quick Motions*; such, as may best produce *Variety*.780

Simpson’s teachings on divisions connect explicitly with language through that

78. Simpson, *Division-Violist* 16-17.
80. Simpson, *Division-Violist* 47-49.
conversational exchange of rhythmic patterns. When a piece involves more than one player, the musicians “vie” with one another in variations of increasing complexity each of which “answers” that which precedes. Then the conversational exchange accelerates: “C. may begin some *Point of Division*, of the length of a *Breve*, or *Semibreve*, naming the word *Breve*, or *Semibreve*, by which B. may know his *Intention*: which ended; let B. answer the same, upon the succeeding *Note*, or *Notes*, to the like quantity of *Time*; taking it in that Manner, One after Another, so long as they please.” The pace shifts from one of oratorical display to repartee.

This “contest” is reminiscent of Cavendish’s descriptions of conversation. “Discourse,” she writes, “should be like Musick in parts.” In the *CCXI Sociable Letters*, Cavendish tells her imaginary correspondent:

> I have several times conversed with Mrs. R. E. and I find her Wit runs in Parts, like as Musick, where there must be several Parties to Play or Sing several Parts; she is not a whole Consort her self, neither can she Play the grounds of Wit, but yet she can make a shift to fill up a Note; . . . few have general Wits, as to Play Musically upon every Subject, especially without making a Fault.

Mrs. R. E.’s conversational ability is superficial in that she can handle the accelerated exchange of rhythmic patterns, but cannot manage the more sustained displays of division of the “subject” or “ground” that ought to precede it. Elsewhere in the same work Cavendish describes “a Consort of Learning and Wit” whose “Discourse was their Music, the Philosophers were the Bass, the Theologers the Tenor, and the Poets the Treble, all which made an Harmony wherein was Variety and Delight.”

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82. *Olio* 1671, 41.
Aside from conversational exchange, the practice of playing divisions intersects with language through the notion of rhetorical figure. In playing divisions, a musical counterpart of rhetorical figure is part of the display of technical virtuosity. Christopher Simpson defines “Figurate Descant,” the subject of the fourth book of his *Compendium of Musick*, as follows:

“And, as we termed Plain Descant, (in which was taught the use of the Conords) The Groundwork or Grammar of Musical Composition, so may we as properly nominate This [figurate descant], the Ornament or Rhetorical Part of Music. For, in This are introduced all the varieties of Points, Fuges, Syncope’s or Bindings, Diversities of Measures, Intermixtures of discording Sounds; or what else Art and Fancy can exhibit; which, as different Flowers and Figures, do set forth and adorn the Composition; whence it is named *Melothesa florida vel figurata*, Florid or Figurate Descant.”

The practice of playing divisions and the themes of language associated with this practice enter Cavendish’s natural philosophy most conspicuously through her emphasis on the concept of material division and divisibility. In Cavendish’s earliest works, she already teaches the infinite divisibility of matter, but she is unclear about the precise characteristics of this divisibility. At this stage, infinite divisibility clearly pertains to infinitely extended substance and its ability to divide in an outwards direction an endless number of times. What is not as clear is whether or not the theory includes the division of segments of matter into infinitesimal pieces. In the *Philosophicall Fancies*, Cavendish hypothesizes concerning the division of matter “to an Atome” in terms that suggest that she embraces the etymological

86. *Fancies* 2.
sense of the word “atom.” However, she also writes that “division is as infinite as the Matter divided,”87 and this “division” may or may not include that of moving in an inward direction.

In the Philosophical Letters, Cavendish’s position on the subject is perhaps still evolving. She emphasizes the endlessness of division in the outwards direction, writing, “this Onely matter, because it is Infinite in bulk, must of necessity be divisible into infinite Parts, that is infinite in number.”88 She also suggests that she accepts at least the theoretical infiniteness of division proceeding inward when she states, “Concerning his [Walter Charleton’s] argument of Divisibility of Parts, my opinion is, That there is no Part in Nature Individable, no not that so small a part, which the Epicureans name an Atome.”89 The latter statement, however, appears contradicted in the middle of the work where Cavendish explains,

> [F]or each part having its proper figure different from the other, which is circumscribed and limited, it is called a finite single part; and such a part cannot be said Infinitely dividable, for infinite composition and division belong onely to the Infinite body of Nature, which being infinite in substance may also be infinitely divided, but not a finite and single part.90

Actual, figured parts are not infinitely divisible, but theoretical, non-differentiated pieces of “the Infinite body of Nature” are.91 In Cavendish’s later works, she firmly resolves the issue in favour of infinite divisibility proceeding in both outwards and inwards directions. She decides, “there is no such thing as a single or individeable part in Nature,”92 “there can be no Atome,

87. Fancies 4; Opinions 1655, 2.
89. Philosophical Letters 455.
91. Of course, Cavendish’s use of the verbs “called” and “said” suggest that the integrity of real figures is a matter of theoretical discourse rather than fact.
92. Observations 132.
that is, an individeable body in nature, because whatsoever has body, or is material, has quantity, and what has quantity is divideable,”⁹³ and “there is no such thing as a Single Part in Nature: for Matter, or Body, cannot be so divided, but that it will remain Matter, which is divisible.”⁹⁴ For Cavendish, divisibility defines the natural and the material, and it distinguishes them from the supernatural or spiritual.⁹⁵

The divisibility of matter connects to Cavendish’s use of terminology from the musical genre of divisions because it provides the logical basis for her innumerable references to processes of composition and division in nature. For Cavendish, composition and division are fundamental material phenomena. She asserts, “for if all parts in nature be corporeal, they are dividable, composable, and intermixable,” and again, “Nature being Material, is composable and dividable.”⁹⁶ In Cavendish’s “brief repetition of those few Notes concerning the principles” of her natural philosophy at the conclusion of the first section of her Observations, the third to fifth principles concern division and composition:

3. The chief and general actions of Nature, are division and composition of parts, both which are done but by one act; for at the same time, when parts separate themselves from such parts, they join to other parts; and this is the cause there can be no Vacuum, nor so single parts in Nature.
4. Every particular part or figure is infinitely divided and composed from and with other parts.
5. The infinite divisions and compositions hinder, that Nature cannot run into extreems in her particulars, but keep the parts and actions of Nature in an equal ballance.⁹⁷

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⁹³. Observations 135.
⁹⁴. Grounds 5.
⁹⁵. For statements concerning the indivisibility of spirit and of God, see Blazing World 81; Grounds 12, 241; Philosophical Letters 186; Observations p2v, 2.38.
⁹⁶. Philosophical Letters 108, 144. See also Observations 1.124, 1.135.
⁹⁷. Observations 1666, 1.246.
Composition and division are inseparable processes at the heart of Cavendish’s explanation for the unfeasibility of an Epicurean cosmos. They are responsible for the tension, balance, interdependence and proportions of a social and aesthetic Nature. They are also the essence of innumerable chemical, physical and mental processes.

That Cavendish conceives of composition and division not only as material processes, but also as musical ones becomes clear through her discussions of the engagement of the rational matter in these processes. For example, Cavendish attributes the lack of consciousness of an animal during gestation and its possession of minimal knowledge at birth to the fact that the rational matter has “not so much company, as to make so much change, as to take parts, like Instruments of Musick, which cannot make so much Division upon few strings as upon more.”

In the same way that a ten or more course lute is more suitable for playing the elaborate divisions of the mid seventeenth century than the eight course Renaissance lute, so a greater number of rational spirits is more apt to produce the elaborate patterns that underpin sensation and knowledge. For Cavendish, the human mind is always engaged in division, “but when the rationall innate matter moves in a regular division, and the measures of time, and the notes of motions skilfully set, and rightfully kept, that is curiously or neatly, and carefully ordered; then there is a harmony.” The mind plays pleasurable music only when the rational matter displays regularity, skill and ingenuity in its divisions. The virtuosity of the rational matter appears in its speed of division, its “nimbleness” that flows from the habit of

98. Fancies 46.
perpetually moving “only in number and measure.” In one account of the process of hearing, the sensitive matter actually produces a musical score of what it hears and then the rational matter uses the score to reproduce the external “ways of division” in its own matter:

[T]he sensitive innated matter, sets, or pricks down notes, and draws lines on the drum of the ear, as musicians do upon paper, or the like; ... but for the verbal, it is writ, or printed on the drum of the ear in letters, for words, and the knowledg the animal figure takes, is when the rational innated matter moves according to those letters or notes, or ways of division.

The generalization of the musical aspects of these processes to Nature as a whole occurs in passages such as where Cavendish affirms, “[T]here are Contraries in Natures actions, which are Corporeal motions, which cause mixtures, qualities, degrees, discords, as also harmonious conjunctions and concords, compositions, divisions, and the like effects whatsoever.”

Processes of composition and division are concrete, but they are also processes of creating and elaborating musical patterns.

As in the musical genre of playing divisions, processes of division in Cavendish’s natural world are always in tension with a “ground.” As Cavendish explains, “although

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100. *Opinions* 1655, 109.

101. *Opinions* 1655, 123.

102. Cavendish also uses the term “ground” frequently in contexts not immediately related to natural philosophy. She uses it in the sense of “principle” in the title *Grounds of Natural Philosophy* and in phrases such as “the Ground of my Opinions” (*Philosophical Letters* a1r, c1r, 3, 5). In rhetorical and literary contexts, she uses it in the sense of the “subject matter which a speaker or writer expands upon” (*Picture* 1671, 30; *Olio* 1655, 72, 115; *Philosophical Letters* [3]47; *Playes* 1662, 678). She most clearly conflates the rhetorical, literary and musical aspects of the term in an analogy “Similizing the Heart to a Harp, the Head to an Organ, the Tongue to a Lute, to make a Consort of Musick”:

The *Tongue a Lute*, the *Breath*, are *Strings* strung strong,
The *Teeth* are *Pegs*, *Words*, *Fingers* play thereon.
These moving all, a sweet soft *Musick* make,
Wise *Sentences*, as grounds of *Musick* take. (*Poems* 137)

Words play the articulatory apparatus like an instrument, and the sentences that emerge are akin to
Nature delights in variety, yet she is constant in her groundworks.”

Early in her writing career she teaches,

Nature is more various in the Shapes, Thoughts, and Colours, than in the Substance, or Kind of Things; yet for Shapes there are but four grounds, as High, Low, Thick, and Thin; of Quality, or Essences, she hath but four, as Fire, Water, Air, and Earth; and for Colours, the ground is onely Light.

Shape, substance and colour are but variations produced from a limited number of “grounds.”

“We find,” writes Cavendish, “that Nature is stinted her self, as well as Man is stinted by her, for she cannot go beyond such Rules and Principles”:

and we Find by her Acts past, that all was begot from the first-grounded Principles; Variation indeed there may be, but not any thing entirely new: And that there have been as good, if not better, in the same kind before. . . . But we find, that Nature hath a constant and settled course in all she doth; and whatsoever she works, are but Patterns from her old Samplers. But the several Stiches, which are the several Motions, are the same; and the Stuff, which she worketh upon, which is the Matter, is the same; and the Figures she makes, are after the same kind; and we find, through many Ages since, that it is the same, as Salomon saith, Nothing is new, &c.

The limited number of motions, substances and shapes with which Nature has to work, lead her to repeat patterns, albeit in ingenious ways, much as a woman might repeat the patterns from an embroidery or quilting sampler made in her youth, or as a musician might apply the conventional rules of division in order to break a ground.

Cavendish’s use of the term “ground” in her natural philosophy accelerates in the musical grounds.

103. Observations 2.15.
104. Olio 1655, 162.
106. Olio 1655, 174-75.
Philosophical Letters and Observations Upon Experimental Philosophy. In the first of these works, Cavendish explains,

But Wise Nature’s Ground or Fundamental actions are very Regular, as you may observe in the several and distinct kinds, sorts and particulars of her Creatures, and in their distinct Proprieties, Qualities, and Faculties, belonging not onely to each kind and sort, but to each particular Creature. ¹⁰⁷

She also teaches that although there are three degrees of matter, yet, “in all those degrees it remains the same onely or meer Matter, that is, it is nothing else but Matter, and the onely ground in which all changes are made.” ¹⁰⁸ Again, she writes that “self-motion, sense, life, and reason, are the grounds and principles of Nature, without which no Creature could subsist,”¹⁰⁹ and that “the perceptive corporeal motions are the ground-motions in Nature, which make, rule, and govern all the parts of Nature, as to move to Production, or Generation, Transformation, and the like.”¹¹⁰ Nature’s grounds are regular. Her grounds are the malleable substance in which variation is made. They are the sine qua non of the being both of individual creatures, and, by extension, of the cosmos as whole. Finally, they both impel and constrain all creativity within Nature’s purview.¹¹¹ Natural grounds have the same function as musical ones.

¹⁰⁸. Philosophical Letters 250.
¹⁰⁹. Philosophical Letters 306.
¹¹⁰. Philosophical Letters 513.
¹¹¹. For similar examples in Observations, see 1.163, 1.195, 1.203, 1.206, 4.52.
1.3 The Curious Variety of Nature

Recall that according to Simpson, the chief aesthetic goal of a musician who is breaking a ground is variety. Particularly in Cavendish’s *Philosophical Letters* and *Observations upon Experimental Philosophy*, variety is also the foremost aesthetic effect of natural composition and division.\(^ {112} \) The two books contain numerous sweeping statements to this end. For instance, “[H]uman sense and reason may well perceive that Nature is active, and full of variety; and action, and variety cannot be without motion, division, and composition,” and “[T]he chief actions of Nature are composition and division, which produce all the variety in Nature.”\(^ {113} \) Nature, like a division violist, uses composition and division to produce an aesthetic display.

Much as the complexity of a musician’s divisions might display her ingenuity and virtuosity, so the variety of the natural world expresses the wisdom and method of Nature. Cavendish discusses the things that people make in a comparison of Nature and Art:

[T]hey [these products of art] are but Natures bastards or changelings, if I may so call them; and though Nature takes so much delight in variety, that she is pleased with them, yet they are not to be compared to her wise and fundamental actions; for 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, Sowing &c. as also in Preserving for those that love Sweet-meats, and in Distilling for those that take delight in Cordials; for she has numerous imployments, and being infinitely self-moving, never wants

\(^ {112} \) Composition and division create variety in motions, figures, creatures, knowledge and perceptions. See for example the following passages: *Philosophical Letters* 62, 101; *Philosophical Letters* 108, 144, *Observations* 24, 136; *Philosophical Letters* 144, 521, *Observations* 69-70; *Philosophical Letters* 172, *Observations* 188, 201, 211, 224.

work, but her artificial works are her works of delight, pleasure and pastime.\textsuperscript{114}

The personification here is not so extreme as it might superficially appear, since Cavendish’s Nature possesses literal consciousness, perception and foresight, albeit perhaps not such a unitary consciousness as the extended metaphor suggests. In the domain of such a housewifely economy, natural processes are full of intention. They take place to preserve the order and the pleasantness of a well-provided for home, an order that balances the delight of novelty and variety with stability.

In less colourful passages, the theme of Nature expressing her wisdom through variety sometimes occurs in relation to biodiversity and its effects. Cavendish writes,

I only treat of Natural Productions, which are so various, that it is a wonder if any two Creatures are just alike; by which we may perceive, that not only in several kinds and sorts, but in Particulars of every kind, or sort, there is some difference, so as to be distinguished from each other, and yet the species of some Creatures are like to their kind, and sort, but not all; and the reason that most Creatures are in \textit{Species}, according to their sort, and kind, is not only, that Nature’s Wisdom orders and regulates her Corporeal Figurative Motions, into kinds and sorts of Societies and Conjunctions; but, those Societies cause a perceptive Acquaintance, and an united Love, and good liking of the Compositions or Productions: and not only a love to their Figurative Compositions, but to all that are of the same sort, or kind.\textsuperscript{115}

Nature’s wisdom leads her to order the animal kingdom through variety in such a way as to produce social and sexual relationships. She desires such relationships on account of the knowledge and the love that exists within them. She is indeed like a housewife shaping the most pleasant domicile possible, and her personal joy is contagious; “[W]ise Nature taking

\begin{flushright}
\textsuperscript{114.} \textit{Observations} 1.101-2.
\end{flushright}
delight in variety, her parts, which are her Creatures, must of necessity do so too.”

Moreover, like the ideal housewife or the musical virtuoso displaying her brilliance, her wisdom even allows her to conceal the effort that she invests through the ease of her overt behaviour:

Nature is wiser than any of her Creatures can conceive; for she knows how to make, and how to dissolve, form, and transform, with facility and ease, without any difficulty; for her actions are all easie and free, yet so subtil, curious and various, as not any part or creature of Nature can exactly or throughly trace her ways, or know her wisdom.

Nature’s *sprezzatura* leaves observers only with amazement.

Cavendish’s housewifely Nature is far from selfless. Self-interest and self-love drive her impulse towards variety. For Cavendish, self-love provides the basis for most natural and moral action, and it is not vicious or even amoral in the way that self-interest is for her acquaintance Thomas Hobbes. Consequently, Cavendish unhesitatingly depicts Nature basking in her own self-indulgence in variety:

And since Nature is but one body [not separated by vacuum], it is intirely 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 of hers can ever attain to.

Nature’s indulgence in variety is sometimes benign, and even benevolent, for instance when she produces distinctions between species and individuals, causes creatures to need sleep, or


118. *Observations* 1.4. The shift from the impersonal pronoun, “it,” back to the personal one, “her,” suggests the literary tensions involved in writing in a scholarly genre with content that pulls conventional metaphors—in this case that of a personified, female Nature—persistently in the direction of literal exposition of fact.
simply avoids repeating certain transformations in favour of novelty instead. On the other hand, Nature’s delight in variety does lead her in more puckish and sinister directions. For example, Nature alone, apart from any specific decree from God, disallows unity of religion simply because she is “Variable, taking delight in variety.” Nature also intentionally deludes her observers through their use of scientific instruments, “for Nature is pleased with variety, and so doth make numerous absurdities, doubts, opinions, disputations, objections, and the like.” Nature’s pleasure in variety leads her to sometimes impede the usual smooth and efficient communication between parts of matter, to manifest the kind of “unusual effects or apparitions” that people ascribe to supernatural activity, to cause humans and other creatures to desire objects that are less beautiful or healthy than other equally available objects, and even to cause serious birth defects. Although Cavendish does not condemn Nature for activities such as these, or even judge these natural effects apart from labeling them “irregular,” they do suggest that Nature’s creation of variety is morally complex.


120. *Grounds* 245.

121. *Philosophical Letters* 365. A rather abstract passage later in the same work declares, “And as for delusion, it is part of Nature’s delight, causing the more variety” (365).

122. *Philosophical Letters* 152, 228, 294, 391.

123. The association of Nature with variety provides a rich mine of evidence for literary critics interested in gender. Suffice it to say that although Nature is associated with a trait connected to stereotypical female fickleness and inconstancy (see *Blazing World* 120; *Picture* 1671, 188; *Poems* 56; *Sociable Letters* 392; *Playes* 1662, 330-31, 654, 656, for some instances in which Cavendish describes her own sex according to the stereotype), Cavendish frequently rehabilitates the notion of variety by associating it with cleverness, beauty and something like “creativity” in the modern, popular sense of the word (*Picture* 1671, 227; *Olio* 1655, 87; *Poems* A3r, 56). She occasionally depicts delight in variety as a weapon that women employ in order to extricate themselves from subjugation to men (*Picture* 1671, 208; *Playes* 1662, 453, 485), and she very frequently condemns men for their love of variety, particularly variety of sexual partners (*Picture* 1671, 86, 130, 180, 217; *Olio* 1655, 82, 82; *Playes* 1662, 190, 505).
The terms in which Cavendish describes natural variety and the numerous occasions upon which it is an object of creaturely awe highlight its aesthetic significance. In her works, variety is connected first and foremost with ideas of number (infiniteness, numberlessness, numerousness, abundance) and difference (diversity, separateness, alteration, change and inconstancy), but it also has recurrent associations with more descriptive terms. Cavendish exclaims in frustration,

And I cannot enough admire the strange conceits of some men, who perceiving and believing such a curious variety and various curiosity of Nature in the parts of her body, and that she is in a perpetual motion, and knows best her own Laws, and the several proprieties of bodies, and how to adapt and fit them to her designed ends, nay, that God hath implanted a faculty of knowing in every Creature, do yet deny, nay, rail against Natures self-moving power, condemning her as a dull, inanimate, senseless and irrational body, as if a rational man could conceive, that such a curious variety and contrivance of natural works should be produced by a senseless and irrational motion.124

The chiasmic structure of the phrase “curious variety and various curiosity of Nature” itself enacts the phrase’s content. The “curious variety” of Nature is variety “Made with care or art; skilfully, elaborately or beautifully wrought”125—qualities that appear in the quotation above through Nature’s self-knowledge and her capacity to “adapt” and “fit” particular creatures into her own design. Nature’s variety is also “Intricate, abstruse, subtle”:

[F]or she [Nature] is wiser then any of her Creatures can conceive; for she knows how to make, and how to dissolve, form and transform, with facility and ease, without any difficulty; for her actions are all easie and free, yet so subtil, curious and various, as not any part or creature of Nature can exactly or

124. Observations 1.44.

125. The definitions in this paragraph are from the following locations: “Curious,” Def. 2.7.a, 2.10.b, 2.12; “Curiosity,” Def. 1.1-4, 1.6, OED Online, Oxford UP, 29 Sept. 2007 <http://dictionary.oed.com>.
throughly trace her ways, or know her wisdom. Nature’s ways are too intricate, too “finely woven” (this is an etymological sense of “subtle”) to be traced and understood. Nature’s subtle variety is, furthermore, “Fine” and “delicate”; it is produced by the most tenuous of the three degrees of matter, the rational matter, which can move “more subtilly, and more variously than the sensitive, and make such figures as the sensitive cannot.” Another aspect of the subtlety of the rational matter is its capacity for swiftness; speed, at times under the guise of wildness, is a quality that appears alongside variety in Cavendish’s writings. Not only Nature’s productions, however, are “curious”; she herself subjectively possesses a “various curiosity.” This various “curiosity” may simply be a manifold care and attention to detail and ingenuity, but perhaps it may also be something akin to “Scientific or artistic interest; the quality of a curioso or virtuoso; connoisseurship.” In any case, there are well over twenty instances in Cavendish’s oeuvre in which the notions of curiosity and variety are closely linked, and the linkage reflects her aesthetic appreciation of the cosmos.

Further intimations of the aesthetic effects of natural variety come from Cavendish’s many statements of awe and amazement about the “Miraculous variety in Nature.” The discontinuity between the immense diversity of Nature and the limited perceptual abilities and

126. Philosophical Letters 476-77.
127. Philosophical Letters 173.
128. Philosophical Letters 516; Fancies 71; Picture 1671 232, 323; Playes 1662, 656.
129. See, for example, Blazing World 100; Philosophical Letters 199, 281, 344, 360, 362, 414, 477, 515; Picture 1671, 111, 117, 206, 244, 272, 516, 516; Observations 1.4, 1.44, 1.45, 1.139; Olio 1655, 6, 116; Poems A3r; Playes 1662, 303, 441, 658.
130. Observations 1.124.
understandings of creatures appears in the convocation of the birdmen in the *Blazing World*.

The birdmen are able to report on the celestial bodies, but unable to give an account of the substance of air because they only perceive it “by their own Respiration”:

> For, said they, some bodies are onely subject to touch, others onely to sight, and others onely to smell; but some are subject to none of our exterior Senses: For Nature is so full of variety, that our weak Senses cannot perceive all the various sorts of her Creatures; neither is there any one object perceptible by all our Senses, no more then several objects are by one sense.\(^{131}\)

Nature, like God, defies creaturely comprehension to such a degree that when the Empress, who has found herself whisked into the fantastic lands of the Blazing World, learns of the gum which dissolved in oil and taken as medicine “could renew old Age, and render it beautiful, vigorous and strong,” she “did not so much scruple at it; for she knew that Nature’s Works are so various and wonderful that no particular Creature is able to trace her ways.”\(^ {132}\)

The natural emergence of a technology sought for by Renaissance alchemists is simply a matter of course. When the fictional Duchess creates an imagined world according to the precepts of Cavendish’s own natural philosophy, this world “appear’d so curious and full of variety, so well order’d and wisely govern’d, that it cannot possibly be expressed by words, nor the delight and pleasure which the Duchess took in making this World-of-her-own.”\(^ {133}\)

Here the Duchess’s delight and pleasure parallel those of Nature, who similarly rejoices in the aesthetics of her creations.

> Nature’s transcendence of creaturely sense and reason is a refrain particularly in the

\(^{131}\) *Blazing World* 22-23.

\(^{132}\) *Blazing World* 51.

\(^{133}\) *Blazing World* 100-101.
Philosophical Letters where it appears at the end of several of the letters and functions almost as a blessing or a statement of worship like Saint John’s parting comment in his gospel: “and there are also many other things which Jesus did, the which, if they should be written every one, I suppose that even the world itself could not contain the books that should be written. Amen.”

Thus Cavendish writes to her imagined correspondent at the end of one letter,

In short, there is so much variety in Nature, proceeding from the self-motion of Matter, as not possible to be numbred, nor thorowly known by any Creature: Wherefore I should labour in vain, if I endeavoured to express any more thereof; and this is the cause that I break off here, and onely subscribe my self,

MADAM,

Your faithful Friend
and Servant.135

At the end of another letter, she writes,

But the curiosity and variety in Nature is unconceiveable by any particular Creature; and so leaving it, I rest,

MADAM,

Your faithful Friend
and Servant.136

At the end of a third letter,

. . . for her [Nature’s] actions are all easie and free, yet so subtil, curious and various, as not any part or creature of Nature can exactly or throughly trace her ways, or know her wisdom. And thus leaving her, I rest,

MADAM,

Your faithful Friend
and Servant.137

The occurrence of these statements at the conclusions of the letters or at important junctures within them is in part an expression of Cavendish’s embracing of a discourse of Erasmian

137. Philosophical Letters 476-77.
copia,$^{138}$ but it is equally an almost liturgical profession of awe at the beauty of Nature.

### 1.4 Eternity and Time

Variety like that in musical divisions not only characterizes Cavendish’s cosmos, but constitutes it as well. This is because in her philosophy, variety constitutes time. Cavendish’s concept of time emerges against the backdrop of her understanding of eternity. The first level on which eternity exists for Cavendish is that of the divine. Consider the mystic vision of the divine light presented in *Poems, and Fancies*:

This *Light* had no *Dimension*, nor *Extent*,
But fil’d all places full, without *Circumvent*;
Alwaies in *Motion*, yet fixt did prove,
Like to the *Twinkling Stars* which never move.
This *Motion* working, running severall waies,
Did seeme a *Contradiction* for to raise;

Yet at the last, all several *Motions* run
Into the first *Prime Motion* which begun.
In various *Formes* and *Shapes* did *Life* run through,
*Life* from *Eternity*, but *Shapes* still new;
No sooner made, but quickly pass’d away,
Yet while they *were*, desirous were to stay.

Not like to several *Lines* drawne to one *Point*,
For what doth meet, may separate, disjoynt.
But *this a Point*, from whence all *Lines* do flow,
Nought can diminish it, or make it grow.
*Tis its owne Center*, and *Circumference* round,
Yet neither has a *Limit*, nor a *Bound*.
A *fixt Eternity*, and so will last,
All *present* is, nothing to come, or past.

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A fixt Perfection nothing can add more,
All things is It, and It selfe adore.\textsuperscript{139}

The “fixt Eternity” is the Being without beginning or end, and Being without succession, of
the traditional Christian notion of God’s Eternal Now. The fixed point of the Eternal Now
radiates continually, and this radiation is the creation of Nature and natural eternity. The “first
Prime Motion” suggests a beginning point to Nature. However, Cavendish writes in the
Observations upon Experimental Philosophy, “In Infinite and Eternity there is neither first nor
last, and therefore Aristotle cannot understand a first mover of Time; and as for motion it self,
if all parts move of themselves, as I said before, there is no necessity of an exterior or first
Mover.”\textsuperscript{140} The choice of “Motion” over the conventional “Mover” in the poem is judicious,
and that motion is “first” and “Prime” only in terms of a causal hierarchy, not in terms of
time.\textsuperscript{141}

The fixed Eternity has always radiated continuously, creating the world and
establishing a second level of eternity: that of Nature. Cavendish is adamant throughout her
career that Nature has neither beginning nor end. The opening statement of the Philosophical
Fancies reads, “There is no first Matter, nor first Motion; for matter and motion are infinite,
and being infinite, must consequently be Eternall.”\textsuperscript{142} The array of possibility presented by
infinite matter and motion necessitates their eternal existence. Natural eternity, existing as it
does at the intersection of the divine and of time, is unlike the former but like the latter

\textsuperscript{139} Poems 40-1. Compare as well the chapter on “The diatical Centers” in Opinions 1655, 172.
\textsuperscript{140} Observations 3.34-35.
\textsuperscript{141} Of course, Cavendish may also be engaged in re-interpreting her original positions in light of
the increasingly defined ideas that she achieved over the course of her career.
\textsuperscript{142} Fancies 1653, 1.
characterized by succession. Nevertheless, it must not be equated with time, for “Eternity depends not on Motion, but of a Being without Beginning, or Ending.” Being, not Becoming, characterizes even natural eternity.

The relationship between divine eternity, eternal Nature and time in Cavendish’s philosophy bears some similarity to Platonic and Helmontian thought. Cavendish would have read in Stanley’s account of Plato, “Time is an interval of the motion of the World, as an image of eternity, which is the measure of the state of the eternal World.” In Timaeus the Locrian’s “Of the Soul of the World, and of Nature,” she would have read, “This time is the image of that which is ingenerate, called Eternity: for as this Universe was formed after the eternal exemplar of the Ideal World, so was this time ordained together with the World after its pattern, Eternity.” Cavendish shares with Platonism the notion that some kind of expression or representation of Eternity, of Being, provides the backdrop against which time unfolds. J. B. Van Helmont reasons that “eternal Duration is Time in created things,” and observes “Time to be in the thrice glorious God, Eminently and Essentially, but in the Creature, Dependently, Subjectively, and from an issuing forth to without, participatively.” Although Cavendish objects to what she reads as an equation of time with eternity in Van Helmont, she presents a very similar notion of the divine radiating its virtues, including its eternity, into Nature.

143. See Picture 1671, 550.
144. Grounds 16.
145. Stanley 188, 567.
147. Philosophical Letters 304.
When she addresses the characteristics of time itself, Cavendish presents her reader with a series of paradoxes. Even though there is succession in eternal Nature,

In Nature there is no such thing, as Number, or Quantity; for Number, & Quantity have only reference to division: neither is there any such thing as Time in Eternity; for Time hath no reference but to the Present, if there be any such thing as Present.  

Natural eternity as a whole is not characterized by time. Even the notion of the present is in doubt, perhaps because the continuity of eternity paradoxically implies the possibility of infinitesimal division and thus the infinite diminution and consequent disintegration of Now. Two years later, Cavendish writes that some natural processes are almost inconceivably slow, “for there is no account, nor time in nature infinite.” Time as account, measure or number is not natural. It is a technique, an art characteristic only of human reason. In her mature philosophy Cavendish asserts,

all is but one thing, that is, a part of Matter moving variously; for there is neither Magnitude, Place, Figure, nor Motion, in Nature, but what is Matter, or Body; Neither is there any such thing as Time: Wherefore it cannot properly be said, There was, and There shall be; but onely, There is.

Although a succession of material changes may be observed in Nature, the past and future do not have independent ontological status. Only natural eternity, the natural Now, possesses this.

Cavendish’s idea that past and future can only be spoken of subjectively and not as absolute philosophical truths reflects the theories of Aristotle and Thomas Hobbes. According

148. Fancies 4. My interpretation of this passages assumes that Cavendish is holding to her word, “I speak not here of Deiaticall Infinites, but of grosse Infinites, such, as Philosophers call Chaos” (Fancies B8v).

149. Opinions 1655, 40.

150. Philosophical Letters 51[5].
to Stanley, Aristotle held that “Time being a numerate number, exists not without a numerant, which is the Soul.” Hobbes writes, “TIME is the Phantasme of Before and After in Motion; which agrees with this Definition of Aristotle, Time is the Number of Motion according to Former and Later; for that Numbrin is an act of the Mind.” With regard to time as a human measuring technique, Cavendish agrees altogether with the Hobbesian and Aristotelian notion of its subjectivity, but with regards to natural eternity she does not:

Your Author says, That things Present onely have a being in Nature, things Past onely a being in the Memory, but things to come have no being at all; Which how it possibly can be, I am not able to conceive; for certainly, if nothing in nature is lost or annihilated, what is past, and what is to come, hath as well a being, as what is present.

Natural eternity exists objectively. Any segment of it contains within itself the essential Being of all events and things past and future. Natural eternity and doctrines of the conservation of matter, motion and shape guarantee the significance, if not the independent reality, of past and future.

Cavendish firmly rejects contemporary opinions that attribute monolithic and unitary characteristics to time. In response to Van Helmont who understands “Time not to be tied up to Place, not to a Body, lastly, not to Motion; but to be a Being separated from the same,” she writes,

I am not of your Authors opinion, That Time hath no relation to Motion . . . . For, in my opinion, there can be no such thing as Time in Nature, but what Man calls Time, is onely the variation of natural motions; wherefore Time, and

151. Stanley 374.
153. Philosophical Letters 34.
154. Van Helmont 634.
the alteration of motion, is one and the same thing under two different names; and as Matter, Figure, and Motion are inseparable, so is Time inseparably united, or rather the same thing with them, and not a thing subsisting by itself.155

Time is as multiple and diverse as the moving subjects in which it inheres. In reply to Walter Charleton, for whom time “seems to be the Twin-brother of Space, devoyd of all relation to Corpriety, and absolutely independent on the Existence of any Nature whatever,”156 Cavendish writes,

[B]ut if Space be as much as Vacuum, then I say, they are Twin nothings; for there can be no such thing as an empty or immaterial space, but that which man calls space, is onely a distance betwixt several corporeal parts, and time is onely the variation of corporeal motions . . . Neither are Time, Duration, Place, Space, Magnitude, &c. dependents upon corporeal motions, but they are all one and the same thing.157

Instead of the monolithic understandings of time advanced by these philosophers Cavendish advances a concept of time as manifold. Van Helmont reasons,

[I]f Time doth inhere in all particular things, as an accident or concomitant; truly besides innumerable Absurdities, there shall be even as many diverse Times, as there are atomes of things: And whosoever doth now subsist at once in the same Duration, shall have as many diverse Essences and Existences of Durations, and Time shall be actually divided into an Infinite.158

Cavendish replies, “To my Reason, there are as many times and durations as there are motions; for neither time nor duration can be separated from motion, no more then motion can be separated from them, being all one.”159 For Cavendish, time only exists in terms of what


158. Van Helmont 641.

might be called “biological time,” the rhythms of biological development, but because her philosophy is vitalist, biological time pervades the entire cosmos. She explains that she agrees not with Van Helmont, but with Solomon, “who says, that there is a time to be merry, and a time to be sad; a time to mourn, and a time to rejoyce, and so forth: making so many divisions of Time as there are natural actions.”

There is no objectively existing unified time in Cavendish’s world, and this is precisely the point that makes time another of the musical aspects of her cosmos. It is important to recognize that Cavendish does not simply equate time with motion. On the contrary, she repeatedly defines time as “the variation of corporeal motions”; time is not motion, instead, time is variation of motion. She expands on the definition as follows:

But when I say, Time is the variation of motion, I do not mean the motion of the Sun or Moon, which makes Days, Months, Years, but the general motions or actions of Nature, which are the ground of Time; for were there no Motion, there would be no Time; and since Matter is dividable, and in parts, Time is so too. . . . Wherefore your Author is mistaken, when he says, Motion is made in Time, for Motion makes Time, or rather is one and the same with Time.

The ground of time is “the general motions or actions of Nature.” The breaking of this ground, its variation through many subtly different repetitions, constitutes the time that is always divided into multiple different times that spread outwards both in series and in parallel. Time, for Cavendish, is like a collection of consorts which are improvising divisions upon their own respective grounds. In the moment when one variation of the ground ends and a new one

begins, or in the moment when a single consort divides into multiple distinct acts of improvisation, natural time occurs.

1.5 Declaratory Song and Nature

In the English early Baroque period, the disciplines of music, rhetoric and poetry were closely intertwined through the concepts of affect and prosody. Quintilian’s *Institutio Oratoria*, one of the most influential classical works on rhetoric during the early modern period, strongly influenced the development of Baroque musical styles. Concerning the emergence of “musical mannerism” on the continent, a phenomenon which repeated itself in England during the mid- to late-seventeenth century, Claude Palisca explains that “there is hardly an author on music in the last half of the sixteenth century who does not dip into Quintilian’s *Institutio oratoria*. It was one of the first printed books containing a discussion of music. . . . It spread the idea that music is closely allied to oratory and that, like oratory, it has the function of moving listeners to various passions.”

Quintilian envisions music and poetry as essential to an ideal orator’s education. For him, just as for Cavendish who calls it the “language of the Gods,”

music is united with the knowledge even of things divine. If this be admitted, music will be a necessity even for an orator, since those fields of knowledge, which were annexed by philosophy on their abandonment by oratory, once were ours and without the knowledge of all such things there can be no perfect


eloquence.\textsuperscript{165}

He continues by indicating the relationship of music to Pythagoras’s and Plato’s natural philosophies. Aside from the fact that a knowledge of music provides an orator with access to large bodies of thought, an education in music and poetry is essential to him because his discipline is an outgrowth of those disciplines. Originally, “the roles of musician, poet and philosopher” were one in mythical figures such as Orpheus and Linus,\textsuperscript{166} and “the art of letters [grammaticae] and that of music were once united: indeed Archytas and Euenus held that the former was subordinate to the latter.”\textsuperscript{167} Moreover, “poetry is song and poets claim to be singers,”\textsuperscript{168} and two of the most important aspects of the arts of music and poetry–prosodic structure and the capacity to move the emotions of an audience–are equally important to rhetoric. According to Quintilian,

\begin{quote}
the musical theory of rhythm \textit{[musica ratio numerorum]} determines the value of metrical feet no less for dancing than for tunes. Again, do we not [as orators] adapt our voice and gesture to the nature of the themes on which we are speaking? There is, therefore, all the less reason for wonder that the same is true of the feet employed in prose.\textsuperscript{169}
\end{quote}

In words that come to relate to the early modern development of the “affect theory of music,” Quintilian notes,

\begin{quote}
It is by raising, lowering or inflexion of the voice that the orator stirs the emotions of his hearers, and the measure \textit{[modulatione]}, if I may repeat the term, of voice or phrase differs as we wish to rouse the indignation or the pity
\end{quote}

\begin{flushright}
\vspace{1cm}


166. Quintilian 1.10.9.

167. Quintilian 1.10.17.

168. Quintilian 1.8.2.

169. Quintilian 9.4.139.
\end{flushright}
of the judge. For, as we know, different emotions are roused even by the various musical instruments which are incapable of reproducing speech [quibus sermo exprimi non potest].

Rhetoric, for Quintilian, and for many of his early modern readers, is inextricable from music and poetry.

Seventeenth-century musical developments interwove themselves with the discipline of rhetoric through the conscious employment of rhetorical devices to the end of manipulating the emotions of the audience. Works treating of music in the time period, whether they are collections of songs or tunes, or theoretical discussions, often equate music with rhetoric. For example, in an epistle “To all Lovers of Harmony” at the beginning of a book that was first published in 1667 when Cavendish was still writing, Christopher Simpson exclaims,

What Tropes and Figures can thy glory reach,
That art thy self the Splendor of all Speech!
Mysterious Musick!

The concluding poem to one of John Playford’s mid-century collections of music that includes works by composers with whom the Newcastles were personally acquainted, similarly exclaims, “Musick miraculous Rhetorick! that speak’st Sence / Without a Tongue, excellent

170. Quintilian 1.10.25.
172. Christopher Simpson, Compendium B2r.
Eloquence.” Much earlier in the century, Francis Bacon, another author whom Margaret Cavendish read, observes in the *Sylva Sylvarum*, “There be in music certain figures or tropes, almost agreeing with the figures of rhetoric, and with the affections of the mind, and other senses.” He continues,

> The sliding from the close or cadence, hath an agreement with the figure in rhetoric which they call *praeter expectum*; . . . . The reports and fuges have an agreement with the figures in rhetoric of repetition and traduction. The triplas, and change of times, have an agreement with the changes of motions; as when galliard time and measure time are in the measure of one dance.  

For Simpson, Playford and Bacon, music functioned rhetorically.

> The employment of musical versions of rhetorical devices in both song and instrumental music presupposes a sympathy among music, the mind, and the social and natural world. From the beginning of the Civil War period, Cavendish’s contemporaries envision this sympathy allowing for some degree of healing in the individual, social and political spheres.

Simpson writes,

> *He that can Sett and Humour Notes aright,*  
> *Will move the Soul to Sorrow, to Delight,*  
> *To Courage, Courtesie, to Consolation,*  
> *To Love, to Gravity, to Contemplation:*  
> It hath been known (by its *magnetick motion*)  
> To *raise Repentance,* and *advance Devotion.*  
> It works on all the Faculties, and why?  
> The very *Soul* it self is *Harmony.*

173. Playford, John, ed. *Select Ayres and Dialogues for One, Two, and Three Voyces; to the Theorbo-Lute or Basse-Viol* (London, 1659) 114. This work contains pieces by, among others, Henry Lawes and Nicholas Lanier.


For Simpson, the soul sympathizes with music because it is itself inherently musical. A poem that prefaces a 1648 collection of music by the brothers Henry and William Lawes similarly claims,

    Such numbers does the soul consiste of, where she
    Meeting a glance of her own harmonie;
    Moves to those sounds she heares; and goes along
    With the whole sense and passion of the song;
    So to an equall height, two strings being wound,
    This trembles with the others stroke; and th’sound
    Which stirr’d this first, the other does awake,
    And the same harmonie they both partake.176

The sympathy between music and the soul is the same phenomenon as that between musical strings tightened to proportional tensions. The effects of music are dependable because they are physical. Elsewhere, a commendatory poet dubs one of Henry Lawes’s books “The Mind’s Physitian.”177 This belief in the efficacy of music in rhetorical persuasion contributed to the flourishing of declamatory song during Cavendish’s lifetime.

    Cavendish’s own associations with declamatory song are considerable. Scholars of music history agree that the innovator of the style early in the century was Nicholas Lanier.178 A lyric poem (about the tortured mind of a lover during his beloved’s absence) by William Cavendish that was to be set by Lanier has been preserved, and Lanier also worked with William in devising a musical entertainment that the Cavendishes held for King Charles II and

176. Henry Lawes and William Lawes, Choice Psalms Put into Musick, for Three Voices the Most of which May Properly Enough Be Sung by any Three, with a Thorough Base (London, 1648) a2v.
177. Henry Lawes, The Second Booke of Ayres, and Dialogues, for One, Two, and Three Voyces (London, 1655) b1v.
his court in Antwerp in 1658. The two most prominent and prolific composers who wrote in the declamatory style in the middle of the century were Henry and William Lawes. William Lawes set at least one song from William Cavendish’s second play, *The Country Captain*. Margaret Cavendish herself recounts that while she was attempting to compound for her exiled husband’s estate in London in the 1650s, she “went with [her] Lords Brother to hear Musick in one Mr. Lawes his House, three or four times.” This was Henry Lawes, who began to work at court in 1631. He set and published a poem entitled “Love and Loyalty” by Charles Lucas, a brother of Margaret Cavendish’s who was executed following the siege of Colchester, he collaborated with Milton on *Comus*, and with Davenant (with whom William Cavendish also collaborated on two of his plays) on several dramatic works, and he set music to the lyric poems of poets including Herrick, Carew, Lovelace, Birkenhead, Jonson, Cartwright and Waller. In Antwerp during the 1650s, Margaret Cavendish’s acquaintance with declamatory song would also have been fostered through her friendship with the Duarte family. In her biography of her husband she writes, “I desired one Mr. Duart a very worthy Gentleman . . . (to whom and his Sisters, all very Skillful in the Art of Musick, though for their own pastime and Recreation, both my Lord and my self were very much bound for their

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great civilities) to be my Interpreter.”185 “Mr. Duart” is Diego Duarte, who set a number of poems by William.186 In a letter to “Eleonora Duarti” (Leonora Duarte) which suggests a close friendship between the two women and which was included in the CCXI Sociable Letters, Cavendish recounts her refusal to sing Diego’s settings of William’s poems during a visit with Leonora’s sisters on account of her inability to live up to the combined talent of the poet, the composer, and the usual singer, Leonora herself.187

This letter provides hints at Cavendish’s own understanding of the declamatory musical style. In her account of her refusal to sing, Cavendish explains,

[I]f I should offer to Sing any of them, I should so much Disadvantage my Lord’s Poetical Wit, and your Brother’s Musical Composition, as the Fancy would be Obscured in the one, and the Art in the other, nay, instead of Musick, I should make Discord, and instead of Wit, Sing Nonsense, knowing not how to Humour the Words, nor Relish the Notes.188

Declamatory airs require “a Sweet Voice, with Quavers, and Trilloes”189 that knows how to “Humour the Words” or “Relish the Notes.” Other references in Cavendish’s works suggest that either she recognizes a distinction between the English declamatory style and the French and Italian styles of monody that may have contributed to its evolution, or she feels ambivalent about this kind of music. Lady Solitary, a character in The Comical Hash who frequently voices opinions that Cavendish elsewhere expresses, voices disdain for the style:

Solitary. For my part, I had rather hear a plain old Song, than any

185. Life of William 87.
186. Unfortunately these settings have all been lost. Rudolph A Rasch, “Duarte, Leonora,” Grove Music Online, 16 May 2006.
188. Sociable Letters 428.
189. Sociable Letters 428
Italian, or French Love Songs stuff’d with Triloes.

Censurer. That’s strange, when as in those Harmonious Songs the wisest Poets, and skillfullest Musicians, are joyned to make up one Song, and the most excellent voices are chosen to sing them.

In any case, the English style of declamatory settings of Cavalier poetry with which Cavendish was acquainted generally subordinate musical ornament to poetic content and structure, and it is in part by this means that this form of music becomes an apt metaphorical resource for Cavendish’s natural philosophy.

In his “Introduction to Henry Lawes,” Eric Ford Hart identifies three “principles” in Lawes’s settings which were applied in the following order of importance: first, “the expression of his poet’s meaning;” second, “the reproduction of the metrical lilt and form of his poem;” and third, “the preservation of the natural speech-rhythms of his words.”

Another historian of music writes that “The most important features of Caroline lyric poetry—at least from the musician’s point of view—are the emphasis laid upon argument and meaning, which in turn throws great importance upon individual words and grammatical constructions, and the interest shown in ordered poetic structures.” At the same time as rhythm and ornamentation illustrate meaning and reflect argument structure, changes in rhythm and melody reflect stanzaic form, and “the length of notes given to syllables” reflects metrical accent. Speech rhythms are acknowledged through careful attention to

190. Plays 1662, 574. Lady Solitary’s opinion may also be intended to imply a lack of social and cultural sophistication.
punctuation, but these “speech-rhythms are those of the orator, not of the conversationalist.”

These characteristics of the declamatory style give birth to a contemporary set of critical terms. John Milton famously writes in his sonnet, “To my Friend Mr. Henry Lawes”:

Harry, whose tunefull and well measur’d song
First taught our English Music how to span
Words with just note and accent, not to scan
With Midas eares, committing short and long,

That with smooth Aire couldst humour best our tongue.
Thou honour’st Verse, and Verse must lend her wing
To honour thee, the Priest of Phoebus Quire,
That tun’st their happiest Lines in hymne or story.

Reflecting upon this poem, R. J. McGrady observes, “The terms ‘accent,’ ‘measured,’ ‘sense,’ etc. occur with such regularity in the commendatory poems of the period that it becomes apparent that Milton, in addition to expressing his own appreciation of Lawes’s music, is giving voice to a popular critical concept.” Cavendish alludes to the same concept

194. See the quotations in McGrady 89.
197. McGrady 88. The lexical confusion of poetic and musical terms in the seventeenth century means that poetry simply cannot be discussed but as an “Artem Musicam” [a musical art] that is “tunable and melodious as a kind of Musicke, and therefor may be tearmed a musicall speech or vutterance” (George Puttenham, The Arte of English Poesie (London, 1589) 5). This confusion is perhaps nowhere more evident than in the complexity of the usage of the term “accent” in the time period. In 1604, Robert Cawdrey, perhaps considering the term in relation to its usage in connection with the Greek language, defines “accent” as “tune, the rising or falling of the voice,” but he also gives “accent” as a definition for “tone.” That is, he connects accent both to the idea of variation of pitch across time, and to the idea of harmonic interval. Seven years later, Randle Cotgrave uses the word “accent” in relation to the diacritics in the French language, and thus in relation to the articulatory position of vowel sounds. By offering the definition of “accent” as “the raising, or letting fall, of the voice in pronunciation” (as opposed to the “rising, or letting fall”), he introduces the notion of volume into accent. Cotgrave also uses the term “accent” with regard to the speech of particular social groups or individuals. In the same year, John Florio alludes to the usage of the term
repeatedly in her work.

Cavendish’s intellectual investment in this critical idea appears over and over again in her discussions of reading, in particular reading aloud. In an “Advertisement to the Reader” that appears both in the 1655 and 1671 editions of The Worlds Olio, Cavendish gives the reader directions on the pacing with which she would like her to read the book, and then she compares the effect of bad reading on a text with that of a bad musician who puts an instrument out of tune when he plays it. She goes on to complain,

So some will read with one Tone or Sound of Voice, though the Passions and Numbers are different: and some again, in reading, wind up their Voices to such a passionate scrue, that they whine or squeal, rather than speak or read: others fold up their Voices with such distinctions, that they make that triangular, which is four-square; and that narrow, which should be broad; and that high, which should be low; and low, that should be high: and some again read so fast, that the Sense is lost in the Race.

Reading aloud is a musical act where the content and prosody of the text should determine pitch, volume, timbre and rhythm. The ability to read aloud well is a musical talent that should

“accent” in relation to Latin when he defines “prosodia” as “the arte of accenting or pronouncing words truly, long or [s]hort.” The fact that the early modern pronunciation of Latin accents appears to already have shifted from a distinction of vowel length to one of articulatory position only complicates this definition. Henry Cockeram, in his English Dictionary of 1623, defines “Accent” as “Tune” (difference in pitch), “Accent in tune” as “Tone, Sumphonie” (harmonic interval, general harmoniousness), and “Accent in words” as “Euphonie” (a lack of harshness of sounds, the spoken equivalent of “Sumphonie”). In 1656, Thomas Blount introduces the more general definition of “accent” as “the due sound over any word or letter,” and he also introduces the use of “accent” in the sense of “stress” in connection to the use of enclitics in Latin morphology. Thus by the middle of the century, by the time that Margaret Cavendish is writing, the definition of “accent” has snowballed in such a way that if prosody is, as Elisha Coles writes in 1676, “the Art of accenting aright,” it involves length, pitch variation, intonation patterns, stress, articulatory position and euphony, among other things. See Lexicons of Early Modern English, ed. Ian Lancashire, 2007, U of Toronto Library and U of Toronto P, 4 Jan. 2007 <leme.library.utoronto.ca>.

198. Olio 1671, c1v.
199. Olio c2r.
accompany poetic and rhetorical talent in an ideal Cavalier gentleman. In the *CCXI Sociable Letters*, Cavendish writes,

I hear a Man who was a Great Scholar, and Learned Man, having Read much, and one that Pretended to be a Good Poet, and Eloquent Orator, Read Mr W. Ns. Excellent Works quite out of Tune and Time, neither Humouring the Sense nor Words, but always persisting in the same Tune, which was Dull, and Flat, and made my Sense or Hearing as Dull as his Reading.\(^{200}\)

She then presents the contrasting example of her husband’s skill in reading:

I know my Husband Reads so Well, that he is like Skilful Masters of Musick, which can Sing and Play their Parts at the first Sight, so my Husband at the first Reading will so Humor the Sense and Words of the Work, as if he himself had Made, and Writ it, nay, I have heard him read some Works, that have been but Mean and Plain Pieces, so Well, as to give a Grace to the Author, and to make his Work Sound Harmoniously, like as an Ill Instrument Well Played on, whereas others put Rare Instruments out of Tune.\(^{201}\)

Like declamatory song, reading aloud involves both “Tune and Time;” it involves a melody made of pitch contours and prosody or rhythm. Interestingly, the relevant definitions of the verb “to humour” in the *Oxford English Dictionary* range from “To comply with the peculiar nature or exigencies of (something) . . .; to fit, suit (*with* something),” to “To imitate a person’s humour,” and finally, and supported by a 1653 quotation from Isaac Walton concerning a song-writer’s authorship of lyrics, “To give a particular character or style to.”\(^{202}\)

To “Humor the Sense and Words of the Work,” therefore, is not only to read in a manner suitable to the semantic and syntactic structures of the text as well as to its more specific

\(^{200}\) *Sociable Letters* 362. “W. N.” is presumably William Newcastle. When Cavendish later on the same page recounts that her husband says that the best reader he has ever heard is one “B. J.,” I suspect that the allusion is to Ben Jonson, particularly given Katie Whitaker’s report of a twenty-year close friendship between the two men (Whitaker 65).

\(^{201}\) *Sociable Letters* 363.

diction and use of rhetorical device, but also to imitate and perform the content of the piece according to a particular style.

Cavendish’s interest in the concept of “just note and accent” further surfaces in her many references to the musical nature of poetry. In “The Dialogue of the Wise Lady, the Learned Lady, and the Witty Lady,” the Witty Lady states, “In Poetry is included Musick and Rhetorick.” In a letter concerning a visit to “Mrs. D. U.’s house” and the music heard there, the narrator of the *CCXI Sociable Letters* exclaims,

> [I]n my Opinion, there is no Musick so Sweet, and Powerful as Oratory, for Sweet Words are better than a Sweet Sound, and when they are Joyned together, it Ravishes the Soul; wherefore Lyrick Poetry hath Advantage of all other Poetry, because both Sound and Sense are Harmonious, . . . Certainly, there is as much Oratory in Elegant Verse as in Elegant Prose. . . . [W]ho can Perswade more Powerfully than Poets?

Lyric poetry, the kind of poetry set in declamatory song, is the height of both rhetoric and music. The connection between music and lyric verse appears in Cavendish’s allegorical “Banquet of Wit” where there is “A Dish of Songs, brought by the Lyricks” that “was very Delicious Meat, and had a most Sweet Relish” and “was Dress’d with a Compounded Sawce of many several Airs, Notes, and Strains.” The “Sweet Relish” bespeaks the idea of

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203. *Picture* 1671, 312.

204. The letters in *CCXI Sociable Letters* have various degrees of fiction in their content. Some are letters that Cavendish actually sent to friends (for example the one to Leonora Duarte from which I quoted earlier), but others may contain initials that are connected to real people and events that may or may not have taken place, and still others appear to be altogether fictional. “Mrs. D. U.” in this passage may be Leonora Duarte, or a fictional personage whom Cavendish associates with her. Note that Cavendish’s statements concerning the degree to which poetry is persuasive vary considerably. For a statement that denies the poetry is rhetorically persuasive, see *Olio* 1671, 230.


“relishing the notes” and the whole concept of “just note and accent” in declamatory song. The close association of music with lyric poetry again comes to the fore in a jibe that Cavendish thrusts towards the courtly love motif in declamatory song. She observes that “in the Spring-time of Love, the Nightingale-Poets sing Amorous Sonnets in several Notes of Numbers, sometimes in the Dawny Morning of Hopes or in the Evening of Doubts, and sometimes in the Night of Despair, but seldom in the high-noon of Fruition.” The phrase “Notes of Numbers” suggests a conflation of prosody with musical rhythm. This conflation appears once again when Cavendish attributes the affective power of music and poetry to “Numbers,” writing, “Thus it is not the Wit or Sense of things [musical or poetic] which moves Passion or Delight, but the Numbers; for Notes which are set, and Numbers that are measured, shall move the Passions as the Musician or Poet pleaseth.”

Cavendish repeatedly and extensively theorizes the capacity of declamatory song, and of music in all of its forms, to affect the human passions. The stationer’s epistle to the reader at the beginning of Descartes’s *Compendium of Musick* describes music as a subject “wherewith the Rationall Soule of Man is so Pathetically, and by a kinde of occult Magnetisme, Affected, that even the most Rigid and Barbarous have ever Confest it to be the most potent Charme either to Excite, or Compose the most vehement Passions thereof,” and it speaks of “the Medico-magical Virtues of Harmonious Notes (instanced in the Cure of Sauls Melancholy fitts, and of the prodigious Venome of the Tarantula, &c.).” Cavendish writes

207. *Olio* 1671, 220.
208. *Olio* 1671, 49.
209. Descartes, *Compendium* a3r-v, b1v.
of the connection of music to mental well-being:

There is great reason why Musick should cure madness; for this sort of madness is no other but the spirits that are in the brain and heart put out of their natural motion, and the spirits having a natural sympathy with Musick, may be composed into their right order; but it must be such Musick, as the number of the notes must goe in such order as the natural motion of the brain, though every brain hath not one and the same motion, but are set like notes to several tunes: wherefore if it were possible, to set notes to the natural motion of the heart, or that brain that is distempered, it might be perfectly cured, but as some notes do compose the brain by a sympathy to the natural motion, so others do make a discord or antipathy, and discompose it, putting the natural motions out of tune.\textsuperscript{210}

There is sympathy between the rational spirits and music. The “order” of the “number of notes,” its “tune,” elicits a kind of imitation from the “tune” of the brain matter. The idea that individuals’ brains should be set to different “tunes” relates to the Galenic theory of the humours and the resulting human temperaments. Charles Butler, another one of Cavendish’s contemporaries, opens his introductory treatise on music with the statement, “MUSICK is the Art of modulating Notes in voice or instrument. The which, having a great power over the affections of the mind, by its various Modes produces in the hearers various effects.”\textsuperscript{211} Butler proceeds to give an account of the conventional expressive associations of the Doric, Lydian, Aeolic, Phrygian and Ionic modes. “Tune” did not only mean “melody” in this era; among its several other meanings was “mode.”\textsuperscript{212} Cavendish therefore may mean that people’s minds are set to specific modes, and that for music to successfully operate as a healing technology it must work within the modal parameters set by the patient’s mind.

\begin{footnotesize}
\begin{enumerate}
\item[210.] Opinions 1655, 139.
\item[211.] Charles Butler, \textit{The Principles of Musik} (London, 1636) 1. I have transcribed the quotations from Butler from his quasi-phonetic alphabet into conventional spelling.
\item[212.] See the \textit{Lexicon of Early Modern English}.
\end{enumerate}
\end{footnotesize}
The idea of “patient” is key here. Dietrich Bartel has remarked upon the connection between the terms “affect” and “passion,” writing, “The original Greek term, pathos, was understood as an ailment or malady resulting in a passive condition of the person. The Latin translation of pathos, affectus is rooted in the verb adficere, meaning to work upon, influence, affect.”213 Cavendish emphasizes the passivity of hearers influenced by rhetoric (and therefore by rhetorical music) in a simile reminiscent of an exchange between Hamlet and Rosencrantz and Guildenstern:

“But you Orators (said she) are like those that are skilful in playing on a Flute, or Cornet; where the Ears of the Auditors are the holes; and your Tongues, or words, as the Fingers, do make the stops; your Breath gives the sound, and your Wit, your Learning, are the Ayres and Musical Ditties that move their Passions, or rather their Passion: for indeed, there is but one Passion in Nature, or at least in an Animal Figure; which Passion changes into several Forms, according to the several subjects or objects it is placed upon.”214

In a gesture parallel to the lists of modes and their affective qualities and influences offered in contemporary treatises of music, Cavendish lists eight different categories of affective qualities of music,215 distinguishing between the categories by means of many different aspects of music including tonality, pitch, volume, melody, rhythm and pace. Her categories do not quite match with those of any other writers on music from her time that I have read, and they presumably derive in part from her own experience of music. She calls her categories “the grounds of musical discourses, or discourses in musick.”216 In the play The Female Academy, one of the characters speaks of “a skilfull and ingenious Musician, which discoursed of a story

214. Picture 1671, 632.
216. Opinions 1655, 168.
of his Travels, in his playing on a Musical Instrument, namely, the Harpsical.”

This new “kind, or sort of discoursing, which is hardly learn’d as yet, because newly invented” simply transfers the affect theory of music from the more obviously rhetorical context of declamatory song to instrumental music. This transfer makes music a form of discourse, a language, in its own right.

The foremost characteristic of declamatory song is the foregrounding of the expression of meaning through attention to the argument structure of the poem set to the music, and the use of the musical counterparts of rhetorical figures to this end. There is a similar foregrounding of the expression of meaning in Cavendish’s natural world—expression in the etymological sense of a pressing outwards, of a flow of meaning, knowledge or intelligence as opposed to a dualistic structure of representation, of sign and thing. To understand how this process of expression works in the macrocosm, the psychology of the microcosm must first be understood. In the Philosophicall Fancies Cavendish writes,

Imagine the rationall Essence, or Spirits, like little spherical Bodies of Quick-silver several ways placing themselves in several Figures, sometimes moving in measure, and in order, and sometimes out of order: this Quick-silver to be the Minde, and their severall postures made by Motion, the Passions, and Affections; or all that is moving in a Minde.

The figures made by the rational matter both constitute and express passions and affections, as well as all other kinds of thought. It is only when the mind tries to conceive of the

217. Playes 1662, 666.
218. Playes 1662, 666.
220. Cf. the remark in the epilogue to the Blazing World, where Cavendish imagines having created a different fictional world where “the Rational figures of my Mind might express as much courage to fight, as Hector and Achilles had” (160).
inexpressible and inconceivable that instead of a natural flow, expression takes the dualistic form of representation:

[F]or when the mind or rational matter conceives any thing that hath not such an exact figure, or is not so perceptible by our senses; then the mind uses art, and makes such figures, which stand like to that; as for example, to express infinite to itself, it dilates its parts without alteration, and without limitation or circumference; Likewise, when it will conceive a constant succession of Time, it draws out its parts into the figure of a line; and if eternity, it figures a line without beginning and end.  

Figures which “stand like to” something else—alogies, models—only appear when the natural flow into the end figure is stopped. When the flow of the rational spirits does work, however, “their motion and figures are like the sound of Musick.”

On account of the ubiquity of rational matter in Cavendish’s cosmos, expression within the psychology of the microcosm provides the pattern for expression across its boundaries and between all manner of creatures in the world. In the *Philosophical Letters*, Cavendish critiques a selection of passages from Descartes’s *Discourse of a Method*. Descartes claims not only “that Beasts have lesse reason than men, but that they have none at all,” and offers the example, “that Pyes and Parrots can utter words even as we can, and yet cannot speak like us; that is to say, with evidence that they think what they say.” Cavendish calls into question the idea that “one man expressing his mind by speech or words to another” is evidence of a specifically human faculty of reasoning by claiming that most human speech


222. *Fancies* 40.


224. Descartes, *Discourse of a Method* 93.
is itself grounded in ignorance or folly. Her point is that the human capacity to speak is really no different from the parrot or magpie’s capacity to speak, that humans express themselves “only by the disposition of their organs” just as Descartes claims animals do. In the context of a belief in a vital and thinking matter, however, to express oneself merely “by the disposition” of matter does not necessarily preclude acting according to knowledge. Consequently, Cavendish argues that the “perceptions and observations” of animals may be “as wise as Men’s, and they may have as much intelligence and commerce betwixt each other, after their own manner and way, as men have after theirs.”

Later in the *Philosophical Letters*, in response to Henry More’s mockery of animism, she responds that most parts of Nature find speech altogether unnecessary, that “nature hath infinite more ways to express knowledg then man can imagine,” that “the several parts of Matter have a more easie way of communication, then Mans head hath with his hand, or his hand with pen, ink, and paper, when he is going to write.” In the same way that the mind’s motions proceed into the “sensitive” motions of the muscles and then into the “figures” of the letters, words and rhetoric on a piece of paper, in the same way that the motions of the minds of bees proceed into the “sensitive” actions that result in the figure of a cooperatively produced honeycomb, so, but on a much more refined and subtle level, the motions of particles of rational matter express to the sensitive matter the figures which the sensitive

226. Descartes, *Discourse of a Method* 92.
228. *Philosophical Letters* 151, 152.
matter in turn expresses through the creation of, for example, a single honeybee.\textsuperscript{229} Matter expresses itself in its creations; natural processes are a flow of information.

In declamatory song, in addition to the emphasis on expression there is a preoccupation with preserving the metrical lilt of the poetry at its core. In “\textit{A Waking Oration}” to students that praises the contemplative and poetical worlds over the worlds experienced in dreams, Cavendish’s orator claims, “[A]nd as for the Poetical World, it is the most Splendorous World that is, for it is Composed of all Curiosities, Excellencies, Varieties, Numbers, and Unities.”\textsuperscript{230} In Cavendish’s natural philosophy, this “poetical world” expands to include the entire objectively existing cosmos. I have already discussed the curiosities, varieties and unities of the cosmos, but its numbers, its prosodic and musical structure, merit more attention.

The prosodic structure of the natural world surfaces primarily in the conflation of musical and poetic terms in descriptions of the rational matter. In the microcosm, “this Rational matter,” Cavendish writes, “moves not as the Sensitive doth, upon the Inanimate matter, but moves by it Self, and in it Self, in Measure, Number, and Figure.”\textsuperscript{231} In the \textit{Philosophicall Fancies} she teaches,

These \textit{Rationall Spirits}, as I may call them, worke not upon \textit{dull Matter}, as \textit{Sensitive Spirits} do; but only move in measure, and number, which make \textit{Figures}; which \textit{Figures are Thoughts}, as \textit{Memory}, \textit{Understanding}, \textit{Imaginations}, or \textit{Fancy}, and \textit{Remembrance}, and \textit{Will}.

Thus these \textit{Spirits} moving in measure, casting, and placing themselves

\textsuperscript{229} These examples are all taken from \textit{Philosophical Letters} 153.
\textsuperscript{230} \textit{Orations} 301.
\textsuperscript{231} \textit{Opinions} 1663, 43.
into *Figures* make a * Consort*, and *Harmony* by Numbers.\(^{232}\)

The purity of the rational spirits in the mind, and their tendency to move in regular patterns within a closed system of their own is reminiscent of the Pythagorean harmonies of the celestial motions and of the disconnection between that music and the inhabitants of the sublunary world. In Cavendish, however, the celestial harmonies are located first and foremost within the human mind itself. Disregarding for now the associations with dance in these passages, to move “in measure” may mean to move according to poetic metre, according to musical bar structure, according to musical time-signature, or according to the scale particular to a given mode.\(^{233}\) To move “in number” may mean to move according to the metrical units of poetry, but it may also mean to move according to the similar structures of music, or even to move in “Harmony” or “conformity, in verse or music, to a certain regular beat or measure.”\(^{234}\) The meanings of “figure,” that product of the motions in measure and number also multiply at this point. They may simply mean shape, but given the poetic and musical context, they may also refer to rhetorical figure in poetry and its musical counterparts in declamatory song.

The rhythmic structure of the rational matter in human mind extends throughout all aspects of Cavendish’s animate Nature. It is in Nature as a whole that

the other part of Animate matter [besides the sensitive], which is the Radical or Rational, is so pure and free, as it cannot be so painfull a Labourer as to work on the gross Unanimate matter, but moveth in numbers, measures, and figures

\(^{232}\) *Fancies* 30.

\(^{233}\) “Measure, n.,” Def. 16a, 17c, 17a, 17b, *OED Online*, 29 Sept. 2007.

\(^{234}\) “Number, n.,” Def. 17a, 17b, 14a, *OED Online*, 29 Sept. 2007.
in its own degree of matter.\textsuperscript{235} The change in motions of the rational matter, for example, may preserve the life or cause the death of an animal, and both the purity and minuteness of this degree of matter, together with its tendency to operate self-reflexively as if it occupied a closed physical system, explains how animals can die without exhibiting obvious physical changes.\textsuperscript{236}

The musical and prosodic qualities of the rational matter provide a rhetorical point of ingress for the theory of “just note and accent” in declamatory song in Cavendish’s physics. One passage crucial in this respect follows upon a description of the rational spirits producing passions in the human mind:

\textit{Besides, their motion and figures are like the sound of Musick; though the Notes differ, the cords agree to make a harmony: so several Symmetries make a perfect Figure, several Figures make a just number, and severall quantities or proportions make a just weight, and several Lines make an even measure: thus equall may be made out of Divisions eternally, and infinitely.}\textsuperscript{237}

The passage describes the patterns that the rational matter makes in space, but if the motion and figures are like music, then the “perfect figure” is rhetorical in nature, and several such figures constitute “a just number,” a metrically appropriate line. Severall “quantities or proportions” could refer to syllable quantity or note length, to prosodic feet or to bar length. The “just weight” is again that rhythmically apt line, and several such lines constitute “an even measure,” an aptly paced song.

The capacity for equality, for harmony, in Cavendish’s cosmos emerges through its

\textsuperscript{235} Opinions 1663, 3.

\textsuperscript{236} Fancies 64.

\textsuperscript{237} Fancies 40. Cf. Opinions 1655, 16.
prosodic tendencies. Within the human mind,

when the rationall innate matter moves in a regular division, and the measures
of time, and the notes of the motions skilfully set, and rightly kept, that is
curiously or neatly, and carefully ordered; then there is a harmony, which
harmony is a quiet minde, gentle imaginations, a clear understanding, a solid
judgment, elevated fancies, and ready memory.\footnote{238}

The skillful setting and right keeping of notes so as to express the positive feelings that such
rhythms literally convey in the materialist psychology is to enact the expression of meaning
through “just note and accent.” The prosodic behavior of the rational matter determines
physical well-being as well:

A healthful temper of the body, is an equal temper of the body, and mixture of
humor, well set parts, and justly tuned motions, whereby life dances the true
measure of health, making several figures, and changes with the feet of
times.\footnote{239}

Furthermore, “A healthful temper of the body” occurs “when the quantity of matter, or
humour is proportionable, and the motion moves equally, for though every kind or sort of
motion may move evenly, and keep just time, yet not equally or harmoniously.”\footnote{240} Cavendish
even sees the prosodic dimensions of the world, Nature’s “exact rules in the various
generations, the distinct kinds and sorts, the several exact measures, times, proportions and
motions of all her Creatures,” as Nature’s means of “expressing” her wisdom.\footnote{241} There is a
flow of expression that moves through the patterns of cosmic musical and prosodic structure.

\footnote{238. \textit{Opinions} 1655, 107.}
\footnote{239. \textit{Opinions} 1655, 157.}
\footnote{240. \textit{Opinions} 1655, 155.}
\footnote{241. \textit{Philosophical Letters} 174.}
1.6 Sympathy

The affect theory of music which underpins declamatory song is one manifestation of the physical process of sympathy which occurs throughout Cavendish’s cosmos. The very rhetorical persuasive influence of music on the mind is such a privileged example of sympathy in Cavendish’s works, however, that it can be taken as a model for the process in general.

The privileging of this model already shows itself through its connection to the bases which cosmic processes of sympathy presuppose. The primary basis of sympathy is likeness between things. As Sir Effeminate Lovely comically says to Poor Virtue in one of Cavendish’s plays, “‘Tis said there is a Sympathy in likeness; if so, you and I should love each other, for we are both beautiful.” In a world with particles of rational matter moving in number and measure in all things including those which are not conspicuously animate, there is a shared manner of performance or expression that enables the process of sympathy. On top of this common substratum, just as some minds are more attuned to certain musical modes than others, so there are many other dimensions of likeness between categories, such as those between degrees of matter, between shapes, and between motions.

Any of these can be a basis for sympathy as long as a second prerequisite is met: sympathy presupposes some additional form of connection between objects. Cavendish teaches that influence (for her by the time of her later writings simply another word for the process “When as the Corporeal Figurative Motions . . . move sympathetically”) must take place on account of the lack of vacuum in the world. This suggests that sympathy involves


either actual proximity between the parties or proximity that is simulated because the motion of any particle necessarily leads to motion in the adjacent particles. The other guise in which the connection between objects may appear is perception. In the same way that the hearing provides the means by which music may alter the motions of the mind, so any form of perception, including forms of perception that are altogether foreign to and even unrecognizable by the human organism, provides the means for other sympathies.

Simple magnetism (between a magnet and iron) and terrestrial magnetism (between the compass and the North) are a touchstone for understanding the process of sympathy in Cavendish. In the 1655 and 1663 editions of the *Philosophical Opinions*, Cavendish offers a mechanical explanation of simple magnetism. Perhaps surprisingly given that she embraces the term “Operative power” earlier in the same work, a term which she associates with sympathy and which bears overtones of occult powers within matter rather than of mechanism, Cavendish writes, “it is not the substance of the body that works, or produceth effects, but the agility, subtility, or strength of motion, and advantage of the shape, so that the working power is more in motion and figure, then meerly the matter.” Here, simple magnetism is “not so much in sympathy, as supremacy.” Magnets exude or express “beams” or “lines” of “sharp points” that “fasten to iron, drawing it to it” by overpowering the particulate motions of the iron.

With respect to terrestrial magnetism, however, Cavendish has qualms about a

244. *Opinions* 1655, 6; *Opinions* 1663, 70.
245. *Opinions* 1655, 66; *Opinions* 1663, 189.
246. *Opinions* 1655, 66,7; *Opinions* 1663, 189, 190.
mechanical explanation. She suggests that if the compass needle were found to vary in the
direction of iron placed next to it, since the “operative power” of the North ought to exceed
that of the iron, the agency of the motion would be proven to be located as much in the needle
as in the North. In this case, the needle “may receive some refreshments from those raies
which stream from the north, for all things turn with self-ends; for certainly every thing hath
self-love, even hard stones, although they seem insensible.”

This shift of agency solidifies in Cavendish’s mature philosophy in the *Philosophical
Letters* where she defines “Sympathy and Antipathy, and attractive or magnetick Inclinations”
as

nothing else but plain ordinary Passions and Appetites. As for example: I take
Sympathy, as also Magnetisme or attractive Power, to be such agreeable
Motions in one part or Creature as do cause a Fancy, love and desire to some
other part or Creature; and Antipathy, when these motions are disagreeable, and
produce contrary effects, as dislike, hate and aversion to some part or
Creature.  

She sets aside the mechanistic account of sympathy. Subjective desire, although that desire
may have been catalyzed by an external object and may or may not be equally shared with that
object, now constitutes all sympathetic phenomena, from magnetism, to the resonance of
eighths on a stringed instrument, to infection, to nourishment, to heliotropism in plants, and to
the migratory patterns of animals–not to mention the psychological relationships between
animals or people, and mythical phenomena such as the weapon-salve that heals a wound at a

247. *Opinions* 1655, 68; *Opinions* 1663, 194.
distance and the wine that undergoes a new phase of fermentation every time the vines from which it originated bloom.  

Cavendish repeats three times in the key chapters on sympathy in the *Philosophical Letters* that sympathy is simply passions and appetites. Passions and appetites differ in that the former are made by the rational matter, and the latter by the sensitive matter. Otherwise, the two “so resemble each other, as they would puzzle the most wise Philosopher to distinguish them; and there is not only a Resemblance, but, for the most part, a sympathetical Agreement between the Appetites, and the Passions.” The sympathy between the rational passions and the sensitive appetites forms one of the two nexus points in the broad pattern of sympathetic processes in the world. The “stronge Sympathy, and agreement, or Affection” between the two parties is not simply a similarity or likeness between them. It is a relationship involving communication, emotion, and shared purpose. The rational and sensitive matter work “Like Fellow-labourers that assist one another, to help to finish their work.” There is mutual cooperation between the two, a relationship that flows in both directions. At the same time, there is a hierarchy encoded in their relationship that allows the rational matter to correct the sensitive:

> [Y]et it is by a loving direction, rather to admonish them by a gentle *contrary Motion* for them to imitate, and follow in the like *Motions*; yet it is, as they

255. *Fancies* 36.
256. *Fancies* 36.
always agree at last; Like the Father, and the Son. For though the Father rules by command, and the Son obeies through obedience, yet the Father out of love to his Son, as willing to please him, submits to his delight, although it is against his liking. So the rationall spirits oftimes agree with the Motions of the sensitive spirits although they would rather move another way.257

Although the communication, the sympathy, usually flows from the passions to the appetites, the complexity of the motives of each party, of love for the self and love for the other, leads to a kind of conversation or negotiation that allows the flow to proceed in either direction.

The relationship between the two degrees of animate matter is the microcosmic parallel of the macrocosmic connection between subject and object which constitutes the second nexus point for sympathetic processes. Given two entities in each of which the relationship between passion and appetite is already in play, the macrocosmic processes of relationship and sympathy unfold at the point of perception or proximity between the two. Any relationship between two people or two things depends upon the setting of two parameters: first, the quality of the sympathy between rational and sensitive matter, and second, the quality of the sympathy between the two people or things. For example, if the sensitive and rational motions sympathize with one another and they “make many and quick repetitions of those sympathetical actions [towards their object], it is Desire and Appetite. When those Parts move variously (as concerning the Object) but yet sympathetically (concerning their own Parts) it is Inconstancy.”258

As on the microcosmic scale, sympathy here may be mutual. In its strongest form, such mutual sympathy may take the form of a “conjunction” between creatures, of a relationship

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257. Fancies 36-37.
258. Grounds 72-73.
which may be capable of producing a new creature, for instance in procreation, or in the
production of a new species by grafting plants or inter-breeding animals. Sympathy may also
involve hierarchy, with one party reacting to a pattern established by the other, either through
“imitation” or contradiction of that pattern in its own particulate motions. Finally, sympathy
flowing from one subject to another may be an unreciprocated act of “attraction” or
“invitation” that remains unfulfilled unless the subject is able to compel its object by force.
In the end, sympathy may involve love, obedience or rape, but it always involves
communication and often involves persuasion.

According to the affect theory of music, both music and mind share a similar structure,
thus predisposing them to a sympathy, and the one expresses passions which likewise exist in
the other. If the music reflects the constitution of a particular individual’s mind, and that mind
is receptive to the music through the integrity and assent of its sensitive and rational matter,
that mind may, through a “strong conjunction” with the music, become an expression or
performance of that music. This is precisely the same process that unfolds, to varying degrees,
in the many manifestations of sympathy in the cosmos. If the communicative interplay
between perceiving subjects—even if these subjects are not human or animal—negotiates a
settlement where one or both parties finds sufficient gratification of its passions and appetites
that a “conjunction” results, then one or both subjects (depending on the degree to which the
relationship is hierarchical or egalitarian) comes to be so like the other that it expresses and

259. *Opinions* 1655, 37; *Playes* 1662, 525.
261. *Observations* 3.56.
performs the other.

The associations between Cavendish’s natural philosophy and music, which she classifies as a form of discourse, are considerable. On the most rudimentary level, Platonic and Pythagorean thought relating to speculative music in Nature contribute to her conclusion that sentience and reason must be inherent in matter. On a more complex level, the musical genre of divisions connects with her vocabulary for describing natural processes, with her aesthetic descriptions of Nature, and, consequently, with her development of a theory of time. Finally, the genre of declamatory song has even stronger connections with her view of Nature. It not only influences her understanding of Nature’s aesthetic qualities, but also provides a model, the affect theory of music, that is likewise essential to the many natural processes which Cavendish understands as resulting from sympathy.
Chapter 2

“Arts Several Languages”:

Handwriting, Needlework and Figure as Shape

From an account of the relationship between Cavendish’s understanding of music and her description of the aesthetics and basic characteristics of the cosmos, I now turn to the relationship between the fourth form of discourse enumerated by the Lady Speaker in *The Female Academy*, “Arts several Languages,” and Cavendish’s natural philosophical doctrines which pertain to “figure” or shape. According to the Lady Speaker, “Arts several Languages” involve “discoursing by Figures, which is by Letters and Hieroglyphicks, which is by Printing, Writing, Painting, and the Like.”²⁶² This form of discourse “is by Figures, or Letters, Prints, Hieroglyphicks, and painted Stories, or ingraven in Metal, or cut, or carved in Stone, or molded, or formed in Earth, as clay, or the like.”²⁶³ In Cavendish’s philosophy, handwriting, with its conspicuous association of language and shape, stands as the prototype for these various forms of communication. Needlework rivals the role of handwriting on account of its own association with pictorial representation and intricate patterns. Like music, these forms of communication and representation are constitutive of natural processes in Cavendish’s world.

2.1 The Art of Handwriting

The English translation of Descartes’s *A Discourse of a Method*, published at the beginning of Cavendish’s writing career, suggests that “the use of speech” and “of other signes
in framing it” constitutes incontrovertible proof of the presence of reason. 264 In contrast, Cavendish’s philosophy as a whole downplays the significance of speech and writing in this respect, arguing that it is prideful to assume that “man’s” ability to “give marks to things to distinguish them to himself” 265 defines a difference from and superiority to all other living creatures. She opens a somewhat ironic poem entitled “A Discourse of Pride” with the lines,

What Creature in the World, besides Man-kind,
That can such Arts, and new Inventions find?

And by his Wit he can his Mind indite,
As Numbers set, and subtle Letters write.
What Creature else, but Man, can speak true sense?
At distance give, and take Intelligence?

What else, but Man, can Nature imitate,
With Pen, and Pencill can new Worlds create? 266

Although Cavendish does not reject the idea that the capacity for language and writing sets humanity apart from other creatures, 267 the poem suggests that it is the possession of language and writing as “Arts” and “Inventions” that really distinguishes humanity. In Cavendish’s philosophy as a whole, these arts and inventions tend to distinguish humanity only from other creatures, from other limited and bounded entities, not from over-arching “Nature.” Therefore, people do not only imitate Nature in the content of the written and drawn images that they produce. Rather, the act of producing such images is itself an imitation of a natural process. In

264. Descartes, Discourse of a Method 91.
266. Poems 93.
267. She writes, for instance, “[T]he difference betwixt man and beast, to speak naturally, and onely according to her [Nature’s] works without any Divine influence, is, that dead men live in living men, where beasts die without Record of beasts” (Olio 1655, 2). Writing allows people an afterlife unavailable to animals.
other words, Nature already possesses forms of representation and expression, and humans seek to emulate her by devising comparable arts. As I have already shown, for example, Cavendish’s Nature does regularly give and take intelligence at a distance (a frequently cited function of writing in discussions of handwriting and cryptography in the period\(^{268}\)) by means of sympathy.\(^{269}\)

For Cavendish, and even for her contemporaries who teach that speech and writing give intimations of what is taking place in an individual’s immortal soul rather than in a mortal and material brain, writing is a strikingly material and even mechanical medium. David Browne, the author of the most detailed treatise on penmanship published in the British Isles in the era, compares the operation of thinking, speaking and writing to a clock mechanism, the final element of which is “the Dyall that declareth both what is meant & spoken, [which] signifieth writing.”\(^{270}\) The philosophers John Wilkins and Géraud de Cordemoy have a more pessimistic opinion of speech and writing. For them, linguistic signs are appurtenances of clumsy corporeality that are altogether unnecessary for spirits.\(^{271}\) Cavendish dramatizes a similar view in her satire of immaterial spirits in the *Blazing World*. When the Empress announces to the spirits attending her that she would like to write a cabala and they ask if she


\(^{269}\) See the discussion on sympathy in section 1.6.

\(^{270}\) Browne 53.

\(^{271}\) Wilkins, *Mercury* 1-3; de Cordemoy A10v, 89.
would like a scribe, “The Empress . . . told them, that she desired a Spiritual Scribe. The Spirits answer’d, That they could dictate, but not write, except they put on a hand or arm, or else the whole body of Man.” In this passage, the failure of the spirits is a facetious intimation of the absurdity of such entities, not a critique of writing. In Cavendish’s view, the emphatic materiality of writing is not a sign of clumsiness; it is an indication of the ability of the written word to intervene productively in the objective world in a way in which imagined spirits cannot.

Part of the concreteness of handwriting in Cavendish’s thought and that of her contemporaries abides in its connection to painting and drawing, in its creative distance from the bare instrumental function of symbolizing sound. The copy-books of the time imply that with the range of scripts available for use in different contexts, with the opportunity for writers to choose from a variety of recipes for ink of different colours and qualities and to prepare them at home, and finally with the need for each individual to select and himself carve appropriate quills for the kind of writing he intended to produce, every literate person was a calligrapher. A scribe like David Browne sees himself as an artist. Browne explains the derivation of his book’s title, Calligraphia, from the Greek καλλιγραφος (calligraphos), which

273. “I haue spent (yea, rather mispent) much precious time, not onelie upon olde Capitall letters, both curiouselie made, and filled up, with Portraites, and all sortes of small Draughtes; but upon painting and inventing of new Capitall Letters, diverse formes of curious Writ and Comparthementes: likewise, in writing of Testificates, with Golde, Silver, diverse colours of Inke, and sortes of Writ; and both of Great Evidences and Small, belonging unto Clerkeship and Notarie, with one fayre and legable Hand: as also in writing oftentimes both of Compts of great Revenewes, and of extraordinarie small and compact writ, . . . and manie other such needlesse curiosities” (Browne 79-80).
he defines as “qui eleganter scribit aut pingit,” that is, one who writes or paints (or draws) elegantly. Cavendish’s contemporaries foreground the idea of pictorial representation even when they consider writing in terms of its relationship to voice. “Letters painte the Voyce, or demonstrate the minde,” according to Browne. For Wilkins, “The Written word is the figure or picture of . . . Sound.”

The notions of figure and of picture are important here. Part of this emphasis may be attributed to the taxonomies of handwriting put forward by contemporary theorists of universal languages. One such theorist, Francis Lodowyck, provides one of the most succinct of these:

The expression by the Pen is either real representations of things, or notionall, or accidentall.

*Real*, is when to expresse a man, we draw the picture of a man, &c.

*Notionall or Relative* [that is, metonymic], when we represent fiercenesse by the figure of a Lion, Watchfulnesse by a Dog, &c.

*Accidental*, is by figures stated at pleasure, to signifie such things as the figures thereof have no relation thereto.

Most contemporary discussions of universal writing hint at the desirability, but also the impracticality, of a “real” relationship between sign and signified, and the slide from imitation, through metonymy, and finally to arbitrary convention which occurs in universal writing schemes speaks to the relevance of all three concepts to writing in general.

274. Browne ¶¶¶2v.


278. I am not simply using twentieth-century terminology here. “Sign” is used by most theorists of the era, and “signified” appears as “signatum” in George Dalgarno’s *Didascalocophus, or the Deaf and Dumb Mans Tutor* (Oxford, 1680) 20.
Real representation is thematic in Cavendish’s works. Scattered throughout her writings are references to the pictorial elements of writing being a very material kind of real, natural and imitative representation of the sense of the words and also of the circumstances surrounding them. When a virtuous maiden writes a letter to express her love to a prince who is above her station and apparently unaware of her, the narrator describes a letter-writing process where the black ink bespeaks the maiden’s jealousy for the gentleman’s attention and also highlights the white smoothness of the paper which, when it is bound with “Blush-colour’d Silk” and sealed with “Virgins Wax,” encodes her innocence, honour and truth.  

When the prince reads the letter, he sees a combination of imperiousness and sadness in it. Her lines are “rul’d” with “a Commanding-wit,” her letters are graced with “Heroick Flourishes,” her black script “solemnly doth march in Mourning-trail,” and her tears make the letter glisten as if it has been sprinkled with gold dust.  

Script is intensely pictorial.

Another kind of context in which this pictorial quality comes to the fore is Cavendish’s reflections on her own handwriting. She analyzes her own arbitrary symbols as what Lodowyck would identify as “real” or “relative” ones. In the Blazing World, the Empress, one of Cavendish’s fictitious self-incarnations, asks the Duchess, another of those self-incarnations, “whether she could write? Yes, answered the Duchess’s Soul, but not so intelligibly that any Reader whatsoever may understand it, unless he be taught to know my Characters; for my Letters are rather like Characters, then well formed Letters.”  

279. Picture 1671, 19. 
280. Picture 1671, 22. 
281. Blazing World 90.
memoir, Cavendish claims, “some have taken my hand-writing for some strange character,” and “I cannot now write very plain, when I strive to write my best, indeed my ordinary handwriting is so bad as few can read it, so as to write it fair for the Press.” Cavendish’s poor handwriting leads to a de-familiarization of the symbols for her, and thence to a figural, and figurative, interpretation of them. When Cavendish releases the pressure of her ideas by writing some of them down, her thoughts proceed like a suddenly uncrowded body of infantry, “in a more methodicall order, marching more regularly with my pen, on the ground of white paper,” but when she looks at the symbols that she has produced, they “seem rather as a ragged rout than a well armed body.” In her childhood handwriting, the members of the metaphorical army actually cower from one another and prefer death to being assembled into formation and legibility. The writing becomes a landscape, and reading becomes “almost as great a Journy for your Eyes, as it was for Coriat’s Feet, that Travelled to Mogorr.” There are blots like “Broad Seas, or Vast Mountains,” “Long, Hard Scratches” like “Long, Stony Lanes,” and the whole is “a Vast Wilderness, and Intricate Labyrinth.”

The author of one of the peritextual poems in a work on cryptography by John Wilkins claims that Wilkins’s “diviner Hieroglyphicks tell / How we may Landskips read, and Pictures

282. “True Relation” 56. Katie Whitaker has recently suggested that the characteristics of Cavendish’s writing and spelling may suggest dyslexia (Whitaker 165-66). It seems to have become fashionable to dismiss the possibility of Cavendish’s writing having any literary merit on the grounds that she claims not to proofread her own work. I have found nowhere where she states this. What she does say is that often she does not proofread the transcriptions (the fair copies) that her secretary makes of her works before sending them to the press (Life of William b1r).


284. Sociable Letters 268.
spell.” Cavendish, too, presents a cosmic landscape suffused with language, and the pictorial dimensions of writing in her thought contextualize this move. Just as figure is foregrounded in writing when a script is contemplated in its concreteness, so figure is foregrounded in the material world when Nature is considered in terms of the being of things. When the symbol is abstracted from the act of symbolizing, figure remains.

2.2 Natural Writing

Throughout Cavendish’s philosophical career, even after she distances herself from other aspects of atomist philosophy, the atomist concept of figure remains central to her physics. In her last philosophical work she writes, “All Creatures are Composed Figures, by the consent of Associating Parts; by which Association, they joyn into such, or such a figured Creature.” All material things, be they animate or inanimate, are figures. As Thomas Stanley expresses the logic of this Epicurean and Lucretian assumption, “[I]t is generally at least true, that every Body is therefore figured, because it consists of Parts terminate and figurate; for Figure is a Term, or Bound.” For Cavendish, figure is so inherent to matter and its processes that she designates Nature itself “a Multiplying Figure,” explaining, “I mean, that Nature makes infinite changes, and so infinite figures.”

285. Wilkins, Mercury A8v.
286. For Cavendish’s rejection of atomism, see “A Condemning Treatise of Atomes” in the prefatory material to Opinions 1655, a3v, and “Another Epistle to the Reader” in Opinions 1663, c1v-c3r.
287. Grounds 17.
288. Stanley 868.
289. Philosophical Letters 529. The doctrine that Nature is capable of an infinite number of different shapes rather than merely of infinite instances of an indeterminable but not infinite number
Cavendish connects figure in the natural world to language. The act of being is an act of meaning. Through its figures and their postures and combinations, Nature is language, alphabet, writing. Contemplating the failure of experimenters to transform gold into another substance by art, Cavendish praises Nature’s sovereign capacity to revise itself: “[C]ertainly, that innated motion that joyns those parts, and so made it in the figure of minerals can dissolve those parts, and make it into some figure else, to express an other thing.” \(^{290}\) Figures express things. Lady Sanspareille in the play *Youths Glory, and Death’s Banquet* preaches that Nature is not only “Mother,” but “tutress” as well,

for she, like as a fond parent, leads and directs man to discoveryes, and as it were, points and markes out their wayes, and as a diligent Tutress, explains and expounds her selfe by her works, and her several works, like as several books hath several prints, and are bound in several vollums, and are keept safe in several Libraryes, of several Ages, by Aged time.\(^{291}\)

Nature’s own works, the plethora of natural figures, explain themselves and one another. Nature is self-referential and yet linguistic, and this influences Cavendish’s notion of method in natural philosophy. She explains,

\[F\]rom the time of twelve yeers old, I have studied upon observations, and lived up-contemplation [on contemplation?], making the World my Book, striving by joyning every several action, like several words to make a discourse to my self; but I found the World too difficult to be understood by my tender yeers, and weak capacity, that till the time I was married, I could onely read the letters, and joyn the words, but understood nothing of the sense of the World, until my Lord, who was learned by experience, as my Master, instructed me, reading several lectures therof to me, and expounding the hard and obscure passages therein, of which I have learnt so much, as to settle my minde on the

\(^{290}\) Opinions 1655, 40.

\(^{291}\) Playes 1662, 138.
ground of peace, wherein I have built an house of happinesse.\textsuperscript{292}

Cavendish charges the conventional metaphor of Nature as a book that must be read and interpreted with additional significance. In her philosophy, figures cohere with a selectiveness akin to that of phonetic segments into larger clusters that form “composed figures,” that is, complex beings akin to words which interact in intricate patterns of interdependence like those of syntax and semantics. The elementary interpreter of Nature can pronounce the syllables and words of Nature, can analyze its details, but she must be exposed to the “reading” of “several lectures”–to readings of readings, interpretations of interpretations–in order to learn to think synthetically about the more complex patterns, the semantics, of the world.\textsuperscript{293}

In Cavendish’s world, Nature’s figures express their meaning by determining each thing’s characteristics through its most literally superficial aspects. Just as mere lines determine the sound and meaning that accompany a written symbol, so mere superficies and lines determine the qualities and abilities of things.

The determination and definition of a thing by its figure appears many times throughout the entire span of Cavendish’s philosophical career, in contexts ranging from discussions of the simplest of natural entities to discussions of the most complex. To cite only one example, in one of Cavendish’s earliest prose descriptions of the elements, she conceives of the elements not as abstract and ideal entities so much as very palpable lumps of matter. She states that the

\textsuperscript{292}. \textit{Olio} 1655, H3r.

\textsuperscript{293}. One could argue that the trajectory of Cavendish’s natural philosophical works over the course of her career obeys precisely this pattern. There is a shift in her works from considering Nature analytically (for instance with the extended descriptions of the characteristics of the elements in the \textit{Poems} (6ff.) and in \textit{Pictures} 1656 (157-59)), to considering Nature as a pattern of interdependence (for instance, with the emphasis on individual creatures being “societies” that appears throughout the \textit{Grounds of Natural Philosophy}).
figure of water is round. Then she proceeds to interpret the figure as the determining factor of
the behaviour of the element. “[T]he round Figure,” she says, “is more apt for motion, by
reason the Circumference Lines are smooth and even.” This figure “cannot be fix’d,” since it
lacks ends or angles, and has “no Basis, or bottom, to rest on.” A round water particle may
accommodate an internal vacuum (it can be hollow), “yet as being an united Figure, as in one
Body or Circle, it makes it more weighty than those Spungie substances that are in parts, or
several lines [air] or points [fire],” and therefore water “is not apt to move upward.”

Cavendish believes, like Stanley’s Aristotle, that although there are four elements,
“there be but one common matter of them all; for they are made mutually of one another.”
The basic stuff of the universe may be “metamorphosed” from one element into another by
means of gradual alterations of “the exterior figure” of the particles of matter. “Figure” is so
essential to Cavendish’s cosmos that it both determines and manifests the various
characteristics of all substances. It defies classification according to Lodowyc’s
conventional categories of representation because it brings what it signifies into being instead
of merely reflecting reality.

To some extent, however, this structure of simultaneously indicating and constituting

294. Pictures 1656, 158. The statement that water particles are round is ambiguous. At times in
Cavendish’s works, round seems to mean “circular,” at other times “spherical.” Perhaps a key insight
into the ambiguity lies in “Of Aiery Atomes” in Poems, where she writes of “watry Atomes, Round,
and Cimball like” (7). Two cymbals held together would yield an internal hollow while still being
more flat than spherical.

295. Stanley 376.


297. Cf. Stephen Clucas’s discussion of Cavendish’s opinions on the nature of fire in “The Atomism
of the Cavendish Circle” (263-64).
things does resemble the mechanism of the universal languages sought by Cavendish’s contemporaries. According to Lodowyck, the new universal writing “is not to have relation to sounds but things.” This philosophical writing will be universal, because it will eliminate the necessity of speech by employing ideographic “figures” in language acts of pure description, pure delineation. If this philosophical writing were carried to its logical extreme, and if it were governed by the “real” or “natural” connection of sign to thing that seventeenth-century philosophers believe eludes practicality in the postlapsarian and post-Babel world, then it would be like ideal hieroglyphs, as they were understood by these philosophers. Wilkins explains, “The word [“Hieroglyphicks”] signifies Sacred Sculptures, which were engraven upon Pillars, Obelisks, Pyramids, and other Monuments before the invention of letters. Thus the Egyptians were wont to express their minds, by the pictures of such Creatures as did bear in them some natural resemblance to the thing intended.” When, in Cavendish’s philosophy, the subjectivity expressing itself is located within Nature at large rather than within individual human minds, the philosophical language takes the form of the “Sacred Sculptures” that Nature forms from the “clayie” “Infinite Matter” that Cavendish remarks “is not like a piece of Clay out of which no figure can be made.” Cavendish’s infinite matter is predisposed to sculpture.

Wilkins elaborates the structure of the universal language in part by emphasizing the role of “notions.” In Wilkins’s opinion, “As men do generally agree in the same Principle of

298. Lodowyck 17.
299. See Lodowyck’s use of the terms “figure” and “describe” (2).
300. Wilkins 101-2.
301. Observations 2.48.
Reason, so do they likewise agree in the same *Internal Notions* or *Apprehension of things.*”

Consequently, the goal of his universal writing is to communicate “apprehensions of things,” and the things themselves, without voice. The introduction of mediating “notions” into the process of communication has parallels first in Cavendish’s understanding of psychology, and second, and more significantly, in her understanding of the psychology of the cosmos itself. Cavendish thus continues to develop her theorization of figure in the context of psychology.

Much like Wilkins, Cavendish believes in a basic commonality of reason and perception across the human race. She explains, “[I]f they have no Imperfections, all Human Creatures have like Properties, Faculties, and Perceptions: As for example, All Human Eyes may see one and the same Object alike; or hear the same Tune, or Sound; and so of the rest of the Senses.” Figure imbues the common human faculties of reason and imagination.

Cavendish teaches, “Figures are as Inherent to the Mind as Thoughts; and who can have an Unfigured Thought? for the Mind cannot have Thoughts, but upon some Matter, and there is no Matter but must have some Figure, for who can think of Nothing?” A thought, an imagination, is a literal in-formation that at once becomes and signifies the object apprehended by means of shapes, lines, superficies. A repetition or reproduction of these internal figures by an artificial means like drawing or sculpture would constitute a real representation, a philosophical writing, a universal character.

“*[T]*he Mind is like Infinite nature,” Cavendish writes, and infinite Nature is also like

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302. Wilkins 20.
305. *Opinions* 1663, 295.
the mind. In other words, Cavendish’s psychology repeats itself in Nature at large. I have already indicated that rational matter is ubiquitous in the world as Cavendish describes it, and that this means that even inanimate beings like celestial objects “may have as much sensitive and rational life and knowledge as other Creatures, but such as is according to the nature of their figures, and not animal, or vegetable, or mineral sense and knowledge.” Figure determines faculties, and within a given set of similar figures (for example, within a given species or within a cluster of parts constituting a single organism) there may very well be a high degree of reciprocal knowledge and intercommunication: “No question but there is Information between all Creatures,” Cavendish states. The only problem with intercommunication in Nature concerns quantity, since “it is impossible for any particular sort to know, or have perceptions of the Infinite, or Numberless Informations, between the Infinite and Numberless Parts, or Creatures of Nature.” The shape of a given creature makes it liable to be in-formed by another figure, liable to apprehend and iterate within its own structure specific details of its object. This in-formation, this self-sculpture or self-writing, then informs the behaviour of the creature. In other words, in Nature at large there is a hieroglyphic pattern of real representation much like that of Wilkins’s universal character.

According to Wilkins, ancient hieroglyphs were “the pictures of such Creatures as did

306. See pp. 24-5. *Cf. Philosophical Letters* 184: “[N]either doth this sensitive and rational matter remain or act in one place of the Brain, but in every part thereof; and not only in every part of the Brain, but in every part of the Body; nay, not only in every part of a Mans Body, but in every part of Nature.”


308. *Grounds* 24

bear in them some natural resemblance to the thing intended.” Wilkins, the kinds of signs structured “Ex congruo, when there is some natural resemblance and affinity betwixt the action done, and the thing to be exprest.” The ultimate form of ex congruo language or real representation is “all those outward gestures, whereby not only dumb Creatures, but men also do express their inward passions, whether of Joy, Anger, Fear, &c.” De Cordemoy writes that natural signs “are those, by which, because of the necessary communion which is between the passions of the soul, and the motions of the body, we know from without the inward different states of the Soul.” The consummate “hieroglyph” (in the sense of “ideograph”) transcends the dualism of real representation by means of the flow of expression through gesture and posture. The figures of Cavendish’s cosmos are hieroglyphs of this sort.

In an early work, Cavendish claims, “The several figures are the several postures of nature, and the several parts, the several members of nature.” Nature is like a body which uses its limbs to express itself, to communicate what is internal to it. And not only does it use gesture, but it uses facial expression as well. Cavendish explains,

By Coutenances [sic.], I mean the several exterior postures, motions, or appearances of each part; for as there is difference betwixt a face, and a countenance; (for a face remains constantly the same, when as the countenance

310. Wilkins, Mercury 101.
311. Wilkins, Mercury 111.
312. Wilkins, Mercury 111.
313. De Cordemoy 78.
314. Opinions 1655, 22.
of a face may and doth change every moment; as for example, there are smiling, frowning, joyful, sad, angry countenances, &c.) so there is also a difference between the exterior figure or shape of a Creature, and the several and various motions, appearances or postures of the exterior parts of that Creatures exterior figure, whereof the former may be compared to a Face, and the later to a Countenance.315

Countenances of this sort are subtleties of figure more transient than an entity’s basic structure, but still manifesting something internal to the figure. Cavendish teaches this close relationship between the internal and its expression as a “countenance” when she explains that if a disconnection occurs between the internal and external, for instance in the death of an animal, shape is suddenly no longer the determinant of the animal’s faculties and “the exterior cannot be altered, from and to, as to change the countenance or face.”316 In other words, face and countenance, figure and even its most transient subtleties, are expressions of what lies within.

Cavendish uses the language of countenance and posture primarily in relation to what would now be called change in the physical state of matter. Concerning the expansion of water during freezing, for example, she claims,

Neither doth Expansion alter the interior nature of a body, any more then contraction, but it alters onely the exterior posture; as for example, when a man puts his body into several postures, it doth not alter him from being a man, to some other Creature, for the stretching of his legs, spreading out of his armes, puffing up his cheeks, &c. changes his nature, or natural figure, no more then when he contracts his limbs close together, crumpling up his body, or folding his armes, &c. but his posture is onely changed; the like for the expansions and contractions of other sorts of Creatures.317


316. Opinions 1655, 84. The context and sense of the passage as well as the usage of terms elsewhere in Cavendish’s writing suggests that “exterior form” ought to be emended to “interior form.”

317. Observations 1.80-81.
As long as the chemical nature, or, in Cavendish’s terminology, the interior nature, of a piece of matter remains stable, only the posture or countenance reveals changes. Therefore “Water may appear in many several Postures of Snow, Ice, Hail, Frost, and the like: . . . when the Water-Circle is Triangular, it is Snow; when the Circle is Square, it is Ice.” 318 Again, WATER being of a Circular Figurative Motion, is, as it were, but one Part, having no divisions; and therefore can more easily change and rechange it self into several Postures, viz. into the Posture of a Triangle, or Square; or can be dilated or extended into a larger compass, or contracted into a lesser compass; which is the cause it can turn into Vapour and Vaporous Air; or into Slime, or into some grosser Figure. 319

In addressing posture in relation to the simple shapes of elements, Cavendish’s theory encounters the problem of the proximity of transient subtleties of figure with the figure itself. Since, as I have already shown, Cavendish sees the elements as constituted by figural distinction within a single kind of matter, 320 change of state (postural change) looks very much like chemical change in the sense of compounds transforming into other compounds.

Figure such as that determining chemical identity in Cavendish’s natural philosophy connects with contemporary linguistic interest in real representation through hieroglyphic forms of writing, and with representation ex congruo through communicative gesture and posture. A third intersection between Cavendish’s natural philosophy and the preoccupations of contemporary language theory lies in the theme of combinatory possibility. For instance, passages in the Blazing World suggest on Cavendish’s part both a fascination with and a

318. Grounds 203.
319. Grounds 205.
320. See pp. 90-91.
scepticism about cabalism.\textsuperscript{321} The Empress asks the immaterial spirits who attend her to assist her with writing “The Jews Cabbala,” and in a burlesque of conventional images of inspiration, the spirits promptly vanish, apparently losing their way in the middle of the Earth, while the Empress collapses into a trance. When the spirits return and send the spirit of “the Duchess of Newcastle” to the Empress, the Duchess dissuades her from her original project, as well as from making “a Philosophical Cabbala,” “a Moral Cabbala,” and “a Political Cabbala.” The only project that the Duchess recommends is “a Poetical or Romancical Cabbala, wherein you may use Metaphors, Allegories, Similitudes, &c. and interpret them as you please.”\textsuperscript{322} The Blazing World itself seems to contain within its own “Poetical or Romancical” structure the sort of interpretation of morals and politics that the Empress may have been interested in producing in the first place. Moreover, despite her skepticism, Cavendish also presents Nature as a sacred text that must be decoded through the analysis of the permutations and combinations of its figures. Her natural philosophical works are, in that sense, first attempts at producing the “Philosophical Cabbala” imagined by the Empress.

John Wilkins discusses several forms of cabalistic analysis of texts in relation to their usefulness for writing in code. One of these techniques is “Combinatio, when the letters of the Alphabet are severally transposed, and taken one for another, after any knowne order.”\textsuperscript{323} The ideas of combination, transposition, order and shifting identities recall the atomist comparison of natural figure to the figures of letters and numbers, and the analogous roles of combinatory

\textsuperscript{321} This segment of the Blazing World (85-92) satirizes Henry More’s Conjectura Cabbalistica.

\textsuperscript{322} Blazing World 92.

\textsuperscript{323} Wilkins, Mercury 69.
possibility in the two domains. Discussing the range of characteristics displayed by nature, including characteristics of figure, size and texture, Cavendish marvels,

[All those several Infinites conclude in One Infinite, like as several Letters conclude in one Word, several Words in one Line, several Lines in one Speech, and these several Letters, several Words, several Lines in one Chapter, so several Parts, several Figures, several Motions in one Matter, and several Infinites in one Infinite Body."

In the next chapter of the Philosophical and Physical Opinions, in a discussion of the limited number of principles responsible for the endless characteristics of beings, Cavendish reinforces the nature of artificial symbolic systems, observing that “as in Nature, so in Arts, as all Musick is from eight Notes, all Language from four and twenty Letters, all Numbers from the Figure of Nine and a Cypher.”

2.3 Figure and Memory

In Nature and as a human art, written language involves structures of combinatorial possibility, expression and representation, but it also has a function. For Cavendish, as for

324. Opinions 1663, 7.
325. Opinions 1663, 8. Sources for Cavendish’s analogy may include Stanley’s remarks on Epicurus based on Lucretius’s De rerum natura (Stanley 856). They may also include similar comments by her doctor and friend, Walter Charleton (Physiologia 120). See Whitaker 138, 289, 292, 298 and 308 for references to the relationship between Cavendish and Charleton. Contemporary translations of Lucretius are other likely sources. These include John Evelyn’s An Essay on the First Book of T. Lucretius Carus De rerum natura (London, 1656), especially page 61, and Lucy Hutchinson’s translation of De rerum natura in British Library Additional ms. 19333 (665a), 21v and 23r. The diametrically opposed politics of Cavendish and Hutchinson make it unlikely, in my view, that Hutchinson’s Lucretius ever would have found its way into Cavendish’s hands. Although the historians A. S. Turberville and Geoffrey Trease do describe one conversation between William Cavendish and John Hutchinson in the Restoration period, this conversation involved the Colonel’s arrest and parole (A. S. Turberville, A History of Welbeck Abbey and Its Owners, Vol. 1 (London: Faber and Faber, 1938) 148-49; Geoffrey Trease, Portrait of a Cavalier: William Cavendish, First Duke of Newcastle (London: MacMillan, 1979) 192).
many of her contemporaries, the act of writing is fundamentally one of memorializing. Cavendish repeatedly and unabashedly explains that her impulse to write and publish stems from her ambition for lasting recognition, for “an extraordinary fame.” She even admits that it is not so much the quality of the fame as its quantity that she seeks. Writing and printing are a means of transcending the material and temporal limits of the self. In the peritextual material at the conclusion of her Philosophicall Fancies, after a poem in which she pleads with her friends to remember her after her death, she writes another poem, simply entitled “An Elegy,” in which she imagines the funeral procession of a corpse, presumably her own, that is so enwrapped in objects and beings that are metonymic for writing that it is as though she has been subsumed by another world in which the art of writing is the substantial reality, a reality whose existence continues independently of her own:

Her Corps was borne to Church on gray Goose wing,
Her Sheet was Paper white to lap her in.
And Cotten dyed with Inke, her covering black,
With Letters for her Scutcheons print in that.
Fancies bound up with Verse, a Garland made,
And at the head, upon her Hearse was laid.
And Numbers ten did beare her to the Grave,
The Muses nine a Monument her gave.

Goose wings, along with raven wings, were the preferred sources of quills for pens used to write either on paper, or in a small script on parchment. Writers used pieces of cotton or linen

326. Pictures 1656, c1r.
327. “[F]or I had rather be praised in this, by the most, although not the best. For all I desire is Fame, and Fame is nothing but a great noise, and noise lives most in a Multitude; wherefore I wish my Book may set a worke every Tongue” (Poems 1653, A3r).
328. Fancies 84.
inside their inkhorns in order to protect the nibs of their pens. Whether or not this piece of cloth was actually immersed in the ink, no doubt the ink would have quickly dyed it through repeated collisions with the pen. Carried on a goose wing, lapped in paper, shrouded with black cloth to protect it and carried by the motion of poetic metre, the corpse in this poem has become a pen—a pen that is itself the instrument of the “scutcheons” (the heraldic decorations), of the garland, of the metrical motion of the procession, and even of the monument given by the Muses. The corpse-pen memorializes itself.

This act of self-memorializing illustrates that the efficacy of writing in generating memory and fame lies not so much in literary composition, in meaning and style, as it does in the techniques of penmanship, printing and engraving themselves. In the words of an older contemporary of Cavendish, written letters are “so manie strong Holdes, Castles, and Yron coffers” for preserving and protecting things, and a “mortall fame” is “an unwritten fame.” In another copybook of the period, writing is designed “The handmaid to memory” and “The Register and Recorder of all Arts,” and the teaching of handwriting to women in particular is encouraged, because women “commonly hav[e] not the best memories (especially concerning matters of moment).”

In Cavendish, the association of writing techniques with memory appears in the emphasis on the act of inscription in allegorical descriptions of achieving fame. Thus, in a

329. Browne 2, 11. The reference to cotton may also be to the rag-content of paper.
330. Browne ¶¶5r. Browne distinguishes between the means by which writing and printing each engage with memory and unfolding time. Handwriting “serveth in doing, preserving, and multiplying of anie thing while it is in doing: and the other, but to preserue and multiplie extractes of a thing alreadie done”(¶¶3r).
331. Billingsley C3v, C3r.
mock sermon a “Preaching-Lady” exhorts her “beloved Brethren in Poetry” to worship and
propitiate the goddess, Fame:

[O]ffer up your several Conceptions upon her white Altars (I mean white Paper),
sprinkling Golden Letters thereon; and let the Sense be as sweet Incense to her
Deity, that the Perfumes of your Renown may be smelt in after-Ages, and your
Noble Actions recorded in her ancient Mansion. 332

The passage seems at first glance to suggest that the true sacrifice, the “Incense,” lies not in the
letters, but in the “Sense,” but it is the letters that are redolent of the perfume of renown, and
the perfume only encourages the goddess to allow the worshiper to achieve the state of being
“recorded in her ancient Mansion.” 333 The goal of writing, in relation to Fame, is quite simply
the production and preservation of more written letters. At the outset of the second part of the
play Nature’s Three Daughters, Beauty, Love, and Wit, the chaste and philosophically inclined
heroine, Grand Esprit, invokes the goddess, Fame:

Great Fame, my Prayers I direct to thee,
That thou wilt keep me in thy memory;
And place my Name in thy large brazen Tower,
That neither Spight, nor Time may it devour;
And write it plain, that every age may see,
My Names inscrib’d to live eternally. 334

The trope for preservation in the collective memory of society is inscription, either with letters
in gold ink, or, as in this invocation, with engravings in or on Fame’s tower. Fame’s tower is a
reversal of the Tower of Babel. If Babel was a locus of univocal progress that became a site of

332. Picture 1671, 279-80.
333. As the Preaching-Lady comments rather deflatingly a few paragraphs before, “Fame’s
Mansion is but an old Library, wherein lies ancient Records of Actions, Accidents,
Chronologies, Moulds, Medals, Coins, and the like” (Picture 1671, 278).
334. Playes 1662, 509.
dispersal and forgetting, Fame’s tower is a site of “uni-scripted” tradition that prompts social coherence and memory.335

The association of memory and writing not only appears in relation to fame, but also in Cavendish’s materialist psychology. In a passage that addresses both fame and psychology, Cavendish explains the actual motions of the rational matter in the brain in terms of this matter’s sympathy with, its appetite for, external objects. When the rational spirits “covet for Fame,” she writes, “they put themselves into such Figures, as Letters do, that expresse words, which words are such praises as they would have, or such Figures as they would have Statues cutt, or Pictures drawne.”336 The mind writes, sculpts or draws what it longs for in the world beyond its limits, and the processes of sympathy are such that these mental, but nonetheless concrete, works of art may hope to bear some organizing power over the objective world.

In the allegorical language of another of Cavendish’s philosophically-minded female protagonists, “[Y]oung brains are like plain paper books, where time as a hand, experience as a pen, and practice as Ink, writes therein; and these books conteins several, and divers Chapters.”337 Each chapter has its own distinct language and style of penmanship. Mental knowledge is inscribed in a legible and easily accessible script. Its use of a language pre-dating the fall of Babel and resembling Hebrew suggests that Cavendish embraces the Cartesian idea that true, universal knowledge exists, and that both its incarnation in the objects of the external world and its existence in mental form would be accessible to all if it were not for intervening

335. For additional passages in Cavendish’s works connecting fame to writing in gold or writing in Fame’s tower, see Picture 1671, 706, 714; Playes 1662, 376, 610; Poems 147.
336. Fancies 40.
337. Playes 1662, 146.
and confounding sign systems. Memory and understanding are written in a smaller and finer script, and with a language derived from the universal language that preceded Babel. These characteristics imply secondariness and derivativeness, but also specialization and individualization. Conception and imagination are inscribed with hieroglyphs and classical Greek, which hint at the naturalness and the freedom of these mental faculties whose content is native to the brain. Finally, remembrance (the faculty of recollecting, as opposed to “memory” which is the faculty of preserving the past) is written in hieroglyphs or “characters” and with Old English. In this context, hieroglyphs suggest antiquity, mysticism, and the heroism of ancient myth. The archaic language of Old English was believed to be compounded of many borrowings, and therefore suggests the act of collection that recollection involves.

Elsewhere, Cavendish contradicts her character’s notion that a child’s mind is a tabula rasa; she follows Henry More in rejecting the idea that “the Mind of Man can be compared to a Table-book, in which nothing is writ.” Instead, they both posit what More calls “an active sagacity of the Soul, or quick recollection.” Henry More dismisses two models for this innate

338. De Cordemoy, who claims to be writing in accordance with Cartesian principles, says, for example, “The pains also which every one finds in conversation, and on all occasions where men impart their thoughts by signes or speech, is not to comprehend what another thinketh, but to extricate his Thought from the signes or words, which often agree not with it” (90). John Wilkins argues in the introductory section of An Essay towards a Real Character: “That conceit which men have in their minds concerning a Horse or Tree, is the Notion or mental Image of that Beast, or natural thing, or such a nature, shape and use. The Names given to these in several Languages, are such arbitrary sounds or words, as Nations of men have agreed upon, either casually or designedly, to express their Mental notions of them. The Written word is the figure or picture of that Sound. “So that if men should generally consent upon the same way or manner of Expression, as they do agree in the same Notion, we should then be freed from that Curse in the Confusion of Tongues, with all the unhappy consequences of it” (20).

339. Playes 1662, 146-47.


341. More, Antidote 17.
knowledge out of hand: “I do not mean that there is a certain number of Ideas flaring and shining to the Animadversive Faculty, like so many Torches or Starres in the Firmament to our outward Sight, or that there are any Figures that take their distinct places, and are legibly writ there like the Red Letters or Astronomical Characters in an Almanack.”

Cavendish, in a work mostly written five years prior to its publication and therefore three years prior to the publication of the first edition of Henry More’s book, appears to pick up on both of these models. In the chapter, “Memory is Atoms in the Brain set on fire,” she begins by presenting the book analogy for memory:

Some say Memory is the folding of the Brain, like Leaves of a Book, or like Scales of Fishes, which by motion of Wind or Vapours are caused by outward Objects, which heave up their Folds, wherein the Letters or Print of such things as have been represented to it; and those things that have been lost in the Memory, is either by the reason those Folds have never been opened after they were printed, or that the Prints have been worn out, as not being engraven deep enough.

In this analogy, the brain responds tectonically to material substances entering it by means of perception at the same time as it records the impressions of these substances. It is shaped by external forces into a book fresh from the press. If the pages of the book have not been cut open, the impressions, the memories, are not readily accessible. Cavendish then proceeds not so much to reject this image of combined tectonic response and printing as to transfer the image into another realm of artistic representation. In place of the ideas like torches or stars that More rejects, she envisions flaming “atoms”. The flame increases with the motion of the

342. More, Antidote 17.
343. See her comment in Olio 1655, A3v.
particles of the brain. These particles “take Figures as they receive Objects;” they are not forced into a new construction, but they imitate what is presented to them. The flaming particles provide light that allows for the clarity of the figures, and heat that solidifies them as if they were pottery baked in a kiln. As long as the brain is mature and active, the particles flame, and the representations of external things become and continue to be solid, multi-dimensional and accessible memories.

2.4 Figure and Memory in Nature

In Cavendish’s thought, techniques of writing, of figuring, function as memorializing processes in both conscious behaviour and the behaviour of consciousness itself. Given her animist natural philosophy, it is unsurprising that the natural world as a whole functions in some ways as a continuum of her materialist psychology, and that processes of writing and of figuring connect to something resembling memory in this domain as well. In Cavendish’s natural world, writing and memory coincide in her important and, by modern standards, peculiar doctrine of the conservation of figure. This doctrine in turn provides Cavendish with a means of obliquely approaching the philosophical debate concerning criteria for the determination and continuity of the identity (in the sense of “sameness”) of things.

Thomas Hobbes neatly summarizes this debate in his *Elements of Philosophy*, where he

345. See *Olio* 1655 (139), where she writes, “Now those Prints or Forms are like Glasses, or several Forms of Pots of Earth; for though they are formed, and figured, yet they are not hardned or perfected until they have been in the Figure; so that the Form may be there, although not kindled: but when they are kindled, they are Thoughts, which are, Memory, Remembrance, Imagination, Conception, Fancy, and the like.”

346. I continue, unsuccessfully, to seek parallels to this doctrine in other early modern writers of natural philosophy.
also formulates his own contribution to the discussion. Given his consequent association not only with Cavendish’s doctrine of the preservation of figure, but also with her doctrines concerning motion and causation which will be discussed in the following chapter, a few words should be said about the relationship between the two philosophers. Upon Hobbes’s graduation from Cambridge, he became tutor to the William Cavendish who later became the second Earl of Devonshire. This William Cavendish was the grandson of Sir William Cavendish and Bess of Hardwick, and was a cousin to the William Cavendish who married Margaret. Hobbes served this family until his politically motivated departure for Paris in 1640. By the mid 1630s, Hobbes had developed a strong intellectually-based friendship and regular correspondence with William, Margaret’s future husband. Hobbes even made plans with William to settle in the latter’s household at Welbeck Estate in Nottinghamshire, although these plans never came to fruition.347 After William’s arrival in Paris in the mid 1640s, the friendship between the two men resumed, and, by Margaret’s own testimony, published in 1655, she has “had the like good fortune to see him [Hobbes] and that very often with my Lord at dinner.”348 Nonetheless, in an effort to assert the originality of her ideas, she claims at this stage, “I never heard Master Hobbes to my best remembrance treat, or discourse of Philosophy, nor I never spake to Master Hobbes twenty words in my life.” With regard to reading his philosophy, she says that she has only encountered “a little book called De Cive.”349

348. Opinions 1655, B3v.
349. Opinions 1655, B3v.
By the time of the *Philosophical Letters*, however, she has read the first part of the *Leviathan* and portions of Hobbes’s *Elements of Philosophy*.\(^{350}\) In her biography of her husband, she is able to recount philosophical discussions between the two men.\(^{351}\) She also shows, as Karen Detlefsen has noted, a knowledge of the “general positions” of the Hobbes-Bramhall debate on free will that took place in her husband’s presence.\(^{352}\) Even if Cavendish’s acquaintance with Hobbes’s philosophy was through his writings and through discussions with her husband and brother-in-law rather than directly from Hobbes himself, Hobbes was a powerful intellectual presence in her life.\(^{353}\)

According to Hobbes’s discussion in the *Elements of Philosophy* of the criteria which establish identity, two bodies differ if they occupy different spaces at the same time.\(^{354}\) The question of identity across time is, however, much more complex. Hobbes mentions three factors that philosophers argue may determine this identity: “Unity of *Matter,*” “Unity of *Form,*” and “Unity of the *Aggregate of all the Accidents together.*”\(^{355}\) Hobbes rejects the first on the grounds that human bodies undergo material changes through time that would disrupt identity. He rejects the second on account of the “Ship of *Theseus*” argument, according to

\(^{350}\) *Philosophical Letters* 18-97.

\(^{351}\) *Life of William* 1667, 143-45.


\(^{355}\) Hobbes, *Elements of Philosophy* 99. “Form” in this case means something like “essence”; it means that aspect of a man that remains the same from infancy to old age (ibid. 99).
which gradually replacing the parts of a ship and using the original parts to rebuild the ship at
another location produces a unity of form between two numerically and spatially distinct
bodies. If unity of form alone constituted identity, numerically and spatially distinct entities
could paradoxically be one and the same. Hobbes dismisses the third possible factor, because it
would mean that identity ceases as frequently as the characteristics of the things in question
change. Hobbes’s own contribution to the debate is that identity is a feature of things about
which people can speak and reason, and that identity is therefore determined only in relation to
the semantic content of words. If a person uses words that denote matter or accidents (which
are logically inherent in matter, for Hobbes), then unity of matter determines identity. If a
person uses a word naming a “form” in the particular Hobbesian sense of an essence that “is
the beginning of Motion”, then unity of form determines identity provided that the motion
continues.

Like Hobbes, Cavendish shifts the meaning of “form” in this debate. She dislocates the
term from its scholastic context, and replaces it with “figure.” She then wrestles with the
relationship of the unity of figure, and to a lesser degree, the unity of matter and motion, to
determining identity. Unlike Hobbes, she does not relegate the question of identity to the realm
of logic and semantics.

Figures, for Cavendish, are at once ephemeral and eternal. They emerge, vanish, and
sometimes repeat themselves or imitate one another across time, but even when they are
unapparent they possess as much being and identity as ever.356 Cavendish explains, “[T]he

356. Susan James discusses the conservation of figure in “The Philosophical Innovations of
Margaret Cavendish” (238).
former figures have as much a being as the present figures, by reason the matter that was the
cause of those figures hath an eternal being, and as long as the cause lasts, the effects cannot be
Annihilated.”357 This holds true not only for “former figures,” but for future figures as well. In a
poetic account of the creation of the world, the personified principles present from the
beginning, before Nature becomes manifest, paradoxically include Nature herself, and her
council of Motion, Figure, Matter, and Life;358 “Figure” preexists figures. This may initially
seem like an indication of a Platonic dichotomy between abstract or ideal Being and concrete
forms of Becoming.

The dualistic argument at first seems supported by a passage distinguishing between the
“interior” and “exterior” nature of entities with simple geometric figures. Cavendish claims that
material manifestations of such shapes may undergo structural changes in their outlines, “and
yet keep their own interiour nature intire, that is the nature proper to such a figure.”359 They
may change their figure and yet retain it. If a circle “is turned square, or triangular-wayes, or the
like,” it becomes “a circle squared, but not a circle broke, for as long as the circle is whole, the
interior nature is not dissolved, let the exterior figure be after what manner it will or can.”360

“Interior nature” seems like it could mean “essence,” “ideal nature,” even Platonic “form.”

There is another explanation, however. Cavendish makes remarks suggesting that if a
figure is broken rather than merely manipulated, it loses its identity or “interior nature.” Given
the two-dimensional frame of reference that Cavendish employs in this discussion, she seems  

357. *Opinions* 1655, 39.
to conceive of figures in terms of geometrical drawings, in terms of outlines and of place within outlines. “Exterior” figure or nature simply means “outline,” or, conceived in three dimensions, “superficies.” “Interior” figure or nature means “content” (place or substance) within the outline. It cannot mean “area” in the mathematical sense, since Cavendish knows that manipulating the outline in such a way as to contract a figure “flings out the compasse” (reduces the area) of the figure, but it can, in particular if the image is shifted from geometrical drawings to actual objects in the world, mean the identity of a thing within the superficies, identity dependent on unity of matter. It makes sense, for example, that a ball that is flattened on one side should have a slightly different “exterior nature,” but the same “interior nature.” This very concrete interpretation of Cavendish’s terminology explains why heterogeneous shape and matter can interrupt the conservation of a figure. If the alteration of outlines results in the mixing of components, unity of matter is disrupted, and the identity or “nature” of a thing is bound to quickly become unrecognizable.

This interpretation does not account for the passages in her works implying that after the dissolution or decomposition of a complex figure into its components, even widely dispersed matter preserves the memory of that figure within itself in such a way that the figure may be repeated or resurrected. Even an artificial figure, one produced through human manipulation of matter, in some sense endures in its material after the object is dismantled. Cavendish explains,

[S]ome will say, when a house: for example, is pull’d down, by taking asunder

361. *Opinions* 1655, 58.
the materials, that very figure of that house is annihilated; but my opinion is, that it is not, for that very figure of that house remains in those materials, and shall do eternally although those materials were dissolved into Atoms, and every Atome in a several place, part, or figure & though infinite figures should be made by those materials by several dissolutions and Creations, yet those infinites would remain in those particular materials eternally, and was there from all eternity; And if any of those figures be rebuilt, or Created again, it is the same figure it was.363

The same principle holds even for the figure, the nature, the identity of the human being:

[A] man, when his figure is dissolved, his parts dispersed, and joyned with others, we may say his former form or figure of being such a particular man is buried in its dissolution, and yet liveth in the composition of other parts . . . [N]ay, although every particle of his former figure were joyned with several other parts and particles of Nature, and every particle of the dissolved figure were altered from its former figure into several other figures, nevertheless each of these Particles would not onely have life, by reason it has motion, but also the former figure would still remain in all those Particles, though dispersed, and living several sorts of lives, there being nothing in Nature that can be lost or annihilated.364

The dispersed matter that can still be identified with the matter of a particular human body (or of any other figure) contains even within its most minute particles information encoding that figure. It is as if Cavendish theorizes that the matter of all structures, whether those structures existed in the past, exist in the present or will exist in the future, contains something rather like DNA.

This conservation of figure becomes a natural philosophical cause of the resurrection of the dead prophesied in Christianity. When Cavendish focuses on the repetition of complex figure in the context of resurrection she voices an awareness of the problems that arise. In the appendix to the *Grounds of Natural Philosophy*, Cavendish addresses matters of religious

364. *Observations* 1.41. There is a very similar passage in *Opinions* 1655, 37.
concern from a rationalistic perspective so speculative that it becomes almost science fiction. She dramatizes a discussion of the parts of her mind over whether the resurrection of a figure whose parts have been dispersed across different worlds is possible, whether a reassembled figure would have the same identity as its predecessor, and whether all of the parts of a figure from all of its stages of development would join this resurrected figure. Cavendish assents to these ideas, but only with the “Major” part of her mind. “All the Parts” of her mind agree that at the general resurrection, “when all those numerous dissolved and dispersed Parts, did meet and joyn, the World wanting those Parts, could not subsist: for, the Frame, Form, and Uniformity of the World, consisted in Parts.” Nature recycles complex figures to such a degree that a general resurrection would mean the dissolution of Nature itself. Positing unity of matter as a source for identity poses problems.

Arguably, Cavendish presents ideas that attempt to overcome these difficulties. For example, some passages do suggest that the conservation of figure in matter is a much more abstract phenomenon. She writes,

> [A]ll particular figures although dissolvable, yet is inherent in the matter, and motion, as for example, if a man can draw the picture of a man, or any thing else, although he never draws it, yet the Art is inherent in the man, and the picture in the Art as long as the man lives, so as long as there is matter, and motion, which was from all Eternity, and shall be eternally; the effect will be so.

Here particular figures preexist, and even exist independently of, their actual manifestation, but

365. *Grounds* 256-60.
366. *Grounds* 256-60.
368. *Opinions* 1655, 30.
surely the “Art . . . inherent in the man” does not include an encoding of everything that he
could possibly draw. Or does it? A further explanation of potential figure may lie in the context
of the long passage quoted on page 112. The passage occurs as an illustration of a statement
about seeds. It is not, Cavendish claims, “a Paradox to say seeds are buried in life, and yet do
drive; for what is not in present act, we may call buried, intombed or inurned in the power of
life.” The seed, or the matter of a dissolved, but not lost, figure of a dead person, contains
within itself and is informed of its own formal and efficient and, to some degree, material
causes, but its occasional causes and residual material causes remain primarily beyond its
limits. The boundaries of identity may be unstable. Matter resembles extended brain
consisting of clusters of memory that have always been in-formed of and by past, future and
possible figures. Pieces of matter are inscribed with figures or information about figures that
surrounding causes explicate. This inscription, which is one of the manifestations of “Arts
several Languages” in Nature, is “the power of life.”

369. Observations 1.41.

370. The speculative account of “Restoring-Beds, or Wombs” in the appendix to Grounds of Natural
Philosophy (291) shows a similar pattern. There, “the Animal Roots or Seeds” (297), the bones of
the dead creature, even if they are scattered, encode within themselves the figure as a whole, and if
these are placed in the restoring-beds, the beds will occasion the re-formation of the figure. I turn to
the account of the restoring beds in connection with natural production on page 317.

371. The phrase, “the power of life,” sounds like a variation of the Aristotelian and Scholastic
concept of potentia materiae (power of matter). William B. Hunter has summarized the concept in
relation to Milton’s thought. Hunter stresses that the power of matter is the passive capacity of matter
to take on form. This is where Cavendish’s thought differs from the traditional concept. For
Cavendish, “the power of life” is an active characteristic of matter even though it requires
Recall the association of writing, figure and picture described near the outset of this chapter. I observed that Cavendish’s Scottish contemporary David Browne defines the Greek καλλιγράφος (calligraphos) as “qui eleganter scribit aut pingit.” There I translated the Latin phrase as, “one who writes or paints (or draws) elegantly.” Pingit, however, refers not only to painting and drawing, but to embroidery and other forms of “pictorial representation” as well. Cavendish and her contemporaries associated embroidery and tapestry weaving with pictorial representation, narrative and linguistic representation. Embroidery and tapestry weaving are among “Arts several Languages” and language’s several arts.

The author of a book of needlework patterns popular in the early and mid seventeenth century prefaced his book with a poem titled “The Prayse of the Needle,” in which he describes the needle’s capacity to imitate nature:

For it doth ART, so like to NATVRE frame,
As if IT were HER Sister, or the SAME.
Flowers, Plants, and Fishes, Beasts, Birds, Flyes, and Bees,
Hils, Dales, Plaines, Pastures, Skies, Seas, Rivers, Trees;
There’s nothing neare at hand, or farthest sought,
But with the Needle may be shap’d and wrought,
In clothes of Arras I have often seene
Mens figur’d counterfeits so like have beeene,
That if the parties selfe had beeene in place,
Yet ART would vye with NATVRE for the grace.373

Although even the most naturalistic designs for insects and flowers in this pattern book are very stylized, other quite realistic images of flowers, fish and especially of birds appear


elsewhere in the pattern books and miscellanies used as pattern books in the period. Scholars have also found that herbals and illustrated natural histories of animals and insects were used as pattern sources. The process of transferring pictures from paper to cloth involved pricking the outlines of the paper image with a needle, placing the image on the cloth, rubbing charcoal or a similar substance over the image, and then tracing the marks transferred to the cloth in ink or paint. The anonymous 1632 pattern book, *A Schole-House for the Needle*, has as its final page a grid in two different sizes with directions on how to use such a grid to redraw the patterns in a different size. Careful reproductions were made of images of natural things, images that were often the most realistic ones available in the time period. All of this evidence suggests a connection between needlework and the real representation of natural things.

One of Cavendish’s poems concerning “a wrought Carpet, presented to the view of working Ladies” portrays the naturalistic vividness sought in needlework:

The Spring doth spin fine grasse-green silk, of which
To weave a Carpet (like the Persian rich)
And all about the borders there are spread
Clusters of Grapes mix’d green, blew, white, and red;
And in the mids’t the Gods in sundry shapes,
Are curious wrought, divulging all their Rapes,


375. Arthur 55-56.
And all the ground with Flowers there are strow’d,
As if by Nature they were set, so grow’d.
Those Figures all like Sculpture doe beare out,
To lye on Flats many will make a doubt.
The Dark and Light so intermix’d are laid,
For shady Groves that Priest devoutly pray’d.
The fruits so hung, as did invite the taste,
And small Birds picking seen to make a waste.
The ground was wrought like threads drawne from the Sun,
Which shin’d so blasing like to a fir’d Gun.
And this peice the patterne is of Artfull skil,
Art, Imitator is of Nature still.376

This “wrought Carpet” is likely a tapestry for use either as a table carpet (a heavy table
covering) or a hanging. It is either embellished with embroidery, or simply interpreted by the
embroidery analogies readily coming to the minds of the ladies observing it who, as the poem’s
title indicates, are themselves presently engaged in their needlework.377

The embroidering ladies are shown a tapestry with a substantial area woven with a weft
of “grass-green silk” reminiscent of springtime.378 This greenery transposes the natural world
into the “shady Groves” of exquisitely tempting fruit, flitting birds and abundant flowers that
provide a background or internal frame to the central image of the tapestry. The external frame

376. Poems 161.
377. This “wrought Carpet” may be one of two possible kinds of artefacts. It may be one of the rare
silk pile floor carpets made in the middle of the century. Edith Standen and Jennifer Wearden
suggest the existence of these carpets in “Early Modern Tapestries and Carpets, c. 1500-1800,” The
619. This suggestion is problematic because I can locate no accounts of examples of seventeenth-
century floor carpets with pictorial images similar to that which is described here. The second and
more likely alternative is that the “wrought Carpet” may be an embroidered table carpet, hanging or
decorative rug made in imitation of Persian carpets. For the existence of these, see Lanto Synge, Art
of Embroidery: History of Style and Technique, Royal School of Needlework (Woodbridge, Eng.:
Antique Collectors’ Club, 2001) 87-89. See Standen and Wearden (618) for the use of the term
“carpet” at this time period.
378. For the use of silk in tapestries as well as of silver and gold, see, for example, Guy Delmarcel’s
is a border of richly coloured clusters of grapes. Elaborate borders of flowers and fruit appear to have been common on tapestries into the mid century. Mythological characters and events were popular subjects of early modern tapestries, and this one perhaps shows the rape of Europa, or Leda, or a similar event. The realism of the spectacle is heightened by the gold or silver thread woven into the ground which is “wrought like threads drawn from the Sun, / Which shin’d so blasing like to a fir’d Gun.” This thread generates a light, albeit only a reflected one, within the tapestry itself. The effect is so realistic that to the women the figures of the gods, and also perhaps of some of the natural things in the image, appear to be three-dimensional. The reference to “Figures” that “beare out” like “Sculpture” and hesitate to “lye on Flats” alludes to the popular “raised work” embroidery in which designs were stitched onto pieces of canvas, cut out, padded and then stitched onto a white satin background. Carved faces and hands were often attached to increase the effect. From the realism of the tapestry, the poet concludes that the tapestry is the “patterne,” the “example or model to be imitated” for needlework. Art, however, ought to imitate Nature. For the embroidering women observing the tapestry of this poem, the art of the tapestry is so natural, representational and vivid, that it manifests itself as if it were Nature. Naturalism in needlework contributes to the diminishment of the distance between Nature and the techniques of art.

Cavendish and her contemporaries associate needlework not only with Nature, but also

380. There are numerous other ways in which sculptural effects were achieved in this form of needlework, including the use of wire frameworks, the attachment of objects such as shells and beads, and the partial joining of separately worked figures to the background in order to produce three dimensional canopies, leaves or clothing. See Synge 136-37; Arthur 65-67.
with narrative and with linguistic representation. Embroideries and tapestries of the period often depict biblical or mythological stories. Tapestries, in particular, were designed in sets, “chambers,” depicting sequences of events in narratives.\(^{382}\) In one of Cavendish’s plays, a steward directs the servants to “hang up the new suit of Hangings, wherein is the story of Abraham and Sarah, and Hagar her Maid.”\(^{383}\) Some of the Abraham Van Diepenbeeck engravings for William Cavendish’s book on horsemanship were also transformed into a series of tapestries.\(^{384}\) Other than proverbs or brief mottoes, few words appear actually written in either the tapestries or the embroideries of the era.\(^{385}\) Nevertheless, Ovid’s mythology popularized the tragic story of Philomela who, after her tongue has been cut out of her mouth, spreads “A woofe vpon a Thracian loome . . . / And inter-weaues the white with crimson threads; / That character her wrong,”\(^{386}\) and Cavendish and her contemporaries capitalize on this idea and persistently depict needlework and tapestry as written substitutes for verbal communication. In one of the poems commending specific women for their needlework that opens The Needles Excellency, the author writes of one embroiderer that her “Workes shewes her worth, though all the world were dumb.”\(^{387}\) The woman’s embroideries record her worth

\(^{382}\) Standen and Wearden 598.

\(^{383}\) Playes 1662, 348.


\(^{385}\) The inclusion of alphabets and numbers, and then of moralistic sayings or poems does not appear to be a feature even of sampler embroidery until very late in the seventeenth century and the beginning of the eighteenth. See Synge 127, Marcus B. Huish, Samplers and Tapestry Embroideries, 2nd ed. (London: Longmans, 1913) 22-24.

\(^{386}\) George Sandys, trans., Ovid's Metamorphosis Engished and Represented in Figures (Oxford, 1632) 213.

\(^{387}\) Taylor B2r.
and speak for other people who should speak about her.

In Cavendish, embroidery and tapestry-weaving appear frequently as metaphors for poetry, and poetry appears as a metaphor for embroidery and tapestry-weaving. A lover praising his beloved’s beauty, presumably as she sits working on her embroidery, exclaims,

Your Fingers are Minerva’s Loom, with which
Your Sense in Letters weave,
No knots or snarls you leave;
Work Fancy’s Thread in Golden Numbers rich.\textsuperscript{388}

The sense-bearing “Letters” here are embroidered and probably pictorial figures. The “Golden Numbers” are precise, discrete stitches made with gold thread. The beloved’s beautiful needlework is her poetry. When vehicle and tenor are reversed, needlework and tapestry-weaving become metaphors for literary production. Mademoiselle Solid, a character who believes that people may achieve fame by literary means in spite of the vicissitudes of Fortune, explains,

[Po]or poverty and birth, can be no hindrance to natural wit, for natural wit, in a poor Cottage, may spin an afterlife, enter-weaving several colour’d fancies, and threads of opinions, making fine and curious Tapestries to hang in the Chambers of fame.\textsuperscript{389}

Wit is the fibre, and fancies and opinions—words associated with several of Cavendish’s own books including the \textit{Philosophicall Fancies, Poems, and Fancies}, and \textit{Philosophical and Physical Opinions}—are the threads of texts.\textsuperscript{390} Decorating a room with a set of hangings illustrating the salient events in a heroic figure’s life parallels literary publication and

\textsuperscript{388.} \textit{Picture} 1671, 106.
\textsuperscript{389.} \textit{Playes} 1662, 111.
\textsuperscript{390.} I am mindful of that word’s etymological derivation from the Latin \textit{texere}, “to weave” (“Text, \textit{n.1},” \textit{OED Online}, 29 Feb. 2008).
subsequent fame. The wovenness of literary texts is so present in Cavendish’s thought that when she imagines a banquet of poets hosted by the Muses, not only does she enter “a Large Room of Imagination, Hung with Imaginary Hangings of Conception,” but she observes that the table-cloth is made of old poets’ brains “Spun by the Muses . . . and then Woven into a Piece, or Web . . . like Damask or Diaper, in Works and Figures of Golden Numbers.”

As the quotations in the previous paragraph might suggest, spinning is another important aspect of textiles that connects to textuality in Cavendish. According to an anecdote she relates in the *CCXI Sociable Letters*, Cavendish appears to have been unable to use a spinning wheel. She describes deciding to occupy herself and her waiting-maids, and deciding to find an excuse to socialize with them, by spinning flax:

I sent for the Governess of my House, and bid her give order to have Flax and Wheels Bought, for I, with my Maids, would sit and Spin. The governess hearing me say so, Smiled, I ask’d her the Reason, she said, she Smil’d to think what Uneven Threads I would Spin, for, said she, though Nature hath made you a Spinster in Poetry, yet Education hath not made you a Spinster in Huswifry. . . . I was very much Troubled to hear what she said, for I thought Spinning had been Easie, as not requiring much Skill to Draw, and Twist a Thread, nay, so Easie I thought it was, as I did imagine I should have Spun so Small, and Even a Thread, as to make Pure Fine Linnen Cloth.

Cavendish and her maids, had they proceeded with their plan, would have been working on hand-turned spinning wheels. With this type of wheel, since one hand is occupied with turning the wheel, the other hand holds the fibre. This hand is “drawn” backwards from the spindle, waits for the fibre to acquire sufficient “twist,” and then allows it to wind onto the spindle. The twist of the fibre determines its strength. Yarn intended for the warp of woven cloth “is spunne

close, round and hard twisted, being strong and well smoothed,” while yarn intended for the
weft “is spunne open, loose, hollow, and but halfe twisted; neither smoothed with the hand, nor
made of any great strength.” Sometime two or more threads will then be “twined” to
produce yarn of the appropriate thickness. At the end of the process, the thread or yarn from
the spindle will be wound into a “clew,” either with or without a “bottom” (a spool or similar
“nucleus”) at its core. The weave of completed fabric is referred to as the “web.” This
terminology is important to Cavendish’s philosophy.

Cavendish may have been discouraged from spinning with her maids, but she embraces
the image of spinning poetry. In her writing, spinning is a common metaphor first for the
inventive aspects of poetry, and second, for the mechanical process of articulating language.
“[V]erses,” Cavendish writes, “are fine fancies, which are spun in the imagination to a small
and even thread.” Poetry is like “fair Holland cloth of great price,” the most delicate, fine,
and difficultly produced quality of linen. In Cavendish, the human capacity for poetic
imagination actually subsumes the mythological spinning of life by the Fates:

Yet what a stir doe the Poets make, when they
By their wit Mercury those soules convey.
But what, cannot the God-head Wit create,

396. The information in this paragraph is found in Markham 154-73.
397. Olio 1655, 10.
398. Markham 171.
399. In the context, the poets convey souls to a metaphorical Elysium, that is, the brain, by means of
the “Boat Imagination” (Poems 141).
Whose Fancies are both Destiny, and Fate,
And Fame the thread which long and short they spin,
The World as Flax unto their Distaffe bring[?]
This Distaffe spins fine canvas of conceit,
Wherein the Sense is woven even, and strait.\footnote{400}

She equates the god who traditionally conveys souls to the underworld, the messenger god and
god of oratory and literature, with the wit of poets. This wit is one and the same with the self-
determining and productive brain, which now invents its own thread of fate or destiny, a thread
which, in the form of imagination and poetry, is a thread of fame. Intriguingly, although the
brain is self-determining (it is its own Lachesis (who apportions the thread of destiny) and
Clotho (who spins the thread)) it is not creative in an absolute sense. The objective world is the
fibre that is brought to the distaff and then spun. It is through an act of textual synthesis, of
weaving the weft “even, and straight,” that the fibre is once again prepared for objectification
as meaning, or “Sense.” The association of spinning with poetic composition intersects with
natural imagery of silkworms and spiders, since “Thoughts,” as Cavendish writes, may be “like
Spiders, or Silkworms, that can spin out of their own Bowels, which is the Mind.”\footnote{401}

Cavendish’s works also associate the mechanical aspects of spinning with the
mechanical process of articulating language. The usage of the spinning image for inventiveness
connects with William Cavendish’s use of similar imagery in a poem complimenting his wife’s
rhetorical ability:

\begin{quote}
Were all the Græcian Orators alive,  
And swarms of Latines, that did daily strive  
With their perfum’d and oily tongues to draw
\end{quote}

\footnotesize
\begin{itemize}
\item \footnote{400. Poems 142.}
\item \footnote{401. Picture 1671, 696.}
\end{itemize}
The deceiv’d people to their Will and Law,
Each word so soft and gentle, every peece
As it were spun still from the Golden fleece,
How short would all this be, did you but look
On this admired Ladies witty Book!\textsuperscript{402}

Traditionally, one of the last steps prior to the final carding and spinning of wool is oiling it so that “it draw[s] well.”\textsuperscript{403} The ancient orators have precisely oiled tongues so that they can draw both the people and their language with the greatest subtlety and to the greatest length possible. Their language is of the highest quality, and it is “soft and gentle” like a weft thread, the thread intended for the visible and decorative aspects of woven cloth. The rhetorical spinning of these ancient orators, however, is “short” compared to Cavendish’s. In other words, she spins an even finer thread, and therefore draws or persuades people to an even greater extent than they do.

In a series of poems comparing different aspects of Nature to human arts, Cavendish identifies the human tongue as “\textit{Natures} [spinning] wheele”:

\begin{quote}
The \textit{Tongue’s a Wheele}, to spin \textit{words} from the \textit{Mind},
\textit{A Thread of Sense}, doth \textit{Understanding} twine.
The \textit{Lips a Loom}, to weave those \textit{words} of \textit{Sense},
Into a fine \textit{Discourse} each \textit{Eare} presents.
This \textit{Cloath i’th Chest of Memory’s} laid up,
Untill for \textit{Judgments shirts} it out be cut.\textsuperscript{404}
\end{quote}

\textsuperscript{402}. \textit{Orations} A2r.
\textsuperscript{403}. Markham 159.
\textsuperscript{404}. \textit{Poems} 136. Cf. \textit{Olio} 1655, 59: “[U]pon every subject that the Thoughts work upon, the Tongue draws forth, or spins forth thrids of discourse.” Another related passage occurs in \textit{Playes} 1662, 666: “Speech is a number of words, which words are made and joyned together by the Breath, Tongue, Teeth, and Lips, and the contirvance [sic.] make a discourse; for a discourse is like a line or thread, whereon are a number of words strung, like as a Chain of Beads, if the words be well sorted, and fitly and properly matched, as also evenly strung, the discourse is pleasant and delightfull; this Chain of discourse is longer or shorter, according as the Speaker pleases.” This passage contains not only the thread analogy, but also an analogy from the beadwork popular to the mid-century. Beads were
When they are still in the mind, words are like an ill defined, fluffy rolag\textsuperscript{405} of carded wool that awaits spinning. The tongue, like a spinning wheel, in a very mechanical way gives shape to this fibre as it draws it out into sequential discourse. Unlike in the actual art, in linguistic spinning, twining and weaving processes occur simultaneously. At the same time as articulation spins a thread of words, the understanding performs the synthetic act of twining two or more such threads into meaning. Also at the same time, the lips weave the twined thread into a cloth, a text, a rhetorical display. The spinning wheel parallels articulation, the twining of thread on the wheel parallels semantic processes, and the loom of the lips parallels rhetorical ones. The combination of these three dimensions of language production yields an objective creation, one that can be laid up in memory for future purposes.\textsuperscript{406}

The final set of textile-related metaphors contributing to the connection between systems of representation and language, and textiles and figure in Cavendish’s natural philosophy are metaphors associating language and clothing. “Dressing,” Cavendish writes, “is the Poetry of Women, in shewing the Fancyes.”\textsuperscript{407} In a letter to the reader that prefaces the first edition of the \textit{Philosophical and Physical Opinions}, Cavendish rationalizes her ignorance of much of the published natural philosophy of the period by explaining that she has lacked the knowledge of foreign languages and the time that she would have needed to access these

\textsuperscript{405} A “rolag” is a roll of straightened wool fibre prepared for spinning. Markham calls carding “tumming,” and the rolls of prepared fibre “tummings” (Markham 159).

\textsuperscript{406} For further reflections on the mechanics of speech production in Cavendish, see Chapter 4, pages 211-16.

\textsuperscript{407} \textit{Olio} 1655, 87.
writings. Then she puts forward a third rationalization:

> Besides, our sex takes so much delight in dressing and adorning themselves, as we for the most part make our gowns our books, our laces our lines, our imbroderies our letters, and our dressings are the time of our studie; and instead of turning over solid leaves, we turn our hair into curles, and our sex is as ambitious to shew themselves to the eyes of the world, when finely drest, as Scholers do to expresse their learning to the ears of the world, when fully fraught with Authors.  

The paragraph must be calculated to establish a sense of community between the author and female readers, but given Cavendish’s repeated assertions that her engagement with textiles is primarily a metaphorical one, the effect of the paragraph is in part to contextualize and emphasize the persistent occurrence in her works of metaphors where clothing is vehicle and writing is tenor. The verses in *Poems, and Fancies*, for example, “are like Chast Penelope’s Work,” because Cavendish wrote them during her return to England to attempt to compound for her husband’s sequestered estates, and the web has produced garments which “are plaine, and unusuall, *yet they are* cleane, *and* decent.” These garments are the style and the prosodic structure of the poems.

Clothing as a metaphor for language, like figure in Cavendish’s natural philosophy, has to do with superficies. There are many passages in Cavendish’s oeuvre that address this, but two of the best occur in discussions amongst groups of characters in the comedy, *The First* 

408. *Opinions* 1655, B2r.
410. *Poems* B3r.
411. *Poems* 121.
412. For passages on the subject that are not addressed explicitly in this paragraph see *Blazing World* 87; *Philosophical Letters* 507; *Picture* 1671, c1r, 687; *Olio* 1655, 4, 12, 94, 120; *Poems* 149, 124-25, 212.
Part of the Play called Wits Cabal. The Mademoiselles Bon Esprit, Portrait, Faction and Ambition are conversing amongst themselves:

Portrait. Some say Poems are not good, unlesse they be gloriously Attired.

Faction. What do they mean by glorious Attire?

Ambition. Rhetorick.

Bon’Esprit. Why gay words are not Wit, no more than a fair Face is a good Soul; and it is Wit which makes Poems good, not words.

Ambition. Indeed, Rhetorick is no part of the Body of Wit, nor more than of the Soul, only it is the outward garment, which is Taylors work.

Bon’Esprit. Then it seems, as if the Grammarians, Logicians, and Rhetoricians, are the Taylors for Oratory, who cut shapes, fit places, seam and sew words together to make several Eloquent Garments, or Garments of Eloquence, as Orations, Declamations, Expressions, and the like worditive work, as they please, or at least according to the fashion.413

In poetry, not only rhetoric, but even logic and grammar are superficial. This “worditive work” is the province of the artisan, and not of the noble poet. Monsieur Sensuality walks in on the ladies’ discussion, and in response to Mademoiselle Portrait’s conclusion that “Poems need not the garments of Rhetorick,” Monsieur Sensuality flirtatiously replies, “No more than a Fair Lady: And as for my part, I like Poems as I like a Woman, best uncloathed.”414 Mademoiselle Portrait and Monsieur Sensuality have at this juncture achieved an aesthetic entente, and they go on to marry at the end of the second part of the play.

A second conversation between a larger number of characters later in the same play presents a more complex view of literary and poetic language and structure. Mademoiselle Superbe agrees with Monsieur Vain-Glorious that “Rhime is a Veil to cover the face of

413. Playes 1662, 266-67.
414. Playes 1662, 267.
Nonsense" (incidentally, these two characters likewise marry at the end of the play), but Mademoiselle Ambition fears that poems turned into prose “will lose the Elegance of the Style, and the Eloquence of the Language.” It is Mademoiselle Pleasure who shows the most astute literary judgement. In her opinion, “Verse is to be accounted of for the sake of Numbers, which is harmonious; yet neither Harmonious Numbers, nor Chyming Rhymes, nor Gay Rhetorick, is Reason, Wit, nor Fancy, which is the Ground, Body, or Soul of a good Poem.” The musical aspects of prosody are to be valued, but even so, they remain superficial. The aesthetic conclusion drawn here is one that I have already shown pervades much of Cavendish’s natural philosophy. Just as prosodic features of poetry which are superficial and contrived nonetheless structure and animate a poem, so superficies and figures in the cosmos are associated with artifice, but are nonetheless essential in Nature’s self-performance.

2.6 Textiles and Needlework in Nature

The first level at which figure intersects with textile metaphors in Cavendish’s natural philosophy appears in her very understanding of figure and interdependence in the universe at large. In a preface to her first mature work of natural philosophy, Cavendish sets out to explain her use of the term “infinite”:

I answer, that Infinite is neither to be Number’d nor Measur’d, neither to be Added nor Diminished, so that no perfect Division can be made in Infinite matter, as to Divide one part from the rest, for though Parts may be made as Folds, or into Figures, and these to Remove from place to place, and Parts to or from Parts, yet they cannot be Divided from the Whole, as to become each a Single part of it Self, but they remain still Parts, pertaining to the Only matter, for though there may be Infinite parts of Infinite matter, yet not Infinite Single

415. *Playes* 1662, 285. The other quotations in the paragraph are likewise from this page.
Parts, but Infinite Inherent parts; neither can any Part be Measured as a Single part, but as a Part of the Infinite matter, so that not any Part can be absolute or freely Bounded or Limited, but it must have some Reference to Infinite matter.\textsuperscript{416}

Parts or figures are made “as Folds.” Cavendish imagines Nature as an endless piece of cloth.\textsuperscript{417} The Lucretian notion of figure as “a Term, or Bound,”\textsuperscript{418} despite its heuristic usefulness in Cavendish’s interpretation of Nature, is a notion that, as the philosopher moves more deeply into her understanding of the cosmos, must be partially set aside. The apparent boundaries of any being, of any part of any being, are real, but they are underpinned and enabled by a greater continuity. As Cavendish explains, “[A]lthough there are perfect and whole figures in Nature, yet are they nothing else but parts of Nature, which consist of a composition of other parts, and their figures make them discernable from other parts or figures of Nature.”\textsuperscript{419} Figure is about difference, but difference is recognized only against a background of continuity and homogeneity. Even a bodily organ such as the eye is a clearly defined folding of the matter of the head, just as the head is a folding of the matter of the body, and the body is

\textsuperscript{416} Opinions 1663, d3r.

\textsuperscript{417} There is an intriguing passage shortly before this one in which Cavendish writes, “It is not probable that the Substance of Infinite matter is only Infinite, Small, Senseless Fibres, Moving and Composing all Creatures by Chance” (Opinions 1663, c2r). The point of the passage appears to be a denial of the Lucretian notion of inanimate particles governed strictly by chance— not of the notion of particles that are “Fibres.” It is therefore tempting to deploy the passage as another example of understanding the world in terms of textiles. Robert Hooke, after all, uses the word in the context of textiles when he describes “each little filament, fiber, or clew of the silk-worm” (Micrographia: Or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses with Observations and Inquiries Thereupon (London, 1667) 6). Surprisingly, the OED suggests that in spite of the possible etymological connection of the word to the Latin for “thread,” use of the word specifically in relation to textiles rather than organic structures does not occur until the nineteenth century (“Fibre, n.” OED Online, 14 Feb. 2008).

\textsuperscript{418} See p. 88, above.

\textsuperscript{419} Observations 1.136-37.
a folding of the matter of the earth and other elements. Living beings are folds in infinitely extended matter. They may be made, unmade, and then made again at any point in the spatial and temporal extent of the world. The capacity to produce any particular figure remains perpetually within the matter. At the same time, figures are produced at the expense of one another, and a general simultaneous manifestation of all potential figures would be, as I have already discussed, impossible.

Because Cavendish understands figures as folds in extended matter, she describes many physical processes, including changes of physical state, chemical nature and temperature, as the manipulation of textiles and thread, and therefore as one of “Arts several Languages.” According to Cavendish, there are six fundamental motions, falling into three categories, from which all physical processes derive: attraction, contraction and retention; dilation and expulsion; and digestion, which “is a mixt motion taking part of all.” She concentrates a great deal on one motion of each of the two major groups: contraction and dilation (or rarefaction). Contraction involves “surfling, pleating, folding, binding, knitting, twisting, griping, pressing, tying, and many the like,” while dilating motions involve “melting,

420. See Cavendish’s use of these examples in Observations 1.137.
421. Opinions 1655, 33. Stephen Clucas points out that digestion “is less a motion than an ordering principle which oversees the functioning of the other motions” (“The Atomism of the Cavendish Circle” 265).
422. Given the OED’s definition of the noun “surfl” as “An embroidered border or hem; also, one of the pleats made in hemming,” I would like to suggest that Cavendish may be using the term to indicate “to pleat” in this specific sense, rather than “to embroider” as the OED’s definition of the verb suggests. See “surfl, n.” “surfl, v.” OED Online, 14 Feb. 2008.
423. “To gripe” is “To make a grasp or clutch, to seek to get a hold (lit. and fig.).” “Gripe, v.,” Def. 1.a., OED Online, 14 Feb. 2008.
flowing, streaming, spreading, smoothing, stretching, and millions the like.”  

On the level of microscopic and sub-microscopic particles, Cavendish turns to language reminiscent of embroidery techniques. “[S]now, hail, and frost, and ice,” she writes, are “made by a level contraction, as if a Circular line should be laid upon a flat ground, and be drawn [into] a particular work.”  

One image which may inform this description is that of “couching” in embroidery. Ornamental threads, in particular expensive metal ones, would be laid on the “ground,” the cloth to be embroidered, and tacked into whatever figures were desired by small stitches emerging from the back of the cloth. The circular lines of the water particles together with the couching imagery suggest that there may be an underlying reference to the wire embroidery thread known as “purl,” that came in tightly twisted loops. The thread analogy appears again in Cavendish’s next assertion: when the “Circular line” of a water particle “contracts into hail, the exterior figure contracts into a ball, or lump, as if one should wind up a double line, or thread into a bundle, or bottom.” Hail is like thread returned to a pre-embroidered, re-wound state of lesser organization and artifice. Snow and ice, by contrast, are states of greater organization:

Snow is made by contraction, as if one should draw a round line into a three square figure, as triangular way.

Ice, as if we should draw a round line into a four square figure, as after a cupe [sic.] way.

424.  *Opinions* 1655, 34. There is a passage concerning different kinds of heat in which very similar lists are included on page 76.

425.  The remaining quotations in this paragraph are from *Opinions* 1655, 59-60.

Cavendish’s persistent use of the verb “to draw” in the context of change of particulate figure together with the obvious whiteness of frozen forms of water suggest that she may be alluding to a form of embroidery called “white work” and “drawn work.” White work samplers were part of the needlework education of girls in the mid seventeenth century. Girls worked the samplers in bands across strips of white linen, stitching them in white thread. The embroidery thread was used to “draw” apart the threads of the cloth in order to create lace-like geometrical, and sometimes pictorial, patterns. “Drawn work” also refers to the removal of individual threads from the cloth in order to create larger open areas. This second sense of the term connects to “cut-work,” a form of embroidery in which portions of the cloth were cut out, the edges finished and threads added into the opening to form a new foundation for embroidery. Cut-work relates to Cavendish’s description of the formation of frost, where “Frost is made by such contracting motions, as if a round line should be drawn into a surfling, as a crackling figure.” As Lanto Synge observes, in The Needles Excellency, John Taylor refers to cut-work as “Frost-worke” and “rare Italian Cut-worke.” If we embrace the Oxford English Dictionary’s definition of a “surflle” as an embroidered hem or border, the image informing Cavendish’s vision of the particulate structure of frost is one of elaborate, lace-like cut-work around the edge of a garment.

The idea that matter is an immense piece of woven cloth appears in much of the more concrete and familiar imagery of Cavendish’s poetry and philosophy. The traditional comparison, for example, of bodies to garments occurs in relation to the radical dualism

428. Synge 126; Taylor A3r.
between the immortal soul which falls under the purview of religion and the material body
which falls under that of natural philosophy. The image is in part a strategy for depicting the
plausibility of a Christian resurrection:

Great Nature She doth cloath the Soule within,
A Fleshly Garment which the Fates do spin.
And when these Garments are growne old, and bare,
With Sickness torne, Death takes them off with care.
And folds them up in Peace, and quiet Rest,
So laies them safe within an Earthly Chest.
Then scoures them, and makes them sweet, and cleane,
Fit for the Soule to weare those Cloaths agen.429

The Fates are Nature’s factors. Rather than spinning an abstraction, the traditional thread that
symbolizes the length of a person’s life, the Fates are spinning concrete material bodies. The
same image appears in “Natures Grange”:

And Nature makes the Fates to sit and spin,
And Destiny laies out, and brings Flax in.
For Nature in this Housewifry doth take
Greate pleasure, the Cloath of Life to make
And every Garment she her selfe cuts out,
Disposition to her Creatures all about.430

Again, Destiny and the Fates are natural, not supernatural, factors. Destiny’s job of laying out
the flax probably refers to the stages of “ripening,” “watering” and drying. After flax plants
were harvested, they had to be “reared up, and dried and withered a week or more to ripen the
seed.”431 Then the seeds were removed and the plants laid out in shallow water for a period of
days in order to rot the hard stalks in preparation for their separation into useful and waste

431. Markham 166.
parts. After this, the plants had to be dried once again.\textsuperscript{432} In the poem, therefore, Destiny uses processes of destruction, of uprooting, rotting and drying, in order to prepare the matter for new bodies. Cavendish’s unconventional Fates do not spin the duration of a life. Rather, they spin the skin, fur, feathers or scales of real bodies. Nature herself chooses the figures these bodies take. The whole process of preparing flax, making cloth and cutting out garments parallels the natural cycle from figure, through dissolution, and back to figure again.

Relatively little of Cavendish’s work, however, dwells on the dualism of body and divine soul, and therefore a focus on the texture of material things displaces the body-as-garment imagery. Cavendish describes the behaviour of the “\textit{Sensitive Spirits},” the animate matter, in shaping figures:

\begin{quote}
. . . when they meet with \textit{Matter}, fine, and thin,
Then they do weave, as \textit{Spiders} when they spin:
All that is woven is soft, smooth, thin things,
As flowry \textit{Vegetables}, \& \textit{Animall Skins}.
Observe the \textit{Graine} of every thing, youle see,
Like inter-woven \textit{Threads} lye evenly.
And like to \textit{Diaper}, \& \textit{Damask} wrought,
In several workes, that for our Table’s bought.
Or like to Carpets which the \textit{Persian} made,
Or Sattin smooth, which is the \textit{Florence} trade.\textsuperscript{433}
\end{quote}

Everything has a grain.\textsuperscript{434} It may have a plain weave, or it may have simple or elaborate patterns woven into it that are highlighted by the material’s reflection of light. It may have a

\textsuperscript{432} Markham 165-66.
\textsuperscript{433} \textit{Fancies} 28.
\textsuperscript{434} The idea resonates with a comment made in the next decade by Robert Hooke: “the Natural Textures, \textit{which some call the Plastick faculty, may be made in Looms, which a greater perfection of Opticks may make discernable by these Glasses; so as now they [the Royal Society] are no more puzzled about them, then the vulgare are to conceive, how Tapestry or flowred Stuffes are woven}” (g1r). Hooke, too, associates natural textures with cloth.
dense pile like a Persian rug, or it may have the smooth sheen of fine Florentine silk satin.

Minute natural things possess a range of beauty that human artifice can only assemble through wide-reaching trade. Imaginative passages where Cavendish describes minute fairy beings are conducive to a microscopic view of the exquisite texture of natural things. In the description of “A Battle between King Oberon, and the Pygmees,” for example, grasshoppers are saddled with “velvet Peach-skin, / Their Bridles small strings, that Spiders do spin.”

Cavendish consistently describes even air and light, for her the most refined forms of matter, in terms of surfaces and lines, cloth and thread. Air, she writes, is made of long atoms, “For Atomes long, their Formes are like a Thread, / Which interweaves like to a Spider’s Web.” Air resembles a very fine, naturally produced textile. It is made by such kinde of motions, as makes cloth that is spun threads weaved, as with shuttles in a loom; . . . the grossest sort makes the thicker air, as great threads make coarse cloth, and the thinner matter makes the serenest air, as small threads make the finest cloth, where some is like cobweb-lawn, so sheer, or clear, as the smallest objects may be seen through, which is spread about the globe of the earth, as a thin vail over a face, or body.

One of Cavendish’s fictional characters looks up into the sky and sees “curling, folding, and rowling Waves of Air, every Wave as thin as the thinnest Cypress.” Woven air provides a


436. Cavendish’s interest in surfaces has been observed by Stephen Clucas who writes, “Her conception of the ‘parts’ of matter is unique, in that it seems to be largely a two-dimensional geometrical conception—instead of spheres, cubes or other solids, she sees matter as largely composed of ‘points and lines,’ which are continuously in motion” (“The Atomism of the Cavendish Circle” 262-63).

437. Poems 7.


439. Picture 1671, 264. “Cypress lawn” was “A light transparent material resembling cobweb lawn or crape” (“Cypress,” Def. 1.c., OED Online, 15 Feb. 2008). There are numerous other examples
ground for the interweaving or embroidering of light.

Cavendish’s description of air may derive from Walter Charleton’s description of light. For Charleton, light rays are very much corporeal. They are “most tenuious streams of Igneous Particles in a continued fluor, and with ineffable pernicity succeeding each other in direct lines.”440 In the discussion that follows this definition, Charleton emphasizes not the particulate quality of light, but its thread-like continuity. He calls light a “most tenuous contexture of innumerable rayes.” Like a spider web, light “appears to be one entire and united body, though it consist of distinct Filaments, variously intricate, and mutually decussating each other.” Rays of light are “like most slender Filaments with exquisite subtilty interwoven into a visible invisible Web.”441

Cavendish associates Charleton’s cobweb lawn imagery with air rather than light, but she also embraces his idea of concrete but delicate filaments of light, each of which makes its own progress through the cloth environing it.442 Light, according to Cavendish, “is made by

from Cavendish’s works where she treats air as cloth: Spring is dressed with a garment of fresh air (Picture 1671, 101); Nature’s bed has sheets of fresh air (Picture 1671, 273); air is made by spinning and weaving motions (Opinions 1655, 86); air forms a mantle interwoven with the sun’s beams (Playes 1662, 568); Apollo clothes an island with heat, light, air and clouds (Poems 117-18); and Nature’s dress is made “of pure Bright watchet Skie” (Poems 127).

440. Charleton 198.
441. Charleton 200-1.
442. Cavendish’s theoretical position on the nature of air and light shifts over the course of her career. In her earlier works, she sees light as “much Purer than the Substance of the purest air” (Opinions 1663, 183), but in her last work, she reverses her position (Grounds 212). When she suggests an alternate theory of light (that light may not have a proper corporeality of its own, but “that the parts of the Air may onely pattern out the figure of light” (Philosophical Letters 202)) she may be acknowledging the opinions of some of her important contemporaries who understood light in terms of impulse rather than substance. Hobbes, for example, sees light primarily as an “endeavour outwards” (Elements of Philosophy 333). Descartes defines light as “a certain movement or action, very rapid and very lively, which passes toward our eyes through the medium of the air and other transparent bodies, in the same manner that the movement or resistance of the bodies that this
such kinde of motions, as weir-drawing, or drawing a small thread from a spindle"⁴⁴³; it “is made by a spinning motion, equally drawing out long parallel lines, with an extraordinary swiftness, evenness, smallness, and straightness.”⁴⁴⁴ The spinning imagery is not merely a figure of speech; instead, it is Cavendish’s attempt to communicate a mechanism for the production of light. In an early poem, “What Atomes the Sun is made of,” Cavendish describes a heliocentric world where “The Fabric [of the sun] like a Wheele is just made round,” and as the planets move around it, “Their Motions make the loose Sharpe Atomes run.”⁴⁴⁵ The revolutions of the planets turn the spinning wheel of the sun, which is also a spindle bearing its own light-fibre, and centrifugal force sends this fibre shooting into the cosmos. All of the thread and spinning imagery for light in Cavendish’s works points back to this very Cartesian explanation of the propagation of light by a “striving” and spinning outwards.⁴⁴⁶

According to Cavendish, this light resembles the finest of precious metal threads destined for embroidery:

[From the sun rising, the motions that make light run in lines upon it [the air], and so [it] is like a garment laid all over with silver-twist, or rather like silver-weir, from the sun rising to high noon, it is as it were, setting, sewing, or embroidering on; this serene air at mid-day it is quite finished, and by sun set it

blind man encounters is transmitted to his hand through the medium of his stick” (Optics, Discourse on Method, Optics, Geometry, and Meteorology, rev. ed., trans. Paul J. Olscamp (Indianapolis: Hackett, 2001) 67.) Cavendish does not explicitly pursue this theory, but it seems inseparable from the doctrine of perception that she develops.

⁴⁴³. Opinions 1655, 86.
⁴⁴⁴. Opinions 1655, 77.
is quite reaped off again.

“Silver-twist” is embroidery thread formed by wrapping silver wire over a core made from a different kind of fibre, whereas “silver-weir” is, as it sounds, completely made of the metal and therefore that much more valuable. The embroidery technique used by the light is significant. The silver thread is again “laid” on the airs; it is couched so that, in actual embroidery, a different thread emerging from the back of the cloth at regular intervals fastens it down. The idea of light laid upon a surface of air rather than light mixed in a volume of air allows Cavendish to explain the speed and facility with which light may be obscured by clouds and then reappear.

The water cycle offers a paradigmatic instance of this light-embroidery in action. More specifically, it reflects the mid-seventeenth-century fashion for embroidering pictures, baskets and other items with beads. Light rays are like long slender threads, but they are made, ultimately, of fire particles, of “loose, sharp Atomes” resembling needles. As these sharp particles join and spin outward from the sun towards the earth, “They sticke their points in all that stop their wayes,” especially the round, porous, bead-like water particles which become “Like Beads that are upon a long thread strunge.” When the water beads obscure the points of the needles, the rays of light “backe do run,/ Drawing those Bodies with them to the Sun,” and the water evaporates. If the threads of light carry too many water particles, the water particles

447. Opinions 1655, 77.
448. Opinions 1655, 77.
449. See Arthur 71-74.
450. The quotations in this paragraph are from Poems 22-2[3]. Stephen Clucas observes that Cavendish’ conception of fire atoms is Platonic rather than Gassendist (Clucas, “The Atomism of the Cavendish Circle” 260).
spill back down as rain. From a mechanist perspective, evaporation is a kind of rebound, reflection or echo of light that occurs when light can no longer move forward. From an animist one, an agency inherent either in the rays of light or in the sun which resembles a hand stitching with needle and thread draws the water particles away from the earth. Cavendish uses the embroidery imagery ambivalently, at once to provide a mechanical explanation for natural processes and to capture the role of sentience in them. The water cycle, conceived of as a process of attraction by the sun, becomes an important pattern for Cavendish’s explications of other forms of sympathy.

While Cavendish’s opinions on light suggest influence from Charleton, her opinions on darkness differ from those of all her well-known philosophical contemporaries. For her, darkness is emphatically material; it is not the privation of light. This substantial darkness is “like a skein of silk, which is so installed, or broken, as not any can finde a leading thread, being full of knots and enter courses”; it is “like motions of silk embroidery, the work to be bossy, full of intermixing stitches, and crosse threds, knotted and purled after this manner.” Unlike the substance of light, that of darkness is soft like silk, three-dimensional like sculptural raised-work embroidery, and textured like the soft density of knotted turkey-work. Darkness is also, however, chaotic, snarled and broken. Darkness is both an undoing of silver, linear, organized

451. Elsewhere Cavendish describes the sun either as an animate being that sucks moisture from the earth or as one that draws buckets of moisture upwards as if from a well (Olio 1671, 321, 325-26).
452. See, for example, “The Attraction of the Poles, and of Frost” in Poems 24.
453. The argument of a “Rational Lord” in “The Animall Parliament” that “Death is only a privation of Motion, as Dankness is a privation of Light” (Poems 204) is no evidence to the contrary on account of the assortment of other statements, including ones obviously rejected by Cavendish, included in the passage.
light, and an elaboration of it in darkness’s own more versatile silken fibres.

Cavendish’s ideas about darkness and light influence her understanding of colour, the final area of intersection between textile and needlework imagery and Nature in her philosophy, and an important preoccupation of contemporary optics. Cavendish’s theory of colour evolves over the course of her career. In the first edition of the *Philosophical and Physical Opinions*, although she rejects atomism, she presents a Gassendist account of colour that has probably been influenced by Charleton’s discussion of the topic.\(^\text{455}\) In the same way that Charleton denies that colours are “Formally (as the Schools affirm) Inherent in Opace bodies,”\(^\text{456}\) Cavendish argues that colour “is not inherent in the thing, but in the form of the thing.”\(^\text{457}\) For Charleton, “Light doth create and vary Colours, according to the various condition of the minute Faces, or sides of the Particles in the superfice, which receive and reflect the incident rayes thereof, in various Angles toward the Eye.”\(^\text{458}\) These particles produce colour “by reason of their Figure, Ordination and Disposition.”\(^\text{459}\) Cavendish similarly understands colour in terms of reflection when she writes, “in my opinion, colours are broken lines of light; for when light is obstructed as being stopped it reflects with double light, those lines returning back like double strings.”\(^\text{460}\)

Charleton asserts that the scholastic distinction of some colours into “Evanid” or “merely Apparent” in contrast to “Real” simply on account of their relatively brief duration is

455. Charleton 182-97. Charleton’s account was published in the year preceding Cavendish’s.
457. *Opinions* 1655, 81.
458. Charleton 185.
460. *Opinions* 1655, 82.
Cavendish assumes the equivalent reality of colours of both categories, and then uses her theory that colour is broken light in order to demonstrate a possible reason for the duration of colour. She employs another metaphor from the domain of needlework when she explains this: “[W]hatsoever work is wrought with parts, as I may say, several pieces of thread, is not so apt to undo or ravel out, as that which is but of one piece.”

As one might expect from the gradual clarification of an anti-atomist stance, in the second edition of the *Philosophical and Physical Opinions*, Cavendish takes a position that leans in its language and emphasis toward Aristotelian and Scholastic opinion. She holds to this new position for the rest of her career, and her arguments attain their most developed form in the *Observations Upon Experimental Philosophy*, in pages that form a clear response to Robert Boyle’s *Experiments and Considerations Touching Colours* (1664).

Like Cavendish, Boyle shows a clear interest in using textiles as models for understanding the combined effects of light and texture on colour. In “Changeable Taffities,” “differing Colours, as it were, Emerge and Vanish upon the Ruffling of the same piece of Silk” according as the light reflects more upon the warp or the weft. Black velvet appears brighter when it is stroked away from the eye than when its piles are erect in relation to the eye.

461. Charleton 188.
462. *Opinions* 1655, 83.
463. Cavendish does not explicitly mention *The Experiments and Considerations Touching Colour* (London, 1664), but she is familiar with that book’s contents. For instance, she alludes to observations concerning the colour of heated steel (*Observations* 1.60), a story about a blind man who can perceive colour by touch (1.64), and an experiment where snow is placed in a completely dark room in order to determine if its whiteness is inherent (1.70). These items appear in Boyle on pages 6-8, 42-46, and 102.
on account of the greater reflection of light from the piles in the first instance.\textsuperscript{465} The vivid red silk of Boyle’s doublet lining tinges his “Pure White Linnen” cuffs with red because the white linen reflects that colour.\textsuperscript{466} Boyle states clearly that these observations do not account for the basic colour of the cloth, “since each Single Pile of Silk [in the velvet] is Black by reason of its Texture.”\textsuperscript{467} He concludes that both atomist and Aristotelian opinions concerning colour have merit, because if colour is understood as “Light Modify’d,” it vanishes in the dark, but if it is understood as “a Certain Constant Disposition of the Superficial parts of the Object to Trouble the Light they Reflect after such and such a Determinate manner,” then colour inheres in bodies.\textsuperscript{468} Boyle believes that the longstanding debate about the origin of colour springs from ambiguity in the term “colour” itself.

In contrast with Boyle’s move to harmonize atomist and Aristotelian opinions, Cavendish chooses to emphasize the Aristotelian argument for the existence of inherent colour. She, like Boyle, deploys a textile image in order to argue her point:

The grain or lines of a man’s skin may be different, like as several figures of wrought Silks or Stuff’s sold in Mercers shops; which if they did make several colours by the various refractions, inflections, reflections and positions of light, then certainly a naked man would appear of many several colours, according to the difference of his pores or grains of skin, and the different position of light.\textsuperscript{469}

If colour were simply modified light, then, in Cavendish’s opinion, the variety and mutability of colour would be unrestrained. There would, in the real world, be the kind of variety of

\textsuperscript{465} Boyle 124-25.
\textsuperscript{466} Boyle 18-19.
\textsuperscript{467} Boyle 125.
\textsuperscript{468} Boyle 74.
\textsuperscript{469} Observations 2.91-92.
complexions which appear among the “Priests and Governors” of the Blazing World, who are “not white, black, tawny, olive- or ash-coloured; but some appear’d of an Azure, some of a deep Purple, some of a Grass-green, some of a Scarlet, some of an Orange-colour, &c.”\textsuperscript{470} The facetious voice of the Blazing World’s narrator cannot ascertain whether these colours “were made by the bare reflection of light, without the assistance of small particles; or by the help of well-ranged and order’d Atoms; or by a continual agitation of little Globules; or by some pressing and re-acting motion.”\textsuperscript{471} Cavendish feels that the ideas of neither Charleton, Boyle, Descartes, nor Hobbes are correct. Many theories could result in the brilliant spectrum of complexions in the Blazing World, but another theory is required to explain the more restrained spectrum of complexions in the real world.

Cavendish teaches the existence of three categories of colour: “natural and inherent colours which are fixt and constant, . . . superficial colours, which are changeable and inconstant, as also Artificial colours made by Painters and Dyers.”\textsuperscript{472} Art can recombine the figures that make colours, but “it cannot make those parts move or work so as to alter their proper figures or interior natures,”\textsuperscript{473} so this third category only poorly imitates the first two. “Superficial colours,” which Cavendish calls “Accidental Colours” in the second edition of the Philosophical and Physical Opinions and in the Philosophical Letters, are “Metamorphosed

\textsuperscript{470} Blazing World 14.

\textsuperscript{471} Blazing World 14-15. The significance of this passage was suggested to me by Cristina Malcomson’s article, “‘The Explication of Whiteness and Blackness’: Skin Colour and the Physics of Colour in the Works of Robert Boyle and Margaret Cavendish,” Faultlines and Controversies in the Study of Seventeenth-Century English Literature, ed. Claude J. Summers and Ted-Larry Pebworth (Columbia, MO: U of Missouri P, 2002) 199.

\textsuperscript{472} Observations 1.72.

\textsuperscript{473} Observations 1.66.
Light or Air, or some Sorts of Loose and Rare Matter caused by Several Motions.”

These are colours produced in accordance with Boyle’s theory that colour is modified light. It is the first category, that of “natural and inherent colours which are fixt and constant,” that Cavendish chooses for her own focus.

In Cavendish’s earliest theory of light, thread-like shapes or figures of broken lines of light make colours. In her mature theory, Cavendish relocates these figures from the substance of air or light into that of the coloured body itself. In her mind, light is no longer essential to colour. The idea that objects in a dark room or in the centre of the earth are colourless is, as the Worm-men in the *Blazing World* show the Empress, simply laughable. Natural colours emerge when “Motion making Lines of the most Facil Substance of a Creature, Contracts those Lines into Several Works or Figures, and according as those Lines are Drawn into such and such Figures, they cause such and such Colours.” The thread-like quality has been transferred to material surfaces which resemble drawn-work embroidery. In the *Observations upon Experimental Philosophy*, Cavendish evokes the Cartesian sense of the importance of motion to the production of colour when she writes that colours are made by “corporeal figurative motions.” If static or moving shapes on the superfcies of bodies create colour, and if light is often unnecessary to this process, then, Cavendish has reasoned, the standard explanations that black and white are the products of the reflection of light inwards to the body or outwards away

475. *Observations* 1.60, 1.70.
476. *Blazing World* 42.
477. *Opinions* 1663, 216.
from it\textsuperscript{479} are no longer necessarily valid.\textsuperscript{480} Moreover, since light is not necessary to produce these colours, there is no obvious constraint upon the kinds of material figures which produce them.\textsuperscript{481} In effect, Cavendish arrives at a rational argument for her longtime claim that darkness is substantial, and that it is not the absence of light. By partially unhinging the physics of colour from light and fixing it in material bodies, Cavendish artfully accounts for the relative stability of many colours in the world, while affirming Nature’s freedom from the very mechanical associations of texture and colour in Boyle’s optics. Cavendish’s optics may look regressive compared to those of Descartes, Charleton, Hobbes and Boyle, but she strategically examines an area of the discipline that appears under-emphasized in their theories, and her process of thought is rational and consistent with the larger body of her work.

When Cavendish does attempt to present concrete illustrations of the relationship between figure and colour, she uses the shapes of letters and numbers:

\[\text{[S]uppose the figure of 8. were the colour of Red, and the figure of 1. the colour of White; or suppose the figure of Red to be a } z \text{. and the figure of an } r. \text{ to be the figure of Green, and a straight } l. \text{ the figure of White; And mixt figures make mixt colours.}\textsuperscript{482}\]

She imagines colour in terms of “Arts several Languages,” in terms of “discoursing by Signs, or Figures.”\textsuperscript{483} Colour is the product of two-dimensional patterns. It is an instance of Cavendish’s fascination with the idea of matter as surface, as paper, as cloth. When she attempts to

\textsuperscript{480} \textit{Observations} 1.67.
\textsuperscript{481} \textit{Observations} 1.65.
\textsuperscript{482} \textit{Philosophical Letters} 476.
\textsuperscript{483} \textit{Playes} 1662, 667.
understand how figure can at once define colour and other properties of a substance she imagines figures within figures:

As for example; Nature in making Snow, contracts or congeals the exterior figure of Water into the figure of a Harp, which is a Triangular figure with the figure of straight strings within it; for the exterior figure of the Harp represents the exterior figure of Snow, and the figure of the strings extended in straight lines represent the figure of its whiteness.\footnote{Philosophical Letters 476.}

She continues to think in terms of largely two-dimensional shapes: she envisions a harp, not a pyramid. Nature draws a single water circle into a complex figure containing other figures, with each shape at once representing and constituting the characteristics of snow. In Cavendish’s natural world, significant figures do not only follow one another sequentially as they do in the written language that she uses as an analogy. Instead, matter inscribes its characteristics in complex patterns that are arrayed in directions proceeding inwards into the most minute pieces of matter and outwards into the most extended ones.

Thus, for Cavendish matter literally possesses characteristics of handwriting, as it does of needlework. Matter everywhere exists as “figures” or shapes which, like hieroglyphic “real” characters, both determine and express the attributes of the beings they constitute. Physical and chemical change involves changes in the meaning-bearing “postures” or “countenances” of these figures. Combinatory possibility akin to that described in seventeenth-century theories of writing, cryptography and cabalism creates the great diversity of complex figures in Nature. Figured matter also encodes both past and future figures within itself so as to permit logical coherence in Nature by allowing for continuity of identity across time and space. Paradoxically, Cavendish understands figures as folds in a cloth-like continuum, and this imagery facilitates
her use of specific embroidery techniques and materials as models for natural phenomena. In particular, such models form the basis for her sensuous theories of the physical nature of light, darkness and colour. Cavendish’s Nature is imbued with the tactile, visual, expressive and logical appeal of “Arts several Languages.”
Chapter 3

“Lifes Language”:

Motion as Figure and Communication

The previous chapter considered the prevalence of “figure” in the sense of “shape” in Cavendish’s natural world, and the associations of figure with handwriting and needlework as aesthetic and representational techniques. That discussion, however, only captures one aspect of what Cavendish means by “figure.” In its complete meaning, the term is inseparable from the concept of motion, and it is associated with the form of discourse that Cavendish’s Lady Speaker in *The Female Academy* describes as “discour sing by signs, which is action or acting.” The Lady Speaker elaborates, “[S]ome discourse by the Motion of their Faces, Countenances, Hands, Fingers, Paces, or Measures, or by the cast of the Eyes, and many such like Postures, Looks, Actions, and several such wayes of Motion as have been invented to be understood.”

In the opinion of the Lady Speaker, not only humans, but also animals may use motion as discourse, and this form of language is therefore conspicuous in Nature. Furthermore, in Cavendish’s natural philosophy discursive motion also permeates the world of subvisible particles. The aesthetic qualities and communicative patterns of “Lifes Language” animate even the most basic of natural entities.

3.1 Motion in Self and Society

Cavendish’s depiction of motion in Nature reflects her own experiences of exile, upheaval and travel. The history of her and her family’s peregrinations is well known. Travel

485. *Playes* 1662, 666.
and exile would have been part of her family’s understanding of itself on account of her father’s six-year exile for dueling, the family’s seasonal moves between Colchester and London, and the participation of two of Cavendish’s brothers in the Thirty Years War on the continent. Cavendish herself joined Queen Henrietta Maria’s court in Oxford in 1644, and shortly thereafter followed the Queen into exile in France, enduring a stormy sea voyage that swept the boat far off course. After several months in which the Queen recovered from a difficult childbirth, the court finally arrived at Paris in November 1644. In the summer of the next year, Cavendish followed the Queen to her summer residence outside of Paris, and then returned to Paris in late 1645, upon her marriage to William. In 1648, Cavendish and her husband journeyed through the Spanish Netherlands, eventually settling in Antwerp. Three years later, Cavendish traveled back to England with her brother-in-law, where she stayed for over a year while she attempted unsuccessfully to compound for her husband’s estate. At the Restoration, she joined her husband first in London and then at Welbeck Estate outside of Nottingham where the two spent most of their remaining years.\textsuperscript{486} This cursory account of Cavendish’s travels omits the story of her husband’s exile and his attempts to help Charles II during the Interregnum, but it should establish the background for Cavendish’s sense of being uprooted and always moving.

This sense plays a prominent role in Cavendish’s narrative and dramatic works. In these she frequently portrays characters who are disillusioned with travel, and she associates travel with travail. In “The Tale of a Traveller,” for example, the young man who has gone on a grand tour, lived at court and finally taken part in the wars concludes,

\textsuperscript{486} See True Relation 41, 44, 45, 46, 50, 51; Whitaker 8, 10, 28, 44, 55-57, 71, 80, 97, 104, 107, 131, 132, 159, 230, 234, 262, 289.
And what have I gained by all my Travels and Experience? Nay, what have I not lost? Have I not spent a great Sum of Money, endangered my Life both by Sea and Land, wasted my Youth, wearied my Limbs, exhausted my Spirits with tedious Journeys, my Senses almost choaked with Dust, or drowned with Wet, lying in Lowsie Inns, eating stinking Meat; and suffered all the Inconveniences that go along with Travellers.\textsuperscript{487}

He concludes that travel can only make a person more strange, foolish and corrupted in the eyes of his own people.

Cavendish’s romances also convey her preoccupation with motion and travel. “Assaulted and Pursued Chastity” purports to be a cautionary tale about dangers encountered by women traveling alone. In the story, a young woman who, like Cavendish, has fled war in her native land seeks, when the war has ended and the country has rebuilt itself, to find her way home. She is, however, “cast by a storm . . . upon the Kingdom of Sensuality.”\textsuperscript{488} Finding herself the captive of a prince who intends to rape her, she escapes disguised as a pageboy who assumes the name of “the Traveller” or “Travelia,” on a ship “sent for new Discoveries towards the South.”\textsuperscript{489} A shipwreck leads to the near sacrifice of Travelia and her master to a pagan Sun God, and when the two again set off homeward, pirates seize them. The prince has made himself the leader of these pirates, and yet a third shipwreck strands the whole group on a deserted island. Once again Travelia escapes with her master, and the two find themselves on a mainland with a warring King and Queen. Travelia, beloved of the Queen, acquires political and then military authority, and ultimately effects a political and romantic reconciliation. Travelia’s story is one of incessant action, of travels not only by sea, but also on land, and of the various motions

\textsuperscript{487}. Picture 1671, 523.
\textsuperscript{488}. Picture 1671, 396.
\textsuperscript{489}. Picture 1671, 418.
of ceremony and battle.  

In Cavendish’s moral philosophy, her preoccupation with restless motion appears in connection with her meditations on war. She repeatedly figures war as a violent ocean storm that wrecks the ship of state. “War,” she writes in 1655, “is a disturber and causeth a violent motion, like a tempest at Sea, or a storm at land, it raiseth up discord, fear, and furie.”

She compares “foreign wars” to the health-restoring flow of blood in medicinal bloodletting. In one of the essays in *The Worlds Olio*, she explains, “Forraign war is necessary some times to maintain Peace at . . . home, it opens the vein of discontents, and lets out the hot & feverish amb[i]tion of the minde.” In fact, she finds the structural parallel between war and bloodletting so convincing that she uses the ultimate successes of war that take place in spite of destruction and loss to support an argument in favour of medicinal bloodletting. In a third image, she compares civil war to a shuffling of cards, where “factions . . . are like gamesters when they play.” They set “life at the stake” and “shuffle them [the cards and the actual social classes and power structures] together, intermixing the Nobles and Commons.”

War plays a significant role in shaping Cavendish’s view of Nature, and it is an important metaphorical resource for her belief in the ubiquity of motion in the natural world.

For Cavendish, the physical upheavals of war relate to the natural restlessness of the

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490. Other good examples of the theme of travel in Cavendish’s works are the plays *Loves Adventures* (3) and *Bell in Campo* (579) in *Playes* 1662, and the adventures recounted in the *Blazing World*.


492. *Olio* 1655, 156.


494. *Olio* 1655, 55.
human passions and appetites. The mind is a perpetual tumult of motion. In “A Dialogue betwixt
the Body, and the Mind,” the Body opens its complaint with a sonnet that begins,

What Bodies else but Mans, did Nature make,
To joyne with such a Mind, no rest can take;
That Ebbs, and flowes, with full, and falling Tide,
As Minds dejected fall, or swell with Pride:
In Waves of Passions roule to Billowes high,
Alwaies in Motion, never quiet lye.
Where Thoughts like Fishes swim the Mind about,
Where the great Thoughts the smaller Thoughts eate out.
My Body the Barque rowes in Minds Ocean wide,
Whose Waves of Passions beat on every side. 495

The mind is tidal and stormy. Within it lies a Hobbesian State of Nature where self-interest
creates a microcosmic war of all against all. The motion of the passions and thoughts subsumes
the body, and makes the body resemble a small boat without steadying sails that is at the mercy
of the ocean’s movement. Humans, Cavendish teaches, have “endless Desires, unsatiable
Appetites, violent Passions, unquiet Humors, Grief, Pain, Sadness, Sickness, and the like;
through which, Man seems to be more restless, than any other Creature.” 496 Internal restlessness
creates external restlessness. Motion in the mind forms a continuum with the motion of the body
and of society.

Cavendish associates the passions of ambition and curiosity, passions which she finds
predominant in her own temperament, with unceasing motion. “That my ambition of
extraordinary Fame, is restless, and not ordinary, I cannot deny,” she writes in the preface to
Natures Picture. 497 In a funeral oration that she composes for an imagined poet, the speaker

495. Poems 60.
496. Grounds 63-64.
497. Picture 1671, b2v.
eulogizes the poet as “so Ambitious, as his Body and Mind was Restless, indeavouring to Live, like as Nature, or the Gods of Nature, which Live, and are partly Known In their Works, and By their Works, which are their Creatures, especially the Chief of their Creatures, which are Mankind.” Writing more explicitly of herself and intimating that she too wants to be like Nature in that she wants to be known by her (literary) works, Cavendish explains in her CCXI Sociable Letters, “naturally I am so Ambitious, as I am restless to Live, as Nature doth, in all Ages, and in every Brain.”

In her efforts to be like Nature, Cavendish as a natural philosopher finds herself immersed in the mental restlessness of curiosity. A “fair Princess” mourning for the death of her father and recalling his ability to instruct, to think and to reason observes that Nature,

. . . from Man receives the greatest praise,
He doth admire all her curious ways:
With wonder he her sev’ral Works doth see,
And studies all her Laws, and each Decree;
Doth travel sev’ral ways within his Mind,
His Thoughts are restless, her Effects to find.
But in his Travels Death cuts him off short,
And leads him into dark Oblivion’s Court.

The intricate ways of Nature lead the thoughts to labour their way through equally intricate paths within the mind. The only rest from the travels and travails of curiosity comes with death, with the annihilation of awareness. In a verse “Of the Head” in the Poems, and Fancies, Reason preaches to the mind, in the church of the head, telling it to avoid inquisitiveness:

498. Orations 159.
500. Picture 1671, 91.
501. Picture 1671, 92.
For why, saies Reason, you shall damned be
From all Content, for your Curiosity.
To seek about for that you cannot finde,
Shall be a Torment to a restlesse Mind.502

Cavendish performs her intellectual life in such a way that she seems “damned” to the restlessness of both curiosity and ambition.

Finally, the theme of motion enters Cavendish’s writing through her understanding of femininity. The conventional contemporary association of femininity with motion recurs throughout her works. In the comedy Wits Cabal, Monsieur Satyrical offers a most disparaging description of women:

Faith all Women, especially Ladies, their natural humour is like the Sea, which will be neither quiet it self, always ebbing and flowing, nor let any thing be at rest on it . . . : But in the Spring-tide of Beauty they overflow all with pride, and their thoughts, like Fishes, are in a perpetual motion, swimming from place to place, from company to company, from one meeting to another, and are never at rest.503

Ceaseless change characterizes the moods and social habits of women, according to Monsieur Satyrical. Admittedly, Satyrical’s own companion warns that he deserves “to die the death of Orpheus,” but Satyrical defends himself, explaining that he is “far from being an Enemy to the Effeminate Sex,” since he attempts “to tell them truth, when other men deceive them with flattery.”505

If, however, Monsieur Satyrical remains an unconvincing spokesperson for Cavendish’s interpretation of femininity, consider the statements of the very admirable Lady Prudence in the

503. Playes 1662, 259.
504. Playes 1662, 259.
505. Playes 1662, 261.
comedy *The Publique Wooing*. In Lady Prudence’s opinion, “Nature hath made women and children to have restless spirits, unquiet minds, busiless active, and such voluble tongues, as it is impossible they should be silent, whilst life gives them motion.” Here, Lady Prudence publicly rejects the courtship of a clergyman by arguing first for the inappropriateness of marriage to his lifestyle, and then, in the passage I have quoted, for the unfitness of women in general to a studious and devout manner of life. In the context of the play, Lady Prudence, who maintains her sense of moral accountability by hearing her wooers in a public assembly, rehearses common public mores.

### 3.2 Motion and Life in Nature

Cavendish develops her natural philosophical theories of motion under a great deal of influence from Thomas Hobbes. In a portion of the *Leviathan* which Cavendish read, Hobbes classifies biological motion:

> There be in Animals, two sorts of *Motions* peculiar to them: One called *Vitall*; begun in generation, and continued without interruption through their whole life; such as are the *course* of the *Bloud*, the *Pulse*, the *Breathing* . . . : The other is *Animal motion*, otherwise called *Voluntary motion*; as to go, to *speak*, to move any of our limbes, in such manner as is first fancied in our minds.

Cavendish adopts, but repositions, the Hobbesian terminology. Rather than looking at the human being or animal as an individual possessing mind and will, Cavendish looks at systems within the human or animal body. She finds Hobbes’s phrase “voluntary motion” incompatible with his own theory of how these motions work. Therefore, precisely because Hobbesian

506. *Plays* 1662, 386. I assume that “busiless active” means “unproductively active.”

“voluntary motions” are “first fancied in our minds,” they are, she says, “in a manner forced and necessitated to move according to Fancy or Imagination.”\textsuperscript{508} Truly voluntary actions “are not occasioned by any outward objects, but make figures of their own accord, without any imitation, patterns or copies of foreign parts or actions.”\textsuperscript{509} For Cavendish, “Imaginations, Fancies, Conceptions, Passions, and the like”\textsuperscript{510} may well be voluntary, but the physical motions that they occasion are part of a logical sequence of causation or motivation, and are therefore not voluntary.\textsuperscript{511}

Recall that Hobbes’s synonym for “voluntary motion” was “animal motion.” This is a term that Cavendish is already using in 1655, prior to the writings in which she explicitly engages with Hobbes’s ideas.\textsuperscript{512} Even after her critical engagement with the \textit{Leviathan}, Cavendish consistently uses the term as a synonym for the Hobbesian opposite, the “vital motions.” Here too she looks at the details of bodily processes rather than at the individual as a whole, and adjusts Hobbes’s definitions. Cavendish reads his claims that the “vital motions” are “begun in generation” and require “no help of Imagination”\textsuperscript{513} as statements that generation causes motions associated with life, and that such motions act without any informing intelligence. For Cavendish, vital matter and motion preexist any discrete, composed organism.

\begin{footnotesize}
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\item 508. \textit{Philosophical Letters} 46. Lisa Sarasohn mentions this passage in “\textit{Leviathan} and the Lady” 50-51.
\item 509. \textit{Observations} 1.211. The language in this quotation will be unpacked in the following chapter on perception.
\item 511. I pursue the issue of will in relation to occasional causation later in this chapter. See section 3.4.
\item 512. See \textit{Opinions} 1655, 19, 104, 130.
\item 513. Hobbes, \textit{Leviathan} 37, 38.
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It is the beginning or change of particular patterns of vital motion that delimits the life of an organism. She labels these patterns or “figures” of motion the “animal motions.”

In an intriguing chapter “Of the Quickning of a Child, or any other sort of Animal Creatures” that occurs in Cavendish’s mature summary of her opinions, *Grounds of Natural Philosophy*, Cavendish suggests that a human foetus is not complete until the mother can feel it moving within her womb:

The Reason that a Woman, or such like Animal, doth not feel her Child so soon as it is produced, is, That the Child cannot have an Animal Motion, until it be perfectly an Animal Creature; and as soon as it is a perfect Child, she feels it to move, according to its nature.  

An earlier, but related passage casts further light upon the matter:

The reason, that the sensitive spirits, when they begin to create an animal figure, the figure that is created feels it not, untill the model be finished, that [reason] is, it cannot have an animal motion, until it hath an animal figure; for it is the shape which gives it local motion.

Figure, in the sense of shape, determines and enables the patterned motions or “figures” which are the consciousness and life of the organism. This is the case not only at the beginning of life, but also at its end. The death of an animal, writes Cavendish, “may be called a privation of animal life; that is, a change of the animal motions in that particular Creature, which made animal life, to some other kind of action which is not animal life.”  

Animal motion is patterned

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514. *Grounds* 41. This passage is complicated by a subsequent statement that the mother senses not the rational, but only the sensitive parts of the child which are in motion. The relationship of these rational parts of the foetus to its identity as a distinct organism then needs to be considered. The fact that the following chapter also begins with a statement implying that the child in the womb is only “Perfect” (complete) at the moment of delivery further complicates matters.

515. *Opinions* 1655, 18.

516. *Observations* 1.125. There are many passages to this effect in Cavendish’s philosophy. Related passages include *Poems* 17, 19, 204; *Fancies* 20, 64; *Philosophical Letters* 223, [3]31.
motion.

One such patterned motion identified by Hobbes as a “vital motion” and by Cavendish as an “animal motion” is the circulation of the blood. William Harvey’s *Anatomical Exercises . . . Concerning the Motion of the Heart and Blood* appeared in London in 1653, and although Cavendish does not seem to be familiar with the details of the work itself, she does accept the notion of the blood’s circulation in even her earliest works. In the section of the first edition of *The Worlds Olio* treating of health matters, Cavendish includes a chapter on “*The Motion of the Blood,*” which she opens with the remark that “The most Renowned and most Learned Physician, Doctor Harvey, hath found out the Circulation of the Blood, by his industrious study.” Cavendish does not, however, show the interest in the relationship between the heart, lungs and circulation that is so central to Harvey’s observations. Instead, because she thinks within a Galenic framework where the blood is one of the body’s humours, and because of her interest in subvisible processes, she recommends a different topic for Harvey’s research agenda: the determination of the patterns of motion of individual blood drops within the flow of circulation.

Cavendish reasons that if drops of blood do flow consistently in the same direction as surrounding drops, then standard techniques of therapeutic bloodletting must be reevaluated, since blood of different qualities may be passing through a given vein at different times. She pictures the details of moving blood either as flowing water “where the following Drops are as

517. *Olio* 1655, 180. This chapter reappears, with light revision, in the second (1663) edition of *Opinions*, on pages 309-10.
518. See *Grounds* 107, for example.
519. *Olio* 1655, 180.
great Strangers to the leading Drops, as the situation of either Pole,” or as “Croud of People, one shuffling another, yet they do not seem to intermix, or incorporate, but rather seem to break, and divide into parts,” branching off in different directions. As the scale at which Cavendish metaphorically represents the blood becomes larger, as it zooms in from the panorama of a river to the individual faces in a crowd, so does the potential for diversity of motion within it. The vividness of motion in Cavendish’s natural philosophy relates to the intensity of her focus on the minute and subvisible.

A second and, in Cavendish’s understanding of life in general, more important “animal motion” is respiration. In a person or animal, like the circulation of the blood, respiration occurs unceasingly, in a regularly patterned motion. Describing the “Motion of the Sea,” Cavendish writes,

And as the Planets move still round about,  
So Seas do ebb and flow both in and out.  
As Arrows flye up, far as strength them lend,  
And then for want of strength do back descend:  
So do the Seas in ebbes run back again,  
For want of strength, their length for to maintain  
But when they ebb, and flow, at certain times,  
Is like the Lungs that draw, and breath out wind.  
Just so do Seas draw back and then do flow,  
As constant as the Lungs do to and fro:  
Alwayes in motion, never lying still,

520. *Olio* 1655, 180.

521. Cavendish consistently lists the heart among the “Vital Parts” of human anatomy (*Opinions* 1655, 140, 166; *Grounds* 106, 109, 300) and claims that blood that is at once healthy and in an appropriate equilibrium with the body’s systems is essential to human life (*Philosophical Letters* 372). However, she rejects opinions which too closely identify blood with life in general (*Philosophical Letters* 372, 401-2; *Observations* 1.34; *Blazing World* 35). For her, patterned motions, not blood, constitute life. There is one early poem in which Cavendish presents the motion of the blood as a model for universal processes of motion permitted by the different qualities of matter (“Of Thin, and Thick Matter,” *Fancies* 8-9).
The empty place they leave, turn back to fill.\textsuperscript{522}

Respiration proceeds as regularly and timelessly as the ebb and flow of the tides, the natural laws producing gravity, and the eternal motions of the heavenly bodies. Elsewhere in the same work Cavendish compares the sleeping body to a ship at anchor, with its sails down and its crew resting or working “under hatches,” “where the motions of the breath are like waves of water, that heave it up, and then sink down, but saile not, nor steer not to any Coast.”\textsuperscript{523} Respiration resembles the incessant ground swell experienced by a boat in a poorly protected harbour during an interminable night.

Cavendish’s explanations concerning the mechanism of respiration seem contradictory at first glance. In places she predictably describes respiration as “the sucking in of air, and sending out of breath in an animal body,”\textsuperscript{524} locating the impulse of inhalation within the body itself. Elsewhere, however, she locates this impulse outside the body, in the air. In “The Dialogue of the Wise Lady, the Learned Lady, and the Witty Lady,” the Learned Lady remarks, “As the agitation of the Air makes us draw our breath; so the agitation of the World makes it continue.”\textsuperscript{525} That this opinion belongs not only to one of Cavendish’s characters, but also to Cavendish herself appears in the \textit{Worlds Olio} where she discusses the fitness of air for breathing. If air is “Congealed,” creatures “can get none to serve for Breath; that is, there is none fit to move the Lungs.”\textsuperscript{526} The impulse for respiration comes as much from the activity and

\begin{itemize}
  \item \textsuperscript{522} Opinions 1655, 25.
  \item \textsuperscript{523} Opinions 1655, 112.
  \item \textsuperscript{524} Philosophical Letters 449.
  \item \textsuperscript{525} Picture 1671, 311.
  \item \textsuperscript{526} Olio 1655, 165; Olio 1671, 314.
\end{itemize}
substance of the air as from that of the lungs.

This contradiction in Cavendish’s description of respiration resolves itself in the context of her reformulation of respiration in her mature writings. Since Cavendish is not as interested in the physiological processes of individual organisms as she is in universal processes of motion at the most minute level, she takes the ground swell of respiration and redefines it as a universal process neither confined only to animals and humans, nor confined to the exchange of “air” and “breath.” In the Observations upon Experimental Philosophy, she explains,

> by Respiration, I do not mean onely that animal respiration which in Man, and other animal Creatures, is performed by the lungs, but a dividing and uniting, or separating and joyning of parts from and to parts, as of the exterior from and to the interior, and of the interior from and to the exterior; so that when some parts issue, others do enter: And thus by the name of Respiration I understand a kind of Reception of foreign Matter, and emission of some of their own. \(^{527}\)

In animals, digestion and perspiration are therefore forms of respiration. Discrete parts of the anatomy like the eye breathe. Rashes such as that from the pox breathe. Plants, minerals and even elements breathe. The Earth as a whole and each of the other celestial bodies continually renew themselves through respiration. \(^{528}\) Cavendish concludes, “And thus it is with all composed figures or parts of Nature, whose chief action is Respiration (if I may so call it) that is, composition and division of parts, caused by the self-moving power of Nature.” \(^{529}\)

Adjacent entities and entities nested within one another continually engage in respiration. Given that Cavendish’s world is a plenum, respiration necessarily involves an exchange of matter between entities. It is “an interchangeable ingress and egress, or a reciprocal


\(^{528}\) Observations 1.15, 1.218; Grounds 134; Philosophical Letters 450; Observations 1.152.

\(^{529}\) Observations 1.152.
breathing.” Cavendish explains, “[A]ll sorts of Creatures have Respiration, by reason all Creatures subsist by each other.” Respiration is necessary, “[F]or not any natural part or creature can subsist single, and by it self, but requires assistance from others.” She also repeatedly writes that respiration is a “perceptive action” that “presupposes . . . knowledg and perception between those parts that make respiration.” In Cavendish’s philosophy, respiration is a knowing and cooperative act. It involves two agents, one which knowingly exhales and another which knowingly inhales. It involves a transfer of what is known from one entity to another. It is a form of communication.

The universalization of respiration points to Cavendish’s sense of the ubiquity of motion and life in the cosmos as a whole. Cavendish advances three central theoretical arguments for this ubiquity. The first of these perplexes by virtue of its repetition in spite of apparent redundancy. Numerous times in the Observations upon Experimental History, and occasionally elsewhere in her mature philosophy, Cavendish declares axiomatically “That Nature is self-moving, and therefore never at rest.” The passage following this statement only approximates an explanation for why self-motion should necessarily entail continual motion. Cavendish assumes not only that Nature is self-moving, but also, implicitly, that it is infinite in size and complexity. Such infiniteness is, for her, inconceivable without perpetual motion. Nonetheless,

530. Observations 1.40. The striking phrase “reciprocal breathing” also occurs in Observations 1.15. 531. Grounds 207. 532. Philosophical Letters 451. 533. Observations 1.215. Cf. Grounds 187, 212; Observations f2r, 1.159; Blazing World 22. 534. Observations 1.135. The exact formula in which she expresses the thought varies from one place to another, but the concept remains clear. Cf. Observations m1r, 1.147, 1.159, 3.33.
the initial statement remains an assumption, rather than a logical conclusion.\textsuperscript{535}

The second and closely related argument states that “there is no such thing as rest in Nature.”\textsuperscript{536} Here Cavendish contradicts all of her more well-known contemporaries. She shares with Henry More the opinion that “what is simply active of it self, can no more cease to be active then to Be,”\textsuperscript{537} but she complains that More “endeavors from thence to conclude, That \textit{Matter is not self-active, because it is reducible to rest.}” Cavendish insists “That there is no such thing as Rest in Nature,” that where there appears to be rest, there are subvisible motions.\textsuperscript{538} When More wonders “what glue of Cement holds the parts of hard matter in stones and metalls together,”\textsuperscript{539} Cavendish replies, “Consistent or retentive corporeal motions, by an agreeable union and conjunction in the several parts of Metal or Stone.”\textsuperscript{540} More follows Descartes here, and with regard to Descartes, Cavendish again asserts, “I am not of your Authors opinion, that Rest is the Cause or Glue which keeps the parts of dense or hard bodies together, but it is retentive motions.”\textsuperscript{541} Hobbes, too, incurs Cavendish’s criticism: “[W]hen he speaks of

\begin{footnotesize}
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\item \textsuperscript{535} There are several reasons why such an assumption should be so essential to Cavendish’s philosophy of motion. For one, it contributes to establishing the inseparability of motion from matter. Cavendish is frequently at pains in her mature philosophy to assert that matter and motion are a single entity. For another, in her mature works she is interested in fortifying her plenist account of the world by denying even privative ontological status to the concepts of rest and vacuum (see, for example, \textit{Observations} 1.175).
\item \textsuperscript{536} \textit{Philosophical Letters} 25. \textit{Cf. Philosophical Letters} 58, 100, 145, 155, 164, 166, 167, 191, 251, 332, 436, 447, 465, 488, 512, \textit{Observations} g[1.5]r, m1r, 1.140, 1.145, 1.147, 1.159, 1.175-77, 2.62, 3.33, 3.54.
\item \textsuperscript{537} More, \textit{Immortality of the Soul} 31.
\item \textsuperscript{538} \textit{Philosophical Letters} 165-66.
\item \textsuperscript{539} More, \textit{Immortality of the Soul} 32.
\item \textsuperscript{540} \textit{Philosophical Letters} 167.
\item \textsuperscript{541} \textit{Philosophical Letters} 110. \textit{Cf. Descartes, Principles of Philosophy} 70.
\end{itemize}
\end{footnotesize}
Rest,” she writes, “I cannot believe there is any such thing truly in Nature, for it is impossible to prove, that any thing is without Motion, either consistent, or composing, or dissolving, or transforming motions, or the like, although not altogether perceptible by our senses.”¹⁴² In a discussion inspired by Galileo’s works, Cavendish uses oxymoron in order to emphasize her point: she labels “rest” as “motion.” Imagining a conversation with the reader of her Philosophical Letters, she muses, “You will say, How can Rest be a motion? I answer: Rest is a word which expresses rather mans ignorance then his knowledg.”¹⁴³ Cavendish is well aware that in rejecting the existence of rest in Nature, she is rejecting a philosophical tradition hearkening back to Aristotle.¹⁴⁴ Her willingness to defy convention so adamantly in this regard reinforces the centrality of ubiquitous motion to her natural philosophical system as a whole.

The third theoretical argument that Cavendish advances for the ubiquity of motion is that pertaining to the mixing of the three degrees of matter:

[M]atter is not meerly Passive, but always Active, by reason of the thorow mixture of animate and inanimate matter; for although the animate matter is onely active in its nature, and the inanimate passive, yet because they are so closely united and mixed together that they make but one body, the parts of the animate or self-moving matter do bear up and cause the inanimate parts to move and work with them; and thus there is an activity in all parts of matter moving and working as one body, without any fixation or rest, for all is moveable, moving and moved.¹⁴⁵

Mixing not only includes all three degrees of matter in motion, but it includes them in

¹⁴². Philosophical Letters 58. For Hobbes’s definition of being “at rest,” see his Elements of Philosophy 80.
¹⁴³. Philosophical Letters 436.
¹⁴⁴. See Observations 3.32-33.
¹⁴⁵. Philosophical Letters 145.
“activity,” in agency as well. It is not simply motion that pervades matter as Cavendish envisages it, but self-motion or agency expressed in motion. The ubiquity of agency in Cavendish’s natural philosophy informs her use of dance imagery to depict natural motion and it informs the nuances of her theory of causation.

3.3 Dance and Natural Motion

As I indicated at the outset of this chapter, the Lady Speaker in The Female Academy identifies her third category of discourse as “a discourse by Signes, which is in Actions, as some can discourse by the Motion of their Faces, Countenances, Hands, Fingers, Paces, or Measures, or by the cast of the Eyes, and many such like Postures, Looks, Actions, and several such wayes of Motion as have been invented to be understood.” The Lady Speaker labels this category “action or acting.” This form of discourse most obviously includes theatrical representation, but it also includes a much broader range of methods of expression.

“Lifes Language” includes, in its most linguistic aspects, expression by means of the various forms of gestural language devised in Cavendish’s era. One of Cavendish’s contemporaries, John Bulwer, the author of Chirologia: Or the Naturall Language of the Hand, rhapsodizes, “the Hand being the Substitute and Vicegerent of the Tongue, in a full, and

546. For a distinction between action and motion with which Cavendish would have been familiar, see Descartes’s Principles of Philosophy: “In fact, inasmuch as we commonly think that there is action in all movement, and, on the other hand, cessation of action in rest; he [a man seated in a boat that is sailing] is more properly said to be at rest rather than in motion, because he feels no action in himself” (50).

547. Playes 1662, 666.

548. Playes 1662, 666.

549. Playes 1662, 667.
majestique way of expression, presents the *signifying faculties* of the soule, and the inward
discourse of reason.” Bulwer’s hand gestures bear a “naturall resemblance and congruity” to
the “habits of minde” that they express, and they are “generally understood and knowne by all
Nations, among the formall differences of their Tongue.” Hand gestures, in Bulwer’s opinion,
are a form of signification *ex congruo*, and they are a universal system of representation. They
are, in other words, much like John Wilkins’s notion of hieroglyphs, and they are also much like
the expressive structures of gesture, posture and countenance that, as I observed in the previous
chapter, obtain in Cavendish’s figured matter.

At the less obviously linguistic end of “Lifes Language” lie deliberate and expressive
forms of display ranging from dance to dressage to elaborate military exercises. In Cavendish’s
era, dance, in particular, was routinely described as a discursive form of communication. One
author on dance, François de Lauze, comments, “*C’est vne eloquence muete . . . bien plus forte
& plus persuasieue que celle de Ciceron.*” A contemporary French theorist of the popular
*ballets de cour* (court ballets) defines his genre of dance in terms of language: “*La definition
peut estre ainsi conceüe. C’est une representation muette, où les gestes & les mouvemens
signifient ce qu’on pourrait exprimer par des paroles.*” It was an accepted idea of the time

551. Bulwer 3.
552. See pp. 95-97.
553. “It is a mute eloquence . . . much stronger and more persuasive than that of Cicero” (François
de Lauze, *Apologie de la danse et de la parfaite méthode de l’enseigner tant aux cavaliers qu’aux
dames*, 1623 (Geneva: Minkhoff, 1977) 15). All translations are mine unless otherwise noted.
554. “The definition may be thus conceived. It is a mute representation, where the gestures and
movements signify what one would be able to express by speech” (Michel de Pure, *Idée des
spectacles anciens et nouveaux*, 1668 (Geneva: Minkhoff, 1972) 210. For similar passages, see 214-
15 and 248-49). For more references to gestural communication in relation to dance, see G. Havers,
that people discourse not only by means of their gestures, but also by means of their “Paces, or Measures,” as the Lady Speaker in *The Female Academy* indicates. Cavendish’s first-hand knowledge of dance determines the language in which she expresses her philosophy and the aesthetic characteristics that she attributes to incessantly moving Nature.

Cavendish would have been well acquainted with at least three styles of dance. Given that she did not join the English court until shortly before its departure for France, she is unlikely to have been very involved in the full-scale masquing tradition of the court of Henrietta Maria, although she may have become acquainted with these performances during her family’s winter-time stays in London during her youth. She would, however, have been exposed, particularly during the years of 1644 to 1648, to the French counterpart of this tradition, the ballet de cour. These years spanned two especially sumptuous performances, those of *La Finta Pazza* and *Orfeo*, as well as numerous lesser ones.555 Three characteristics of these ballets stand out. The first of these is the use of elaborate perspectival scenery, sometimes revealing new scenes in the distance of a given scene.556 The second is the general lack of narrative structure to the ballets. Instead of telling a story, the ballets de cour usually explored the multiple facets of a theme. As long as a ballet “eût l’unité de dessein,” writes one historian, “il était dispensé de

trans., *A General Collection of Discourses of the Virtuosi of France* (London, 1644) 399-401. In the *Philosophical Letters* Cavendish indicates that she is aware of this book although she has received it only recently and is therefore not prepared to critique it extensively (*Philosophical Letters* 496).


556. It may indeed be the ballet sets designed by Giacomo Torelli for the French court (or, alternately, it may be the masque sets designed by Inigo Jones for the English court) by which Cavendish is inspired in her comedy *The Convent of Pleasure*, where she depicts quasi-impromptu masque-like entertainments accompanied by detailed stage directions. See *Playes* 1668, 33, 31.
"l’unité de temps, et de lieu, et même de l’unité d’action." 557 De Pure offers a more poetic description of the structure of the ballets: “Le Sujet est l’Ame du Balet . . . qui communique les esprits aux diverses parties, & qui leur donne enfin & la nourriture & le mouvement. Ce n’est pourtant pas une Ame parfaite qui soit toute, & toute entiere en chaque partie.” 558 The third and, for the purposes of my argument, most notable characteristic of the ballets de cour is their delight in “figures,” in complex combinations of dance steps tracing out geometrical floor patterns.

Although the earliest formal, dance-related definition that I have located of the term “figure” dates from more than a century after Cavendish’s death, 559 the term was a common part of the dance jargon in Cavendish’s day. According to De Pure, one improvement that the ballets of his age show over the ones of the past is “dans la façon que l’on pratique aujourd’hui la diversité des figures.” 560 He complains that changes of figure from cadence to cadence within a single dance can be excessive, bring confusion or be inappropriate to more serious subject

557. “As long as it had unity of design, it was free from the unity of time and of place, and even the unity of action” (Victor Fournel, Les contemporains de Molière, Vol. 2 (Paris, 1866) 175). See Fournel 173-77 for a good discussion of the structure of ballets.

558. “The subject is the soul of the ballet . . . which communicates the spirits to the diverse parts, and which gives them in the end both nourishment and movement. Nevertheless it is not a perfect soul that is all and in whole in each part” (de Pure 216). The structure of ballets, and perhaps also of masques, provides an interesting precedent for Cavendish’s ways of structuring her own written works. Even a clear narrative like “Assaulted and Pursued Chastity,” for example, reads, on account of its episodic qualities, as much like a series of parallel elaborations on the theme of the troubles and adventures that may befall a young woman traveling alone, as it does like a coherent narrative.

559. Charles Compan, Dictionnaire de danse, A Facsimile of the Paris, 1787 Edition. Monuments of Music and Music Lit. in Facsimile, 2nd ser., Music Lit. 84 (New York: Broude Brothers, 1974) 156. “FIGURE, en terme de Ballets, se dit des pas differens que font les Danseurs en ordre & cadence, qui marquent diverses figures sur le parquet.” “Figure, in term[s] of ballets, is said of the different steps that the dancers make in order and cadence, which mark diverse shapes on the floor.” Figures are steps in order and cadence that trace out two-dimensional patterns.

560. “in the manner in which the diversity of figures is practiced nowadays” (de Pure 255).
matter. Nonetheless, “il y auroit de l’injustice à n’approuver pas une diversité si agreable, une presteesse si reguliere, & des changemens si soudains. Car outre la beauté de l’effet, ces changemens de figure demandent des soins, du temps, du concert & de l’étude.”561 Figure is a form of ornamentation that may be overdone, but it also determines the aesthetic effects of the dance. Figure creates diversity, spriteliness of motion, admirable suddenness of change. It displays virtuosity and relies upon a tacit background of communal knowledge and skill amongst the dancers.

The other two kinds of dance which Cavendish knew well were social dance forms. Although Cavendish claims in her autobiography not to have been “kept strictly” to the studies for which she and her sisters had tutors as children, she does list dancing among these studies.562 She and her sisters would have been taught both the evolving French courtly style of dance that was making inroads into England, and country dances of both English and continental origin. The lessons in the courtly style would have been the most serious and demanding. They would have involved learning to maintain good posture and graceful motion while walking on turned out feet, learning to execute different kinds of curtseys, and then learning a number of different dances from the relatively simple branles, to the potentially much more complex and patterned courantes and galliards.563

In the only technical treatise on the courtly style of dance to be published in seventeenth-

561. “there would be injustice in not approving of such an agreeable diversity, such a regular nimbleness, and such sudden changes. For besides the beauty of the effect, these changes of figure require care, time, cooperation and study” (de Pure 255).
562. True Relation 43.
century England or France, De Lauze lists the dances characteristic of various European nations. The English, he writes, have “les mesures & contredanses,” while the French have “la diversité des Bransles & Courantes tant à figures que simples.” The dedication of the book to “Monseigneur le Marquis de Buckingham” and of its second section to “Madame la Marquise de Buckingham” is in itself indicative of the beginning of the supplanting of the older English dances with the figured, French courante. This is the kind of dance of which Cavendish is thinking when, in the Worlds Olio, she describes “The true Art of Dancing” as

  Measured-Figures by the Feet in divided-times: for, the Feet keep as just a distance of Times, as Notes of Musick. Dancing is compounded of Measures, Figure, and Motion. Measure is Geometry, Figure is Symmetry, and Motion is Division. Geometry is Equal Measure, Symmetry is Proportionable Measures, Division is Numbers.

A mathematical and geometrical harmony of rhythm, pattern and motion constitutes the “true Art of Dancing.” We know that by the late 1650s, Cavendish was well-acquainted with the French style. At the spectacular ball and banquet that she and her husband held in Antwerp for Charles II and his three siblings on February 17, 1658, the evening began with two hours of French courtly dancing, and ended with two hours of English country-dances.

The English country-dances would have formed the second and more playful aspect of Cavendish’s dance education. These dances were performed to traditional folk tunes by groups of couples standing in circles, squares, rectangles or columns. The dances were learned in advance, but they were simple enough that their steps could have been called out during the

564. The English have “measures and country dances [or contre-dances],” while the French have “the diversity of branles and courantes, both figured and simple” (de Lauze 9).
565. Olio 1671, 52. This passage also appears in the 1655 edition of the work.
566. See Whitaker 221.
dance as well. John Playford’s mid-century book, *The Dancing Master*, testifies to the importance of a sense of geometrical patterning through the diagrams that it presents on each page for the positions of the dancers relative to one another, and through the instructions it gives for each dance. For a dance called “All a Mode de France,” a series of steps leads the dancers from a long double column into a single file. The instructions then proceed,

> Then armes all with your own by the right and left, and remain in the same Figure, then men fall of to the right, and We. [women] to the left hand, fall back into the same Figure, then men to the left, and We. to the right, and back again into the same Figure, then the first man fall into his first place, and his Wo. the like, so the rest one after another.

Here “figure” does not carry the complex and multidimensional sense of an elaborate combination of steps along a patterned trajectory that it carried in relation to the ballets and to French courtly dance. Instead it refers to the two-dimensional shape marked out on the floor by the locations of the dancers in relation to one another. Nonetheless the term is again important in relation to a style of dance.

Cavendish speaks at once idealistically and condescendingly of the dances of the peasant people. She writes disparagingly, “*Countrey-Dancing* is a kind of a rude Pastime, and cannot be called truly a *Dance*, but rather a *Running in Vagaries*.” “*Kissing Dances*” in particular, “were invented by the meaner and ruder sort of people at Wakes and Fairs; which kind of people know not the Ceremonies of modest Civilities.”

567. Presumably a corruption of “À la mode de France.”
569. *Olio* 1671, 52.
570. These are country dances like the very first one in Playford’s *Dancing Master*, “All in a Garden Green” (1), where kissing is part of the choreography of the dance.
571. *Olio* 1671, 52.
up a child according to his or her social position, Cavendish imagines little girls “dancing Sellingers-Round” with the servants “in Christmas-time,” which makes the children become like the servants, and ultimately ruins their chances at a happy marriage.\textsuperscript{572} Despite these concerns around social status and country-dancing, Cavendish idealizes the dances of the peasants as the most joyful and natural form of dance. In her \textit{Orations}, one peasant answers the complaint of another, explaining, “[A]s for our Recreation, although we do not Dance, Sing, and Play on Musick Artificially, yet we Pipe, Dance, and Sing Merrily.”\textsuperscript{573} This thought reappears, spoken presumably in Cavendish’s own voice, in the \textit{CCXI Sociable Letters}, where she romanticizes “that Unconcerned Freedom” of the peasant people who, not “Constrain’d and bound with Forms and Rules,” “take more Delight and true Pleasure, and are more Inwardly Pleased and Outwardly Merry at their Wakes, than the great Ladies at their Balls, and though they Dance not with such Art and Measure, yet they Dance with more Pleasure and Delight.”\textsuperscript{574} In “The Tale of a Traveller,” part of the disillusioned traveler’s idealization of rural life in England involves the peasants’ daily routine of dancing to the point of exhaustion after dinner. Finally, in Cavendish’s narrative, “The Contract,” the Lady Delicia defends herself against the public charge of “too mean a Breeding,” by romanticizing her rural childhood through the association of music and dance with Nature:

\begin{quote}
But I was bred a private Countrey-Life, where the Crowing of the Cocks served as Waights of the Town; and the Bleating of the Sheep, and Lowing of the Cows, are the Minstrels we dance after; and the Singing of the Birds are the Harmonious Notes by which we set our Innocent Thoughts, playing upon the
\end{quote}

\textsuperscript{572} \textit{Olio} 1671, 163.  
\textsuperscript{573} \textit{Orations} 249.  
\textsuperscript{574} \textit{Sociable Letters} 111-13.
Heart-strings of Content, where Nature there presents us a Masque with various Scenes of the Several Seasons of the Year.\textsuperscript{575}

The rhythms of Nature are the rhythms of music and dance. In fact, they are the rhythms of the most sophisticated form of British dance spectacle, those of the masque.

Cavendish writes ambivalently not only about dance in relation to social status and Nature, but also dance in relation to gender. In the \textit{Worlds Olio}, Cavendish counsels, “A Gentleman ought to be skilful in the use of his Sword, in the Menage of Horses, to Vault, to Wrestle, to Dance; . . . the fifth gives his Limbs a graceful Motion.”\textsuperscript{576} As highly valued as the cultivation of such grace may be, dance nevertheless occupies the bottom of the hierarchy of the attainments proper for a gentleman. Cavendish feels pride that her husband “is an Heroick Man, fitter to Conquer a Nation, than to Dance a Galliard or Courant.”\textsuperscript{577} Generally speaking, “It is more proper for a Gentleman to be active in the use of Arms, than in the Art of Dancing; for a Gallant Man hath more use of his Arms, than of his Heels.”\textsuperscript{578} Even though the kinds of social dance of which Cavendish writes are usually couple dances, she consistently, and with more than a hint of contempt, describes them as women’s pastimes. To “Dance, Sing, and Fiddle” is among the only education that women ever receive.\textsuperscript{579} Dance, with its associations with sexual allurement, is morally questionable.\textsuperscript{580} Girls who attend boarding school “may learn them

\begin{itemize}
\item \textsuperscript{575} Picture 1671, 383, 386.
\item \textsuperscript{576} Olio 1671, 129.
\item \textsuperscript{577} Sociable Letters 69.
\item \textsuperscript{578} Olio 1671, 223. Another of the short essays in this section of the book reads, “It becomes a Gentleman rather to love Horses and Weapons, than to Fiddle and Dance” (224). Cf. Orations 3.
\item \textsuperscript{579} Sociable Letters 50.
\item \textsuperscript{580} For dance as allurement, see Olio 1671, 151 and Picture 1671, 324.
\end{itemize}
Measures with the Feet, and mistake the Measures of a good Life."°581 In a tirade against the morals of the women of her age, she complains, “our Sexes chief Exercise is Dancing, not alone, amongst themselves, for that they hate, but in masculine Company, and this they love so well, as to dance themselves into a fire heat, if not a Fever."°582 Women, she asserts, do not even enjoy music, except “Violins to tread a measure.”°583 Given the moral dangers of dance, then, it is perhaps surprising that, in a funeral oration for a young bride, Cavendish’s speaker associates a kind of innocent and wholehearted dancing with “Maids and Brides,” whose “very thoughts as well as their Persons Dance, Sport, and Play in their Minds.”°584 Married women may dance more than the unmarried or brides, but “their Actions [are] more Constrain’d,” their hearts are heavier, and, metaphorically speaking, “their Dancing daies are done.”°585 All of this is significant in relation to Cavendish’s depictions of Nature dancing. Dance is feminine and sometimes effeminizing. Even within the cultivated style of courtly dance, dance may be joyful and wholehearted or it may be constrained. Dance also performs a sexual availability that may or may not be morally sanctioned.

The human and social aspects of dance also appear in Cavendish’s natural world. Especially in Cavendish’s earliest philosophical work, the Poems, and Fancies, dance pervades the cosmos from the level of the most immense to that of the most minute entities. The celestial bodies accompany Nature as she dances alone on the stage of the Milky Way:

°581. Olio 1671, 127.
°582. Sociable Letters 40.
°584. Orations 181.
°585. Orations 180-81.
Great *Nature* by *Variations* lives,
For she no constant course to any gives.
We find in *Change* she swiftly runs about,
To keep her *Health*, and yet long *Life*, (no doubt.)

The *Spheares her Musick*, and the *Milkie way*
Is, where *she* dances, whilst those *Spheares* do play.\(^{586}\)

Given the harmonious musical accompaniment and her elaborate solo variations, perhaps Nature is here performing an *entrée* in a ballet, a solo with the elaborate diversity of figures described by De Pure. On the terrestrial level, the winds provide the music for a whole range of dances:

No better *Musick* then the *Windes* can make,
If all their severall *Notes* right places take:

All that this *Musick* meets, it moves to dance,
If *Bodies* yeilding be with a *Compliance*.
The *Clouds* do dance in circle, hand in hand,
Wherein the mids [sic.] the *Worldly Ball* doth stand.
The *Seas* do dance with *Ships* upon their back,
Where Capering high, they many times do Wrack.
As *Men*, which venture on the *Ropes* to dance,
Oft tumble downe, if they too high *Advance*.
But *Dust*, like *Country-clownes*, no measure keep,
But rudely run together on a *Heap*.
*Trees* grave, and civilly, first bow their *Head*
Towards the *Earth*, then every *Leafe* will spred;
And every *Twig* each other will salute,
Embracing oft, and kisse each others *Root*.
And so each other *Plant* and *Flower* gay,
Will sweetly dance, when that the *Windes* do play.\(^{587}\)

The clouds dance in a ring around their sovereign, the Earth, as if in a masque or a country celebration. The ships and seas dance, like street performers, on tightropes. The dust, like the peasants, dances without the elaborate figures and virtuosity that convey singularity upon

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586. *Poems* 139.
dancers in the courtly style. The trees begin their dance with a courtly bow, as dancers at a ball do, but then they perform an unrestrained kissing-dance. Animals, too, dance in Cavendish’s world. Like human beings, “most Creatures keep a Noise, and Dance when they Wooe, as striving to express their Affections.” 588 Nature dances to express love, reverence and simply to relish its own skill, joy and freedom.

The presence of dance in Cavendish’s conception of Nature may suggest the influence of John Davies’s long natural philosophical poem “Orchestra,” first published in 1596 and reissued in 1622. Davies imagines Antinous wooing “chaste Penelope, Ulisses Queen” 589 while she waits the long years at home. When she refuses to dance, Antinous sets forth a defense of the antiquity, morality, naturalness and splendour of dance. According to Antinous, whether the world consists of the Aristotelian elements or of “vndeuided Motes” (atoms), dance orders and sustains it. Antinous describes the original god of Love summoning the “rude disordered rout” of uncivilized human beings around him and teaching them the “many rules” of the art of dance from the “large volume” of the world. The stars, planets, moon and sun all dance; “Onely the Earth doth stand for euer still,” but “On her broad breast hath Dauncing euer been.” The winds keep “their reuelry,/ Their violent turnings, and wild whirling hayes” in the air. The sea dances, at once with its gaze fixed on the moon, and as a means of wooing the earth. Plants and animals dance as well. Flowers, “As oft as they the whistling wind doe heare,/ Doe waue their tender bodies here and there.” Birds, too, dance in time “with the modulation of their layes.” 590

588. Olio 1671, 280.
590. Davies H7v-H8r, I1v, I2v, I5v (Davies does include a parenthetical remark in the same stanza acknowledging the Copernican theory), I4v, I5r, I6r, I6v.
Cavendish’s philosophy, in Davies’s poem, dance permeates the world.

The association of Nature with a style of dance that brings together the joy of country-dance with the formality of courtly dance surfaces in the periodic reappearance in Cavendish’s works of Queen Mab and her fairies dancing in a ring. Cavendish imagines the centre of the Earth,

Where this Queen Mab, and all her Fairy fry;
Are dancing on a pleasant mole-hill high;
With fine small straw-pipes sweet Musicks pleasure,
By which they do keep just time and measure.
All hand in hand, a round a round,
They dance upon this Fairy ground.591

The fairies express the mysterious impetus that lies at the centre of natural things. Queen Mab and “her Fairy fry” are dancing branles (the English spelled the word “brawls”), circle or chain dances originating in France as country-dances, but assimilated in the Renaissance into the standard series of dances performed at balls.592 Interestingly, in Davies’s poem the first dances that Love teaches to the people after he has finished preaching to them are branles:

Thus when at first Loue hath them marshalled
As earst he did the shapeless masse of things,
He taught them rounds and winding Heyes to tread,
And about trees to cast themselves in rings.593

In Davies, the most basic motions found in Nature constitute these dances which are associated with fairy-like nymphs.594 The significance of the dancing-fairies imagery deepens in relation to

591. Poems 151.
593. Davies I7v.
594. Davies I7r-v.
Cavendish’s comments a decade later that in her book of poems she uses the term “fairies,” because she lacks any other term for “little, minute Creatures.”\textsuperscript{595} Even though in her mature philosophy Cavendish doubts the existence of fairies with “airy bodies, . . . a humane shape, and . . . humane actions,”\textsuperscript{596} living entities containing within themselves the impulse to move and far exceeding in their minuteness the range of the best contemporary microscopes remain central to her philosophy.\textsuperscript{597} The dancing fairies are much like dancing particles of matter. After all, in the 

*Poems, and Fancies*, “Atomes small on Sun-beames dance all day.”\textsuperscript{598} In Davies, if the world “Of vndeuided Motes compacted bee, / . . . / they erre that say they [the atoms] did concurre by chance, / Loue made them meet in a wel-ordered daunce.”\textsuperscript{599}

For Cavendish, aside from expressing the vital impulse at the heart of Nature, dance also determines the life and death of particular organisms. Cavendish evokes an image reminiscent of the traditional *danse macabre* of death in an allegorical wedding of Life and Death: 

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At this Wedding, old Father Time, which looked the youngest, although he was the oldest in the Company, and danced the nimblest and best, making several changes in his Dances; he trod so gently, and moved so smoothly, that none could perceive how he did turn, and wind, and lead about. And being wiser than all the rest, with long Experience, he behaved himself so handsomely, insinuated so subtilly, courted so civilly, that he got all the Ladies Affections; and being dextrous, got Favours from every one of them, and some extraordinary ones; for
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\textsuperscript{595} *Philosophical Letters* 501.

\textsuperscript{596} *Philosophical Letters* 227.

\textsuperscript{597} The early association of atoms and fairies with dancing has caused me to wonder whether the “Queen Mab . . . drewne with a teeme of little Atomies” of Mercutio’s speech in *Romeo and Juliet* (Mr. William Shakespeares Comedies, Histories, & Tragedies, ed. Helge Kökeritz, introd. by Charles Tyler Prouty, facsim. ed. (New Haven: Yale UP, 1954) 655) could have been echoing in her mind and eliciting a chain of associations. Cavendish had an acquaintance with at least some of Shakespeare’s plays.

\textsuperscript{598} *Poems* 158.

\textsuperscript{599} Davies H8r.
he devirginated Youth, Beauty, Pleasure, Prosperity, and all the Five Sences; but could not corrupt, Wit, Virtue, nor the Graces.600

So nimble is old Father Time and so ornate are his figures that he becomes the dance. Time is motion.601 Time, pacing and pattern allure Youth, Beauty, and the other Ladies, and become one with them in a repetition of the marriage of Life and Death, but they also destroy them. It is as though Cavendish collapses the passage of time with the biological motions within a creature, leaving the reader with a metaphorical preparation for her later doctrine of biological time.

In an early poem, she personifies “Motion” as a conductor or dancing-master who keeps time for the atoms:

Motion directs, while Atomes dance.

Atomes will dance, and measure keep just time;
And one by one will hold round circle line,
Run in and out, as we do dance the Hay;
Crossing about, yet keepe just time and way:
While Motion, as Musicke directs the Time:
Thus by consent, they altogether joyne.
This Harmony is Health, makes Life live long;
But when they’re out, ‘tis death, so dancing’s done.602

The dance of the atoms here is a country-dance performed in a circle. The “hay” is a particularly fun and carefree pattern where dancers, every second one moving in the opposite direction around the circle, weave in and out across the “circle line,” taking the hand of another dancer

600. Picture 1671, 233.
601. Cf. Davies H8v, where Time and Dance are “Twins, together got,/ And time first borne . . . .” According to Davies, Dance rides on the “nimble wings” of Time. He neatly illustrates the association of the two in the chiasmic lines, “time the measure of all mooing is;/ And Dauncing is a mooing all in measure.”
602. Poems 17.
and dancing a half-circle with them before they move on to the next dancer and do the same. This joyful pattern embodies the life of a biological organism for Cavendish, but note that these dancing atoms “keepe just time and way” regardless of how much fun they are having. They are dancing the country-dance as aristocratic people would at a ball. The “harmony” of motion indicative of the health of the biological organism occurs when the atoms have finished the hay, and “altogether joyne” into the next sequence of steps. The joyful and yet measured motion embodies life, while the cooperation and harmony between atoms embodies health.

In her first medical writings, which are collected under the title “The Natural Wars in Animal Figures,” Cavendish also describes physical well-being in terms of dance. She writes, “A Healthful temper of the body, is an equal temper of the body, and mixture of humor, well set parts, and justly tuned motions, whereby life dances the true measure of health, making several figures, and changes with the feet of times.” The internal motions of a healthy body dance the measures and figures of courtly social dance.

Within the over-arching category of the biological motions internal to creatures, the “true Art of Dancing” particularly characterizes the psychological motions, the motions of the thoughts, the passions and the wit. When Joy exclaims in one of Cavendish’s poems, “Give me some Musick, that my Spirits may / Dance a free Galliard, whilst Delight doth play,” the sentiment is not simply anthropomorphic. The same is true where Cavendish writes that when moral philosophers “play Conrords, the Mind dances in Measure, the Sarabrand [sic.] of

603. For country-dances using the hay or “hey,” see Playford’s Dancing Master, 5, 8, 9, 17, etc.
605. Poems 80.
Tranquillity,” and when she apostrophizes her own thoughts:

Thoughts, trouble not the Soule with falling out,
Siding in Factions, with Feare, Hope and Doubt.
But with the Muses dance in measur’d feet,
Taking out all the Fancies as you meet.

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
Let those that sober, sad, a Pavin measure,
Corantoes are the lighter Fancies pleasure.

The poet’s exhortation to her thoughts to dance with the Muses displays another parallel between the physical and the psychological realm. In the natural world at large, Cavendish deploys the branles of the fairies as an image for the impulse to motion inherent within matter. In the world of the mind, she substitutes for the fairy dances the dances of the Muses. The Muses may dance like the fairies, but they are also capable of the greatest courtly sophistication. Cavendish imagines a masque, “Phantasmes Masque,” for which “The Stage is the Braine, whereon it is Acted.” After several scenes, “Then there is presented in Shew the Nine Muses, who dance a measure in foure and twenty Figures, and nine Musicall Instruments, made of Goose-quils, playing severall Tunes as they dance.” The twenty-four figures are, as a marginal note indicates, the letters of the alphabet. Here, the figures of the dance have become

606. Poems 51. The sarabande was a newly fashionable solo dance of Spanish origin that was at least sometimes performed with castanets (Compan 346).

607. Fancies B1v-B2r. Pavans were the majestic processional walking dances that opened balls in the Renaissance and early Baroque periods. See Compan 294-95 and Dolmetsch 82-101 on the pavan. The courante or coranto was a particularly fashionable couple dance performed in triple time that indeed conveyed a sense of lightness and allowed considerable latitude for virtuosic floor patterns and footwork. See Compan 109 and Dolmetsch 133-43.

608. Poems 91.

609. Poems 155. In England, the measures were “grave and stately” social dances including pavans and almains that were performed at the end of a masque when the performers first stepped out and invited the audience to dance with them. (See Andrew J. Sabol, Four Hundred Songs and Dances from the Stuart Masque (Providence, RI: Brown UP, 1978) 15-16.
conflated with letters, and dancing has become linguistically discursive.

The virtuosity of the Muses speaks to the impulse towards complex and refined motion and pattern that Cavendish intuits within the brain.610 The dancing thoughts and Muses are so apt in Cavendish’s writing because the rational matter, the matter found concentrated in the brain of any intelligent being, quite literally dances. It does so not only in her earliest and most obviously poetic works, but also in her mature works as well. In an early description “Of the Minde,” Cavendish explains,

These *Rationall Spirits*, as I may call them, worke not upon *dull Matter*, as the *Sensitive Spirits* do; but only move in measure, and number, which make *Figures*; which *Figures* are *Thoughts*, as *Memory*, *Understanding*, *Imaginations*, or *Fancy*, and *Remembrance*, and *Will*.

Thus these *Spirits* moving in measure, casting, and placing themselves into *Figures* make a *Consort*, and *Harmony* by Numbers.

Where the greater Quantity, or Numbers, are together of those *rationall Spirits*, the more variety of *Figure* is made by their several *Motion*, they dance severall dances according to their Company.611

The rational matter does not labour as the sensitive matter does. Rather, its motions are recreational and self-motivated. The three ingredients of “The true Art of *Dancing*” also characterize its motions: measure, figure and number. The individual particles of matter move as dancers in an entrée of a ballet de cour. While they move “in measure,” they are performing a sequence of steps in a given configuration in relation to one another. When they “cast,” they move out of this configuration into a new one.612 The language of “consort” and “harmony”

610. Other passages on the dances of the muses include *Poems* 58; *Picture* 1671, 106; *Opinions* 1655, A4r.

611. *Fancies* 30-31. There is a marginal note next to the last paragraph that reads, “*Dancing is a measur’d Motion.*”

612. “Casting” or “casting off” is the contemporary term used to describe the deliberate movement of dancers out of their place in a given configuration. It marks the transition between “figures” in the
suggests that the motions that Cavendish envisions do indeed recall those of courtly styles of
dance, while the idea that increased numbers of particles results in greater variety of figure
implies that she is imagining ballet rather than social dancing. In contrast, the fact that the
particles perform different dances depending on their company suggests that the dances are
social and that like contemporary dancers at balls, the rational matter may dance grave
processional dances, light-footed displays of virtuosity and fun-loving country-dances, all
without losing its refined adherence to measure, figure and number.

As Cavendish’s philosophy evolves into its prose form and into increasing maturity, the
language of dance becomes inseparable from her physics in general. There are fewer concrete
allusions to specific styles of dance, and any residual sense that she was using the language of
dance metaphorically and anthropomorphically gradually drops out of sight. She also no longer
confines the dancing matter to the brain. Instead, it exists throughout Nature. In the first edition
of the *Philosophical and Physical Opinions*, Cavendish teaches that the rational matter has “two
ground motions”: “it first runs into figures, and then moves figuratively.” Coming as this
passage does after a chapter in which “figure” designates the anatomy of biological organisms,
there is little to indicate that the two ground motions of the rational matter are first, moving into
the configuration of the dancers on floor, and second, performing sequences of steps tracing out
patterns. The ensuing chapter, however, offers a hint concerning the imagery lying behind these
apparently abstract terms. There, Cavendish attributes disorder in the understanding and the
passions to “the wrong steps and false measures of the rational innated matter,” which, a

sense of these configurations, or at least the partial reordering of the dancers. For contemporary
usage of the term in country-dancing, see Playford’s *Dancing Master*, 4, 5, etc.

613. *Opinions* 1655, 105.
marginal note indicates, “moves in figures like dancing.”\textsuperscript{614} By the second edition of the \textit{Opinions}, even such belated explications of the metaphor have disappeared. Here the rational matter “is so pure and free” that it “moveth in numbers, measures, and figures in its own degree of matter.” It “moveth only in it Self, in Number and in Measure, but neither the Sensitive Animate matter nor the Rational Animate matter, moveth alwayes Regularly.” Again, “this Rational matter moves not as the Sensitive doth, upon the Inanimate matter, but moves by it Self, and in it Self, in Measure, Number, and Figure.”\textsuperscript{615} In short, the dance imagery has become a formula for describing the motions of this degree of matter. The formula fades from Cavendish’s later works, but it does leave traces. For example, it echoes in the passage on the orderliness of Nature’s “fundamental actions” with “the several exact measures, times, proportions and motions of all her Creatures.”\textsuperscript{616} It also resonates in Cavendish’s conclusion to a chapter “\textit{Of the Parts of Nature, and of Atomes},” where she writes, “Lastly, as there is a perpetual self-motion in Nature, and all her parts, so it is impossible that there can be perfect measures, constant figures, or single parts in Nature.”\textsuperscript{617} Her use of the formula may diminish, but the aesthetics it implies and its repercussions for other aspects of her physics, such as her doctrines of biological time, occasional causation and perception by “patterning out,” persist.

### 3.4 Motion, Free Will and Causation

Recall, from a few pages back, Cavendish’s description of the winds moving the natural

\begin{itemize}
  \item \textsuperscript{614} \textit{Opinions} 1655, 105.
  \item \textsuperscript{615} \textit{Opinions} 1663, 3, 25, 43.
  \item \textsuperscript{616} \textit{Philosophical Letters} 173, 174.
  \item \textsuperscript{617} \textit{Observations} 1.146.
\end{itemize}
world to dance:

All that this Musick meets, it moves to dance,
If Bodies yeilding be with a Compliance. 618

Music does not move a dancer by applying physical force to her. According to Cavendish’s physics, the winds operate like the music in that they only “occasion” the natural world to move in response. In her opinion, the Aristotelian maxim that “Whatsoever is moved must necessarily be moved by another, either external or internal” 619 is wrong. That wrongness lies not in the placing of an object within a chain of causation that involves external and internal factors. Rather, it lies in the assumption that natural motion must be the effect of an Other. In an internal debate where Cavendish dialectically works out her ideas, her thoughts arrive at the conclusion “that all the parts of Nature, whansoever they move, move by their own motions; which proves, that no particular Creature or effect of composed Nature, can act upon another, but that one can onely occasion another to move thus or thus.” 620 For Cavendish, the immediate cause of most natural effects, the motion itself, stems from within that which moves. 621

Several of the most sophisticated scholarly articles on Cavendish’s natural philosophy have been written about her theory of causation. Eileen O’Neill has written a brief but excellent account of Cavendish’s occasional causation, drawing connections with Stoic philosophy and

618. Poems 138.
619. Stanley 374.
620. Observations i2v.
621. On this point Cavendish differs even from contemporary philosophers who embraced the notion of occasional causation. For them, the “other” within the self that was the immediate cause of motion was God. See the section on “Occasional Causation” in Steven Nadler’s “Doctrines of Explanation in Late Scholasticism and in the Mechanical Philosophy,” The Cambridge History of Seventeenth-Century Philosophy, ed. Daniel Garber and Michael Ayers, vol. 1 (Cambridge: Cambridge UP, 2003) 513-52.
introducing the notion of “moral cause” into the discussion. Karen Detlefsen has picked up on this terminology from the seventeenth-century debate over determinism and free will between Thomas Hobbes and John Bramhall, and has developed a careful analysis of Cavendish’s theory that in the end describes her natural world as at once materially monistic, non-deterministic, and “irreducibly teleological and normative.” From a more literary perspective, John Rogers has linked Cavendish’s doctrine of occasional causation not only to a rejection of mechanistic natural philosophy, but also to a proto-feminism that Cavendish’s own theory ostensibly fails when it re-inscribes masculine and feminine, public and private binaries through its location of physical freedom only within “the ‘private’ context of the household organization within objects.” Brandie Siegfried has commented that Cavendish’s occasional causation marks a “preference for the causality of human nature (chance) over the causality of faceless social forces (determinism).” Siegfried associates Cavendish’s form of causation with “intentionality” and with “the ontological elasticity of potentiality or capacity as delineated in the writing of Aristotle.”

My own interpretation of Cavendish’s theory of causation has been influenced by these

626. Siegfried 20, 22.
627. Siegfried 24.
and other scholars. I seek, in the following paragraphs, to continue the process of refining the
interpretation of the theory. I also dwell upon what several of these authors have identified as
the most mysterious part of Cavendish’s theory, the process that occurs at the actual moment of
occasional causation. Cavendish’s unique assemblage of doctrines of causation (for as I will
show, occasional causation is not the sole causal structure in her world) creates an additional
opportunity for discourse in Nature as she conceives it.

First of all, the repeated claim of scholars that there is a radical break away from
mechanism and towards animism after Cavendish’s first two or three works of natural
philosophy must be tempered. Rogers states, “In 1663, Cavendish mounts a surprising,
thoroughgoing critique of her own mechanistic principles.” He comments, “material bodies can
move, according to the newly vitalist Cavendish in 1663, only if they choose to move” and
“matter for Cavendish in 1663 possesses attributes of motional self-determination hitherto
reserved for thinking, soulful human beings.” In a note, Rogers points the reader to an article
by Lisa Sarasohn for an account of this “philosophical conversion.” Sarasohn claims,
“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.”
Sarasohn’s choice of date must simply be a typographical error, and she and Rogers must be
discussing the 1663 publication of the second edition of the Philosophical and Physical
Opinions, with its excision of the material from the 1653 Philosophicall Fancies that constituted

628. Rogers 188, 189.
629. Lisa Sarasohn, “A Science Turned Upside Down: Feminism and the Natural Philosophy of
630. There were no books by Cavendish published in 1661.
the first part of the first edition of the *Opinions*, and its inclusion of many new chapters that articulate the nature of matter with new vocabulary and precision.

Another reasonable date that scholars have given for a “philosophical conversion” is 1655. In this year Cavendish includes in the prefatory material to the first edition of the *Philosophical and Physical Opinions* “A Condemning Treatise of Atomes,” which ends with the claim,

> But the old opinions of atoms seems not so clear to my reason, as my own, and absolutely new opinions, which I hear call my Philosophical opinions, which opinions seem to me to be most probable, and these opinions are like Chymistrie, that form a grosse substance, extract the substance and essence, and spirits of life, or knowledge which I call innated matter.\(^{631}\)

There is, however, no reason to assume that by “the old opinions of atoms” Cavendish means “my old opinion of atoms,” and there is also no reason to assume that by “absolutely new opinions,” she means “absolutely new as of the writing of this book.” Lucretian atomism was indeed an old philosophy, and Cavendish’s animism was indeed new, even in comparison with the seventeenth-century revival of interest in atomism. Moreover, although Cavendish does use the term “atom” frequently only in her first two books, this is a product of the gradual evolution and refinement of her vocabulary as she becomes increasingly acquainted with the opinions and writings of her contemporaries. In “A Condemning Treatise of Atomes,” after all, she actually uses the notion of “atom” as the basis of her own “absolutely new” philosophy:

> But I have considered that if the onely matter were atoms, and that every atome is of the same degree, and the same quantity, as well as of the same matter; then every atom must be a living substance, that is innate matter, for else they could

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631. *Opinions* 1655, a3v.
not move, but would be an infinite dull and immoving body.632

Living “atoms” are “innate matter,” and this “innate” or “innated” matter is Cavendish’s “absolutely new” theory of Nature, which she eventually describes as “self-moving matter” in her most mature works. As Stephen Clucas writes, “A Condemning Treatise of Atomes” is “not an anti-atomist statement, but rather a refinement of the crudities of an updated Democritean-Lucretian atomism.”633

For Cavendish, words are fluid in their relation to meaning. Cavendish also has an evolving sense of the networks of concepts associated with particular philosophical terms. Therefore, neither her use of the term “atom” in her early works, nor even her use of certain concepts associated with Lucretian atomism entails a belief in the inertness of matter, in a physics based on external efficient causation, in a mechanical world view. Even her works from 1653 are full of animist descriptions of matter, where, for example, the “Innate Matter is a kind of God, or Gods to the dull part of Matter, having power to forme it, as it please,” and “All things in the World have an Operative power; which Operation is made by Sympathetical Motions, and Antipathetical Motions, in severall Figures.”634 Cavendish’s philosophy evolves, and it may even evolve towards a decreasing interest in the role of physical force in causation, but there is no sudden “philosophical conversion” away from atomism or mechanism and towards animism and occasional causation. Animism and even occasional causation are present, albeit not so precisely and analytically described, from Cavendish’s earliest philosophical

632. Opinions 1655, a3v.
634. Fancies 1653, 12, 13.
works.

Cavendish consistently writes in her mature philosophy that God has granted the parts of Nature, including human beings, a limited free will. She resists Hobbes’s suggestion that self-motion would remove creatures from a “dependance” upon God, claiming that God, in his infinitude has, in free will, bestowed an infinite gift upon humans. Then she qualifies this gift, saying that although infinite, it is not absolute:

I do not say, That man hath an absolute Free-will, or power to move, according to his desire; for it is not conceived that a part can have an absolute power: nevertheless his motion both of body and mind is a free and self-motion, and such a self-motion hath every thing in Nature according to its figure or shape; for motion and figure, being inherent in matter, matter moves figuratively. 635

Cavendish’s deployment of Hobbesian terminology speaks to her understanding of causation in general: she equates “free will” with “power to move, according to [one’s] desire.” According to Hobbes, “power” is virtually synonymous with “cause,” except that “Cause is so called in respect of the Effect already produced, and Power in respect of the same Effect to be produced hereafter.” An agent has the power to produce an effect, “Active Power,” when that agent “has all those Accidents which are necessarily requisite for the production of some Effect in the Patient.” Active power, though, is not enough to completely cause an event. “Entire or Plenary Power,” which Hobbes also calls “Entire Cause,” exists only when the patient, too, has “power,” when it has “all those Accidents which it is requisite it should have for the production of some Effect in it.” 636 In both Hobbes and Cavendish, no single part has absolute or plenary power. Although “absolute power” and “plenary power” may appear to refer to two different


issues, the former to the power to do everything and the latter to the power to do something, nevertheless, the connection holds that neither in Hobbes nor in Cavendish does causation exist outside of a dyadic structure of shared power.

Even the motions that Cavendish identifies as “voluntary,” as lacking in an external cause, are part of such a dyadic structure because they are constrained by the characteristics with which God has endowed Nature. When Cavendish recounts a discussion on the free-will debate between “Sir P.H. and Sir R.L,” Cavendish confesses herself troubled, and presents her own attempt at establishing a middle ground in the argument. The “Power and Will” of Nature, she writes, are “not absolute, but limited; that is, she has a natural free-will, but not a supernatural, for she cannot work beyond the power God has given her.”\textsuperscript{637} This is a structure of limiting freedom, that, I hypothesize, obtains at other levels in Cavendish’s natural philosophy as well. In other words, creatures are limited in their actions by their identities. This is part of what Cavendish means in her repeated statements that self-motion is according to figure, that “such a self-motion hath every thing in Nature according to its figure or shape,” that “as it is impossible for Nature to go beyond her self; so it is likewise impossible that any particular body should extend beyond it self or its natural figure.”\textsuperscript{638} Component parts of a creature, however, are less constrained by the creature’s identity in that they identify with Nature as a whole. This is why digestion, respiration, dissolution, and other processes that involve transcending or altering the boundaries of a creature are possible. Regardless of the ubiquity of reason in the cosmos on every scale of measure, the consciousness of a creature or an object has a different, and in some

\textsuperscript{637} Philosophical Letters 505.
\textsuperscript{638} Observations 1.108.
respects more limited, set of powers available to it than the matter constituting that
consciousness does, and yet both have a measure of free will.

How is Nature’s power limited beyond being confined to the natural? The free will of
Nature’s parts is only a free will “of Self-motion”; it is not a “Free-will to oppose God’s
Decrees.” God can (but in Cavendish’s opinion, in practice usually does not) intervene in
natural processes in any way he chooses that remains consistent with Nature’s fundamental
characteristics. (Oddly, God himself is not free “to alter Nature’s nature,” to undo or redo his
creation, perhaps because for him to do so would threaten the logical coherence of his own
personality.) Nature cannot create ex nihilo or annihilate any part of itself. Nature cannot
contradict the logic of its defining characteristics. It must “move in parts,” have figure, and
move continually. The characteristics of the three degrees of matter are unalterable. They
cannot change from one into other, and no process of spiritualization of matter or
materialization of spirit is possible. Nature cannot arbitrarily convey the characteristics of one
part of herself, for example of one animal, to another part. Characteristics of creatures must
flow logically from the figurative motions that constitute them.

642. *Observations* 1.159.
646. Interestingly, Cavendish cannot “certainly affirm” that God has determined which “of the
several species of Creatures” may exist. This leads me to wonder whether she is implying that the
existence of the human species has been determined not so much by God as by Nature. See
*Observations* 1.158.
Finally and most significantly given the current scholarly emphasis on the “libertarian” aspects of Cavendish’s doctrines of causation and motion, the brute force of some of Nature’s parts often limits the power and freedom of other parts.\textsuperscript{647} Explaining a very deterministic passage in which she states, “every thing is led like Dogs in a string by a stronger Power,”\textsuperscript{648} Cavendish writes, “Also when I say, that outward things govern, and a Creature has no power over it self, I mean, that which is stronger, by what means soever, is superior in power.”\textsuperscript{649} Force may not be the most common characteristic of causation in Cavendish’s world,\textsuperscript{650} and it may never be the immediate cause of motion itself, but it continues to be an important aspect of causation even in her most mature philosophy. In 1668 she writes, “Though Nature’s Parts are Self-moving, and Self-knowing, yet they have not an infinite or uncontrollable Power; for, several Parts, and Parties, oppose, and oft-times obstruct each other; so that many times they are forced to move, and they may not when they would.”\textsuperscript{651} Individual parts of Nature may be

\textsuperscript{647}. Karen Detlefsen writes, “Cavendish endorses a libertarian account of freedom, according to which finite material parts of the natural world, having both self-motion and reason, are capable of determining their own actions conforming to their own reasons, rather than being determined to act in a specific way by something extrinsic to them. At the same time, finite material parts do not thereby necessarily act without reference to other material parts, precisely because they are rational. Finite parts may consent to the rational suggestions made to them by other parts to behave in certain ways” (“Atomism, Monism and Causation” 212). Lisa Sarasohn similarly writes, “For Cavendish, the original freedom of all being lay in the ability of matter to move according to its own will, independent of any necessitating factors. An element of indeterminacy, built into the very matter of the universe, produces the fundamental liberty of all creatures. Cavendish argued most forcefully for the autonomy and freedom of all nature, insisting that such freedom was rooted in a self-moving principle of matter itself” (“Leviathan and the Lady” 51).

\textsuperscript{648}. \textit{Opinions} 1663, 73. In the 1655 edition of \textit{Opinions}, Cavendish gives a marginal note glossing “a stronger power” with the phrase “Natural power” (29).

\textsuperscript{649}. \textit{Philosophical Letters} 530.

\textsuperscript{650}. See \textit{Grounds} 128, \textit{Observations} 1.138.

\textsuperscript{651}. \textit{Grounds} 105.
limited in their own power to act by external power. Common examples offered by Cavendish include phenomena related to fire. The matter of fire may, when it melts metals, “force or cause other parts of Matter to move and work according to [its] will, without any change or alteration of parts,” or it may, when it burns wood, “cause other parts to work and act to [its] own will, by forcing these over-powred parts to alter their own natural motions into the motions of the victorious Party, and so transforming them wholly into their own Figure.” Moreover, this kind of causation-by-force does not only happen among figures constituted of the already-blended degrees of matter; it also happens amongst the degrees themselves. Sensitive animate matter may, in isolated events, upset the whole hierarchical functioning of the material world by forcing “the rational to obey.” The application of force sometimes produces “irregularities” within the cosmos, but irregularities are, as I showed in my first chapter, a regular feature of Nature’s equilibrium. In Cavendish’s philosophy, the application of force is not fundamentally incongruent with Nature.

Scholars of Cavendish’s theory of causation have written as if she offers a single and unitary theory which she and they call “occasional causation.” Even Cavendish’s “occasional causation,” however, actually accommodates multiple structures of causation. An entity that acts as an occasional cause, for example, may have varying degrees of association with the object to which it applies itself:

the motions of the exterior Agent [the occasional cause], and the motions of the Patient [the material cause], do sometimes joyn and unite, as in one action, or to one effect, and sometimes the motions of the Agent are onely an occasion, but

not a co-workman in the production of such or such an effect.654

Furthermore, the category of “occasional causation” divides not only according to the degree of
the occasional cause’s involvement, but also according to the qualities with which the
occasional cause applies itself to the object:

[F]or example, two men may meet each other contrary ways, and one may not
only stop the other from going forward, but even draw him back again the same
way he came; and this may be done with love and kindness, and with his good
will, and not violently by power and force: The like may be in some actions of
Nature.655

Note that one of the alternatives for the occasional cause is for it to apply itself to its object
“violently by power and force.”

Even more strikingly given the scholarly emphasis on free will in Cavendish’s Nature,
occasional causation is, for Cavendish, actually about the application of force. At times, this
force is violent:

[T]here is a perpetual opposition and war between the parts of nature, where one
sometimes gets the better of the other, and overpowers it either by force or slight,
and is the occasion of its dissolution into some other figure.656

The application of over-powering force or trickery to a figure can set in process the figure’s
dissolution, its death. Speaking more loosely, force kills, but even killing-force is subject to the
structure of occasional causation in that the actual motions of death or dissolution arise from
within the dying or dissolving object itself. As Cavendish writes in an explanation of her earlier
use of language, when “A thing is forced, . . . some Corporeal Motions are at least an occasion

654. Philosophical Letters 310.
655. Observations n1r.
656. Observations 2.9.
to make other parts more industrious.” Other times, the application of force may be about the
human will intervening to alter Nature from its natural course. All motions made by artificial
things are forced, but at the same time, they are also occasioned. The motions in a watch and the
motions of a man using an artificial contraption in order to fly are at once forced and
occasioned:

Nevertheless, I say, that all these motions, although they be forced or artificial,
do not proceed from some exterior agent any otherwise but occasionally, and that
all motions whatsoever are intrinsecally inherent in the body, or which is in
motion.658

The lack of application of force does not define occasional causation. When Cavendish objects
to Aristotle’s theory “That whatsoever is moved, must necessarily be moved by another,” her
response is, “‘Tis true, one part may occasion another by its outward impulse or force, to move
thus or thus; but no part can move by any others motion, but its own, which is an internal, and
innate motion.”659 What defines occasional causation is that the motion of the object of the
occasional cause stems from within the object itself. Since all matter, assuming the blending of
the three degrees, is self-moving, all matter is, as I have already shown, always already moving.
Its motion comes from within. An occasional cause determines to a lesser or greater extent the
specifics of the motion of its object, but the motion has always and only belonged to the object
itself.

Cavendish’s apparent motivation for her doctrine of occasional causation has little to do
with free will in Nature. Instead, that motivation lies rooted in the denial of any kind of

657. Philosophical Letters 539.
659. Observations 3.34.
ontological status to motion separate from that of the matter in which it is “intrinsically inherent.” Three times in three pages during a discussion of the “Principles of Nature,” Cavendish actually equates “animate matter” with “self-motion.” Although she finds it theoretically possible to conceive of matter without motion, motion itself is inconceivable without matter, “and if Motion is corporeal, then Matter, Figure, Place, and Motion, is but one thing, viz. a corporeal figurative Motion.” Even Descartes’s identification of motion as “a Mode of a thing” appears to Cavendish as an inappropriate “abstraction . . . of motion from body.” If motion is matter, Cavendish reasons, then Descartes’s doctrine of the transfer of motion at impact collapses because it would mean that in every act of efficient causation, the agent would lose substance and the patient would gain substance, and this does not occur.

Hobbes offers another account of motion which Cavendish also rejects. For him, motion is an “accident” in the scholastic sense of the term. Cavendish objects to this terminology not when Hobbes uses it with regard to the subjective human perception and understanding of

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662. Philosophical Letters 97. For Descartes’s position, see Principles of Philosophy 52.
663. For Cavendish’s critique of Descartes, see Philosophical Letters 98 and Observations 1.50. For related passages on the lack of such a transfer, “transmigration” or “communication” of motion, see Philosophical Letters 21, 444-48; Observations i2v, 3.53. There is an interesting passage in the Observations where Cavendish says that this lack of transfer of motion also holds true for when “the sensitive parts carry or bear along with them the inanimate parts” (m2r). This strikes me as odd since the inanimate parts are ostensibly lacking in the property of self-motion.

Eileen O’Neill offers a similar account of Cavendish’s rejection of Descartes’s theory of the transfer of motion. I am inclined to take O’Neill’s statement that Cavendish’s “point is that the mechanical transfer of motion via impact does not underlie all natural change” (xxix) one step further, and to say that Cavendish’s point is to deny that the transfer of motion through impact underlies any natural change unless matter is conspicuously transferred as well.

For Descartes’s opinion on the transfer of motion at impact, see Principles of Philosophy 61-62.
motion, but when he uses it with regard to the actual composition of motion. To say that "An accident is not a body, but in a body," is to undermine the essential, for Cavendish, materiality of motion. For her, motion does not simply inhere in a body; it is “intrinsecally inherent” within it. In a passage that appears in both editions of the *Opinions*, she writes, “Some have opinion that Motion is nothing, but to my reason it is a thing; for if matter, is a substance, a substance is a thing, and the motion, and matter being unseparably, united, makes it but one thing.”

Hobbes, by categorizing motion as an accident, replaces the Cartesian theory of the transfer of motion with one of the perishing and generation of motion:

And therefore when any thing appears otherwise then it did, by reason of other and other Accidents, it is not to be thought that an Accident goes out of one Subject into another . . . but that one Accident Perisheth, and another is Generated. For example, when the Hand being Moved, Moves the Pen, Motion does not go out of the Hand into the Pen, for so the Writing might be continued though the Hand stood still, but a new Motion is Generated in the Pen, and is the Pens Motion.

Cavendish thinks that Hobbes comes part way to an accurate description of the relationship between motion and causation, but she thinks that his theory runs aground on another of the important tenets of her philosophy, the tenet that motion is conserved. If matter and figure are, as I have shown in previous chapters, conserved, then in a world of corporeal figurative self-motion, motion must be conserved as well. This doctrine persists throughout Cavendish’s works. In 1655, already using an example similar to that employed by Hobbes, Cavendish explains that when a man ceases to shake hands, the motion in his hand is not spent, or gone; “it

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665. *Opinions* 1655, 31; *Opinions* 1663, 95.
is neither fled away, nor ceased to be, for it remains in the hand.” The motion, she says, resembles gold that remains in a chest even when it cannot be seen; “particular motions are, but shewed, not lost, or Annihilated.”\textsuperscript{668} Motions can neither be annihilated nor generated. “[A]ll Sorts of Motions are as Old as the Matter,” and when they are not “in the present Action,” they are nevertheless “in the Power of the Matter.”\textsuperscript{669} Matter always retains the possibility of repeating its past actions. Overall, then, Cavendish’s motivation for developing and refining her theory of occasional causation resides in her need to account for physical events within a logical structure of causation that does not contradict the materiality of motion and the conservation of matter, figure and motion.

Not only are issues of free will of little significance to the development of her theory, but they are of relatively little significance to the actual performance of occasional causation in her world. In the \textit{Philosophicall Fancies}, Cavendish writes of the “dances” of the rational spirits in the mind. She states, “Will is to choose a dance, that is to move as they please, and not as they are perswaded by the sensitive spirits.”\textsuperscript{670} To will something is to have “freedom with respect to exercise . . . and freedom with respect to specification.”\textsuperscript{671} It is to have freedom to perform or not to perform an act and freedom to choose or specify the nature of that act. The model that scholars have found to elucidate Cavendish’s doctrine of occasional causation is moral causation.\textsuperscript{672} As Detlefsen indicates, in the Hobbes-Bramhall debates, Bramhall defines moral causation.

\textsuperscript{668} \textit{Opinions} 1655, 31; \textit{Opinions} 1663, 95-6.
\textsuperscript{669} \textit{Opinions} 1663, d4v. For more passages on the conservation of motion see \textit{Opinions} 1655, 37; \textit{Philosophical Letters} 54, 534, \textit{Observations} 1.48-49.
\textsuperscript{670} \textit{Fancies} 31.
\textsuperscript{671} See Nadler 1198 for this terminology.
\textsuperscript{672} See O’Neill xxx-xxxi, Detlefsen, “Atomism, Monism, and Causation” 215.
causation:

Then the will is determined morally, when some object is proposed to it with perswasive reasons and arguments to induce it to will. Where the determination is naturall, the liberty to suspend its act is taken away from the will, but not so where the determination is morall. In the former case, the will is determined extrinsecally, in the latter case intrinsecally. 673

Although there may be a freedom of exercise in moral causation in the sense that the object of the moral cause may still refuse to act, this object does not really possess the freedom of specification. The “perswasive reasons and arguments” determine the specifics of the object’s action. In fact, Cavendish takes an even more deterministic sense of moral or occasional causation than does Bramhall. For her, if the rational spirits are persuaded by the sensitive spirits, they are not truly willing something, because they are not choosing their dance.

Free will continues to exist in Cavendish’s cosmos, but only under the guise of matter that performs “voluntary motions.” Cavendish, as I have already shown, tends to use the term “voluntary motion” in relation to mental phenomena, for example in relation to the motions of the rational matter in creating fancy and dreams. However, she believes that voluntary motion is not the prerogative solely of rational matter in the brain. Instead, the sensitive matter, too, may move voluntarily, causing either mental phenomena or macroscopic “Generations, Dissolutions, Alterations, Transformations, &c.” 674 Voluntary motion is confined neither to the mind, nor the human, nor even the animal and vegetable realms. Instead it is confined to the level of subvisible parts of matter, which may express themselves in human consciousness or in macroscopic and observable events. This is significant: true free will exists first and foremost on


But just how free is this free will? Cavendish’s repetition of a phrase in her description of voluntary motions brings this freedom into some doubt. Matter, she writes, performs its voluntary actions, makes its voluntary figures, “by rote.” Cavendish repeats this phrase at least six times in the *Observations*, and it occurs in other works as well.⁶⁷⁵ Although she gives no explanation of the phrase, the *Oxford English Dictionary* offers as a contemporary definition, “in a mechanical manner, by routine . . . ; also, with precision, by heart.”⁶⁷⁶ This suggests that even Cavendish’s voluntary motions are made on the basis of previously acquired skill, or previously learned routine. If to will is “to choose a dance,” it is to choose from a set of pre-existing choreographies, and it is to perform the selected dance with precision. Thus, even the so-called “voluntary motions” of Cavendish’s world do not carry with them the connotation of the kind of spontaneous freedom that feminist scholars in particular might like to find. Even the voluntary motions are not wholly exempt from the dyadic structure of causation that I observed earlier.

To return to occasional causation, it often involves the application of force, it allows for only limited “freedom of exercise,” and it eliminates “freedom of specification.” This last point still merits a little more emphasis. Occasional causation is not about choice. John Rogers has written,

> As we might expect, Cavendish works hard to scuttle the possibility that the free will of her theory is in fact forced consent, convinced, at least in a discussion of the hypothesis of atoms, that “there must necessarily be as much Liberty and

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⁶⁷⁵ *Observations* 1.210, 1.212, 1.242, 1.243, 1.247, 3.55; *Picture* 1671, 590; *Philosophical Letters* 28; *Opinions* 1663, 282; *Grounds* 91, 92.

Power in every atome to Disagree as to Agree.” But the depressing regularity with which parts of matter “agree” to move when struck by the parts of matter of other, stronger bodies suggests all too forcefully that there is probably not as much liberty and power in animate matter to disagree as to agree. The free will Cavendish heroically attributes to material bodies quietly slides, on reflection, into the more deferential realm of assent and acquiescence. 677

This supporting evidence is misleading. The statement by Cavendish that Rogers cites occurs in the context of a hypothetical and contrary-to-fact situation. She imagines that if atomism were to account for the order and complexity of the world, it would have to posit animate atoms each endowed with, among other things “as much Liberty and Power . . . to Disagree as to Agree.” However, if atoms were to have this “Free-will and Liberty,” if the order of the natural world were to “rest upon Consent and Agreement, like Human Governments,” there would be continual conflict, and the cosmos would not cohere.678 Cavendish at no point purports to construct a theory in which matter in general has equal free will and choice. On the other hand, parts of Nature do continue to enact voluntary motions, and so free will never really does “slide” “into the more deferential realm of assent and acquiescence.”

I wonder whether perhaps the scholars who have drawn attention to what they see as rather subversive theories of freedom in Cavendish’s natural philosophy have not been misled by Cavendish’s frequent use of lexical items such as “consent” and “agree.” In the case of “consent,” the contemporary homonym “concent” (meaning “To harmonize or make to accord” or “To meet harmoniously”679) seems to exert a significant semantic pull on the first word’s meaning. When Cavendish writes that pointed atoms, “by consent of parts,” grow into a

677. Rogers 206.
678. See Opinions 1663, c2r-v.
“Wheele of Fire" that becomes the sun, that atoms join “by consent” into a dance the harmony of which makes health and life, and that porous atoms, thrust upwards by sharp ones, join together and “By one consent” fall back to the earth as rain,\textsuperscript{680} the predominant meaning is not so much one of the atoms assenting to a proposition as it is one of the atoms joining and being in harmony with one another. The same holds true in Cavendish’s mature works. In \textit{Grounds}, she three times repeats the notion “That all Creatures are produced, or composed by the agreement and consent of particular Parts.”\textsuperscript{681} Creatures are formed not primarily by the permission or assent of particular Parts, but by the harmonious meeting of those parts.

A similar situation obtains with respect to the word “agree.” Cavendish often speaks of matter agreeing, but most often the word does not mean “To become well-disposed, to accede.” Instead, it means “To come into harmony” or “To be in harmony.”\textsuperscript{682} In fact, Cavendish indicates very clearly that “agreement” within matter does not necessarily have to do with causal processes–not even with moral or occasional causation. She explains that in the case of the sun’s heat and the internal heat of the earth, “though their natures and dispositions may mutually agree and sympathize, yet their powers cannot work upon their Interior Natures so, as to produce internal natural effects and proprieties in them.”\textsuperscript{683} Parts of Nature may have knowledge of each other, resemble one another, and “agree” without being immediately linked in a causal chain.

For natural things to “agree” is for them to engage in the cosmic processes of sympathy which I discussed in the first chapter. In Cavendish’s opinion,

\begin{itemize}
\item \textsuperscript{680} \textit{Poems} 14, 17, 22.
\item \textsuperscript{681} \textit{Grounds} 31, 17.
\item \textsuperscript{682} “Agree, v.,” Def. III, IV, V, \textit{OED Online}, 11 August 2008.
\item \textsuperscript{683} \textit{Philosophical Letters} 269.
\end{itemize}
[I]n all natural actions there is a commerce, entercourse, or agreement of parts; which entercourse or agreement, cannot be without perception or knowleg of each other; Wherefore it must of necessity follow . . . that perception between parts is required in every action of Nature; nay, even in those which are called voluntary actions.\textsuperscript{684}

Even the matter possessing, thanks to its context, the greatest autonomy in Nature is not exempt from the web of perception and knowledge that makes Nature work. Agreement, like consent, is not about free will in Nature; it is about relationship, society and discourse.

This discussion concerning causation in Cavendish may be distilled into two points. First of all, multiple models of causation co-exist in Cavendish’s universe. As long as Cavendish’s reader understands these models as provisional attempts to describe Nature, the co-existence of voluntary causation, occasional causation and, possibly, mechanical efficient causation does not seem logically problematic. The other point is that occasional causation, the dominant form of causation in Cavendish’s thought, is not about free will, and it is consequently not incongruent with force and determinism.

Recall, again, Cavendish’s poetic description of the winds inciting the natural world to dance:

\begin{quote}
All that this \textit{Musick} meets, it moves to dance,  
If \textit{Bodies} yeilding be with a \textit{Compliance}.\textsuperscript{685}
\end{quote}

This is an image of occasional causation. As such, the image depicts not only the arousal of motion from within the object of the occasional cause, but also the role of force upon the occasional cause. The trees, even though their motion flows from within, cannot select how they

\begin{flushright}
\textsuperscript{685.} \textit{Poems} 138.
\end{flushright}
will move when the wind blows on them. Likewise, dancers, though their motions arise from within their own bodies, may not feel that they rationally choose how they will move. The trees and the dancers are impelled to move in “concent” with the winds and the music. Occasional causation involves a harmonization, a communion, of the cause and its object.
Chapter 4

“The Language of the Senses”:

Speech and Perception

All of the important themes discussed in the previous chapters—order, variety, sympathy, communication, figure, expression, motion, and agency—culminate, in Cavendish’s natural philosophy, in the keystone doctrine of perception. In her mature philosophy, processes of perception exceed in importance all other physical or biological phenomena; “the perceptive corporeal motions are the ground-motions in Nature, which make, rule, and govern all the parts of Nature, as to move to Production, or Generation, Transformation, and the like.”686 As Cavendish writes at the outset of the Observations, “Perception being the chief and general action of Nature, has occasioned me to be more prolix in explaining it, then any other subject.”687

For Cavendish, perception is a multi-faceted topic. It involves not only the manner in which a being becomes aware of something external to itself, but also the production and nature of the perceptible aspects of an object, their behaviour and their encounter with the perceiver. Therefore, one possible entrance into the topic of perception in her writings is through her interest in the production and reception of speech.

In the categorization of “discourse” offered by the Lady Speaker in the play The Female Academy, the second form of discourse, the one described after “discourse in the mind, which is Reasoning,” is

687. Observations e2r.
discoursing with words, which is Speech, and words are not things or notches, but only marks of things, or nicks, or notches to know things by; and the Tongue is the Tally on which they are scored: for Speech is a number of words, which words are made and joined together by the Breath, Tongue, Teeth, and Lips, and the continuance make [sic.] a discourse.\(^{688}\)

“Words,” the Lady Speaker continues, are “the Language of the Senses.”\(^{689}\) Concrete through their production and articulation by “the Breath, Tongue, Teeth, and Lips,” words are at the same time abstract, rudimentary and linear signs; they are “not things . . . , but only marks of things.” They share in the simultaneous concreteness and abstraction of the notches cut horizontally into a tally. The writtenness of the spoken word, its similarity to engraved signs resembling writing, extends to Cavendish’s understanding of the hearer’s reception of spoken words, and to the production and reception of the perceptible aspects of objects in general. Cavendish’s descriptions of speech lead into the metaphors of exchange, printing and painting that structure her doctrine of perception.

### 4.1 Discourse with Words

Scholars of the history of linguistics have commented on the seventeenth century’s advances in areas including those now labeled historical linguistics, language acquisition and phonetics.\(^{690}\) There appears, however, to be no scholarship addressing Cavendish’s relationship

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688. *Playes* 1662, 666. I believe that the first instance of “or notches” in this passage is the product of error on the part of Cavendish’s transcriber or the printer.

689. *Playes* 1662, 667.

to these preoccupations, and therefore no scholarship suggesting the greater relevance of these interests to her larger natural philosophical project.

As evidence for the seventeenth-century fascination with the origins of language, the historian of linguistics Vivian Salmon cites John Wilkins’s remark, “There is scarce any subject that hath been more throughly scanned and debated amongst Learned men, than the Original of Languages and Letters.” Wilkins himself shows ambivalence about the origins of language. He concedes “that no one Language is natural to mankind,” but on the other hand he asserts that “the first Language was con-created with our first Parents.” He can find no proof of a natural original language, but he is convinced that there was an original language of supernatural origin.691

Cavendish also shows interest in the origins of speech, and similar tensions appear in her assessment of these origins. For her, speech itself is either of artificial origins (in that it is the product of intentional human invention) or supernatural ones, but it is most likely not of natural origins. In the play Youths Glory, and Deaths Banquet, the learned Lady Sanspareille teaches her audience,

[Language, although it is not born with man, yet it is bred with man, or in man, either by their education, or their own Invention; for, if language had a beginning, it was invented by the Creature, if no beginning, it was taught them by the Gods; for, though that Nature made such Organs, as was proper to express language with, yet it seems as if she did not Creat language, as a principal work.692

Nature facilitates speech, but speech itself, even if God initially taught it to Adam and Eve, has

691. Salmon 5; Wilkins, Essay Towards a Real Character 2.
692. Playes 1662, 147.
continued to change and to re-emerge as the artificial product of distinct human minds.

Cavendish depicts the utopian “Blazing World” as if it bears a privileged connection to Paradise and to the New Heaven and Earth of the biblical book of Revelation.\(^{693}\) The Empress therefore obtains presumably reliable answers from the spirits whom she questions concerning the state of affairs in the biblical Paradise. She asks them,

> Whether the first Man did give Names to all the various sorts of Creatures that live on the Earth? Yes, answered they, to all those that were presented to him or he had knowldg of, that is, to all the prime sorts; but not to every particular: for of Mankind, said they, there were but two at first; and as they did encrease, so did their Names. But, said the Empress, who gave the Names to the several sorts of Fish? The posterity of Mankind, answered they.\(^{694}\)

Proper names, perhaps the names of subspecies, and certainly the names of species of fish were not invented until they were needed. Moreover, the Adamic names did not mystically bear the presence and essence of the creatures they indicated. Cavendish’s Adam names creatures absent from him, that he only “had knowldg of.” Even the Adamic language, like modern speech which resembles marks on a tally, had a relatively loose and artificial connection—a conventional connection—between word and thing.\(^{695}\)

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\(^{693}\) Cavendish indicates twice that “Paradise” is the name of the capital city of the Blazing World (9,11). The connections between the Blazing World and the New Heaven and Earth of the Bible include the conspicuous presence of health-giving rivers in both places (10,11; Rev. 22:1), the presence of an elixir of life in one and of the tree of life in the other (49-51; Rev. 22:2), the construction of both the Emperor’s city and the New Jerusalem from gold (11; Rev. 21:18), the construction from colourful precious stones of both the cities approaching “Paradise” and the foundations of the New Jerusalem (10-11; Rev. 21:19-20), and the similarity of the Emperor’s throne room with its pavement of green diamonds and rainbow-like, jewel-encrusted arches to Saint John’s vision of the throne of God surrounded by an emerald rainbow (12; Rev. 4:3). There are many allusions to Revelation besides these in the Blazing World.

\(^{694}\) Blazing World 84. The quibble about naming the fish is, of course, Cavendish’s response to the traditional observation that in Genesis 2:19-20, Adam is only said to name the birds and the beasts.

\(^{695}\) Cavendish at once follows and goes beyond Thomas Hobbes in these opinions concerning the origin of speech. Unlike Cavendish, Hobbes asserts in the Leviathan that “The first author of Speech
Although Cavendish seems convinced of the artificiality and non-innateness of speech, she repeatedly affirms that Nature has made the human mind particularly apt to invent it. In the *Worlds Olio*, the chapter “Of Speech” claims,

> [M]an can speak when he comes to maturity, that is to be man, without teaching, that is, although he doth not learn a language that his forefathers have made, yet he can make one of his own, that is to give marks to things to distinguish them to himself.\(^{697}\)

This comment may allude to contemporary speculation that a child raised in isolation from language might begin to speak the Adamic one. John Wilkins mocks this speculation on the grounds that no language is innate.\(^{698}\) Cavendish does not mock it, because for her, such an experiment could prove not the innateness of language, but the innateness of the aptitude to invent language. She observes, “[T]hose that are Born Deaf and Dumb . . . are for the most part very Ingenious to help the Defects of their Body by the Wit of their Minds, for they will Conceive and Inform by signs Ingeniously.”\(^{699}\) Even a man born without any external senses at

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was *God* himself, that instructed *Adam* how to name such creatures as he presented to his sight,” but he goes on to claim, “But this was sufficient to direct him [Adam] to adde more names, as the experience and use of the creatures should give him occasion; and to joyn them in such manner by degrees, as to make himself understood; and so by succession of time, so much language might be gotten as he had found use for” (*Leviathan* 24). For Hobbes, God taught Adam the art of naming. Adam continued to practice this art and he cobbled together syntax and speech. Hobbes writes, as Cavendish seems to imply, that “the Originall of Names” was “Arbitrary” (*Elements of Philosophy* 12). Even in the Adamic language, there was no mysterious encoding of presence and essence in the spoken word.

\(^{696}\) This is to say that Cavendish does not hold a view comparable to that popular in twentieth-century linguistics where there was thought to be a “Universal Grammar” innate to all human minds. As I will show further in the final chapter, she does believe that “discourse” in another form is innate to both human and animal minds.

\(^{697}\) *Olio* 1655, 24; 1671, 48. *Cf.* *Observations* K2v

\(^{698}\) Wilkins, *Mercury* 4.

\(^{699}\) *Opinions* 1663, 335.
all, “if he hears not such a thing as Words, yet he would hear something equivalent to words.”

That is, if the only objects to which a person has access are the thoughts in his own mind, he will still invent something resembling a language in order to manage them.

Just as Cavendish detects a natural mental aptitude for the invention of speech, so she and her Cartesian contemporaries observe that the human body has a parallel physical aptitude for speech. One such Cartesian, Géraud de Cordemoy, exclaims at the beginning of his account of the physical mechanisms of speech production, “I ought, above all, to take notice, that the wonderful Workman, to whom I owe the structure of my Body, hath so mechanically disposed and order’d all the parts, and principally those that serve for the voice, that to form it I need no soul.” Cavendish dwells on this bodily fitness for speech in a chapter of her mature philosophy. She comments,

[Man’s] shape makes him not only fit, proper, easie and free, for all exterior actions; but also for Speech: for being streight, as in a straight and direct Line from the Head to the Feet, so as his Nose, Mouth, Throat, Neck, Chest, Stomack, Belly, Thighs, and Leggs, are from a straight Line: also, his Organ-Pipes, Nerves, Sinews, and Joynts, are in a straight and equal posture to each other; which is the cause, Man’s Tongue, and Organs, are more apt for Speech than those of any other Creature; which makes him more apt to imitate any other

700. *Philosophical Letters* 175.

701. Cavendish even detects a hint of the innate ability for linguistic invention in the micro-dialects of the lower social classes in England. She anxiously explains that although the only English she knows is the “Vulgar part,” or “that which is most usually spoke,” she does not mean “that which is us’d to be spoke by Clowns in every Shire, where in some Parts their Language is knowne to none, but those that are bred there. And not onely every Shire hath a severall Language, but every Family, giving Marks for things according to their Fancy” (*Poems* B2r). The relative geographical isolation of these people seems to Cavendish to provide the circumstances not merely for the adaptation of language, but for its invention as well.

702. For instances in which she comments on the naturalness of speech to the human body, see *Playes* 1662, 147; *Observations* k2v; *Philosophical Letters* 35.

703. De Cordemoy 9.
The change from “Organs, Pipes,” in the parallel passage in the *Philosophical Opinions* to “Organ-Pipes” in this passage from the *Grounds of Natural Philosophy*, whether the product of scribal or typographical error or joke, or of authorial intention, evokes Cavendish’s tendency to construe the physiology of speech and voice as a mechanical and musical system. In her opinion, the bellows of a pipe-organ resemble the lungs. Organ pipes parallel the erectness of the human form and, to a lesser extent, that of the upper body of the birds which, Cavendish goes on to say, are the creatures next “most apt for Speech.” The pipe-organ model also illuminates the qualities of melody, volume and resonance that Cavendish connects with the human voice. Finally, the model speaks to the fantastic capacity of the human voice to imitate other sounds. Cavendish’s contemporaries were impressed with the pipe-organ’s ability to produce a considerable variety of timbres, some of which imitated other musical instruments, through the

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704. *Grounds* 49. The italics are my own. *Cf. Opinions* 1663, 41-42. There Cavendish writes that man’s “Upright Shape makes him not only fit, easie, and free for all sorts of Local motions and Actions, but for Speech also, for being Straight in a straight and direct Line, his Belly, Stomack, Chest, Neck, Throat, and Mouth, as also the Organs, Pipes, Nerves, and Sinews are straight and equal to each other, which makes his Voice ready and apt for all manner of Sounds, and his Tongue apt for Speech.” (Again, the italics are my own.) Francis Bacon, interestingly, has an extended passage in his *Sylva sylvarum* where he mentions that the physiology of beasts appears to be more human-like and thus should be more apt for speech than the physiology of birds. He remarks on the human and animal capacity to imitate, and he recommends further inquiry into “the aptness of birds, in comparison of beasts, to imitate the speech of man” (*The Works of Francis Bacon*, ed. James Spedding, Robert Leslie Ellis and Douglas Denon Heath, vol. 4 (Boston: Brown and Taggard, 1861) 280-82).

705. *Grounds* 49.

706. I think that resonance is probably the idea that Cavendish is circling around when she comments on the voices of birds being “uneasy” and “constrained” compared to the human voice, but she may actually be alluding to the ability of birds to articulate words. See *Grounds* 49.
manipulation of its stops.\textsuperscript{707}

Despite the fitness of human physiology for speech, speech remains an entirely artificial contrivance. Lady Contemplative, a philosophically-minded character in the play bearing her name, dismisses her companion’s assertion that speech is the final cause, the purpose, of the tongue’s creation. “Pardon me,” Lady Contemplation replies almost rudely,

tongues were made for taste, not for words, for words wa[s] an art which man invented: you may as well say, the hands were made to shuffle cards, or to do juggling tricks, when they were made to defend and assist the body; or you may as well say, the legs were made to cut capers, when they were made to carry the body, and to move, as to goe from place to place.\textsuperscript{708}

The body may be marvelously apt for speech, but speech is as artificial as playing cards, performing tricks, or dancing in the most virtuosic style. This is significant given the role of forms of discourse in the structure of Cavendish’s natural philosophical world. The incidental and artificial occupies, as I will continue to show later in this chapter, an essential structuring role in her vision of Nature.

The artificiality of speech does not detract from Cavendish’s interest in the physical means of its production. Vivian Salmon remarks that “the middle years of the period [of the seventeenth-century] in England were remarkable for some extraordinarily advanced treatments . . . of phonetics,” including works by Owen Price, John Wilkins and William Holder.\textsuperscript{709} Unlike

\textsuperscript{707}. I am reminded of the praise of the organ in John Dryden’s 1697 poem “Alexander’s Feast.” De Cordemoy also offers a contemporary description of the vocal apparatus in terms that connect to pipe organ imagery when he writes, “We are also to conceive, that as the wind, which issueth out of Bellows, when they are closed, would be capable to thrust the Air as many different ways, as we should put different pipes at the place where the wind comes out; even so the Air, which issues out of the Lungs, when the Breast subsides, is diversly thrust, according as the Entry of the Wind-Pipe is differently disposed” (42).

\textsuperscript{708}. \textit{Playes} 1662, 206.

\textsuperscript{709}. Salmon 20.
these men, Cavendish does not systematize her observations on phonetics, but she does employ similar conceptual formulations. For example, she assumes a distinction between “vocal” and “verbal” sound.\textsuperscript{710} Both humans and other animals produce vocal sounds (sounds created primarily through the vibration of the vocal cords), but verbal sounds (significant or meaning-bearing sounds differentiated by articulation in the throat or mouth) are the province of humans alone.\textsuperscript{711} Holder identifies the same two components of human language, albeit in different terms.\textsuperscript{712}

With respect to phonetic articulation, Cavendish and her contemporaries turn to the imagery and terminology of musical instruments. In the epistle “To The Ingenious Student of the English Tongue” that opens Owen Price’s book offering a phonetic approach to teaching orthography, Price explains, “For as the hollowness of Musicall instruments yeeldeth a sound, so the breast yeeldeth a voice, and as by touching their various stops, their notes are changed, so the Harmony of the voice is made by, 1 Lips, 2 Teeth, 3 Tongue, 4 Palate, 5 Throat.”\textsuperscript{713} The word “stops” refers metaphorically either to the places on the neck of a stringed instrument where the string is depressed in order to produce a given pitch or to the action of pressing the string. It may also refer to the holes or keys of a wind instrument or to the act of depressing them, or to the mechanism on a pipe organ used to select the set of pipes producing notes of a

\textsuperscript{710} For example in \textit{Fancies} 35.

\textsuperscript{711} \textit{Playes} 1662, 464.

\textsuperscript{712} William Holder, \textit{Elements of Speech} (London, 1669) 6. A few pages later he states, “Of Letters the Material part is Breath and Voice; the Formal part is constituted by the Motions and Figures of the Organs of Speech, affecting the Breath or Voice with a peculiar sound, by which each Letter is discriminated” (22).

\textsuperscript{713} Owen Price, \textit{The Vocal Organ} (Oxford, 1665) A2r-v.
particular timbre.\textsuperscript{714}

As I have already demonstrated in the first chapter, similar imagery and terminology appears in relation to the articulatory apparatus in Cavendish’s writing.\textsuperscript{715} An “Orator’s tongue” is “like as a Fidler” who plays music that he had not composed; “words are only created in the mouth, and are born through the lips, before the soul of sense is enter’d or inbodied therein.”\textsuperscript{716} Words are “prest and struck . . . against the Lips, Teeth, or Tongue.”\textsuperscript{717} Orators are like flute or cornet players, whose tongues “do make stops” like fingers, and whose words “do makes stops” on the ears of the hearers.\textsuperscript{718} Both the articulatory apparatus of the speaker and the auditory apparatus of the hearer are musical instruments, or perhaps they are a single united instrument. (This is one of the points at which Cavendish’s doctrines of language production and of perception begin to unite.) In the \textit{Poems, and Fancies}, Cavendish imagines, “The \textit{Tongue, a Lute, the Breath, are Strings strung strong, / The Teeth are Pegs, Words, Fingers play thereon.”\textsuperscript{719} The tongue is metonymic for the whole articulatory apparatus. The words, as the speaker articulates them, resemble fingers adjusting the tuning pegs or makings stops on the strings, on the vibrating vocal sound of breath. This imagery reoccurs later in the book in “The Animall Parliament,” when Lord Reason stands up and proposes a bill against abuses “in \textit{Articulate, and Vocall sounds, or tone of the Voyces.” He complains that sometimes the “fingers

\textsuperscript{714.} For the history and range of meanings of the term “stop” see “Stop, n.,” \textit{OED Online}, 14 Oct. 2008.
\textsuperscript{715.} See p. 61.
\textsuperscript{716.} \textit{Playes} 1662, 666, 371.
\textsuperscript{717.} \textit{Olio} 1671, 244.
\textsuperscript{718.} \textit{Picture} 1671, 632.
\textsuperscript{719.} \textit{Poems} 137.
of words play so fast as they keep no stops, or else so slow, as they make more stops than they should: which make it [a reading] preposterous. “Keeping stops” means observing marks of punctuation, but in the context of discussion of tone and immediately preceding musical imagery concerning tuning pegs and breaking strings, it also means using clear left hand fingerings on the lute.

Cavendish’s use of this imagery demonstrates her location in the evolution of phonetic theory, and even in the evolution of linguistic terms that remain in use up to the present. According to the Oxford English Dictionary, the first use of “stop” as a linguistic term indicating a particular class of phonetic segments occurs in William Holder’s Elements of Speech (1669). Holder explains that articulate sounds are produced “by the several checks or stops, or (as they are usually called) Articulations of the Breath or Voice in their passage from the Larynx through the Mouth or Nose, made by the instruments of Speech.” Cavendish’s language is again very much in the vein of Holder’s.

Cavendish’s interest in the origins and the physicality of speech come together in her discussions of childhood native language acquisition. For her, language acquisition revolves around imitation–a concept that becomes central to her doctrines of perception in general. In a chapter giving advice on raising children that appears in both editions of the Worlds Olio, Cavendish warns of the dangers of using baby-talk with infants:

720. Poems 205.
721. Holder 11. Later in the work Holder comments on “that property in all Letters, of Aptness to be conjoined in Syllables and Words, through the voluble motions of the Organs from one stop or figure to another, that they modify and discriminate the Voice without appearing to discontinue it. And so Letters may well enough be termed Articulations of Voice in respect of Speech, which yet in their own simple abstracted Nature are but Articulations of Breath” (31-32).
Children should be taught, at first, the best, plainest, and purest of their Language, and the most significant Words; and not, as their Nurses teach them, a strange kind of Gibbridg, broken Language of their own making; which is like scraps of several Meats heapt together, or hash’d, mixt, or minced: As for example, when Nurses teach Children to go, instead of saying go, they say do, do; and instead of saying, come to me, they say, tum to me . . .

She offers a series of increasingly comical examples indicating the absurdity that she sees in baby-talk. For Cavendish, the problem with nurses speaking to infants in this way is four-fold. First, since language in Cavendish’s opinion is not innate to the infant, the nurse’s or parent’s speech forms the foundation for all following linguistic ability. Second, Cavendish suggests that lexical items are learned by the child before the child associates meaning with them, and baby-talk therefore delays the acquisition of generally useful language by introducing an ultimately useless vocabulary. In the experience of the child, words have a material existence prior to being charged with meaning. Third, Cavendish finds baby-talk problematic because hearing, as her contemporaries are fond of observing, closely connects with learning. Learning leaves long-lasting physical traces in the malleable brains of children. Finally, Cavendish warns against baby-talk, because children learn through imitation and reproduce the sounds that they hear. Baby-talk causes children to develop habits of physical motion of the articulatory

722. Olio 1671, 123; Olio 1655, 60. Her concern with baby-talk and other forms of incorrect or vulgar speech used by parents, nurses and tutors also appears in Picture 1671, 670, and Playes 1662, 148.

723. By contrast, in the opinion of her contemporary Géraud de Cordemoy, children learn language at a remarkable rate that far exceeds that at which adults consciously teach them, and children also acquire language according to a universal order (30-34).

724. Olio 1671, 124; 1655, 60. De Cordemoy, on the other hand, writes that children acquire vocabulary first by observing things, and then by learning the words associated with them (30).

725. Contemporary writers on language like to observe that hearing is the “sense of discipline,” that is, the “sense of learning.” See Havers 145, 343; Holder 1. Cf. Grounds 85.

726. Olio 1671, 124; 1655, 60.
apparatus that permanently and adversely affect patterns of pronunciation, among other aspects of speech. For Cavendish, the hazards of native language acquisition lie in the artificiality and physicality of speech, and in the fact that speech is obtained by imitation.

4.2 The Basics of Perception

Artificiality, physicality and imitation become important themes in Cavendish’s evolving doctrines of perception. Further groundwork for these doctrines is established by several basic characteristics of sense perception that remain constant throughout the evolution of Cavendish’s philosophy. These characteristics are also essential and consistent factors in her development of an epistemology and in the relationship of this epistemology to skepticism. For example, Cavendish’s theories of perception incorporate at least two assumptions that lead her away from skepticism: the reality of objects and the reliability of the senses. Both assumptions relate to contemporary philosophical attempts to reformulate “traditional frameworks for dealing with the relation between thought and its objects.”

In arguing for the reality of objects, Cavendish takes a stand against Thomas Hobbes. In Hobbes’s account of perception,

the pressure of the uttermost part proceeds from the pressure of some more remote Body, and so continually, till we come to that from which, as from its fountain we derive the Phantasme or Idea that is made in us by our Sense. And

727. Olio 1671, 124-25; 1655, 60; Picture 1671, 670.

728. Michael Ayers, “Ideas and Objective Being,” The Cambridge History of Seventeenth-Century Philosophy, 1062. What I mean by the rather nebulous phrase “reality of objects” is what Ayers more articulately calls “the real or hard distinction between idea and object, that it, between the intentional object and the real object” (1095).
this, whatsoever it be, is that we commonly call the object. 729

Cavendish replies that “sense perception” is not “a meere Phantasme or Idea, but a Corporeal action of the sensitive and rational matter.” 730 For the materialist Hobbes, phantasms or ideas must necessarily be corporeal motions as well, but the thrust of Cavendish’s argument is that sense perceptions have more reality and have a closer connection to the external thing than the terms “phantasm” and “idea” suggest. For Cavendish, an “object” is not a thing as it is perceived, but a thing as it exists in itself. In her opinion, when a person feels the heat of a fire the perception “is a real copy of a real object, and not a meer fantasme, or bare imparted motion from the object to the sentient, made by pressure and reaction.” 731 According to Hobbes, “Light & Colour & Heat & Sound, and other qualities which are commonly called Sensible, are not Objects, but Phantasms in the Sentients.” 732 Cavendish, on the contrary, insists that it is not “the organ of the sentient that makes colour, sound, and the like.” Instead, these are “really inherent in the object it self.” 733 Cavendish’s statements constitute a rejection of Hobbesian (and Cartesian) epistemology according to which human reason has direct access only to phantasms or ideas. 734

The second assumption underlying Cavendish’s theories of perception, the essential reliability of the senses, may surprise readers on account of Cavendish’s often discussed distrust

730. Philosophical Letters 61.
733. Observations 1.173.
of optical instruments and leanings towards rationalist rather than experimentalist natural philosophical methods. Cavendish argues that differences between people’s sense perceptions of objects depend largely on differences in the objects rather than on differences within the senses. As long as the senses and reason are not “distempered,” “an Apple is an Apple to the particular and general Sense and Reason of one Man, or more Mens Senses and Reason,” and the apple as it is perceived is not “any thing different from the Nature, or at least in its outward Form.”\textsuperscript{736} In answer to the question “Whether all Creatures see all Objects alike,” Cavendish replies, “My Answer is, that if the Sight be Perfect, and without Imperfection, they do . . . for surely an Eye is Nature’s Press, to Print all Outward Objects that are presented to it, the like are all the rest of the Senses.”\textsuperscript{737} As Cavendish’s models of perception evolve, so does her understanding of the complexity and limits of sense perception and of the consequent liability of the senses to irregularity and imperfection.\textsuperscript{738} When Cavendish responds to Hooke’s \textit{Micrographia} in the \textit{Observations}, it becomes easy to misread her statements about the use of optical instruments as if they were statements about sense perception in general.\textsuperscript{739} Nonetheless,


\textsuperscript{736} \textit{Opinions} 1663, 84.

\textsuperscript{737} \textit{Opinions} 1663, 218.

\textsuperscript{738} See, for example, the list of “conditions required to the optick perception of an exterior object” (\textit{Observations} 1.63), and her comment concerning the frequency with which sense perception errs on account of internal or external factors (1.109).

\textsuperscript{739} It is tempting, for example, to read the comment in \textit{Observations} that “Sense deludes more then it gives a true Information, and an exterior inspection through an Optick glass, is so deceiving, that it
in her final codification of her philosophy, Cavendish affirms her belief in the reliability of the senses. She explains, “as I said, if they have no Imperfections, all Human Creatures have like Properties, Faculties, and Perceptions: As for example, all Human Eyes may see one and the same Object alike; or hear the same Tune, or Sound; and so of the rest of the Senses.” Human sense perception fairly consistently yields accurate knowledge of the objective world.

At the same time as she accepts the reliability of the senses and the reality of objects, Cavendish does hold several beliefs concerning perception that pull her towards the skepticism so often noted in her work. These include the beliefs that human sense perception is local, that it is limited and that it is surrounded by innumerable other forms of perception with different capabilities.

Regardless of the ubiquity of sensitive and rational matter in Cavendish’s universe, this matter does not behave as a unified, extended perceiver. Instead, even in a single biological entity and even in a single organ within that entity, perception is fragmented. In one of her earliest works Cavendish asks, “How many severall Touches belong to the Body? [F]or every part of the Body hath a severall Touch, which is a severall Knowledge belonging to every severall part; for every severall part doth not know, and feele every severall Touch.” The human skin itself is only very locally aware of sensations. Even in her most mature works, Cavendish continues to argue that “Perception, or a perceptive knowledg, belongs properly to parts.”

cannot be relied upon” (d1r) as if the first clause makes a general statement about sense perception. In its context, the whole passage addresses the use of optical instruments in natural philosophy.

740. Grounds 81.
741. Fancies 50.
742. Observations 1.157. The fragmented and local quality of sense perception will be explored further in the final chapter of the dissertation in the context of consciousness. See p. 296.
Like her contemporaries, Cavendish seeks the means by which sense perceptions are united in the human consciousness. For Descartes, among other philosophers, there is a “‘common’ sense” that “functions like a seal, fashioning in the phantasy or imagination, as if in wax, the same figures or ideas which come, pure and without body, from the external senses.” For Cavendish, the rational matter in the brain unites the fragmented perceptions or knowledges of the senses into a whole picture. This capacity for both sensitive and rational perception both in individual organisms and in Nature in general is what Cavendish in her mature work refers to as “double perception.”

Cavendish runs into a logical problem with her argument that the brain has this uniting function, however. According to her theory, knowledge is local and fragmented even in rational matter:

Moreover, this is to be observed, That all rational perceptions or cogitations, are not so perspicuous and clear as if they were Mathematical Demonstrations, but there is some obscurity, more or less in them, at least they are not so well perceivable without comparing several figures together, which proves, they are not made by an indivisible, immaterial Spirit, but by dividable corporeal parts.

Cavendish does argue that the “purity” and “liberty” of the rational matter in relation to the

743. Descartes, Rules for the Direction of the Mind, The Philosophical Writings of Descartes, trans. John Cottingham, Robert Stoothoff and Dugald Murdoch, vol. 1 (Cambridge: Cambridge UP 1985) 41. Another example comes from Henry More. He spends many pages of his Immortality of the Soul attempting to deduce the exact nature and location of this common sense, and he finally concludes, “That the chief Seat of the Soul, where she perceives all Objects, where she imagines, reasons, and invents, and from whence she commands all the parts of the Body, is those purer Animal Spirits in the fourth Ventricle of the Brain” (94).

744. See Opinions 1663, 82.

745. For good examples of her usage of the phrase, see Philosophical Letters 19, 115 and Grounds 9.

746. Philosophical Letters 179.
sensitive allows it to “more easily make an united Perception, than the Sensitive,” and her works repeatedly describe the rational matter dancing cooperatively and harmoniously. Nonetheless, it is difficult not to feel that the localness of perception obstructs human knowledge.

The second belief pulling Cavendish’s philosophy towards skepticism concerns the limited capabilities of sense perception. For Cavendish, perception is limited in, among other factors, the quantity, scale and aspect of what it can process. Since perception is local and constrained by the material bounds of its own apparatus, it is overwhelmed and unable to process the multitude of objects presented to it. Even though Nature, in its infinite extent, has “an Infinite Knowledge and Perception,” yet Nature’s “finite Parts, or particular Creatures, cannot have a general or infinite Knowledg, being limited, by being finite, to finite Perceptions, or perceptive Knowledge.” Even optical instruments can bring their users no closer to complete or certain knowledge of the universe. Telescopes may allow the observer to “pace the Skie” with her senses, but in doing so they only reveal further reaches in the infinite variety, curiosity and extent of the cosmos. Another limit on the efficacy of human perception, minuteness, is only confirmed by optical instruments. Reflecting on some tiny worms that she has seen removed from a water


748. Cavendish’s statements concerning the localness of sense perception and its consequently limited capacity are connected to what Thomas Stanley designates as the fifth reason for which the ancient Skeptics chose to suspend judgement. This reason is “from Positions, Distances, and Places: for through any of these, the same things seem different” (Stanley 783).

749. *Grounds* 24. For a related statement, see *Observations* 157: “A whole may know its parts, and an Infinite a Finite; but no particular part can know its whole, nor one finite part that which is infinite.”

pump, Cavendish reasons,

But if it be probable that there may be such small animal creatures in nature, as are not subject to our exterior senses, by reason of their littleness; it is also probable, that there may be such great and big animal creatures in nature as are beyond the reach and knowledge of our exterior senses.\textsuperscript{751}

The failure of human sense perception to grasp the extremes of magnitude does not merely limit the quantity of human knowledge of the world. Figures are often nested one within another, and “worlds”–whole physical systems themselves containing perceiving subjects–are no exception to this nesting. In a series of verses in \textit{Poems and Fancies}, Cavendish suggests that the failure to grasp extremes of magnitude is a failure to grasp whole levels of physical worlds. Atoms are so minute that there may be hundreds of thousands of worlds in “The Head of one small, little, single Pin,” and there may be “A World of Worlds” in a lady’s earring. Looking outwards into possible levels of worlds, Cavendish imagines, “In after Ages more Worlds may be found. / If we into each Circle can but slip, / By Art of Navigation in a Ship.”\textsuperscript{752} If humans cannot identify whole physical systems within which they exist and upon which their perceptive abilities are contingent, certain knowledge of much of reality seems difficult to achieve.\textsuperscript{753}

Human sense perception is further limited to the exterior aspects of objects. Perception, Cavendish writes, “may also be called an exterior knowledg, by reason it extends to exterior objects,” and “Perception has but onely a respect to the exterior figures and actions of other

\textsuperscript{751} 751. \textit{Philosophical Letters} 133.

\textsuperscript{752} 752. \textit{Poems} 45-46.

\textsuperscript{753} 753. This inability of the senses to perceive whole worlds seems related to what Stanley gives as the eighth reason for which the Skeptics suspended judgement: the reason “\textit{From Relation}; for every thing having relation to some other, what they are simply in their own Nature, we suspend from affirming” (Stanley 785).
Creatures.”754 Since perception is confined to surfaces and entities of middling magnitudes, it is doubly incapable of accessing worlds within, adjacent to, and encompassing its own.

The final assumption pulling Cavendish’s philosophy towards skepticism is the idea that innumerable forms of perception, many of which humans are incapable of understanding or even recognizing, surround and dwell within them. Here Cavendish combines and extends the first and third reasons for which the Skeptics, according to Thomas Stanley, chose to suspend judgement in natural philosophical matters. These reasons are that the physiology of creatures determines their perceptions, and that each sense only perceives certain characteristics of objects.755 The sense organs of animals may perceive things differently from those of humans, and the five human senses may be altogether incapable of apprehending some objects. In Cavendish, such ideas move from the realm of likelihood to that of doctrine. In her opinion:

The truth is, our humane perception is stinted, so that we cannot perceive all objects, but those that are within the compass of being perceived by our senses; nay it is without question, but that there are more perceptions in man than these Five, because there are Numerous different perceptive parts, which have all their peculiar perceptions which we do not know of, what they are, nor how they are made.756

Even within the human being, there are more than five kinds of sense perception. In fact, “every Part and Particle of a Man’s Body, is perceptive.”757 However, there is no over-arching faculty that unites all these perceptions in the way that the rational perception unites the perceptions of the five senses. People cannot recognize the range of perception either within their own bodies or

754. Observations 1.157, q1r. Cf. Grounds 23.
755. Stanley 779, 781.
756. Observations 3.64.
757. Grounds 51.
within the bodies of animals. They also inhabit a world where animals have superior perceptions of some objects, where “severall Creatures, by severall Sense, / Have better far (then Man) Intelligence.”758 Furthermore, not only animals, but all manner of natural things have perception and external knowledge:

[T]hough every kind or sort of Creatures has different perceptions, yet they are not less knowing; for Vegetables, Minerals, and Elements, may have as numerous, and as various perceptions as Animals, and they may be as different from animal perceptions as their kinds are; but a different perception is not therefore no perception.759

Because there is no “such thing as Unsensibleness in Nature, except it be in respect of some particular Sensation in some particular Figure,”760 and because all things possess fairly reliable access to a reality that in its totality exceeds the knowledge of any perceiver, complete, contextualized and exhaustive knowledge of natural phenomena is impossible.

4.3 Trade and Conversation

Against the background of these assumptions, Cavendish’s theories of perception evolve through three models closely tied to her thinking on language. The first of these models is the one that I am designating “trade.” The dominant metaphor associated with this model is the import,

758. Poems 102. Cf. Francis Bacon, Sylva sylvarum, Works, vol. 4 (1861) 469: “and if there were any other perforations for the spirits to pass, there would be more than the five senses: neither do we well know whether some beasts and birds have not senses that we know not: and the very scent of dogs is almost a sense by itself.”

759. Philosophical Letters 519. Cf. Bacon, Sylva sylvarum, Works, vol. 5 (1861) 63: “It is certain that all bodies whatsoever, though they have no sense, yet they have perception: for when one body is applied to another, there is a kind of election to embrace that which is agreeable, and to exclude or expel that which is ingrate: and whether the body be alterant or altered, evermore a perception precedeth operation; for else all bodies would be alike one to another.” For Bacon, too, even apparently inanimate entities are perceptive.

760. Philosophical Letters 288.
and sometimes also the export, of mercantile goods. It involves an exchange or acquisition of goods guided by self-interest. On a more abstract level, this model involves material things crossing boundaries.

Although trade is not an important theme in Cavendish’s works, she is keenly aware of the necessity of trade to the well-being of a state. In a passage reminiscent of Bernard Mandeville’s eighteenth-century work *The Fable of the Bees*, Cavendish defends women’s propensity for self-adornment on the grounds that it contributes to the political stability and distribution of wealth within a country. Listing only some of the many trades involved, she explains that these are “the cause in employing the greater part of a Commonwealth,” and the “the cause of keeping a Commonwealth in Union.” Through these trades, the adornment of women “distributes and spreads the Maintenance of the Kingdome; for without particular Commerce, and Trafick, a Commonwealth cannot stand, and subsist: for though many a Commonwealth may subsist without the help of their Neighbours, yet it cannot live without their own Imployment and Dividement among themselves.”

Cavendish’s experience of living on precarious credit during her years in exile no doubt underlies her reflections in the *CCXI Sociable Letters* on the role of hard currency in the economy. She complains,

> there is not so much Mony in Specie, not in all Europe, nay, in the World, as to pay readily for all that is Bought, for there are more Commodities than Mony, I may say, more Paper than Mony, for Paper and Parchment payes more than Mony; a little Mony sprinkled amongst many Bills and Bonds, keeps up Commerce and

761. *Olio* 1655, 87; *Olio* 1671, 179. There are other passages in Cavendish’s works on this theme. In the *Blazing World*, the Empress’s strategy of war in her native world is dictated by the knowledge that “the several Nations of that World could not well live without Traffick and Commerce, by Sea, as well as by Land” (140).
Trading throughout the world, more than Exchange of Commodities doth.\textsuperscript{762}

The use of “Bills and Bonds,” of credit, so widespread that it looks almost like paper money, disturbs Cavendish. She feels that the exchange of hard currency maintains the economy, not the exchange of pieces of paper that merely represent money. The exchange of tangible things concretely possessing value determines the well-being of the over-all system.

Lastly, Cavendish discusses trade in relation to love and marriage. When Mademoiselle Grand Esprit blesses her sisters at their weddings and preaches on love at the conclusion of \textit{The Second Part of Nature’s Daughters}, she proclaims that in spite of the disadvantages of marriage, it has two functions essential to the well-being of humanity. The first of these is simply the “increase” of “the race of Mankind,” but the second is that marriage “causes Commerce, Trade, and Traffick, all which associates men into an Agreement” and ultimately into a stable political entity.\textsuperscript{763} Negotiation and trade produce the family unit that becomes the first step towards the development of an economy and a state. In one of the \textit{CCXI Sociable Letters}, Cavendish figures public gathering places where singles meet the opposite sex as “Hymen’s and Venus’s Shops,” where potential husbands and lovers are bought by women for prices determined in part by scarcity and paid for in the “Coin” of the women’s “Beauty, Birth, Breeding, Wit and Virtue.”\textsuperscript{764} Interestingly, in this passage Cavendish elides the issue of the actual financial transactions that accompanied marriage.

The connection between trade and love draws my argument towards the theme of

\textsuperscript{762} \textit{Sociable Letters} 86.
\textsuperscript{763} \textit{Playes} 1662, 526.
\textsuperscript{764} \textit{Sociable Letters} 102, 100.
conversation, arguably the broadest model underlying processes of perception in Cavendish’s understanding of the natural world. Conversation, like trade, has to do with love and marriage. One of the contemporary meanings of “conversation,” and one that often appears in Cavendish’s writing, is “Sexual intercourse or intimacy”–a meaning often tempered in its context by the more common and related meaning of “The action of consorting or having dealings with others; living together; commerce, intercourse, society, intimacy.”⁷⁶⁵ Many of the most risqué passages in Cavendish’s works play on these meanings. The dangers inherent to Platonic love that she halfway dramatizes when the Empress’s and Duchess’s souls both enter into the Duke’s body and the Duchess briefly feels jealous that the Duke’s soul has “afforded such delight and pleasure to the Empress’s Soul by his conversation”⁷⁶⁶ are the dangers lurking in the double meaning of “conversation.” The “Conversation of Souls,”⁷⁶⁷ Platonic love, looks suspiciously like adultery. Some of Cavendish’s male characters protest that the conversation of souls alone is unsatisfying. In The Second Part of the Lady Contemplation, Sir John Argument seeks to convince The Lady Conversation that a “perfect friendship of souls” is indeed impossible without “a reciprocal and mutual conversation and conjunctions of Bodies.”⁷⁶⁸ In The First Part of the Play Called Wits Cabal, Monsieur Sensuality, too, makes it clear that although he loves “the Conversation and Society of fair young Ladies,” he hates “an incorporeal Conversation.”⁷⁶⁹ In The Comical Hash, the Lady Censurer reassures her companions that the brothel she imagines building will not seem
overly crowded, because although “There may be a great resort, . . . their Conversation is by
single Couples.” The physical intimacy associated with conversation is significant in relation
to conversation’s manifestations in Nature.

Conversation in all of the senses of the word belongs properly to marriage. In the CCXI Sociable Letters, one “Sir W.S.” asserts that he that he will marry only a woman who is at least
twenty-two or twenty-three years old because he wants “a Wife that is fit for Breed and
Co[n]versation”—and by “conversation” he means discourse and wit. “Sir W.C.” explains that
he has “a Mistress for Delight, and a Wife for Conversation, . . . a Mistress to Look on, and
Admire, and a Wife to Listen to and Discourse with, and both to Embrace at my Pleasure.” For
Cavendish, “conversation” may denote discursive exchange, but it also denotes a much more
intimate form of reciprocity. When conversation occurs in Nature, it continues to carry these
connotations.

Many of Cavendish’s works have verbal conversation as a theme. In these conversation is
about acquisition or exchange. In her opinion, “The best kinde of discourse in ordinary
conversation” is informative, fact-based talk about geography and history. The brain works like
a “Magazine, / to store up wise discourse.” Because conversation involves acquisition,

770. Playes 1662, 576. The meanings of “conversation” so overlap in Cavendish’s cultural context
that instances of mere talk and company-keeping have the psychological and social repercussions
that might be expected of sex. The mere habit of keeping company causes boldness to replace
bashfulness in a lady’s face (Playes 1662, 676). In the CCXI Sociable Letters, a lady fears that any
“Usual Conversation with any Man, but those she is nearly Allyed to, or hath an Obligation to of
Duty or Gratitude” will be interpreted as a sign of an adulterous affair (Sociable Letters 265).

772. Sociable Letters 73.
773. Olio 1655, 16.
774. Fancies A4v.
Cavendish is anxious to prove that she has “never had a familiar acquaintance, or constant 
conversation with any profest Scholar.”\textsuperscript{775} To admit that she has had such conversation would be 
to admit that her ideas were acquired from someone else.\textsuperscript{776}

For Cavendish, conversation, like trade, sustains the wealth and well-being of the 
individual and of society. In one of her moral allegories, Experience (conversation in the broadest 

sense) gives birth to Wit, who governs the brain. The brain, being the part of the human that 
“hath the greatest Traffick and Commerce,” is also the part that “flourishes most.”\textsuperscript{777} In a 
dialogue later in the same book, a Poet argues that a Contemplating Lady may be correct that 
“Contemplation is the Mother of Invention.” Nonetheless, “Language is the Midwife, and 
Practise the Nurse. Besides, if there were no Practice or Conversation, all Invention or Industry 
would be Abortive.” In short, conversation allows both poetic and practical arts to intervene 
meaningfully in the world. Conversation also enables the original contemplation, because 
“Conversation gives the Mind breath [sic.], and makes the Imagination the stronger, the 
Conception larger, the Invention apter, and Fancy livelier.”\textsuperscript{778} Just as the well-being of the state 
and its citizens depends on trade, so the well-being of the society and the individual depends on

\textsuperscript{775.} \textit{Olio} 1655, E2r. \textit{Cf. Opinions} 1655, A1v, Av4-B1r, B3v-B4r, 61.

\textsuperscript{776.} Paradoxically, the fact that some of Cavendish’s knowledge has been acquired through 
conversation with her friends and family reinforces her sense of proprietorship of her ideas. This 
speaks to the degree of bonding that can be brought about by conversation. In one of the “Short 
Essayes” in the \textit{Worlds Olio} Cavendish writes, “[A]s Birth most commonly gives a likeness of parts, 
so Conversation breeds a resemblance in humours and dispositions; the one begets a likeness in 
Body, the other of Minds, or Souls” (\textit{Olio} 1655, 113). Conversation involves an exchange of 
attributes that effects a connection analogous to a genetic one. Consequently, ideas arising from 
within Cavendish’s most intimate familial and social connections are ideas properly belonging to her.

\textsuperscript{777.} \textit{Picture} 1671, 271-73.

\textsuperscript{778.} \textit{Picture} 1671, 306. For other arguments for the benefits of conversation see \textit{Orations} 228 and 
\textit{Sociable Letters} 450. It must be said that throughout Cavendish’s works, as in these two passages, 
there is a tension between the benefits of conversation and those of solitude and contemplation.
Nature depends on conversation and commerce as well. Cavendish emphasizes this in a series of passages in the *Observations*. In Nature, she writes, “there is a perpetual commerce and intercourse between parts and parts,” there is “an intercourse and commerce, as also an acquaintance and agreement between parts and parts,” “there is a commerce, intercourse, or agreement of parts; which intercourse or agreement, cannot be without perception or knowledg of each other.”

The term “intercourse,” with its contemporary connotations not only of conversational exchange, but also of entrance into a place, is significant. The perpetual “intercourse of Home and Forein Parts” in an organism is the “interchangeable ingress and egress, or . . . reciprocal breathing in all Natures parts.” It involves an intimate exchange of matter across the boundaries of figures or organisms. This is the generalized process of perceptive respiration to which I referred in Chapter 3.

The “intercourse and commerce” in Nature contrasts with another motif in Cavendish’s works, the notion of “concourse.” A concourse is a crowd where conversational exchange fails, perception is ineffective, and conflict and chaos dominate. When slander, argument and swearing interrupt civil conversation, “there can be no union; and where there is no union, there can be no perfect society, but may rather be called a concourse, which is to meet rather than to unite.”

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782. See p. 161.
783. *Olio* 1655, 15.
This, for Cavendish, is the state of affairs analogous to the Hobbesian war of all against all\textsuperscript{784} that would hold if minute, impervious, unperceptive, chance-governed bodies constituted the world. The world would be “a casual concourse of senseless and irrational Atomes.” The “concourse” of atoms “would rather cause a confusion, then a conformity in Nature,” because all would be “Governours, but none would be governed.”\textsuperscript{785} Orderly natural processes can proceed only with a regular exchange of material information, with conversational intercourse.

As with trade and verbal conversation, exchange in Nature involves relationships based on fondness or love and determines the well-being of individuals and groups. Cavendish observes that animals share all the passions and appetites of human beings including “delight in Society,” and that those animals that do “love Company” “will not thrive, nor grow, but where there are great Flocks of them together.”\textsuperscript{786} Both on the level of animals and on that of minute particles, beings with similar characteristics behave as societies. These societies, whether they be competing packs of animals or competing clusters of matter in motion, may wage war with one another like human “Monarchies,” but “when there is a truce, or a league, they have a common commerce, joyning their motions, working sympathetically together, which produceth an equall temper.”\textsuperscript{787} The boundaries of societies are renegotiated as the commerce and conversation shift.\textsuperscript{788} On both the minute and the macroscopic levels, “no Creature can subsist alone and of it

\textsuperscript{784}. See Hobbes, \textit{Leviathan} 87-90.
\textsuperscript{785}. \textit{Observations} 3.26, 1.142.
\textsuperscript{786}. \textit{Olio} 1655, 142.
\textsuperscript{787}. \textit{Opinions} 1655, 75.
\textsuperscript{788}. This is important in relation to Cavendish’s tendency to refer to organisms or animals as “societies” in the \textit{Grounds of Natural Philosophy}. The malleability of the boundaries of a “society” connects with the malleability of the boundaries of “figure” as it is understood in the context of metaphors related to cloth and needlework (see pp. 128-30). In both instances, the identity of a being
self, but all Creatures traffick and commerce from and to each other, and must of necessity to do, since they are all parts of the same Matter.” 789 The very fluidity of identity and boundaries in a world where beings are, as I indicated in the second chapter, much like folds in a single piece of cloth necessitates commerce and conversation. When this exchange stalls even in very small ways and perception ceases to be effective, disease erupts, reproduction ceases, and even minds, material souls, cannot subsist. 790 Without commerce and intercourse, Nature cannot proceed.

4.4 Perception as Trade

Trade and conversation amongst humans and in Nature provide the context and structure for Cavendish’s first model of human sense perception, the model that involves exchange across boundaries. This model predominates in Cavendish’s earlier works, particularly in The Worlds Olio, Natures Pictures and the first edition of the Philosophical and Physical Opinions. Sometimes Cavendish imagines a unitary entity going out from the senses, usually the eyes, acquiring material goods, and then bringing these goods back. In “Allegory 18” in the Worlds Olio she writes,

The Spirit travels in Ships of Air, from the Kingdom of the Brain; hoisting up the Sails of the Eye-lids, being well balanced with clear sight, puts forth from the Optick Port, through the Haven of the round Circle in the Ball; and when it is full freighted with Objects, returns and pays Knowledg (for Custom) to the Soul, its King; whereby the Kingdom grows rich in Understanding, besides the curiosity of Fancy. 791

is very fluid.

789. Philosophical Letters 421.
790. Grounds 146, Picture 1671, 398, Philosophical Letters 430.
791. Olio 204. There is nothing in the context of this passage to indicate what Cavendish means by “the Spirit.” If “travels” were conjugated in the third person plural, I would assume that “Spirits” was
The passage may be related to one in the *Philosophicall Fancies* where “the Spirits from the Eyes issue out in Beames, and Raies; as from the Sun,” and even to one in the *Philosophical and Physical Opinions* where “the sight of the eye runs thorow” the air. The idea of a unitary emanation from the eyes may suggest influence from Stoic philosophy which taught, according to Thomas Stanley, that “Sense” is a singular “spirit.” In another work with which Cavendish was familiar, Walter Charleton explains, “The Stoicks affirmed, that certain Visory Rayes deradiated form the brain . . . into the eye, and from thence in a continued fluor to the object.” According to the Stoics, the eye uses “the mediation of the Aereal staff” to apprehend objects. Regardless, in this version of Cavendish’s theory an active and unitary entity accomplishes the first stage of visual perception beyond the boundaries of the body and the second stage of perception takes place back within these boundaries.

In most of the passages connected to the trade model of perception, there are multiple entities active at and sometimes beyond the boundary of the sense organs. These entities bring objects into the brain for the second stage of perception. In an allegorical piece named “Fancy’s Monarchy in the Land of Poetry,” Cavendish calls the senses “the five Ports to this Kingdom; the Head and the Heart were the two Magazines.” Various “Governours” and “Commanders” determine, based on aesthetic and moral considerations, which commodities gain entrance to the intended and points of comparison both within and beyond Cavendish’s works could be made more easily.

792. *Fancies* 35.

793. *Opinions* 1655, 84; 1663, 219.

794. Stanley 430.

795. Charleton 149. Descartes, of course, picks up on the Stoic imagery at the beginning of his *Optics* (67).
In a series of passages of moral philosophy in the two editions of the *Worlds Olio*, Cavendish imagines the senses bringing in raw materials for artisans to work on in the brain. Then either the brain itself puts the crafted objects to work, or it uses the senses to return them into circulation in the world.\(^{97}\)

Here the sense organs themselves are active, whereas in the more natural philosophical of Cavendish’s works employing this model of perception, the sense organs retire to passivity and the “sensitive spirits” or sensitive matter is active. In the *Philosophicall Fancies* Cavendish writes, “the Spirits passe, and repasse by the holes, they peirce through the dull Matter, carrying their severall Burthens out, & in.”\(^{98}\) In the poem “Of the flowing of the Spirits,” sensitive spirits issue forth from the pupil like ants from an anthill, and they gather objects to store in the brain. The same spirits buzz like bees in the ear canals and sometimes fly beyond them to bring back sound, like wax, to the brain. They sit on the tongue like bees sucking nectar from flowers, they fly to the nose to “pick / Up sweet *Perfumes*” with which they build a nest in the brain, and they spread out in the skin like grazing sheep.\(^{99}\) The trade model of perception involves the physical transportation of material objects across boundaries. The She-Anchoret actually teaches natural philosophers that if other animals’ bodies were transparent and illuminated from within like glow-worms’ tails, “the several Objects that the Senses bring in” would be visible to observers.\(^{800}\)

The She-Anchoret also emphasizes the passivity of the structures of the sense organs.
themselves, “for the Eyes, Ears, Nostrils, Mouth, or pores of the Skin, are but the Working-houses or Rooms of the Sensitive spirits.”

This emphasis in the trade model of perception allows for the emergence of an idea that will remain central throughout Cavendish’s development of her theories of perception, the idea that the first stage of perception takes place at a threshold. In her first systematic work of natural philosophy, she teaches, “[T]he sensitive spirits makes holes, which holes serve as doors in animal figures to receive outward objects, as the holes that are made in the eyes, ears, nostrils, mouth, and the pores of the skin, wherein the animal receives light, sound, scent, tast, and touch.”

If the doors are open, the spirits may go outside or at least stand at the threshold and receive external objects into the rooms. This is the normal first stage of perception. If the doors are closed or the spirits are standing at the threshold but looking inward, the spirits have only the materials already within their rooms with which to work. Dreams result.

The nature of the objects received by the sensitive spirits varies, but often these objects are “species”—an identification suggestive of the influence of other philosophies on Cavendish’s doctrine of perception. When Nature holds her council concerning the formation of the world at the beginning of the Poems, and Fancies, Motion advises the council on the creation of the eye:

*Figure* must draw a *Circle*, round, and small,
Where in the midst must stand a *Glassy Ball*,
Without *Convexe*, the inside a *Concave*,
And in the midst a round small hole must have,

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801. *Picture* 1671, 591.
803. *Opinions* 1655, 136; *Opinions* 1663, 326. This remains the foundation of Cavendish’s explanation for dreaming throughout her career. See, for example, *Philosophical Letters* 19, 28-29, 68; *Grounds* 90.
That Species may passe, and repasse through, 
Life the Prospective every thing to view. 804

The fact that the pupil must be a “hole” in order to allow the passage of the species implies that the latter are material particles. Several other statements that Cavendish makes confirm this. In both Natures Picture and the first edition of the Philosophical and Physical Opinions, visible species attempting to cross through the pupil “like a Croud of People at a narrow Pass” rather than in an orderly fashion can cause blindness. 805 “Foggy, and grosse vapors” in the optic nerve may also impede the journey of the visible species. 806 In the Worlds Olio, Cavendish implies that there are degrees of solidity and substantialness to sensible species, and that particular sense organs are fit only to apprehend species of a given degree. 807 She confirms the materiality of the sensible species when she rejects them later in her career. In the Philosophical Letters, she argues that the incursion of visible species into the eye or their contact with its surface would damage it. 808 Furthermore, in the Observations upon Experimental Philosophy, she reasons that the multitude of species and of the figures that they make in the air would impede the passage of following species, and that “the species being corporeal, and proceeding from the object, would lessen its quantity or bulk.” 809

So the “species” of Cavendish’s early theory of perception are material and they actually enter the body. This means that although she is using scholastic vocabulary, she is not using

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804. Poems 2. Other implications of these verses will surface later in this chapter.
805. Picture 1671, 270, Opinions 1655, 121.
806. Opinions 1655, 122.
807. Olio 1655, 173; 1671, 333.
808. Philosophical Letters 37.
809. Observations 1.218.
Her early theory of perception unsurprisingly owes most to Epicurean and Lucretian atomism. According to Thomas Stanley who is quoting Diogenes Laertius, “the external Appearances, and Forms of Things, are therefore seen by us; because something glides from without, or from the Objects into us, that is, into our Eye.” Stanley does use the term “species” to describe these sensibles, and he includes a passage explaining that the material characteristics of the sensible species and of the sense organs determine which organs can receive which species. He includes paragraphs defending the orderliness with which the atoms flow from the sensible objects and defending the lack of obvious diminishment of the matter of these objects. He also includes a passage stating that nothing goes out from the eyes or other sense organs in the process of perception—a passage that may have influenced Cavendish to conceive of her sensitive spirits as staying close to the thresholds of their working-rooms. If Thomas Stanley’s chapter on Epicurus was not Cavendish’s source for this first model of perception, Walter Charleton’s Physiologia Epicuro-Gassendo-Charltoniana (1654) could have provided the same combination of Epicurean doctrine and Aristotelian language. In conclusion, as one might expect from the trajectory of the evolution of her matter theory,

810. In Thomas Stanley’s account of Aristotelianism, for example, the five senses “receive sensible species without matter, as wax the impression of a seal without gold” (382). A modern translation of this line from Aristotle’s On the Soul reads, “a sense is what has the power of receiving into itself the sensible forms of things without the matter, in the way in which a piece of wax takes on the impress of a signet-ring without the iron or gold” (674). This suggests that the species may indeed be material, but that perception does not involve the theme of crossing thresholds.

811. Stanley 887.


813. Remember that by the time of her point-by-point rejection of Epicurean doctrine in the Observations Cavendish was well acquainted with this portion of Stanley. See Observations 20-31, especially 27-29.
Cavendish’s earliest doctrine of perception is an atomistic one.

4.5 Perception by Impact

The second model of perception characteristic of Cavendish’s early works emerges through the emphasis of another aspect of the Epicurean physics of perception. The images flowing from objects “enter into our eyes, and strike our sight with a very swift motion,” creating a “sigillation (or impression)” in the eye.\textsuperscript{814} Hearing, too, involves material effluvia “striking” the ear, and smell involves material particles making an “impression or stamp.”\textsuperscript{815} In Epicurean atomism, all perception involves touch; it involves the object striking the sentient.

When Cavendish describes the sense of touch in her earliest work, perhaps playing on the language of the biblical curse on the serpent in the garden of Eden, she suggests that to strike the heel of a person is indeed to strike his head, because “The Sinewes are small, slender Strings, / Which to the Body Senses brings.”\textsuperscript{816} In the first edition of the Opinions a marginal note explains, “As for touch the pores of the flesh are like harpsical [harpsichord] keys, and the nerves like the

\textsuperscript{814} Stanley 888. Cf. Charleton 152: “[I]n the act of Vision there is a certain Sigillation of the figure and colour of the object, made upon that part of the Eye, wherein the Perception is; and this sigillation cannot be conceived to be effected otherwise then by an Impression; nor that Impression be made, but by way of Incursion of the Image, or Type.”

\textsuperscript{815} Stanley 889. According to Charleton, the variety of sounds in language is made by “a variety of Sigillation, or Impression, dependent respectively on the various Configuration of those (moleculae) small masses, that compose sound”(216). Likewise for “the variety of Odours” (237) and “the Variety of Sapours” (246).

\textsuperscript{816} Poems 42. Cf. Genesis 3:14. Cavendish’s description of the nerves in these lines is not as fanciful as it might sound to modern ears. Thomas Willis, the great English authority on the brain and the nerves, published his works in Latin during Cavendish’s lifetime. In the 1681 translation into English, the translator who authored the glossary defines “Nerves” as “the sinews which convey the spirits which serve for life and motion through the whole body” (The Anatomy of the Brain and Nerves, 1681, William Feindel, facsim. ed. (Birmingham, AL: Classics of Medicine Lib., 1978) b2v). Willis’s own language also has much in common with Cavendish’s.
wyer strings, which move when those keyes are touch’d.” And this pattern of producing sensation by striking nerves and then communicating the impact to the brain through the vibration of the nerves is not confined to touch. In the medical section of both editions of the *Worlds Olio* Cavendish writes,

> As all Objects and Sounds that go through the Eye and Ear, must first strike, and make such a Motion in the Brain, before the Mind is sensible thereof; so any thing that toucheth the Body, goeth first thorow the Pores of the Skin and Flesh, and strikes upon the Nerves; which Nerves are little Strings, or Pipes, full of Brain; those spread all over the Body; and when those are moved, as the Brain is in the Skull, then the Body is sensible.  

Here, sight and hearing involve material incursion into the sense organ, impact upon nerves, and communication of the subtleties of that impact to the brain by means of musical-string-like nerves. Cavendish points explicitly to the role of touch in all forms of sense perception in passages inserted into the second edition of the *Philosophical and Physical Opinions*. She teaches, “though all the Senses are not Touch, yet Touch is in all the Senses.” She also explains, “[T]he Sensitive Animate matter gives a Sensible Touch on the Brain of all the Outward Senses, by which Touch, I mean Sensible Knowledge.” All knowledge derived from

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817. *Opinions* 1655, 125n. Willis uses a similar musical analogy, only he replaces the pores with the “fibres,” that is, the finest branches of the nerves: “[I]n Sensation the Fibres receive first of all and immediately the impressions of sensible things, and express the same (as musical strings do the strikings of a quill or fingers) by an intrinsecal motion of the Fibrils, as by a moveable and fluid Character, whose Idea the Nerves transfer only to the Head” (128).

818. *Olio* 1655, 197; 1671, 383. Cf. *Opinions* 1655, 112 and 1663, 284, where one of the activities of the senses when they are awake is “striking, or playing on the nerves, and on the dia [dura] mater and pia mater, of the brain.” The *dura mater* and *pia mater* are respectively the hard outer and soft inner membranes surrounding the brain inside the skull (Willis a2v, c1r). According to Willis, all nerves are coated in *pia mater* just as “from a Silver mass gilt or inriched with Gold, all the threads produced from it are gilded” (127). Many nerves are also encased in *dura mater* (127).

819. *Opinions* 1663, 52.

820. *Opinions* 1663, 297.
the senses is the product of touch, of impact.

In this version of Cavendish’s Epicurean model of perception, she emphasizes motion over figure. Motion arising from impact with the sense organ determines perception. The perception is not a figured sign *ex congruo* of the object. The figure of the object plays only a secondary role in that it affects the qualities of the motion generated. This is an appreciably Hobbesian understanding of perception. Hobbes teaches,

> [T]he immediate cause of Sense or Perception consists in this, that the first Organ of Sense is touched and pressed. For when the uttermost part of the Organ is pressed, it no sooner yeilds, but the part next within it, is pressed also; and in this manner, the pressure or Motion is propagated through all the parts of the Organ to the innermost.\(^{822}\)

However, the merely mechanical propagation of pressure is only one aspect of Hobbes’s theory. I commented in a note in an earlier chapter that Hobbes conceives of light as “endeavour outwards.”\(^{823}\) For Hobbes, anything that becomes an object of sensation has some form of “endeavour” which initiates a chain of pressure and reaction first through the air or other medium, and then within the sense organs and nervous system of the perceiver. This “endeavour” is an almost vitalist notion of energy or impulse, and any endeavour in one direction provokes a reaction, an endeavour, in the opposite direction.\(^{824}\) Although “the immediate cause of Sense” is the pressing of the sense organ, the perception in its final form is a reaction or reply to this

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821. This is not to say that Descartes, for example, does not write a great deal about the role of motion in sense perception, but Descartes, unlike Hobbes, finds a place in his theory for figure.


823. See note 442.

824. Susan James has also noted that Hobbesian “endeavour” verges on vitalism (227-28). She presents Cavendish’s belief in the ubiquity of sense perception in Nature as if it were an inference drawn on the basis of the role of endeavour in Hobbesian mechanics.
pressing,

so that when that Endeavour inwards is the last action in the act of Sense, then from the Reaction, how little soever the duration of it be, a Phantasme or Ideas hath its being; which by reason the Endeavour is now outwards, doth always appear as something situate without the Organ.  

Hobbesian perception involves impulse and reply. It involves a pattern akin to exchange or conversation.

Cavendish shows considerable interest in phenomena involving refraction and reflection that highlight a similar conversation-like structure and allow her to draw parallels between the behaviour of sound and light. The logic of the particular associations that Cavendish draws is, admittedly, doubtful. (She writes, for example, “Just as a Perspective-glass carries the sight afar off; so a Trunk, or Pipe, conveys the sound and voyce to the Ear at a great distance,” disregarding that in the first case it is the lenses, not the tube of the telescope, that creates the effect). Nonetheless, she does use these phenomena to develop a coherent account of the mechanisms of the sense organs.

The eye and the ear, she writes, focus light and sound in the same way that a burning-glass does. In other words, when light passes through the cornea and the lens, it focuses on the surface of the end of the optic nerve, that is, on the retina. Cavendish understands that light thus
focused produces an inverted image of the external object. She therefore imagines a second stage where “lines piercing from the optick nerve, darting on the concave parts,” create a reflection that allows the optic nerve to receive the correctly oriented image.\textsuperscript{829} She finds reflection or “rebound” in the ear, too. “As for the motions and figures of sound,” she explains, “the notes that are made are struck from the drum of the ear, as balls from a hand, to the concave part, and from thence rebound from side to side, and fall down, as a new note is raised.” She hypothesizes that “Rebounds” made in “the hollow cave of the mouth” produce and intensify taste, and that the sense of touch involves “rebounds” “striking from side to side” of pores. Even the sense of smell involves a kind of rebound by means of a tidal ebb and flow.\textsuperscript{830}

The dominant analogy structuring this impact-based model of perception comes from acoustics. The production of echoes and their association with other means of manipulating sounds fascinate Cavendish and her contemporaries. She observes that sounds in vaulted churches, caves and similar structures last longer and are louder than others on account of the “rebounds” or echoes that such “hollow figures” cause.\textsuperscript{831} These observations form the basis of one of Cavendish’s more ingenious theories. When Descartes seeks an explanation for thunder, he imagines high clouds gradually condensing and then suddenly falling onto lower clouds with

\textsuperscript{829}. \textit{Opinions} 1655, 118. This passage and other similar ones suggest that Cavendish has a fairly good grasp of contemporary knowledge of the anatomy of the eye. She could have gleaned this information from Descartes’s \textit{Optics} (especially the fifth discourse “Of the Images that Form on the Back of the Eye”), but she would have needed someone to translate it or at least to explain the diagrams. She also could have found this information (and the fact that the inversion of the image on the retina leaves unresolved the problem of why objects are seen in their true orientation) in Charleton’s \textit{Physiologia} (173-79). Cavendish’s solution to the problem, the extra reflection, increases the likelihood that she was familiar with one or both of these texts.

\textsuperscript{830}. \textit{Opinions} 1655, 117-18. This chapter does not occur in the 1663 edition.

\textsuperscript{831}. \textit{Opinions} 1655, 92; 1663, 228; \textit{Opinions} 1655, 117; \textit{Philosophical Letters} 90.
great crashes resembling avalanches. Hobbes imagines that between the higher, slowly condensing and therefore descending clouds and the lower ones are trapped pockets of air which eventually reach such high pressures that they violently tear their way out and generate lightning and thunder. Cavendish, in contrast, offers mechanical and acoustic causes that are rooted in the behaviour of minute particles. She suggests that lightning results from the rapid warming and sublimation of the water vapours in clouds into air and then fire. Recollect from Chapter 2 that for Cavendish the water vapour itself is made of tiny circular particles. In the production of lightning, these circles break open and unfurl to become air, and then snap into smaller threads to become particles of fire. This process is rapid and violent, and the fragmented threads jostle intact water circles. The noise of these collisions is amplified by the rebounds of the initial sound within each individual intact water circle. Thus Cavendish is able to explain both the sequence of lightning and thunder and particular auditory qualities of thunder.

She maintains this theory even in the Grounds of Natural Philosophy, where she explicitly reconfigures “rebound” in terms of conversation. In diction and syntax that imitate her subject matter, she explains that the hollow figure of water circles causes quick Repetitions and Replies; which Replies and Repetitions we name Rebounds but, Replies are not Rebounds; for Rebounds are Pressures and Re-actions; whereas Repetitions are without Pressure, but Re-action is not: and, Replies are of several Parts; as, one Part to reply to another.

834. See p. 91.
835. Opinions 1655, 92; 1663, 227.
836. Grounds 208.
Understood in the context of occasional causation, sound is not produced by impact (for example of moving air against the internal wall of a water circle), but by change of direction, endeavour or impulse (of the moving air bouncing away from the wall it has struck and back across the water circle). Since matter is rational and sensitive, this impulse is a moment of decisive agency. It is a moment of expression. If the rebound has occurred between distinct entities rather than within the walls of a single entity, the sound is a conversational reply. Exactly the same quality of “rebound” exists, in Cavendish’s mind, at the level of human conversation, where “Discourse is like playing at Tennis, and the Tongue is the Racket to strike the Ball of Wit, and the Brains are the Gamesters.”

At times Cavendish’s Epicurean model of perception emphasizes not motion, but figure. In these cases, the metaphors of impression dominate, and her thought seems to owe a greater debt to Descartes than to Hobbes. Descartes teaches that “sense-perception occurs in the same way in which wax takes on an impression from a seal.” He asserts that this is not “a mere analogy,” but that “we must think of the external shape of the sentient body as being really changed by the object in exactly the same way as the shape of the surface of the wax is altered by the seal.” In his “Optics,” he prefers the image of the printing press to that of the signet ring and wax: “the objects we look at do imprint very perfect images on the back of our eyes.”

837. Olio 1671, 209; 1655, 102 (where “Discord” should be emended to “Discourse”).
838. Descartes, Rules for the Direction of the Mind 40. Note that in his next paragraph Descartes asserts that the mechanism of perception can be understood by assuming that the object prints the senses with an abstract (but not necessarily an arbitrary) shape, “since it is certain that the infinite multiplicity of figures is sufficient for the expression of all the differences in perceptible things” (41). The print need not bear the full similitude of the object. It need not be fully “real” or ex congruo.
839. Descartes, Optics 91. By “the back of our eyes,” Descartes means the retina.
Cavendish sees this perception-by-imprint model taking place in its most uncomplicated form in the world at large. Although she does not accept the perpetual efflux of corporeal images from objects that the Epicureans teach, she does believe that through processes of “printing” material bodies perpetually create representations of themselves in the world. This happens simply as a consequence of bodies possessing extension in a *plenum*:

> [F]or questionless wheresoever our bodies are, there is the figure in air; for we are alwayes encompast about with air, wherein we make prints of our figures; for the solid bodies print their figures in that which is more porous, and softer substance, as a seal on wax, or a print on butter, or the like; thus the solid bodies as they remove, still make new prints perpetually, and infinitely, but as they remove, the prints melt out.\(^{840}\)

Every moving object leaves behind a vanishing jet stream of self-representations. These representations are three-dimensional or sculptural until their own motion causes them to collide with and imprint a surface, until “the figurative be cast upon a solid ground.”\(^{841}\)

Near the beginning of this chapter I described Cavendish’s fascination with linguistic articulation. One notable instance of printing or stamping as perception in her philosophy occurs in that area. The air perceives and is displaced by the motions of the tongue and the rest of the articulatory apparatus. The resulting three-dimensional stamp in the air becomes the entity that travels into the ears where it is heard as sound. This theory leads Cavendish to the ancient philosophical question of how a single object can be perceived by multiple people. Stanley’s Epicurus and Walter Charleton provide hazy descriptions of a single piece of imprinted air fragmenting over the course of its motion away from its source.\(^{842}\) Cavendish, in contrast, uses

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841. *Opinions* 1655, 80; *Opinions* 1663, 187.
her preoccupation with surfaces in Nature\textsuperscript{843} in order to provide a mechanism for this fragmentation. She explains,

\begin{quote}
the mouth, tongue, and breath formes not onely a single word, but millions in one lump, with the same labour of pains, as for one word; as for example, take a sheet of paper, or the like, and fold it into many folds, in a small compass, and stamp a print thereon, and every fold shall have the like print with one stamp, and until they are parted they stick so close as if they were but one printed body, when every fold is divided by the stamp with the print thereon; so likewise the mouth folds up thin air, and the tongue gives the printed stamp, which being cast forth like a ball of wilde-fire, disperseth in a crack or sound, and then suddenly spreads about in several streams.\textsuperscript{844}
\end{quote}

Air is like folded paper. It can take on three-dimensional stamps, but it can also unfold in a ray-like and even wave-like manner. There are no discrete configurations of atoms flying from the mouth of the speaker to the ear of the perceiver. Rather, there are accordion-like streamers of air bearing stamps,\textsuperscript{845} there are undulating surfaces bearing three-dimensional configurations. Thus, although Cavendish works from the basis of Epicurean assumptions and problems in her first work of natural philosophy, she combines these views with original ideas that lead her to novel theories.

The third main instance of printing as perception in the macrocosm occurs in phenomena involving the reflection of light. Remember that darkness, for Cavendish, is not a privation, that particular figures and motions constitute darkness, just as they constitute colour and light.\textsuperscript{846} On the basis of this assumption, Cavendish interprets reflection as shadow, and then formulates a

\begin{flushright}
\textsuperscript{843} See section 2.6.
\textsuperscript{844} \textit{Opinions} 1655, 124.
\textsuperscript{845} That Cavendish imagines the paper and air folded in a fan or accordion pattern is admittedly just an inference. She does, however, use the image of folding paper in this type of pattern in other contexts (see \textit{Opinions} 1655, 110; 1663, 267-68).
\textsuperscript{846} See p. 139.
\end{flushright}
metaphor that becomes the underpinning of all of her future thought on perception:

Shadows are copies, and pictures, drawn, or printed, or ingraven by dark motions, for dark lines made by the eclipsed light, are as the pencil, or the like, the light is the paint, the solid body on which shadows are cast, is the ground or substance to work on, motion is the artificer; . . . Yet all shadows are not as if they were painted, but printed in black and white, as against a wall, or on water, or the like, but on a looking-glasse, or on a piece of paper through a little hole, in a dark room, it is as painted, the colours being represented as well as the figures.⁸⁴⁷

Reflections and shadows are representations that may involve only the binary distinction of darkness and light, and they may therefore resemble print. They may also, however, be representations that involve the whole spectrum of colour, and they in this case resemble painting. Cavendish treats such natural “painting” as simply an elaboration of natural “printing.” The painting occurs in mirror reflections and “on a piece of paper through a little hole, in a dark room,” that is, in a camera obscura.⁸⁴⁸ This twin reference to painting and to the camera obscura comes to underlie Cavendish’s theory of perception in her mature natural philosophy.

### 4.6 Perception by “Patterning Out”

Contemporary references to the camera obscura explain how painting and the camera could become connected in this way. One of the most important published descriptions of the camera obscura contemporary with Cavendish’s philosophy appears in Porta’s *Natural Opinions* 1655, 80. The version of this chapter that appears in *Opinions* 1663 (185-86) omits most of this.

⁸⁴⁷. *Opinions* 1655, 80. The version of this chapter that appears in *Opinions* 1663 (185-86) omits most of this.

⁸⁴⁸. Cavendish’s familiarity with the camera obscura is confirmed in a reference in the *Philosophical Letters* to “figures presented in a room through a little hole, inverted” (90). Ironically given the importance of the camera to her theory of perception, she states here that this and other forms of manipulating sound and light belong “more to Artists then to my study.”
Porta explains,

You must shut all the Chamber windows, and it will do well to shut up all holes besides, lest any light breaking in should spoil all. Onely make one hole, that shall be a hands breadth and length; above this fit a little leaden or brass Table, and glew it, so thick as a paper; open a round hole in the middle of it, as great as your little finger: over against this, let there be white walls of paper, or white clothes, so shall you see all that is done without in the Sun, and those that walk in the streets, like to Antipodes, and what is right will be the left, and all things changed; and the farther they are off from the hole, the greater they will appear.

Having described the structure of his camera (and note that it is the size of a room that the observers literally stand inside), Porta proceeds to explain that lenses can heighten the effect and that mirrors can right the figures. Significantly, he also advises his readers that if they have difficulty drawing or painting realistic images, they may use the camera obscura to this end. The reader need simply draw or paint on top of the image projected onto the white paper opposite the small hole. Not only does the image produced in the camera resemble painting, but it may also be used as a pattern for painting. Then Porta draws an analogy between the camera and the human eye, explaining, “The Image is let in by the pupil, as by the hole of a window; and that part of the Sphere, that is set in the middle of the eye [ie. the lens], stands instead of a Crystal Table.”

Porta’s Natural Magick hence contains all of the ingredients necessary for the development of

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849. My discussion of the history of the camera obscura is guided by the first chapter of Philip Steadman’s book Vermeer’s Camera: Uncovering the Truth behind the Masterpieces (Oxford: Oxford UP, 2002) 4-24. It is this work that has pointed me to the passages in Porta and Henry Wotton, and to Constantijn Huygens’s association with the camera.

850. Porta 363.

851. To my ear, the wording and sense of wonder in this translation of Porta evokes 1 Corinthians 15:51-52 where the Apostle Paul writes, “Behold, I shew you a mystery; We shall not all sleep, by we shall all be changed,/ In a moment, in the twinkling of any eye, at the last trump: for the trumpet shall sound, and the dead shall be raised incorruptible, and we shall be changed.” For me the marvel of the camera obscura evokes the marvel of the resurrection at the end of time. It also evokes the technicolour brilliance of Cavendish’s exotic and paradisal Blazing World.

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Cavendish’s mature theory of perception. It describes the mechanism of the camera, its usefulness for painters, and its structural similarity to the human eye. However, the English edition of the book, although Latin editions began to be published in the previous century, did not appear until 1658, three years after the publication of the first edition of the *Opinions* where Cavendish works out the connection of the *camera obscura* to other optic phenomena. Consequently, Porta must be regarded merely as a cultural context for the development of Cavendish’s theory, and not as a direct source. The published comments of other seventeenth-century natural philosophers on the *camera obscura*, including those of Descartes in the *Optics*, must be regarded likewise. If Cavendish had a direct source for her ideas on the subject, it must have come not through books, but through a personal connection.

There are at least two possible personal connections between Cavendish and the camera. The first of these comes through the diplomat and polymath Constantijn Huygens. During her time in Antwerp, Cavendish developed a friendship with Huygens. In his book on Vermeer, Philip Steadman recounts the evidence for the mid-seventeenth-century knowledge of and use of the camera by Dutch artists. According to Steadman, in 1622 Huygens acquired a *camera obscura* in London from the Dutch inventor Cornelis Drebbel. Drebbel was an expert in the manufacture of optical instruments, and he even taught Huygens how to grind glass. When

852. Descartes, *Optics* 91


Huygens returned home, he demonstrated the camera to numerous people, including at least one painter who seemed to have prior knowledge of the device. Through her friendship with Huygens, Cavendish could have obtained information about the camera, and perhaps could even have seen it at work. In one of his letters to her, Huygens asks Cavendish, as an extension of an earlier philosophical discussion the two have had, her opinion on the behaviour of “those Wonderful Glasses, which . . . will fly into Powder if one breaks but the least top of their tails: whereas without that way they are hardly to be broken by any weight or strength.” It is likely that the earlier conversation involved glass, lenses, optics, and maybe even the *camera obscura*.

Steadman’s account of the *camera obscura* points to a second and admittedly more tenuous personal connection that Cavendish may have had with the camera and its uses in the fine arts, this time through the diplomat Henry Wotton. In 1612, William Cavendish accompanied Wotton on a diplomatic visit to Savoy in what was an important stage of William’s intellectual and cultural education. In 1651, Wotton’s letters and other writings were published as *The Reliquiæ Wottonianæ*. This collection, which would have been of interest to the Cavendishes, includes a letter to Francis Bacon about Kepler’s *camera obscura*. Wotton explains that in Kepler’s study he saw a remarkable drawing of a landscape that Kepler said he had

857. Again, it must be said that this letter was dated in 1657 and so it too follows Cavendish’s allusions in the first edition of the *Opinions* to the *camera obscura*. Nonetheless, the friendship with Huygens likely preceded this date, and may well have been a source for Cavendish’s knowledge.
859. Geoffrey Trease gives an account of this journey in *Portrait of a Cavalier* (31-36).
accomplished “non tanquam Pictor, sed tanquam Mathematicus” (not as a painter, but as a mathematician). Kepler then proceeded to describe or show Wotton his camera. Wotton suggests to Bacon that the device may be useful for mapping, “For otherwise, to make Landskips by it were illiberal; though surely no Painter can do them so precisely.” Whether or not Margaret Cavendish learned of the camera obscura and its connection to painting through Wotton and Huygens, the device was certainly a part of contemporary intellectual discussion on optics.

In Cavendish’s mature philosophy, “the Sensitive Organs . . . have their perceptive actions, after the manner of patterning, or picturing the exterior Form, or Frame, of Foreign Objects.” In the phrase she repeats most frequently, especially in the Philosophical Letters and the Observations, animate matter “patterns out” external objects. Although Cavendish first uses the phrase in the same work in which she first clearly refers to the camera obscura, she never draws any explicit connection between the mechanism of perception on the one hand, and the camera and its uses for painting on the other. There are, however, numerous reasons to believe that such a connection obtained in her thought.

For one, as I have already shown in relation to Porta, Cavendish had good precedents for treating the camera obscura as structurally parallel to the human eye. For another, the camera obscura connection allows Cavendish’s reader to see in her evolving doctrines of perception not a succession of theories where “patterning out” replaces impact-based perception which has

861. Wotton 414.
862. Grounds 55.
863. These references appear in Opinions 1655, 114 and 80.
already replaced perception based on the incursion of matter into the sense organs, but rather to see a single unified theory, the articulation of which evolves in conjunction with her shifting ideas on causal structure. In this light, for instance, Cavendish’s early references to the pupil as a “round small hole” and to the sensitive matter making “holes” in the surface of the sense organs in order to allow the incursion of material species look like allusions to the aperture through which light enters the camera.

The camera obscura connection also makes the glosses that Cavendish offers at the end of the Philosophical Letters on passages from the Philosophical and Physical Opinions look less like blatant re-definitions of terms and revisions of ideas, and more like mere clarification and shifting of emphasis. For example, she writes, “When I make mention of what the Senses bring in, I mean what the sensitive Motions pattern out of foreign objects.” If the camera is indeed the model for perception in her mature theory, matter does still enter into the senses just as light enters into the camera’s aperture, but now Cavendish is interested in the patterns formed on the retina (or analogous part of a different sense organ), just as the observer in a camera obscura looks at the images cast onto the screen opposite the aperture.

If perception is analogous to the camera obscura, Cavendish can justly reformulate “prints” as “the figures of objects which are patterned or copied out by the sensitive and rational corporeal Motions.” For Cavendish to explain “by Prints I understand Patterns, and by printing patternning; not that the exteriour object prints its figure upon the exteriour sensitive organs, but

864. See p. 237, above.
865. Philosophical Letters 540.
866. Philosophical Letters 540.
that the sensitive motions in the organs pattern out the figure of the object”\textsuperscript{867} is not for her to supplant her earlier theory with a new one. Rather, it is for her to agree with Descartes’s use of “imprinting” in relation to the formation of images on the retina in the eye and on the screen in the \textit{camera obscura}. It is for her to agree with this usage, but then to shift the emphasis from the external and occasional cause of the images to their efficient cause in the matter of the retina or the screen itself.

At the culmination of the development of the theory of patterning out in the \textit{Observations upon Experimental Philosophy}, Cavendish writes, “the patterns of outward objects being actions of the body sentient, are, as it were, a self-touch, or self-feeling, both in the sensitive and rational perceptions.”\textsuperscript{868} The choice, the agency, even the pleasure of the perceiver has become the focus of the theory. Perception is no longer about alteration imposed from the outside; it is about art and information being generated from within the self. It is also still about touch, as it was in her earliest writings.

This shift of emphasis away from the external and occasional cause towards the efficient cause within the perceiving matter results in the conflation of the formation of the image on the screen in the \textit{camera obscura} with the copying of this image by the artist who is using the camera to produce a realistic drawing. In both editions of the \textit{Philosophical and Physical Opinions} and in \textit{Natures Picture}, this conflation has not yet occurred, and perception is still a two stage process where the sensitive matter prints or paints objects in the senses, and then the rational matter

\begin{itemize}
\item \textsuperscript{867} \textit{Philosophical Letters} 539-40.
\item \textsuperscript{868} \textit{Observations} 1.231.
\end{itemize}
patterns out the sensitive print."869 When the eye sees an external object,

those sensitive spirits, in the eye taking notice thereof . . . strait prints or paints
those objects upon the optick nerve . . . upon which the rational spirits view as on
pictures, then copie them out, not by working on the dull part of matter, as the
sensitive innate matter doth, but turn themselves by number and measure, into
figures like those printed or painted figures; the difference is, that the rational
matter is like sculptures, the others as pictures upon flats.870

The sensitive spirits create a coloured, two-dimensional image in the matter of the retina, and
rational spirits copy this image, transforming it into their own work of art. Since the rational
spirits do not have a canvas other than their own matter to work upon, they move in measure and
in figures like dancers, and they produce a three-dimensional representation of the object in the
brain. When the rational matter copies the sensitive matter in this way, it literally “informs it self
of the Sensitive Actions.”871 Perception is a means of information, learning, communication.

By the time of the Philosophical Letters where Cavendish seeks to eliminate the
vocabulary of “printing” from her philosophy on account of its associations with philosophical
systems that she critiques, both stages of human and animal perception are labeled “patterning
out,” and appear to be structurally identical.872 It is as though the light entering the camera
obscura has become one with the artist. In some respects, the two stages of human perception
have even joined together to produce a single, instantaneous act of patterning out and

869. Opinions 1655, 114; 1663, 287-89. Cf. Picture 1671, 590-91. The publication of the first
edition of Natures Pictures in 1656 explains the coherence of its doctrines on perception with those
of the two editions of the Opinions, published in 1655 and 1663, respectively.


871. Opinions 1663, 49.

872. For example, “the sensitive and rational Matter doth make or pattern out the figures of several
Objects” (Philosophical Letters 22),
“communication at a distance.”

This supports the generalization of the process of perception by patterning out to the world at large. The earth takes “a copy” or patterns out the scent of a wild animal that has passed that way, and the hunting dog’s nose patterns out that copy. A container patterns out the figure of what has been stored within it, and later, the human nose may pattern out this copy of the original scent. Even the apparent tendency of winds to carry temperatures with themselves actually results from a chain reaction within the moving air of patterning out figures of heat and cold, figures which may ultimately be patterned out by human skin and pores.

With the conflation of the light and image in the camera obscura with the painter and painting comes also the spread of art and representation in Nature. The human senses behave like artists. Descartes has to multiply explanations for how humans “see” distance, taking into account the shape, motions and relationship between the eyes as well as logical inference and the appearances of objects, and even then he can only conclude that perspective drawings prove the facility with which people misjudge distance. Cavendish, in contrast, uses the analogy of perspective drawing to provide a unified and implicit explanation for why people visually estimate distance as well as they do. For her, “the sensitive motions do pattern out the distance

874. Cavendish does, it must be noted, indicate on numerous occasions that she is not certain that patterning out is the sole method of perception in Nature. See, for example, *Observations* f1v, 1.160, 1.209-10, 1.216-17.
together with the object”; they produce a drawing that conforms to the rules of perspective just
as a landscape copied by an artist from the screen in a camera obscura would conform to these
rules. The rational matter need only interpret a picture, a representation ex congruo of the
objective reality. It need not take into account all of the factors enumerated by Descartes.

The senses also behave like the artists of Cavendish’s era in that each respective sense
may pattern out a different part of an object or image, and then knit these into a single perception,
because “it is as easie for several senses to pattern out the several proprieties of one body, as it is
for several Painters to draw the several parts of one figure.” Cavendish’s allusion here may be
either to the veritable painting factories of artists like Rubens and Van Dyck who employed
multiple assistants, or to more personal collaborations between artists like that between Rubens
who would paint the human figures and Brueghel who would paint the flowers on one and the
same canvas.

4.7 Art in Nature and Method

Perhaps the most significant effect of assimilating the light to the painter and the image to
the picture in the camera obscura is the introduction of fallible human agency, first into the
otherwise mechanical process of human sense perception, and then into other forms of

879. Philosophical Letters 68.
880. Observations 1.222.
Barnes and Julius S. Held (New York: Harry N. Abrams, 1990) 56; Malcolm Rogers, “Van Dyck in
England,” Van Dyck 1599-1641, Christopher Brown and Hans Vlieghe (London: Royal Academy
Publications, 1999) 84; Gilles Néret, Peter Paul Rubens 1577-1640: The Homer of Painting (Los
perception. Cavendish, as I noted earlier in this chapter, tends to argue for the reliability of the senses. When her skepticism concerning the usefulness of optical instruments appears in the *Observations upon Experimental Philosophy* in conjunction with her mature theory of perception, this skepticism stems not so much from distrust of the senses as from disdain for and distrust of human agency in the guise of painterly imitation.

Imitation usually carries negative connotations in Cavendish’s works. The Duchess in the *Blazing World* defends her “singular” clothing, deportment and speech on the grounds that “[I]t argues but a mean Nature, to imitate others.”\(^882\) In *The Comical Hash*, two gentlemen discussing a newly published book of poems that imitates another book to the point of plagiarism seek to define acceptable literary imitation or emulation, but they describe even this in negative terms:

> 2 Gent. By your favour, imitation is only to be like another, and not the same: . . . those that do imitate any Excellent Poet, do not gain so much honour to themselves, as they give honour to those they imitate; . . . for Imitators are only as Painters, where he that is imitated is as Nature, or the Gods, for the one draws but Copies, the other makes the Original; so that there is as much difference as a Man, and the Picture of a man.\(^883\)

In this character’s opinion, painters in general are imitators—and painters producing landscapes or still lifes by what Henry Wotton calls the “illiberal” means of a *camera obscura* are presumably doubly so. According to the gentleman in *The Comical Hash*, “an Imitator is but an Artificer, when as the Original Author is a Creator, and ought to be accounted of, and respected, and worship’d as Divine.”\(^884\) Imitators, artificers and art contrast with authors, creators, inventors,

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882. *Blazing World* 149.
884. *Playes* 1662, 561.
Nature and God.\textsuperscript{885} At best, an imitation is an accurate representation, but it has an ontological status fundamentally different from that of the original. Just as a painter’s picture does not contain real fire or real light, so the eye, when it “patterns out the exterior figure of Light,” never becomes light.\textsuperscript{886} Even natural patterning motions produce artificial figures.\textsuperscript{887} In the \textit{Worlds Olio}, Cavendish compares imitations to “a flight of Wild-Geese, which go each one after another: when Singularity is like a Phoenix.”\textsuperscript{888} Even very good imitations demonstrate a “want of Invention, that they cannot draw without a Pattern; and it is weakness not to be able to go without the help of another.”\textsuperscript{889} Cavendish’s moral philosophy and drama thus disparage the most important physical process of her mature natural philosophy.

In the same way that imitation is inferior to creation, Art is inferior to Nature.\textsuperscript{890} Cavendish reflects upon this in the context of competing methods for understanding Nature. One philosophical “art” is scholastic logic. Scholastic natural philosophers fail in their undertaking, “\textit{for Nature is so far beyond and above Art, as Art is Lost and Confounded in the Search of Nature, for Nature being Infinite, and Art Finite, they cannot Equalize each other.}”\textsuperscript{891} The two are simply incommensurable.

The principal manifestation of Art in relation to method for Cavendish is in the optical instruments, mechanical inventions and alchemical apparatus of what Bacon earlier in the

\textsuperscript{885} For Cavendish’s comments on imitation in relation to invention, see \textit{Olio} 1671, 52-53.
\textsuperscript{886} \textit{Observations} 1.237.
\textsuperscript{887} \textit{Philosophical Letters} 486.
\textsuperscript{888} \textit{Olio} 1671, 210.
\textsuperscript{889} \textit{Olio} 1671, 210.
\textsuperscript{890} For more on Art and Nature in Cavendish, see Dear 131-36.
\textsuperscript{891} \textit{Opinions} 1663, d2r.
century criticizes as “the Empirical school of philosophy” which he feels develops theories based on “the narrowness and darkness of a few experiments.” With respect to empirical natural philosophers, Cavendish writes,

I have heard that Artists do glory much in their Glasses, Tubes, Engines, and Stills, and hope by their Glasses and Tubes to see invisible things, and by their Engines to produce incredible effects, and by their Stills, Fire, and Furnaces, to create as Nature doth; but all this is impossible to be done: For Art cannot arrive to that degree, as to know perfectly Natures secret and fundamental actions, her purest matter, and subtilest motions.

Cavendish argues here that the technologies of the experimentalists fail to transcend limits on observation already established by Nature, fail to imitate Nature’s ability to create or produce, and even fail to perceive and accurately represent natural phenomena. When Art does succeed in representing Nature or producing noteworthy effects, these representations or effects are “but Natures bastards or changelings” and they are “Hermaphroditical Effects, that is, such as are partly Natural, and partly Artificial.” Such representations and productions do not, Cavendish argues, conform to natural distinctions of “kind or species.” They fall short of perfect representation.

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894. *Observations* 1.101, 2.4.
895. *Observations* 2.4.
896. Jo Wallwork has written that Robert Hooke’s project in the *Micrographia* “quite deliberately depended upon representations to convey new knowledge, developing a graphically dependent rhetoric which went beyond the ‘philosophy of discourse and disputation’” (“Old Worlds and New: Margaret Cavendish’s Response to Robert Hooke’s *Micrographia*,” *Women Writing, 1550-1750*, ed. Jo Wallwork and Paul Salzman (Bundoora, Austral.: Meridian, 2001) 192). Cavendish’s point is that optical instruments participate in a discursive system of representation, a system characterized by the same artificiality and fallibility as language.
Art ultimately originates in Nature, but Art troubles its source. When Cavendish considers it as an expression of Nature, Art is capricious. It is “Natures sporting or playing actions,” “Nature’s Mimick or Fool, in whose playing actions she sometimes takes delight,” and “Natures blind, at least her winking or jugling actions.” When Cavendish considers Art as an expression of human beings, “Art is the insnarled motions of Nature,” and it is rather “a troubler, then an assistant to Nature.”

There is a two-fold irony in Cavendish’s mature doctrine of perception. First, she selects as the model for her theory of perception the *camera obscura*, one of the optical instruments invented and refined by empirical natural philosophers. She puts the art or technology that she disparages at the core of her theory of Nature. Second, although Cavendish adopts the theory of patterning out because for her it explains the constancy, exactness, variety and clarity of perceptions better than other theories do, patterning out involves imitation, and imitation involves fallibility. When she explains not only human sense perception but also many other natural phenomena by means of patterning out, she puts this fallibility, this failure of complete realization, at the heart of Nature itself. She puts a form of communication that falls short of the “real” representation and representation *ex congruo* that the philosophers of universal languages idealized, at the heart of natural processes.

897. *Philosophical Letters* 345, 474
900. *Observations* 1.73.
Cavendish claims in the *Observations upon Experimental Philosophy* that she cannot agree with those who believe that “all natural effects may be called artificial, nay, that Nature herself may be called the Art of God,” because “to say God or Nature works Artificially, would be as much as to say they work irregularly.” However this is precisely what her mature philosophy asserts. All optic phenomena, the production of sound and odour, the workings of the five senses themselves and the translation of sensation into rational perception, the communication of temperature, change in chemical state or composition and the spread of disease are among the natural processes effected by chains of “patterning out.” By Cavendish’s own attestation in relation to the production and transfer of odours, “those patterned figures are but as it were artificial, like as a man who draws a Copy from an Original.” Where chains of patterning out occur, copies are taken from copies, and as Cavendish comments with respect to observed reflections, these are “like as many pictures of one man, where some are more perfect then others, for a copy of a copy is not so perfect as a copy of an original.” This is the natural philosophical basis for Cavendish’s argument that optical instruments “do oftentimes present falsly the picture of an exterior object.” She explains, “the Glass onely figures or patterns out the picture presented in and by the Glass, and there may easily mistakes be committed in taking Copies from Copies.” With the ceaseless natural production of representations in Cavendish’s mature philosophy comes at least the likelihood of irregularity in both Art and Nature.

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903. *Observations* 2.7.
905. *Philosophical Letters* 74. This may be an allusion to the practice of contemporary painters of using a portrait from a single sitting with a subject as the basis for multiple paintings. See Millar 54.
The doctrine of patterning out justifies Cavendish’s distrust of optical instruments, and her consequent distrust of a significant component of the so-called New Science, but it also affects her mature stance on natural philosophical method in a more subtle way. Cavendish argues that natural philosophy should be pursued by two complementary means which reinforce and act as checks upon one another. She teaches, “[T]hat particular sensitive knowledg in man which is built meerly upon artificial experiments, will never make him a good Philosopher, but *regular sense and reason* must do it, that is, a *regular sensitive and rational inquisition* into the various actions of Nature.” The use of optical instruments increases the chain of patterning out and therefore increases the likelihood of fallibility. However, the natural senses alone, as long as they are “regular,” are generally more reliable, and therefore “when the Perceptions both of sense and reason agree, then the information is more true.”

Cavendish does not by any means conclusively reject either empirical or experimental natural philosophy. Nonetheless, she repeatedly asserts the priority of reason and speculative natural philosophy over both observation and the use of technological “arts.” Reason is “above

907. *Observations* 1.92. The italics are my own. There are numerous passages to this effect. For example, in the *Philosophical Letters* Cavendish writes, “Pure natural Philosophers, shall by natural sense and reason, trace Natures ways, and observe her actions, more readily then Chymists can do by Fire and Furnaces” (281), and she criticizes the empirical school, explaining, “[T]heir Instruments, Figures, Furnaces, Limbecks, and Engines, cannot instruct them of the truth of Natures Principles; but the best and readiest way to find out Nature, or rather some truth of Nature, is sense and reason, which are Parts of Natures active substance, and therefore the truest informers of Nature” (348). In the *Observations* she even asserts, “[A]s knowledg and understanding is more clear, where both the rational and sensitive perception do join; so Experimental and Speculative Philosophy do give the surest informations, when they are joined or united together” (82). Compare, too, the Empress’s summary of her own method of natural philosophy in the *Blazing World*: “[B]oth by my own Contemplation, and the Observations which I have made by my rational & sensitive perception upon Nature, and her works, I find . . .” (47).

sense,” and “reason being more subtile, piercing and active, doth oftener inform and rectifie the senses” than the senses do the reason. Consequently, “although Experimental Phylosophy is not to be rejected, yet the Speculative is much better, by reason it guides, directs and governs the Experimental.”

Reason logically precedes the invention and application of arts, and speculative philosophy therefore precedes experimental philosophy. Reason also has better access to Nature than the senses do. It can “pierce deeper” than the senses by considering and attempting to represent for itself the interior figures and actions of its objects. It is not confined to imitating superficial figures and actions in the way that the five senses are. The subtlety and activity of the rational matter make it more capable than the sensitive of representing the subtleties of Nature through its dances in the human mind. It is the similarity between the elaborate and refined capabilities of the rational matter and those of Nature as a whole that gives reason privileged access to the world. When Cavendish asserts that “[rational] discourse shall sooner find or trace Natures corporeal figurative motions, then deluding Arts can inform the Senses,” she implies that just as there is a structural parallel and, in effect, a shared language between optical instruments and the sensitive matter, so there is a more complete structural parallel and shared language between reason and the natural world. This parallel will be the subject of the next chapter.

909. Observations 2.82.

910. For more passages to this effect, see Philosophical Letters 502, Observations d1r, 1.7, 2.3, 2.12, 2.79-80.

911. Observations 1.93.

912. Observations 1.6. Cavendish’s use of the term “discourse” to denote the process of reasoning will be explored in the next chapter.
Chapter 5

“The Souls Language”: Reason and Creation

The beginning of this dissertation explored the immanence of reason in the world of Cavendish’s natural philosophy through a discussion of the relevance of speculative music to her world’s structure. The last chapter concluded by describing the priority of reason and speculation in Cavendish’s theory of natural philosophical method. This final chapter draws universal natural reason and human reasoning together and demonstrates their relationship in Cavendish’s thought to all forms of creation: to the divine creation of the cosmos, the natural production of organisms and objects, and human imaginative and literary making. The chapter demonstrates that for Cavendish, all creations, be they physical, biological or mental, relate to the form of discourse that her Lady Speaker labels “the Souls Language.”

5.1 Reason and Poetry

The Lady Speaker in The Female Academy who categorizes discourse calls the first of her categories “the Souls Language,” and she describes it as follows:

As for the first, which is a discourse in the mind, which is Reasoning, which reasoning is a discourse with things, and not with words, as such a thing is not such a thing, and what such things are, and what they are not, or in what such things agree or disagree, sympathy, or antipathy, or such things resemble, or not resemble, or on the cause of things, or their effects, or the like: This discourse is in the mind, which is distinguishing, and distinguishing belongs to Judgement.

Here, mental discourse is “reasoning.” Because human consciousness is made of moving rational

913. Playes 1662, 667.
914. Playes 1662, 666.
matter, and because thoughts are configurations of this matter, the discourse in the mind involves complex algorithms conducted not with symbols but with concrete things. It involves the literal juxtaposition of things and the analysis of their arrangement, their syntax. The objective and non-representational aspects of the “Souls Language” also allow it to exist outside of the mind, in the world at large.

The Lady Speaker’s description of the discourse of the mind critiques and revises Hobbes’s discussion of mental discourse and reason in the *Leviathan*. For Hobbes, “Mentall Discourse” is simply the “Consequence, or TRAYNE of Thoughts.” When it is “Unguided, without Designe,” it is the stream of consciousness. When it is “governed by designe,” it is “Seeking, or the faculty of Invention, . . . a hunting out of the causes, of some effect, present or past; or of some of the effects, of some present or past cause.”915 Reason, with which it contrasts, is on the other hand “Reckoning (that is, Adding and Subtracting) of the Consequences of generall names agreed upon, for the marking and signifying of our thoughts.”916 For Hobbes, the algorithms of reason, unlike the simpler ones of mental discourse, require language. This is not the case for Cavendish’s Lady Speaker for whom the most complex syntaxes of things can exist and be analyzed without supervening symbols. Things (in this case the material thoughts) become their own symbols. Objectively existing systems can constitute reasoning.

Although Hobbes does see “Seeking, or the faculty of Invention” even in pre-linguistic mental discourse,917 Cavendish finds far more keenness and ingenuity in the “Souls Language.”

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Moreover, since the rational matter extends beyond human and animal minds to pervade all of Nature, so too do these characteristics of the mind, and so too does the “Souls Language.” The connections between divine, natural and human forms of creation in Cavendish’s thought stem from her sense of the discursive and yet fully material complexity of reason throughout the universe.

The connections between divine, natural and human forms of creation in the world as it is described by Cavendish’s philosophy rely in part upon the role that she feels reason plays in relation to fancy and literary invention. This threefold role is the key to the pervasiveness of the “Souls Language” in all forms of creation. It includes constitutive, governing and structural functions.

As I indicated in the first chapter, “sense and reason” are the “Principles and Grounds” of Cavendish’s natural philosophy. Sensitive matter and rational matter are ubiquitous and effect all phenomena. In Cavendish’s vocabulary, one definition of “reason” is “rational matter.” In the brain, the rational matter effects and constitutes all thought. In poetic fancy, it “creates figures . . . after its own invention, which are imagination and conception, wherein are made imaginary worlds, without the materials of outward objects. In the epilogue to The Blazing World Cavendish writes, “the Worlds I have made, both the Blazing- and the other Philosophical World, mentioned in the first Part of this Description, are framed and composed of the most pure, that is, the Rational parts of Matter, which are the parts of my Mind.” “Imaginary worlds” evoked

920. Blazing World X4r.
by literature have a material being in the very substance of reason, just as the objectively existing world does.921

When Cavendish publishes *The Blazing World* as an appendix to the *Observations upon Experimental Philosophy*, she includes an epistle “To the Reader” discussing the relationship between the works. In this epistle, another important sense of the term “reason” appears. Both works, Cavendish writes, are “made by the rational parts of Matter,” but they are the products of distinct and complementary faculties, fancy and reason. The faculty of reason conducts “a rational search and enquiry into the causes of natural effects” using representation and logic. Its goal “is Truth.” By contrast, the faculty of fancy “creates of its own accord whatsoever it pleases, and delights in its own work.” “The end of Fancy, is Fiction,” and this fiction need not be representational: it may be self-subsisting.922

The faculties of reason and fancy are complementary, because while reason is “more profitable and useful . . . , so it is also more labourious and difficult, and requires sometimes the help of Fancy, to recreate the Mind.”923 Reason is serious, while fancy is a form of play. Reason also moderates the contents of the fictions the fancy produces. The allegory “Fancy’s Monarchy in the Land of Poetry,” which I discussed briefly in connection with the trade model of perception in Chapter 4, begins,

921. Of course, the objectively existing world also consists in sensitive and inanimate matter, whereas imaginary worlds are predominantly composed of rational matter. Note that at times Cavendish uses “wit” as a synonym for “rational matter.” She writes, “Wit is the purest Element, and swiftest Motion of the Brain: it is the Essence of Thoughts; it incircles all things” (*Olio* 1671, 11; 1655, 5)

922. *Blazing World* 1666, b*1v.

923. *Blazing World* 1666, b*1v
In the Land of Poetry, Reason was King: a Gallant Prince he was, and of a Heroick Spirit, a Majestical Presence, and of a Sober and Grave Countenance: He was tall of Stature, and strong of Limbs. His Queen was the Lady Wit; a Lady of a quick Spirit, of a pleasant Conversation, amiable Countenance, free Behaviour, and of a sweet Disposition: she was neatly shap’d, fair Complexion’d, and finely, but variously attired.\(^924\)

The sober and grave majesty of Reason complements the sweet amiability of Wit. Their rule produces a Kingdom of Poetry characterized by good laws, the preaching of moral virtue, and careful control over what enters and exits the kingdom’s ports. Poetry is the shared product of quick and various wit and fancy, and restraining and ordering reason.

Not only does the faculty of reason govern poetry, but it structures poetry as well.

Cavendish explains that poets are in general superior judges of practical affairs,

For a good Poet hath \textit{distinguishment}, which is \textit{judgment}; as well as \textit{similizing}, which is \textit{fancy}: I mean not those Poets which can only \textit{Rhyme}, but those Poets which can \textit{Reason}: not those that have most \textit{Art}, but those that have most \textit{Nature}.\(^925\)

Cavendish does not prefer poets capable of producing elaborate prosodic structure, but poets capable of balancing “\textit{distinguishment}” and “\textit{judgement}” on the one hand and “\textit{similizing}” and “\textit{fancy}” on the other in their choice of subject matter. To balance these qualities is to demonstrate acuity of reason and similarity to Nature. In a dialogue between three ladies, the witty lady discusses the self-sufficiency of Wit in its creations “from the Imaginations.” Contrary to what the example of contemporary literary romances might suggest, wit, she claims, “needs no other Table or Ground to draw its Draughts, or take Copy from, but its own Brain, which creates and

\(^{924}\) Picture 1671, 227. For Cavendish’s usage of the word “wit” and its connection to the fancy, consider the chapter “Wit is natural” (\textit{Olio} 1671, 22; 1655, 11), which includes the phrases, “Imagination we call Fancy, and Fancy is Wit.”

\(^{925}\) \textit{Olio} 1671, 15; 1655, 8.

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invents, similizes and distinguisheth.” Poetry involves two processes: first, creation and invention, and second, similizing and distinguishing. When the poets visit the She-Anchoret, “they asked her, What was the ground of Poetry?” This ground, according to the She-Anchoret, is “Distinguishing and Similizing, which is, said she, Judgment and Fancy: as for Numbers, Rhyme, and Rhetorick, they are but the several Accoutrements, but no part of the Body of Poetry.” In the first part of the play Youth’s Glory, and Death’s Banquet, Lady Sanspareille similarly teaches, “the two principles of Poetry, is similizing, and distinguishing, which are fancy, and judgment.”

In some respects, “similizing” and “distinguishing” oppose one another. The former refers to drawing things together, likening things to one another in similes and metaphors. Consider the section of the Poems, and Fancies preceded by the warning to the reader “to read this part of my Book very slow, and to observe very strictly every word they read; because in

926. Picture 1671, 319.
927. Picture 1671, 687.
928. Plays 1662, 148. Cavendish’s formula parallels (and predates) Walter Charleton’s “consideration of the Nature of Wit” in A Brief Discourse Concerning the Different Wits of Men (London, 1669). According to Charleton, “The Understanding of a Man . . . is commonly measured either by the rectitude of his Judgement, or the celerity of his Imagination” (18-19). He writes, “By Judgement, we distinguish subtilty in objects neerly resembling each other, and discerning the real dissimilitude betwixt them, prevent delusion by their apparent similitude” (19). He continues, “By Imagination, on the contrary, we conceive some certain similitude in objects really unlike and pleasantly confound them in discourse” (20-21). Later on, Charleton writes, “In Poets, both Phansie and Judgement are required; but Phansie ought to have the upper hand, because all Poems, of what sort soever, please chiefly by Novelty” (25). Cavendish may have influenced Charleton (or vice versa), or they may have had a shared source for their ideas.

929. Quintilian teaches, “On the whole metaphor is a shorter form of simile” (8.6.8), that is, it is a subtype of simile. He also teaches that metaphor is “the commonest and by far the most beautiful of tropes” (8.6.4). This expanded meaning of simile may account in part for its importance to poetry in Cavendish’s thought.
most of these Poems, every word is a Fancy.” Many of the poems in this section bear titles such as “Similizing the Braine to a Garden” and “Similizing the Winds to Musick,” while most of the others are also clearly metaphorical. These poems are Cavendish’s most concentrated series of attempts at metaphysical wit.

The latter term of Cavendish’s formula, “distinguishing,” suggests division or the recognition of differences. “Distinguishing” is conspicuous in the series of dialogues in the Poems, and Fancies. These, which have titles such as “A Dialogue betwixt Man, and Nature” and “A Dialogue between Melancholy, and Mirth,” often use prosopopoeia to give a voice and feelings to abstract categories or characteristics or apparently inanimate beings, and they use patterns of complaint and response in order to allow each of the speakers to clarify his own nature and his relationship to the other.

Considered in this way, Cavendish’s poetic oeuvre as a whole balances similizing and distinguishing. It therefore, according to her own theory, demonstrates acuity of reason and naturalness. Like the cosmos in her natural philosophy, her poetry emerges from a rational tension between composition and division in animate matter. Her cosmos and her poetry share

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930. Poems 123.
932. While many of Cavendish’s comparisons are trite, others, like the opening of “A Dissert,” which reads, “Sweet Marmalade of Kisses new gathered, / Preserv’d Children that are not Fathered” (Poems 132), are striking indeed.
934. Poems 58,76.
935. See pp. 32-33. The terms “similizing” and “distinguishing” in Cavendish’s formula need not, however, be considered in opposition or in tension with one another. One of the seventeenth-century definitions of “similize” is “To imitate, copy,” and among the contemporary definitions of “distinguish” are “To single out, notice specially” and “To make prominent, conspicuous, remarkable, or eminent in some respect.” In this reading, Cavendish believes that the ground of
5.2 Divine Creation

Cavendish’s beliefs concerning God’s creation of the world and of the spiritual soul inform her thoughts on natural and poetic creation. They also point to additional respects in which reason, “the Souls Language,” characterizes creative processes. The heterodoxy of these beliefs is all the more startling given her conservative opinions concerning the interpretation of the Scriptures.

Cavendish believes that the Bible should be jealously guarded from misguided interpretation. In the CCXI Sociable Letters, she complains that the Church of England “hath suffer’d the Scripture to be Read too Commonly,” and that permission to read the Bible unfortunately amounts to tacit permission to interpret it. She opposes the Bible’s popularization through paraphrases, because “whosoever doth Heighten the Sacred Scriptures, by Poetical Expressions, doth Translate it to the Nature of a Romance . . . and certainly the Scripture and Feignings ought not to be Mix’d together.” In her opinion, “no Subject is so Unfit for Poetical Fancies, as the Scripture.”

Cavendish’s heterodoxy lies in part in her belief that the Bible does not describe the

poetry is to imitate or represent Nature, and then to draw attention to the specifics of what she represents. However, Cavendish’s association of fancy with creation (which I will discuss below) makes the association of similizing with imitation less than convincing. (“Similize, v.”, Def. 1, OED Online, 9 Feb. 2009; “Distinguish, v.”, Def. 6, 7, OED Online, 9 Feb. 2009).

936. Sociable Letters 173. She argues that this freedom has led to disturbance both within individuals and within the church government. Cf. Philosophical Letters 324.

937. Sociable Letters 263. The opinion is striking because Cavendish does offer her own imaginative version of the creation of the world at the beginning of the Poems, as well as elsewhere in her works.
creation of Nature as a whole, but only of “the world.” In the *Philosophical Letters* she argues, “the holy Scripture informs us onely of the Creation of this Visible World, but not of Nature and natural Matter.” Later in the same book she asserts, “The Holy Writ doth not mention Matter to be created, but onely Particular Creatures, as this Visible World, with all its Parts . . . [A]ll creatures, and figures were made and produced out of that rude and desolate heap or chaos which the Scripture mentions, which is nothing else but matter.”

The book of Genesis, she argues in the *Observations upon Experimental Philosophy*, “expresses the framing of this World, yet it doth not say, that Nature her self was then created; but onely that this world was put into such a frame and state, as it is now; and who knows but there may have been many other Worlds before, and of another figure then this is: nay, if Nature be infinite, there must also be infinite Worlds; for I take, with Epicurus, this World but for a part of the Universe.”

Although Cavendish shows no direct acquaintance with the works of John Milton, and although it is highly unlikely for practical, political, social and theological reasons that she ever would have seen the manuscript of his *De doctrina christiana*, the two authors flourished in the same time period, wrestled with the same philosophical trends, and arrived at some closely related opinions. Milton, like Cavendish, believes that “it was of the latter heaven [that is, the sky, the planets, stars and other heavenly bodies] alone, and of the visible world, that Moses undertook to write.” He rejects the orthodox doctrine of “the moderns” that “the original matter

of the universe” was created *ex nihilo*, and asserts that the Hebrew word *bara’* and its Greek and Latin equivalents in the first verse of Genesis do not imply creation *ex nihilo*. He argues that the “darkness” of Genesis 1:2 is substantial. He evokes the ancient concept, prominent at the beginning of Lucretius’s *De rerum natura*, that nothing can be made of nothing. He claims that logic simply requires that an agent have a patient, and that therefore “matter must either have always existed independently of God, or have originated from God at some particular point of time.” Unlike Cavendish, he chooses the latter alternative on the grounds that the former “is inconceivable,” and he articulates his famous doctrine of creation *ex deo*, creation out of God.

Cavendish, too, believes that when “the earth was without form, and void; and darkness was upon the face of the deep,” the Spirit of God moved over formless matter, over a substantial darkness. She describes this matter as “a rude and indigested Heap, or Chaos, without form, void and dark.” Since there was matter, there was also motion and, therefore, time. Cavendish even wonders, “[W]hy may it not be probably believed that there have been other


944. Genesis 1:2.


worlds before this Visible World?"  She does not, however, reason according to Milton’s false dichotomy between dependence on God and eternal existence. She reasons that Nature must be at once dependent upon God and coeternal with him, explaining, “[I]f there be an Eternal Creator, there is also an Eternal Creature, and if an Eternal Master, an Eternal Servant, which is Nature; and yet Nature is subject to Gods Command, and depends upon him.”  Because the presupposition of a radical dualism of body and spirit underlies all of Cavendish’s thought, she also does not wholly relinquish the idea of creation ex nihilo, but in the context of her discussions of the creation of Nature, she does not insist upon it either.  A Nature coeternal with God may still originate or have originated ex nihilo.

When she makes Nature coeternal with God and yet dependent upon him, Cavendish places Nature in a position much like the traditional role of the Son of God who is, according to the Athanasian creed, at once “begotten” by and “coeternal” with the Father, and who, according to the Thirty-Nine Articles, is “the Word of the Father, begotten from everlasting of the Father, the very and eternal God of one substance with the Father.”  She turns to arguments defending these paradoxical characteristics of the Son of God in order to defend the paradoxical

948. Philosophical Letters 95.
949. Cavendish writes, “[F]or certainly, the work of creation and annihilation is a divine action, and belongs onely to God” (Observations 2.31), but she also writes, “Thus natural reason may conceive that Nature is the Eternal servant of God; but how it was produced from all Eternity, no particular or finite creature is able to imagine” (Observations 2.44).
950. Grudem 1170; Church of England, Articles Agreed Upon (London, 1630) B2r. I mention the Athanasian Creed in this context because Cavendish herself mentions it in close proximity to one of her discussions of the Biblical creation (Philosophical Letters 141), and because it is one of the three creeds that the Thirty-Nine Articles dictates “ought thorowly to be received and believed” (Church of England B3v).
characteristics of Nature. Where Milton finds logic useful in determining how God created matter, Cavendish asserts that God transcends logic because he transcends time:

[I]f you will speak naturally, as human reason guides you, and bring an Argument concluding [that matter had a beginning] from the Priority of the Cause before the Effect, give me leave to tell you, that God is not tied to Natural Rules, but that he can do beyond our Understanding, and therefore he is neither bound up to time, as to be before [matter], for if we will do this, we must not allow that the Eternal Son of God is Coeternal with the Father, because nature requires a Father to exist before the Son, but in God is no time, but all Eternity.\textsuperscript{951}

In the Observations upon Experimental Philosophy she again argues, “[I]n God is not time, and therefore neither beginning nor ending, neither in himself, nor in his actions; for if God be from all Eternity, his actions are so too, the chief of which is the production or creation of nature.”\textsuperscript{952}

By placing the creation of Nature in parallel rather than in temporal series with its ongoing existence, Cavendish assimilates its creation to God’s ongoing act of sustaining and preserving Nature. In theological terms, she collapses God’s two means of executing his decrees, creation and providence.\textsuperscript{953}

The occasion where Cavendish comes closest to relinquishing creation \textit{ex nihilo} appears in “The Deitical Centre,” the Neo-Platonic chapter that concludes the Philosophical and Physical Opinions. There Cavendish writes, “Infinite Moving matter Flows as much To [the] Deitical Centre, as From it, it doth as it were Present it Self, or rather is Forced to be Ordered by its [the deitical centre’s] Infinite Wisdom.”\textsuperscript{954} Matter is sustained and ordered because it continually

\textsuperscript{951} Philosophical Letters 14.
\textsuperscript{952} In the Observations, for example, she writes, “Thus natural reason may conceive that Nature is the Eternal servant of God; but how it was produced from all Eternity, no particular or finite creature is able to imagine” (2.44).
\textsuperscript{953} See the Westminster Assembly of Divines, The Larger Catechisme (Amsterdam, 1649) 5-6.
\textsuperscript{954} Opinions 1663, 453.
proceeds from and to God. Moreover, God and matter have much in common:

[T]hough this Deity is as the Centre to Infinite matter, yet this Deity in it Self is as Infinite matter, for its Wisdome is as Infinite as Matter, and its Knowledge as Infinite as its Wisdome, and its Power as Infinite as both, and the Effects of these Attributes run with Infinite matter like Infinite Parallel Lines, Even and Straight, not Crossing nor Obstructing, nor can they Circumference or Circle in each other, the Matter and the Deity being both Infinite.  

If matter is coeternal with God, if its attributes extend from him, if God himself cannot encompass matter, then, in spite of all of Cavendish’s assertions elsewhere to the contrary, matter looks much like God. Matter seems to exist in a state of perpetual creation and sustenance ex deo, and Cavendish’s thought looks more similar to Milton’s than might be expected.

Cavendish casts Nature in a role in the creation of the visible world that intensifies this connection between God and matter. She paraphrases Genesis 1:3-31, and then comments, “Thus all was made by Gods Command, and who executed his Command but the Material servant of God, Nature? which ordered her self-moving matter into such several Figures as God commanded, and God approved of them.” Later in the Philosophical Letters she again comments, “all creatures and figures were made and produced out of . . . chaos . . . by the

955. Opinions 1663, 453.

956. I am admittedly blurring categories here, but I think that Cavendish blurs them as well. They are also blurred in the larger debate surrounding the issue of creation. There is a point at which Milton’s monistic doctrine that God created the world from “substance considered as an efflux of the Deity” (Milton 977) looks very much like Henry More’s dualistic doctrine. More, according to whom spirit like body is a “Substance” because it has “Extension and Activity” (Immortality of the Soul 21), claims that God thought the world of spirits into existence in his mind and then “exhibited really to their own view the whole Creation of Spiritual Substances,” and that “God thought again, and invigorating his thought with his Will and Power, created an immense deal of real and corporeal Matter” (Conjectura Cabbalistica 17). Assuming that God is spirit for More, the externalizing of the substance of God’s thought looks much like creation ex deo.

957. Philosophical Letters 16.
powerful Word and Command of God, executed by his Eternal Servant, Nature.”\textsuperscript{958} As Milton indicates, the Bible supports the doctrine that “God the Father produced every thing that exists by his Word \textit{and} Spirit.”\textsuperscript{959} According to the version of the Westminster Confession ratified in England, “It pleased God the Father, Son, \textit{and} Holy Ghost, for the manifestation of the glory of his eternal power, wisdom, and goodness, in the beginning, to create, or make of nothing, the World, and all things therein, whether visible or invisible, in the space of six days.”\textsuperscript{960}

Surprisingly, in Cavendish’s discussions of Genesis, the Holy Spirit makes no appearance whatsoever. Instead, the third agent in Creation is Nature herself. Moreover, although the second person of the Trinity appears in Cavendish under the guise of “the All-powerful Decree and Command of God,”\textsuperscript{961} she transfers most of the agency of creation from the second person of the Trinity to Nature herself. It is Nature who executes God’s command, not the Word of God.\textsuperscript{962}

Even more to the point, when Cavendish designates Nature “the servant of God,” she assigns Nature an epithet associated both with the Messiah and the series of biblical characters who are types foreshadowing him.\textsuperscript{963} In her formulation, in addition to eternal existence, Nature inherits

\textsuperscript{959.} Milton 973. The italics are my own. Milton has unorthodox and anti-Trinitarian opinions about the identity God’s “Spirit.”
\textsuperscript{960.} Church of England, \textit{Articles of Christian Religion} (London, 1648) 10. Again, the italics are my own.
\textsuperscript{961.} \textit{Observations} 3.26. The allusion depends, of course, on the opening of the Gospel of John, which reads, “All things were made by him [the Word]; and without him was not any thing made that was made” (John 1:3).
\textsuperscript{962.} Cavendish’s approach contrasts with the vividness of the Son’s role in creation in \textit{Paradise Lost}. There the Father addresses the Son, “And thou my word, begotten Son, by thee / This I perform, speak thou, and be it done: / My overshadowing Spirit and might with thee / I send along, ride forth” (Milton, \textit{Paradise Lost}, Complete Poems and Major Prose 7.163-66).
\textsuperscript{963.} For example, in the book of Zechariah, God promises, “[B]ehold, I will bring forth my servant the BRANCH” (Zechariah 3:8). King David too is frequently called, or calls himself, the “servant”
the Son’s executive power in creation and one of his designations. It is almost as if the divine
*Logos*, the Word, expression, and reasoning of God, has become at least as much a part of Nature
as a part of the Trinity. The *Logos* has come to inhere in the rational matter of Nature. The divine
manifestation of the “Souls Language” has been transferred to the natural world. Appropriate
indeed is the anxiety with which Cavendish volunteers to “submit this Interpretation to the
Church.”

Granting this quasi-divine status to Nature leads Cavendish into ambivalence and
heterodoxy concerning the duration of the biblical creation of the world. In the *Philosophical
Letters*, she agrees with orthodoxy (in particular with the orthodoxy of the Westminster
Assembly) that “God made this World in six days, and rested the seventh day,” and that
therefore, “a perpetual making of something out of nothing” simply cannot take place.

(Interestingly, the comment implies that the original creation did occur *ex nihilo.*) In the *Blazing
World*, the Empress asks the spirits, who are usually purveyors of opinions elsewhere supported
by Cavendish, “Whether the Universe was made within the space of six days, or, Whether by
those six days, were meant so many Decrees or Commands of God?” Up to this point, the spirits
have rejected a series of ideas from Henry More’s *Conjectura cabbalistica*, but suddenly they
replace rejection with open-mindedness. They reply “That the World was made by the All-

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966. According to Henry More’s “Defence of the Philosophick Cabbala,” “You are to understand
that these *Six numbers or days* do not signify any *order of time*, but the *nature of the things* that were
said to be made in them. But for any thing in Moses his *Philosophick Cabbala*, all might be made at
once, or in such periods of time as is most suitable to the nature of the things themselves” (More,
powerful Decree and Command of God; but whether there were six Decrees or Commands, or fewer, or more, no Creature was able to tell." The spirits express uncertainty not only about the number of literal days involved, but also about the theologically far more important point of the number of divine commands. If the events of creation are indeterminate, its finality and completeness may be so as well.

This sense of indeterminacy around the creation of the world extends to the issue of the possible appearance of new animal species since the creation of the world. In the Observations upon Experimental Philosophy Cavendish asserts, “‘Tis true, if Adam were alive now, he might see more variety, but no more Truth; for there are no more kinds and sorts of natural Creatures, then there were at his time, though never more metamorphosed, or rather I may say disfigured, unnatural and hermaphroditical issues then there are now." Genera and species have remained constant, but disfigurations have multiplied. By contrast, the spirits in the Blazing World tell the Empress “that there were no more nor fewer kinds of Creatures [at Creation] then there are now; but there are, without question, more particular sorts of Creatures now, then there were then." The number of genera has remained stable, but the number of species has increased. If the spirits do indeed present reliable opinions, the two statements can be reconciled only if the “metamorphosed, . . . disfigured, unnatural and hermaphroditical issues” of the first are at least

Conjectura Cabbalistica 79). In his appendix to the defense he writes that the numbered days are like the drawers in a cabinet, each of which contains the most appropriate contents for that location (144). He claims that in Genesis, “an exact concatenation of the Series of things throughout is more then ought to be expected, no such Accuracy being industriously intended, but only that the Order of Numbers according to their significance should be a Repository of Notes and Remembrances” (145).

967. Blazing World 73.
968. Observations 2.15.
969. Blazing World 85.
partially equated with the “particular sorts” of the second. If so, then the new “particular sorts” would be products of degeneration as opposed to creation. Such an interpretation would disregard the parallel vocabulary of the two passages. It would also disregard the confusion that arises when Cavendish makes Nature eternal and conflates God’s act of creating Nature with his act of sustaining it. Consequently, Cavendish seems to leave her readers with one act of creation *ex nihilo* or *ex deo* (of Nature) that may transcend time and therefore be ongoing, and one act of creation from preexisting matter (of the world) that took place within time and ought to be finished, but is perhaps not so.  

The possibility of ongoing creation intrudes again into Cavendish’s philosophy when J. B. Van Helmont’s works provoke her to lay aside her resolution to “not meddle with any Divine Mysteries,” and entice her to write not only about the characteristics, but also about the production of the “immaterial and divine Soul in Man.” Cavendish aims to extricate spirit from matter, and to preserve the independence of spiritual and material processes from one another. When she writes that “the Propagation [of the divine soul] from Parents seems improbable,” she does not intend to wholly reject traducianism of the Miltonic sort whereby “the human soul is not created daily by the immediate act of God, but propagated from father to son in a natural

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970. Cavendish argues, “Indeed the generation of new figures, seems to me much like the generation of new motions; which would put God to a perpetual Creation, and argue that he was not able to make Nature or Matter perfect at first, or that he wanted implantment” (*Observations* 2.72). In Cavendish’s Christian understanding of the cosmos, however, even if all figures and motions are latent within the power of the original matter, God has intervened at a specific point in time to actualize some of these. It seems that at least once in the history of the cosmos, God did indeed “want implantment,” and chose to occupy himself by creating the world.

971. *Philosophical Letters* 323.


order.” If she had encountered Milton’s systematic theology, she would have agreed with him that “the rational soul” is indeed produced in this way. What she would have objected to is Milton’s very Cartesian attribution of reason to spirit rather than matter.

For Cavendish, there is both a material (rational) soul and an immaterial (divine) soul, but they apparently do not interact. For Van Helmont, too, there are two souls, the “immortal mind” (or intellectual soul) and the mortal “sensitive soul,” but for him, “both souls are created at once, and conjoyed by God, who will never attribute his own Honour of Creator unto any Creature.” According to Van Helmont, the sensitive soul is “as it were the husk of the minde.” Since the two souls are so closely joined, even the sensitive soul cannot belong wholly to the purview of Nature. Van Helmont imagines the intersection of matter and spirit in human generation:

fruitfulness is granted to the seed by a participation, and specifical determination of vital principles: which thing surely, doth not otherwise happen, than by a sealing of the Soul [of the begetter] in the Spirit of the seed, whence the matter obtains a requisite maturity, and a delineated shape or figure, that at length it may obtain by request, a formal light of life from the Creator, or the Soul of its own Species, the similitude whereof is expressed in the figure.

974. Milton, Christian Doctrine 980. Traducianism is the doctrine that a child inherits his soul from his parents, rather than receiving it directly from God.


976. J. B. Van Helmont, Oriatrike or, Physick Refined (London, 1662) 286. Van Helmont’s sensitive souls appear to be material, but they also appear to be created ex nihilo by the special intervention of God. Van Helmont writes, “the Souls of Beasts are not Spiritual substances of a proper Name, but only the living vital lights of Soulified Creatures: The which notwithstanding are Created by God the Father only, and are dispensed according to the requirance of Seminal dispositions. I knew thirdly, that every frail and Sensitive Soul did issue from the seeds, occasionally and dispositively only” (352).

977. Van Helmont 286.

978. Van Helmont 287.

The soul of the father imprints or seals the seed with the father’s figure, and this figure informs God’s choice of a soul for the new creature.

The process leaves Cavendish wondering “how an immaterial substance should make a print upon a corporeal substance.” She responds to this and related problems concerning the interaction of matter and spirit by affirming, “it is not probable that she [the immaterial soul] is produced by the way of corporeal productions, but created and infused from God, according to her nature, which is supernatural and divine.” In other words, she agrees with the Helmontian doctrine of the creation *ex nihilo* of souls and of God’s voluntary bestowal of them upon the offspring, but she insists that the divine soul bears no relationship to material processes. God arbitrarily chooses the divine soul for a given body. Unlike Van Helmont, she cannot explain how this soul can be “defiled with the impurity of sin,” and she asserts that it can never suffer, and certainly cannot die. Her divine soul is so disconnected from matter that it seems almost irrelevant to human experience.

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983. *Philosophical Letters* [3]31; Van Helmont 286. From a natural theological perspective, Cavendish’s failure to provide a mechanism for the inheritance of original sin is a serious fault in her philosophy. On the other hand, this failure may indicate that Cavendish attributes original sin to the rational rather than the divine soul.
984. Nonetheless, in this discussion Cavendish reifies spirit to a greater extent than anywhere else in her works. Van Helmont’s vocabulary and categories entrap her, and she repeatedly refers to the divine soul as a “substance.” Because of the scholastic usage where “substance” is anything in which accidents can inhere, writers such as Van Helmont and More label spirit “substance” quite frequently. Cavendish, however, in part because she resists abstractions such as the notion of “accident,” usually resists this usage of the term and instead tends to equate “substance” with “body.” For example, she writes, “God is a Spirit, and not a bodily substance,” and “it is impossible that *substance*, or *body*, and *figure*, should be separated from each other, but wheresoever is body or
Cavendish’s forays into theology illuminate the parallels she frequently draws between human mental processes and divine creation. The aura of sanctity with which she surrounds poetic composition appears in the piece called “The Preaching-Lady” in *Natures Picture*. Here a female preacher expounds a “Text” (“the third Chapter, beginning at the fourth Verse”) excerpted from “*Nature*” that opens, “In the Land of Poetry there stands a steep high Mount, named Parnassus; at the top issues out a Flame, which ascends unto Fames’s Mansion.”985 The first theophany in the biblical book of Exodus (the manifestation of God in the burning bush) appears at chapter 4, verse 3, and the Preaching-Lady’s text also alludes to the greatest theophany of that book, God’s descent upon Mount Sinai.986 According to this passage, the composition of poetry parallels Moses’ reception of the Law. Furthermore, for Cavendish poetry is not only inspired like the Law; it is also creative in its own right. The Preaching-Lady associates the “*Land of Poetry*” with Eden. “Our Father Adam in Poetry, which was Homer” was the original inhabitant of this land, and “he did not only give some Names” to creatures; “Nay, he did more; he made Heavens and Hells, Gods and Devils; and described them, that his Posterity might know them in after-Ages.”987 Homer and his poetic descendants transcend the merely human act of naming and engage in creation through the imaginative use of language.988

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986. Exodus 19:18: “And mount Sinai was altogether on a smoke, because the LORD descended upon it in fire: and the smoke thereof ascended as the smoke of a furnace, and the whole mount quaked greatly.”
987. *Picture* 1671, 276.
988. Divine poetic making and merely human word-smithing are contrasted in a chapter on “Why Men write Books”: “[T]o create a Fancy, is to be like a God; but to make neat and new Words, is to
Many passages in Cavendish’s works extend this characterization of poetry as sacred creation to include a range of mental processes. For example, a student who speaks in praise of learning in the *Orationes* explains, “Learning makes men Divine, as to Resemble God and Nature, in Knowledge and Understanding; also it makes Men in some things Creators, as in Conceptions, Imaginations, Fancies, Arts, and Sciences.”\(^{989}\) The She-Anchoret extends this even further from the mind as a whole to its minute parts, claiming that both the rational and sensitive spirits “are not Creatures, but Creators, which creating-brains may easily understand; and those that cannot conceive, have a scarcity thereof.”\(^{990}\) The mere ability to form a mental image involves having sufficient “Creators” in the brain.

Like God’s Biblical world-making, mental creation, an important function of “the Souls Language,” is not for Cavendish effected *ex nihilo*. Rather, it uses existing matter. In the dialogue between the three ladies, the witty lady hypothesizes,

> I think the Chaos was a great Lump of Wit, which run it self into several Figures, creating several Forms. Thus the Chaos being Wit, and the Wit being Motion, hath invented this World, and many more, for all we know: for Wit is never idle, but is still producing something either of Delight or Profit.\(^{991}\)

Wit resembles Cavendish’s conception of chaos. In its self-moving generative fecundity it be like a Taylor” (*Olio* 1671, 7).

\(^{989}\). *Orationes* 306.

\(^{990}\). *Picture* 1671, 588-89. In the context, “those that cannot conceive” means “those that cannot imagine.”

\(^{991}\). *Picture* 1671, 309. Walter Charleton similarly remarks in *A Brief Discourse*, “[T]he most *Absolute* Wit is that which (like the *First Matter* of the *Aristoteleans*) is capable of any *Form*, and can with equal facility employ it self in all kinds of Studies; having an Universal Acuteness, and strength as well to grasp the difficult and slippery Mysteries of State, as to unravel the knotty Methods of Arts and Sciences professed in Universities” (94-95). Of course, Aristotle’s first matter bears a complicated relationship to the biblical chaos.
resembles God’s Eternal Servant, Nature, in whom Cavendish sees not only the material cause, but also the efficient cause of creation. Wit, Cavendish writes, cannot be acquired by human effort, “for it is a free-gift of Nature, and disclaims Art.”

This natural entity “is like Eternity, in being fixed; though it proveth a perpetual Motion, with continual changes and varieties.” In its relationship with itself, wit is at once restlessly moving and still, at once agent and patient. On the one hand, wit as agent is “the God of Fancy, the World of Arts, the Disposer of Passions.” On the other hand, wit as patient is “a Child of the Brain, begot by Experience, and fed with Heat.” The self-reflexive operation of Wit is such that “Wit is, like Proteus, of several Forms,” but its creativity makes it “the Mother of Nature.”

Ironically, if wit resembles a god at the same time as it resembles chaos and Nature, poetic fancy is like creation ex deo.

Cavendish’s discussions of creative processes within the mind reveal her understanding of the final cause, the purpose, of creation at all levels. According to the first statement in The Larger Catechisme of the Westminster Assembly, “Mans chief and highest end is, to glorifie God, and to fully enjoy him forever.” This statement seems to underlie Cavendish’s understanding of both poetic and divine creation. For her, the chief end of any creation is to glorify its creator. I have already indicated in connection with the themes of figure and memory Olio 1671, 22. Olio 1671, 22. Olio 1671, 242-43. When William Cavendish writes in the commendatory poem preceding the Blazing World, “Then what are You [compared to Columbus], having no Chaos found / To make a World, or any such least ground? / But your Creating Fancy, thought it fit / To make your World of Nothing but pure Wit” (A3r), he misses the thrust of Cavendish’s career-long argument for the materiality of mental processes, and her earlier choice to identify wit with a creative material chaos.

Westminster Assembly of Divines 3.

992. Olio 1671, 22.
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995. When William Cavendish writes in the commendatory poem preceding the Blazing World, “Then what are You [compared to Columbus], having no Chaos found / To make a World, or any such least ground? / But your Creating Fancy, thought it fit / To make your World of Nothing but pure Wit” (A3r), he misses the thrust of Cavendish’s career-long argument for the materiality of mental processes, and her earlier choice to identify wit with a creative material chaos.
996. Westminster Assembly of Divines 3.
that Cavendish’s goal in writing is to achieve recognition. In the *CCXI Sociable Letters*
Cavendish explains that it is wrong for a reader to allow the opinion she has already formed of an
author based upon his works to be diminished by personal acquaintance with him. The reader
who does so has “not Read the Scripture, or not Believed what there is Written, *viz. That a Man
is Known by his Works; and we Admire the Creator Through and By his Works.*” An author’s
works deliver the best estimation of his nature. A truly ambitious poet seeks
to Live, like as Nature, or the Gods of Nature, which Live, and are partly Known
In their Works, and By their Works, which are their Creatures, especially the
Chief of their Creatures, which are Mankind; for we cannot Perceive, but that the
Chief Habitations of the Gods are in the Minds of men.

The immediate shift in this passage away from the poet who is the subject, to the Nature and
gods of Nature whose behaviour his own resembles, suggests the ease with which mental and
literary forms of making associate themselves with divine and natural ones in Cavendish’s thought.

For Cavendish this association is appropriate, because mental creation, the imaginative
use of “the Souls Language,” is as original as divine creation. Recall from the previous chapter
that perception and the acquisition of knowledge involve imitation or “patterning out” often
instigated by some external, occasional cause. This is not at all the case with creative mental
processes. Figures voluntarily made in and by the rational matter “without any outward pattern,”

999. *Oration* 159. Cavendish’s choice to use the plural form “gods” here is connected both to the
fictional context of the *Oration* and, perhaps, to her attempt to imply that they are occurring in a
classical milieu.
are not perceptions, but conceptions.\textsuperscript{1000} They are fully willed and original. Subtypes of these “voluntary actions of figuring” include “Imaginations, Fancies, Conceptions, Passions, and the like.”\textsuperscript{1001} They include much of the material expressed in literary production. In an epistle to the reader in the first edition of \textit{Natures Pictures}, Cavendish explains that she has attempted “to lay fancy by in some out-corner of [her] brain” and to describe and imitate Nature instead. “[F]or fancy,” she writes, “is not an imitation of nature, but a naturall Creation, which I take to be the true Poetry: so that there is as much difference between fancy, and imitation, as between a Creature, and a Creator.”\textsuperscript{1002}

The other sense in which the statement from the Westminster Catechism resonates with Cavendish’s thought in this area is with regard to “enjoyment.” Man’s purpose, according to the catechism, is to enjoy God. If Cavendish were to rewrite the catechism in a way consonant with her thought on creation, she might write the response, “The Creation’s chief and highest end is to glorify God and to enable God to enjoy himself forever.”

For Cavendish, creation, particularly poetic creation, is about the self-fulfillment of the creator. In the \textit{Orations}, a student rhapsodizes on the pleasures of the life of the mind:

\begin{quote}
[F]or the Mind is the Lord of all, and not only Possessor and Lord of all the Satisfactions of the Appetites, and the Objects and Subjects of the Senses, but it is Lord of that which the Senses cannot know, being beyond their Capacity, having a Power of Forming, Composing, Altering, Changing, Making, Continuing, Prolonging, Keeping, Putting away, or Destroying whatsoever it Pleases: All which makes the Contemplative Life the Best, being Happiest and Pleasant’st; and as for the Poetical World, it is the most Splendorous World that is, for it is
\end{quote}

\textsuperscript{1000} \textit{Observations} 1.243.
\textsuperscript{1002} \textit{Pictures} 1656, c4r. For another excellent quotation on the god-likeness of authors, see \textit{Playes} 1662, 561.
Composed of all Curiosities, Excellencies, Varieties, Numbers, and Unities: In short, it is a World that is Extracted out of Infinite Wit, Ingeniosioty, Judgement, Experiences, Understanding, Knowledge, and good Nature, it is the Heaven, and Contemplation is the Spiritual Life in this Poetical World.  

The mind, like God, is omnipotent over its creation and capable of providing itself with any delights it pleases. Subtlety, variety and order pervade the rational matter’s creation, the imaginative use of “the Souls Language,” as they do that of the divine Reason or Logos. The mind’s creation resembles an unfallen world. According to Cavendish’s character the Lady Contemplation, “the minde which doth create the thoughts, and the thoughts the fancies, is as a Deity; for it entertains it self with it self, and only takes pleasure in its own works, although none other should partake, or know thereof.” Conception and fancy provide a field for self-love, for communion and conversation with the self, for the kind of communal creative joy sometimes read into God’s statement, “Let us make man in our image.” 

Nowhere is this communion and conversation with the self more visible in Cavendish’s oeuvre than in the Blazing World. The creation of the fictional universe of the story is an assertion of authority and ownership, but the whole segment of the story that is about

1003. Oration 301.
1004. The statement of the virtuous “Stoick” lady who lives in solitude in “Of Two Ladies different Humours” supports this idea. She claims, “That Solitariness was a Paradice of true Happiness; and, that Contemplation was a Heaven of Fruition: for in Imagination (said she) we enjoy all things with ease, and as we will; whereas in Action we find great disturbance and opposition; are cross’d in every thing, and enjoy nothing” (Picture 1671, 209).
1007. “[T]hough I cannot be Henry the Fifth, or Charles the Second; yet, I will endeavour to be, Margaret the First: and, though I have neither Power, Time, nor Occasion to be a great Conqueror, like Alexander, or Cesar; yet, rather than not be Mistress of a World, since Fortune and the Fates would give me none, I have made One of my own. And thus, believing, or, at least, hoping, that no Creature can, or will, Envy me for this World of mine, I remain, . . . M. Newcastle” (A4v).
imaginative creation focuses on the friendship between two self-representations of the author, the Duchess and the Empress. Out of this conversation with the self emerges another creation, the sequence of mental worlds imagined by the Duchess and the Empress for the purpose of finding enjoyment impossible in the objective universe. When the Duchess does succeed in creating an original world that is viable on account of its internal logical consistency, this world is “composed of sensitive and rational self-moving Matter.” It is composed of the potential for perception and intercommunication. It is also the world which Cavendish’s mature philosophy suggests the real Creator God has made. When the Duchess presents her world to the Empress, “Her Majesty was so ravished with the perception of it, that her Soul desired to live in the Duchess’s World.” One of the author’s self-representations has found a focal point for a more intense communion and conversation with another of her self-representations. Nature as it truly, according to Cavendish’s philosophy, exists, provides a site for the fulfilment of the creator’s self-love. Rational matter allows for the “Souls Language” to be shared by multiple aspects of one mind, or even by multiple minds. It allows reason to become a site of conversation.

5.3 Natural Production

Remember that according to Cavendish, God did not create Nature at a particular moment in or limit of time. Instead, he has sustained it throughout eternity and allowed it to unfold itself.

1008. Enjoyment is what the Spirits repeatedly promise the Duchess in their conversation with her on the topic (Blazing World 97).
1009. Blazing World 100. I am aware that the Hebrew plural form in this verse in considered a grammatical intensive, but I am also aware of the Christian tradition of reading it as an intimation of the existence of the Trinity.
In an allegory of the mind, Cavendish writes, “The Mind is like a God, that governs all: The Imaginations, like Nature, that created all.”\textsuperscript{1011} God maintains his providence, but he has delegated creation to Nature and Reason. Having examined the creativity of God and of the mind in relation to God, I now turn to the creativity of Nature, and of the mind in relation to it.

With God’s delegation of creation to Nature comes a manifold immanence of the Logos, the Word or Reason, to Nature. In Cavendish’s earliest writings, she takes the Christian tradition that behind God’s statement, “Let us make man in our image” lies a discussion amongst the members of the Trinity, and displaces this discussion onto Nature itself. The poetic version of the resulting allegorical council of Nature, Motion, Figure, Matter and Life appears at the outset of the Poems, and Fancies as a naturalistic Genesis-like account of the creation of the world.\textsuperscript{1012} In the first edition of Natures Pictures she translates the beginning of the poetic account into prose:

Nature, when she made the World, thought it best to call a Council; for though she had power to Command, yet there must be those that must execute her Authority. Her Counsellors were four, Matter, Form, Motion, and Life.

Matter was grave, and solid, and of a sound Judgement. Form or Figure had a clear Understanding, but was unconstant and facile, complying still to the last Council, though it were the worst. Motion had a subtil, ingenious, and quick Wit; and was most dextrous in all his dispatches of Affairs.

Life would give very strong and sound reason in the height and heat of his discourse, but at first would seem weak, and at latter end dull, as if his

\begin{flushleft}
\textsuperscript{1011} Olio 1671, 211.
\textsuperscript{1012} Poems 1-4. The parallel between the opening of Genesis and Cavendish’s opening poem is particularly emphatic where Nature resolves, “Yet Man we must like to our selves create” (4). In this passage, unlike elsewhere in Cavendish’s works, Nature is much like God in that she actually creates an immortal mind for man and endows it with free will. There is nothing to suggest that this immortality is, as it is elsewhere in Cavendish’s works, the immortality of the rational matter but not of the united consciousness. In other words, here the mind resembles the immortal divine soul and Cavendish comes closer to Miltonic monism than she does elsewhere in her works.
\end{flushleft}
Understanding wanted maturity, or we[re] tired.\textsuperscript{1013}

Just as the Christian creation of the world depends upon the cooperation of the three persons of the Trinity, so the execution of a natural creation depends upon the cooperation of the fundamental aspects of Nature. The characteristics that Cavendish associates with each of these aspects speak to the processes involved in all forms of creation. Just as Cavendish sees similizing and distinguishing in poetry, so in the natural creation of the world she sees wit and judgement, and a conversational version of “the Souls Language.” The “grave,” “solid,” “sound Judgement” of Matter decides things, distinguishes them, provides the basis for elaboration. The “quick Wit” of Motion makes “subtil” and “ingenious” juxtapositions of the matter, and it, more than any other aspect of Nature effects creation. Figure manifests Nature. It has a “clear Understanding,” and explicates Nature’s other aspects. Life’s rational and discursive ability suggests that in it lies the logic, the syntax, the system of natural production. The fluctuations in Life’s ability point to the cyclical assembling and disassembling of portions of this system.

In Cavendish’s more mature works, she replaces allegorical accounts of the presence of abstract cosmic reason at the beginning of the world with accounts of the presence of locally situated material reason in ongoing natural production. She also begins to clarify her motivations for constructing a panpsychic philosophy, a philosophy in which mind pervades Nature.\textsuperscript{1014} She believes, counter to Epicurus as she knows him through Thomas Stanley, that neither perception

\textsuperscript{1013} Pictures 1656, 157. Note that the comment on Figure implies that this council is one of a succession of councils responsible for a succession of creations.

\textsuperscript{1014} O’Neill (xxv) was the first to label Cavendish’s philosophical position thus. My discussion of Cavendish’s position, particularly as it relates to explaining the presence of higher centres of consciousness in Nature has been informed by William Seager and Sean Allen-Hermanson, “Panpsychism,” The Stanford Encyclopedia of Philosophy, ed. Edward N. Zalta, Fall 2008, Stanford, CA, 10 March 2009 <http://plato.stanford.edu/archives/fall2008/entries/panpsychism/>.
nor reason (in the sense of discursive consciousness) can emerge from entities lacking these characteristics. In order for perceiving and reasoning organisms to exist, perception and reason must already exist in their material components. Cavendish also believes, counter to Hobbes, that although the production and sustenance of organic life does not require imagination at any level of consciousness, it does require “Knowledge,” which she also labels “Reason.” She explains, “[F]or if there were not Knowldg in all Generations or Productions, there could not any distinct Creature be made or produced, for then all Generations would be confusedly mixt, neither would there be any distinct kinds or sorts of Creatures, nor no different Faculties, Proprieties, and the like.” The locally situated knowledge or reason that precedes, organizes and then preserves organisms analyzes matter. It distinguishes beings and characteristics from one another, and therefore determines the distinct identities of individuals. In this respect, the rational matter functions like “distinguishing” or “judgement” in literary production.

Moreover, just as judgement works together with fancy in literary production, so particulate reason has an associate in natural production. Cavendish explains, “The Rational

1015. Cavendish writes, “The Soul of Animals, says Epicurus, is corporeal, . . . and this subtile contexture of the soul is mixed and compounded of four several natures . . . by means whereof it is indued with a sensitive faculty.” She replies, I shall never be able to conceive, how senseless and irrational Atomes can produce sense and reason, or a sensible and rational body, such as the soul is . . . [T]here is no principle, which is senseless, can produce sensitive effects; nor no rational effects can flow from an irrational cause” (Observations 3.26-27). When Stanley writes of the soul that according to Epicurus a “fourth nameless thing, or sensitive faculty” is the “the chief of its parts,” Epicurus seems to be saying, like Cavendish, that there are bits of matter that are innately capable of perception. Stanley’s Epicurus does, however, also seem committed to the spontaneous emergence of mind from complex systems. Stanley writes, “[T]here is some internal part of the Body of such a temperature, as that where the Soul adheres to it, it receives an extraordinary Perfection. This Perfection is the Mind, the Intellect, or that which we call the Rational part of the Soul” (Stanley 885).

1016. Philosophical Letters 45.
degree of Matter is the most intelligible, and the wisest part of Nature, and the Sensitive is the
most laborious and provident part in Nature, both which are the Creators of all Creatures in
Infinite Matter.”1017 She writes, “the Animate part of Matter, which is sense and reason, life and
knowledge, is the designer, architect, and creator of all figures in Nature.”1018 Since “Nature,”
according to Cavendish, is “Life and Soul [ie. Mind] her self, and all her parts . . . enlivened and
soulified [endued with mind], . . . there can be no generation or natural production without
Life.”1019 All of Nature’s parts are enlived with life and mind. Particulate life precedes, organizes
and preserves organisms as much as particulate reason does. Like fancy in literary poiesis, the
sensitive matter brings things together. Cavendish calls the sensitive parts of matter the
“Architectonical” and “Labouring Parts.” These parts “form, build, or compose themselves with
the Inanimate Parts, into all kinds and sorts of Creatures.”1020

By describing life and reason as “particulate,” I do not mean to imply that life and reason
exist solely in discrete, self-subsisting units that compose larger organisms in a strictly
mechanical fashion. Eileen O’Neill demonstrates in her introduction to the Cambridge University
Press edition of the Observations upon Experimental Philosophy that Cavendish’s materialism is
not “particulate” or “corpuscularian” in this sense. O’Neill writes that in Cavendish’s opinion,
“Even if the minima of nature were animate, . . . aggregations of such minima would not yield
unified, middle-sized bodies. Nor could such vital atoms yield the continuous body of nature as a

1017. Philosophical Letters 418.
1018. Philosophical Letters 525.
1019. Philosophical Letters 237.
1020. Grounds 5. For more on this building-related diction, see the final section of this chapter.
whole.” Nonetheless, in the interpretation of Cavendish’s philosophy the notion of the continuity of matter must always be held in tension with the notion of matter’s divisibility, with the significance of figure. After all, even in the second edition of the *Philosophical and Physical Opinions* eight years after she published the “Condemning Treatise of Atomes,” Cavendish writes, “[T]hough the Nature of Infinite matter cannot be divided from it self, yet the Substance may be divided in it self by Self-motion into Atoms.” Parts or particles may differentiate themselves, but in order for wholes to exist, they must resemble figures folded in a portion of an extended piece of cloth. This means that specific instances of life and reason are locally situated in and bounded by such figures at the same time as they preserve means of connection and communication. Life and reason pervade Nature as local and limited centres of consciousness.

One of the challenges of Cavendish’s philosophy is to explain the relationship between particulate reason and the generation of complex forms of rational consciousness, complex sites of “the Souls Language.” She approaches this relationship through a consideration of foetal development. She observes, “the Rational Animate matter moves not the same way or after the same manner in the other Degrees of matter before the frame of [an] Animal Figure or Creature is Perfected.” In other words, until the anatomy of a foetus is complete and coordinated motions involving the whole foetus begin, the rational matter is not engaged in the business of a unified consciousness. To use modern terminology, at this stage there is no functioning central

1023. This relates directly to the fragmented and limited nature of knowledge for both particles and conscious organisms. See pp. 221-24.
nervous system to coordinate the motion and perception of the parts. At this stage, the rational matter occupies itself with “the Ordering, Contrivance, and Designing [of the foetus] like as Surveyers.” The completion of the foetus’s anatomy coincides with the beginning of coordinated motions including those of quantities of rational matter in and through the brain and nerves. Thus the completion of the organism’s “figure” entails the release of the rational matter from its former employment, and its re-involvement in the emergence of partially unified consciousness.

While there is an increasing concentration of rational matter in certain parts of the foetus’s and then the child’s body (in the Philosophical Fancies, for example, Cavendish comments on the preference of the rational matter for “spungy, soft, and liquid Matter; as in the Blood, Brain, Nerves, and in Vegetables,” and on this matter’s choice of “the Head in Animals, for their chiefe room to dance their Figures in”1027), there is never any true coalescence of the particles of rational matter even in these locations. In the Grounds of Natural Philosophy Cavendish writes that thoughts are “united, by Conjunction in one Creature, into one whole Mind.” Rational matter conjoins; it does not coalesce. Its parts maintain their respective identities. She presents a vivid illustration of this in her early work when she puns,

the Rationall spirits may be similized to a company of Good fellows, which have pointed [appointed] a meeting; and the Company coming from several places, makes their time the longer ere their numbers are compleated, though many a

1025. Recall from p. 33 and p. 157 that according to Cavendish a foetus lacks both coordinated sense perception and coordinated motion prior to the completion of its figure.

1026. Opinions 1663, 32.

1027. Fancies 49.

1028. Comparison with the modern notion of “synaptic clefts” between neurons is tempting.

braine is disappointed. She adds a marginal note, \textit{\textit{The greater the Number is, the more variety of Motion is made, which makes Figures in the braine.}}\textsuperscript{1030} The relationship between particles of rational matter is like the relationship between friends. Although it involves physical proximity, it is grounded in communication and shared activity rather than in physical unification. During gestation, infancy and childhood, rational spirits gradually gather like partygoers, and as they increase in number, their party increases in energy and their dances increase in complexity. These figured dances are thoughts. Thus the power and subtlety of the mind grow as the rational matter reorients itself within the body, increases through nourishment and gains practice in its dances from experience.\textsuperscript{1031}

For Cavendish, parts in apposition to one another which are bonded, like the \textit{\textit{company of Good fellows,"}} by similarity, communication and shared intention constitute even the rational consciousness (the mind or material soul\textsuperscript{1032}). Parts in apposition constitute the part of a person that allows her to experience and reflect upon her self as an individual. Cavendish writes in the \textit{Grounds of Natural Philosophy}, \textit{\textit{Human Contemplation, is a Conversation amongst some of the}}

\textsuperscript{1030} Fancies 48.
\textsuperscript{1031} For more on the gradual formation of the mind see Opinions 1663, 33-34 and Observations k2v-11r.
\textsuperscript{1032} Note that in some respects, Cavendish’s concept of the material soul closely resembles Aristotle’s concept of vegetative and animal souls. Theodore Browne summarizes Aristotle’s concept of the soul: \textit{\textit{Thus the word soul is not meant to describe a spirit or immaterial agency; rather it signifies a distinction between differing levels of activity. . . . In particular, animate matter can be shaped only by external agencies like heat and fire, whereas ensouled matter as part of its animate behavior can grow and develop under its own internal control”}} (Theodore M. Brown, \textit{\textit{The Mechanical Philosophy and the ‘Animal Œconomy’: A Study in the Development of English Physiology in the Seventeenth and Early Eighteenth Century,”}} diss., Princeton U, 1968, 37). Cavendish’s \textit{\textit{material soul}} (the mind) is likewise the product of rational matter reaching a level of complex activity.

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Rational Parts of the Human Mind.” Since the relationship between the rational and sensitive matter is similarly “Sociable” and “Assisting,” consciousness, be it perceptive or rational, need never be fully centralized. It remains partially dispersed throughout an organism’s body, and therefore significantly limited in the extent of the communicative networks that its individual particles can develop. “[L]ike as Officers in a Common-wealth,” these particles know only their own specific tasks and their own immediate contexts. Consequently, the limited amount of knowledge or information available to a single organism is never fully centralized and generally available in that organism’s consciousness. As Cavendish explains, “it is impossible, for a Human Creature, to know any otherwise, but in part: for, being composed of parts, into Parties, he can have but a parted knowledg, and a parted perception of himself.” Even a person’s consciousness of himself comes to parts of him in pieces from multiple sources.

Cavendish’s panpsychism and her tendency in her final philosophical work to label organisms “societies” may seem fanciful, but in fact they reflect a significant insight made by vitalist English natural philosophers of her era: the insight that perception and apparently deliberate motion occur in many parts of the human body that the mind does not consciously guide and of which it is even unaware. A prime example of this insight is the doctrine of tissue irritability. Cavendish could well have been exposed to the theoretical difficulties that tissue

1033. *Grounds* 160. To some extent, this impression of the mind as a society of rational parts stems from the dialectical style of thought that Cavendish uses to arrive at philosophical conclusions. She famously dramatizes this mental process in the “Argumental Discourse” at the outset of the *Observations* (h1r-q2r) and in the speculative final sections of the *Grounds* (251-311).


1036. *Grounds* 55.
irritability presented through her communication with Walter Charleton or through his book *The Natural History of Nutrition, Life, and Voluntary Motion* (1659).\(^{1037}\)

Charleton is an atomist who clearly prefers mechanical explanations to vitalist ones, but when he attempts to explain the motion of the blood, he is led to vitalist conclusions: one cause of the motion of the blood is “that the Heart is endowed with a certain Motive-virtue inherent and essential, called the *Pulsifick Faculty,*” and the other cause is “by reason of its [the blood’s] quantity filling and distending the Ventricles of the heart, and irritating them to discharge it by contracting or shutting themselves.”\(^{1038}\) When Charleton attempts to explain liver function he is led to another such vitalist statement: “all sensitive parts . . . are capable of *Irritation:* and therefore, whenever they are distended beyond their natural rate, or otherwise molest; they begin instantly to make some resistance, and reduce themselves to their due laxity, by expressing what was offensive to them.” This, Charleton explains, is “a motion of *self-Restitution.*”\(^{1039}\) These conclusions lead him into a discussion of the “paradox” “that we have a certain sense of *Feeling,* which is not referrible to the Common sense, nor communicated to the Brain, and of which we take no cognisance, but by the various effects and commotions that it causeth in our bodys.”\(^{1040}\) As Charleton indicates, his opinion amounts to a rejection of the Cartesian belief in a

\(^{1037}\) Susan James’s article on “the Philosophical Innovations of Margaret Cavendish” led me to this section of Charleton (226-27).

\(^{1038}\) Charleton, *Natural History of Nutrition, Life, and Voluntary Motion* (London, 1659) 84, 83.


\(^{1040}\) Charleton, *Natural History of Nutrition, Life, and Voluntary Motion* (London, 1659) 119, 122. Charleton shares his opinion with William Harvey (as he himself admits (124)) and with Francis Glisson. On Francis Glisson’s opinions concerning liver function, irritation and vitalism, see Brown (54-57). Note that Charleton emphatically does not share Cavendish’s opinion on the generation of the rational soul. For him, “the *Rationall Soul of Man*” is “an Essence separable from the body, and subsisting entire and complete after separation . . . [that] may therefore be most justly termed a substance, or Form substantiall” (Charleton, *Physiologia* 423).
unitary source for all physiological motion. Cavendish’s panpsychism and her theory of the emergence of centres of consciousness account well for the idea that even in animals with complex, centralized minds, there continue to be multiple centres of “feeling” (or perception or awareness) that do not straightforwardly communicate with the mind.

The presence of multiple centres of consciousness of various levels of activity and complexity even within a single organism, and the presence of information exchange within each of these centres and with their vicinities means that for Cavendish, reason, in the guise of the consciousness of the rational matter (but not necessarily of the organism as a whole), plays an essential role in even the most physical of processes. For her, a healthily functioning organism governs itself by consensus. Processes involving the whole organism, namely generation, growth and dissolution, occur as a consequence of “the consent and agreement” of the “many Self-moving Parts” involved.

As in natural production, so in literary production the rational matter plays an essential role. For Cavendish, the relationship of mind to matter has important aesthetic implications for poetry. Minds capable of poetic production bear a privileged relationship to Nature, because poetry is “the finest work that Nature hath made.” Since mind emerges through natural processes, each poet’s mind is an epitome of Nature’s own creative ability. Cavendish does not simply repeat a platitude when she declares, “True Poets, and Natural Philosophers, are rather


1043. *Olio* 1671, 133.
born such, than learn’d to be such: for, it is a natural Ingenuity that creates fine Fancies, and produceth Rational Opinions.”  Poets have a privileged relationship with Nature. They are her children, her favourites, her guests. The best poets are “not those that have most Art, but those that have most Nature,” those whose ingenuity and style derive from Nature rather than from human learning. This, and not a rhetorical agenda in sympathy with Thomas Sprat and the Royal Society, lies at the heart of Cavendish’s preference for a “natural plain style” in writing and speech. Natural poets, Cavendish repeatedly indicates, use the same productive processes as Nature does. In her early works, Cavendish conveys this through allegories comparing poetic minds to vibrant gardens. In her mature works, she claims that both poetic and natural production occur according to the same subvisible process, “voluntary actions of figuring.”

For Cavendish, poetic and natural forms of production are similar in that both involve a generation or assimilation of matter followed by dissolution or expulsion. Cavendish excuses her own failure to repeat portions of her works in conversation, “for it is impossible the Brain should retain and create; and we see in Nature, Death makes way for life; for if there were no Death,

1044. *Olio* 1671, 132; *Cf. Olio* 1671, 15; *Sociable Letters* 301.
1045. *Sociable Letters* 301, 304, 417; *Playes* 1662, A7v; *Picture* 1671, 686.
1047. *Life of William* c2r. For some of her many related comments, see *Life of William* b1v; *Olio* 1671, 29-30; *Picture* 1671, 630-31; *Poems* 110, 129, 143; *Fancies* A3v; *Philosophical Letters* 3; *Observations* e1r; *Blazing World* 56-57, 58, 59; *Sociable Letters* 52, 53, 133, 166, 246, 258-59; *Playes* 1662, A7v, 148; *Opinions* 1663, b4r; *Orations* a2v-a3r. Richard Nate argues that Cavendish “obviously adhered to the stylistic programme formulated by authors like Thomas Sprat and Joseph Glanvill” (“‘Plain and Vulgarly Express’d’: Margaret Cavendish and the Discourse of the New Science,” *Rhetorica* 19 (2001): 405. Deborah Bazely argues that Cavendish’s opinions on style have an affinity with this programme but are also a distinctly feminine reaction to it (114).
1048. *Poems* 136-37, 148; *Olio* 1671, 212-13, 219, 220; *Picture* 1671, 272.
there would be no new Life, or Lives." The mind must continually rid itself of the old in order to avoid stagnation. This cycle appears in passages where Cavendish uses parturition as a metaphor for literary production:

Fancy in Verse or Prose, is like a Child in the Womb, which only lives whilst it is in motion; but when once the innate motion ceases, it is dead: So Fancy, when once it is conceived and quickned in the Brain, if it be not brought forth and put into Writing, it dyes; and if those Writings be once lost, they cannot be writ again; no more than a Child can go into the Womb, and be as it was.

Literary production, like Nature, moves inevitably through a cycle of generation, expulsion and dissolution. Cavendish vividly depicts the last stage of the cycle of literary production when she describes her ritual handling of her manuscripts after they have been printed; “then I Commit the Originals to the Fire, like Parents which are willing to Die, whenas they are sure of their Childrens Lives, knowing when they are Old, and past Breeding, they are but Useless in this World.” The printed copies become the new generation responsible for bringing their author fame.

Such cyclicity is so essential to Cavendish’s understanding of natural production that she gives it two special terms. In general she refers to it as “transmigration,” but on occasion, particularly in the second edition of the Philosophical and Physical Opinions, she calls it “transmutation.” The first term evokes the Platonic transmigration of the soul. For instance,

1050. Pictures 1656, 364.
1053. Note in particular the revision of the chapter “Of Transmigrations” (Opinions 1655, 47-48) to “Of Transmutations” (Opinions 1663, 136-7). Other than the replacement of the cognates of “transmigration” throughout the chapter, the only revisions involve capitalization, punctuation, paragraphing and the elimination of marginal notes. For other related uses of “transmutation,” see Philosophical Letters 252, and Blazing World 44, 45. Walter Charleton, among other writers, uses
when the speaker of a fictional funeral oration for a philosopher concludes, “[L]et us lay him into the Grave, to Transmigrate as Nature pleases,” the reader might wonder whether the process involves the soul or the body. Cavendish’s natural transmigration does, of course, involve the material soul, but only in the sense that it causes that soul’s fragmentation and complicates the traditional isomorphic relationship between person and soul. The term “transmutation” connotes the alchemical transmutation of base substances into gold. Cavendish herself rejects the idea “that Gold might be made by the Art of Chymistry,” and even that it continues to be generated and dissolved by Nature, but she does admit that “all other Creatures, as Minerals, and so Vegetables, and Animals, may, and do Transmigrate, except the Sun, Moon, and Stars.” She creates a parallel between the transmutation of gold and the transmigration of matter. The wonder and richness that fail in alchemy appear instead in the natural world. Connotations of richness and spiritual sanctity fit well with Cavendish’s theory of transmigration, since transmigration, as the mechanism for the conservation of matter, underpins the eternity and incorruptibility of matter, the interdependence of all parts of Nature, the stability of

the term to describe one part of the process of nutrition (Natural History 9, 10).

1054. Orations 161-62. Compare the situation of the people slain in war who “have the happiness to be inurned with their Fore-fathers, where by a natural Instinct or Sympathy, they may mutually intermix and perchance transmigrate together” (Orations 21).

1055. See Philosophical Letters 434.


1057. Philosophical Letters 460.

1058. Opinions 1663, 143.
species, growth and nourishment, and the endlessness of new and varied creations.

Another characteristic connected to cyclicity that both natural and literary production share (and that thus associates Nature with “discourse in the mind”) is the use of preexisting materials. I have already indicated that for Cavendish poetic wit parallels the material chaos that existed prior to the creation of the world. In her opinion all poetic creation derives its matter from sense experiences. Lady Solitary in *The Comical Hash* explains to her visitor, Lady Examination, “The Brain can no more Create Fancy without the materials of outward Objects, and Subjects, than Nature can Create a World without matter to make it withall.” Fancies are like objects “minzed,” “pounded and chopt by Imagination” and cooked into a soup or stew. They are also like paper for which the rags have been beaten so thoroughly that they are invisible in the final product. In an image from carpentry, the senses bring materials into the brain, and the imagination works on these “by carving, and cutting, and inlaying several pieces, and so is represented to the Mind as a new Recreation, which are called Fancies or Idea[s].”

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1059. *Fancies* 22-3; *Philosophical Letters* 252.
1060. *Opinions* 1655, 47-48; 1663, 136.
1061. *Fancies* 24-5; *Philosophical Letters* 350. As I shall show below, William Harvey significantly influences Cavendish’s discussions of generation. One of the *Philosophical Letters* refers quite explicitly to Harvey’s *Anatomical Exercitations Concerning the Generation of Living Creatures* (London, 1653) (*Philosophical Letters* 419). To my mind, the marginal notes to the chapter “Of Transmigrations” in *Opinions* 1655 (48) may also suggest that Cavendish had some acquaintance with Harvey’s work. Harvey’s *Generation of Living Creatures* (77) contains a poetic passage on the “reciprocal interchange of Generation and Corruption” which conveys the same sense of wonder as Cavendish’s discussions of transmigration.
1062. *Plays* 1662, 666.
1063. See p. 286.
1064. *Playes* 1662, 564.
1065. *Playes* 1662, 564.
1066. *Olio* 1671, 57.
Cavendish labels the form of natural transmigration associated with the continuity of species through time and the inheritance of traits “translation” or “transfer.” “Translation” is the mechanism for sexual generation. The notion underlying “translation” occurs even in Cavendish’s early works, for instance in *Natures Picture* where the She-Anchoret argues concerning plants, “the Earth, and the Seed sown (which are the Parents that produce an Offspring), cannot produce any thing of its own nature, unless some part of the Producers goeth to the creating of the Produced.” Nevertheless, Cavendish does not actually begin to use the term until the section of the *Philosophical Letters* immediately preceding her response to her fictional interlocutor’s “scruples” concerning “the Book of that most learned and famous Physician and Anatomist, Dr. Harvey, which treats of Generation.” Here she teaches,

> [T]he rational and sensitive parts of Nature, which are the designing and architectonical parts, keep the species of every kind of Creatures by the way of Translation in Generation, or natural Production; for whatsoever is transferred, works according to the nature of that figure or figures from whence it was transferred.

This translation necessarily involves “both Matter, and Motion.” In the production of viviparous animals, moving matter from both parents combines in the mother’s uterus and becomes an embryo.

Cavendish formulates her theory of translation in opposition to William Harvey’s doctrines, particularly as he presents them in the chapter “Of the Conception” that concludes his *Anatomical Exercitations Concerning the Generation of Living Creatures* (1653). According to

Harvey, “the Geniture of the Male doth not so much as reach to the cavity of the Uterus, much less abide there for any time; that geniture doth derive fecundity to the Uterus only by a kinde of contagion, (not as if it were now tangent, and operating, but because it hath formerly touched).” \(^{1071}\) For Harvey, conception is not the product of a material sperm and a material egg. It is the product of some kind of influence or power relayed to the matter of the female reproductive system. Although this sounds like an Aristotelian super-addition of form to matter, Harvey’s position differs from Aristotle’s in that for Harvey, both male and female possess “a principle from whence the mutation proceeds, and also a constituting faculty.” \(^{1072}\) Harvey compares the influence of the male that renders the female fertile to that exerted upon iron when it is magnetized. He also compares it to mental processes, processes which for him, unlike for Cavendish, are not corporeal:

\begin{quote}
For as we, from the Conception of the Form, or Idea, in the Braine, do fashion a form like to it in our works, so doth the Idea or Species of the Genitor, residing in the Uterus, by the help of the formative facultie, beget a Fœtus like the Genitor himself; namely by implanting that Immaterial species which it hath, upon its Workmanship.\(^{1073}\)
\end{quote}

By the end of his chapter, Harvey comes to the very Aristotelian conclusion that “the species and Immaterial Forme of the future Chicken is Aliquo modo, in some sort, the cause of the pregnation, and fecundity of the Uterus.” \(^{1074}\) In short, Harvey argues that the mature chicken that the egg will become in some real, albeit immaterial, sense already exists at the moment of conception. He argues that the chicken comes before the egg.

\begin{footnotes}
1071. Harvey, Generation of Living Creatures 539.
1072. Harvey, Generation of Living Creatures 177.
1073. Harvey, Generation of Living Creatures 543.
1074. Harvey, Generation of Living Creatures 555.
\end{footnotes}
For Cavendish, as I have elsewhere shown, immaterial agents of natural processes are absurd and impossible, and, moreover, scholastic reasoning is deceptive. Interestingly, however, by insisting upon the translation of matter as well as of motion from both the male and the female, Cavendish disregards Harvey’s emphasis on the female as “the efficient cause of Generation,”¹⁰⁷⁵ and embraces a more egalitarian theory of sexual generation.¹⁰⁷⁶

Although her theory contrasts with Harvey’s, her choice of the term “translation” suggests that his chapter has influenced her, and it reinforces the ongoing association that she draws between natural and literary forms of production. Harvey develops at length an account of the similarities between mental conception and physical conception. Cavendish balances the competing demands of her physical theories with those of the analogy to mental conception when she chooses her term. On one level, the frequency with which Cavendish uses “transfer” in place of “translate” in these contexts implies that “translate” bears its simple, etymological meaning of “to carry across.” On another level, however, the term is replete with connotations related to literary production. Translation in generation, as I have shown, is a mechanism designed to “keep the species of every kind of Creatures.” In Cavendish’s discussions of literary translation, she similarly emphasizes the importance of carrying the uniqueness of the author’s genius and style over to the translation.¹⁰⁷⁷ For Cavendish, translation in generation brings about the ownership of

¹⁰⁷⁵. Harvey, Generation of Living Creatures 546. This is not to say that Harvey denies that the male plays a significant role in reproduction.

¹⁰⁷⁶. This is one of the lovely instances in which Cavendish’s theory is far closer to the truth than the theory of her highly educated and much esteemed male contemporary.

¹⁰⁷⁷. Olio 1671, 25-7, 231; Opinions 1655, a2r.
the offspring by the producers. Likewise, literary translation only underscores, or ought to underscore, the author’s ownership of his works. Translation in generation involves a literal dissemination of the substance and knowledge required to generate a new being. Literary translation similarly divulges and distributes knowledge. In Cavendish’s theory, the translation of animate matter from the producers to the conception is a material transfer of information. It is the transfer of a code or a plan that will explicate itself in the process of generation.

There are two broad categories of reproductive processes for thinkers of Cavendish’s era, sexual generation and spontaneous generation, and spontaneous generation is as rooted in the use of preexisting matter as the former. While sexual generation involves translation, spontaneous generation involves a “bare Metamorphosis or Transformation.” Cavendish explains, “[S]uch insects, as Maggots, and several sorts of Worms and Flies, and the like, which have no Generator of their own kind, but are bred out of Cheese, Earth and Dung, &c. their Production is onely by the way of Metamorphosing, and not Translation of parts.” Following the examples of possible spontaneous generation presented by Robert Hooke in his *Micrographia*, she includes “the Generation or Production of Moss, and the like Vegetables that grow on Stones, Walls, dead

1078. “[T]here is a property in all Productions, as, for the Produced to belong as a Right and Property to the Producer” (*Grounds* 37).
1079. *Olio* 1671, 245; *Fancies* 80; *Sociable Letters* 151.
1080. *Olio* 1671, 244; *Opinions* 1655, a2r; *Sociable Letters* 227.
1081. The connection of Cavendish’s idea to the modern notion of genetic translation, of the biochemical decoding of genetic information, is difficult to ignore.
1083. *Observations* 1.38.
Animals sculls, tops of houses, &c.” in her list.1084

Just as Cavendish formulates her theory of sexual generation in tension with Harvey’s theory, so she formulates her theory of spontaneous generation in tension with Robert Hooke’s. The defining characteristic of spontaneous generation for Cavendish is discontinuity between producer and production. The Fish- and Worm-men in *The Blazing World* teach the Empress that organisms generated spontaneously

are for the most part those we call Insects, whose production procedure from such causes as have no conformity or likeness with their produced Effects; as for example, Maggots bred out of Cheese, and several others generated out of Earth, Water, and the like. But said the Empress, there is some likeness between Maggots and Cheese, for Cheese has no blood, nor Maggots neither; besides, they have almost the same taste which Cheese has. This proves nothing, answered they; for Maggots have a visible, local, progressive motion, which Cheese hath not.1085

In her more technical vocabulary, Cavendish explains, “the generation of [a] Maggot in a Cheese, of a Worm in the root of a Tree, of a Stone in the Bladder, &c. are not made by patterning or imitation, because they are not like their producers, but merely by a voluntary figuring.”1086

Cavendish’s opinion contrasts with Hooke’s in several respects. For one, Hooke seeks to prove that spontaneously generated plants and insects actually arise from “Eggs, Seeds, or

1084. *Observations* 1.39. For Hooke’s discussions concerning spontaneous generation, see *Micrographia* 122-25, 127, 132-34, 206-7. It should be noted that spontaneous generation is only the most extreme form of the process Cavendish identifies as “Metamorphosis or Transformation.” Other instances of the process include something like chemical change, change of state, the transformation of an egg into a chicken, the germination of a seed, assimilation to another creature as nutrition, the metamorphosis of a caterpillar into a butterfly, the petrification of wood, and the spread of disease in the body. See *Opinions* 1663, 209-10, 212; *Grounds* 40, 321, 274-75; *Observations* 1.28, 1.60, 1.77.

1085. *Blazing World* 37. I wonder whether Cavendish herself ate some overly ripe cheese! The Empress’s statement may allude to Hooke’s reference to the effects of environment on such insects (*Micrographia* 206).

seminal principles” that his microscopes are yet incapable of revealing.\textsuperscript{1087} He longs for the day when “many other animate beings, that seem also to be the mere product of putrifaction, may be innobled with a Pedigree as ancient as the first creation, and farr exceed the greatest beings in their numerous Genealogies.”\textsuperscript{1088} For Cavendish, his assertion “that all natural things are produced by the way of seeds or eggs” disregards the variety of processes evident in the natural world.\textsuperscript{1089} In her opinion, sexual reproduction through translation constrains Nature’s creativity, while spontaneous generation through transformation unleashes it.\textsuperscript{1090}

Hooke also provides a mechanism, or at least a mechanical analogy, for the process of spontaneous generation from decomposing organic matter. All living organisms are mechanical, he believes, and a decaying organism from which spontaneous generation occurs is like a clock, some of the parts of which have ceased to function and have come to impede the motion of the whole. If some external force agitates the whole clock, those impeding parts may fall from their places and the remaining materials of the mechanism may return to motion, albeit to a very different motion than before. The new configuration of materials and their new motion resembles the matter and life of spontaneously generated organisms.\textsuperscript{1091} For Hooke, spontaneous generation thus entails a degeneration of complexity.

This conflicts deeply with Cavendish’s idea that spontaneous generation does not occur

\textsuperscript{1087} Hooke, \textit{Micrographia} 123.
\textsuperscript{1088} Hooke, \textit{Micrographia} 207. Cf. 132, 214-15.
\textsuperscript{1089} \textit{Observations} 1.37.
\textsuperscript{1090} \textit{Observations} 1.39. A ghoulish vision of the transforming power of Nature over the matter of dead organisms occurs in the description of Nature’s transformation of the slain pygmees and their animals as if by a French cook (\textit{Poems} 184).
\textsuperscript{1091} Hooke, \textit{Micrographia} 133-34.
“by patterning or imitation,” and that it therefore does not produce a diminished version of an original. For her, spontaneous generation increases the number, variety and overall complexity of living organisms. It is, in fact, an upwards evolution toward complexity that is sought by matter itself, especially by the “superfluous” parts of living organisms such as leaves, fruit, milk and eggs. As evidence that “such sorts of Creatures account an Animal Life the best,” Cavendish observes, “[A]ll such superfluous Parts of Creatures endeavour to unite into an Animal Society; as we may perceive, that Fruits and Herbs, are apt to turn into Worms, and Flies; and some Parts of Milk, as Cheese, will turn into Maggots.” This upward tendency of matter provides Cavendish with an explanation for matter’s assimilation to existing organisms in the form of nutrition. She explains, “when Animals feed of such Meats, they occasion those Parts they feed on, to a more easie Transformation.” This tendency of matter parallels the human desire for “a better Change,” for example, into “a glorious Sun, or Starr.” It is also a diminished version of John Milton’s vision of the capacity of matter to evolve into spirit.

Where Hooke sees a machine accidentally devolving toward a more rudimentary order, Cavendish sees rational agents working with preexisting matter and using “voluntary figuring” in

1092. Observations 1.210, 3.58. 1093. Again, see Observations 1.39. 1094. Grounds 274-75. 1095. In Paradise Lost, Adam asks Raphael if the angels eat and Raphael responds, “. . . food alike those pure / Intelligential substances require / As doth your Rational; and both contain / Within them every lower faculty / Of sense, whereby they hear, see, smell, touch, taste, / Tasting concoct, digest, assimilate, / And corporeal to incorporeal turn” (5.407-13). The shared meal is followed by a discussion in which Raphael tells Adam that if he is obedient, the substance of human beings may eventually evolve into spirit and they may be able to live with the angels: “. . . time may come when men / With Angels may participate, and find / No inconvenient Diet, nor too light Fare: / And from these corporal nutriments perhaps / Your bodies may at last turn all to spirit, / Improv’d by tract of time, and wing’d ascend / Ethereal, as wee, or may at choice / Here or in Heav’nly Paradises dwell” (5.493-500).
order to produce a wholly original organism. The idea of originality, of something new arising through intention and knowledge in spite of the use of preexisting matter, is another point at which Cavendish’s theories of poetry and of natural generation intersect. The processes of imaginative, discursive creation and spontaneous generation are one and the same. They differ only through which degree of matter uses and is used by them:

As for example, Imaginations, Fancies, Conceptions, Passions, and the like; are made by the rational, corporeal, figurative motions, without taking any copies of foreign objects; also many Generations, Dissolutions, Alterations, Transformations, &c. are made by the sensitive motions without any exterior patterns.1096

Cavendish depicts this originality, this independence from patterns, by describing the self-sufficiency of the creative mind. In the Worlds Olio she writes, “a true Poet is like a Spider, that spins all out of her own bowels.”1097 At the outset of her first collection of plays, she compares the originality of her writing to the modest self-sufficiency of someone who builds himself a cottage made entirely from materials available on his small property, without employing knowledge, skill or capital gathered from beyond.1098

The emphasis on self-sufficiency in creation surfaces in several areas of Cavendish’s theories of generation. It appears, for example, in the self-sufficiency of matter which, as I discussed in Chapter 2, contains all figures latently within itself and does not require an Aristotelian super-addition of form in order to actualize beings.1099 It also appears in Nature’s

1097. Olio 1671, 13.
1098. Playes 1662, A7v.
independence from God in natural production.\textsuperscript{1100} It appears, too, in Cavendish’s repeated allusions to the self-sufficiency of the earth in natural production, in her discussions of the germination of seeds, and in her interest in womb-like structures.

I referred above to Cavendish’s use of an egalitarian theory of sexual reproduction. I indicated that she does not capitalize on Harvey’s emphasis on the relative self-sufficiency of the female who provides, in his opinion, not only part of the formative power involved in the development of an embryo, but also all of the materials and the sustaining power involved therein.\textsuperscript{1101} However, Cavendish does deploy a similar emphasis in discussions of natural production that appear in her earlier works and that do not specifically address sexual reproduction. In her description of the environmental factors which ought to be considered in the selection of a healthy place for habitation, she recommends giving more attention to the quality of the soil than to the quality of the air. The earth, she explains, exerts greater power in production, and therefore in determining the environment, than does the sun:

\begin{quote}
[W]e plainly find, that the Sun doth not make Heat in the Earth, but that the Earth hath Heat of her own, and her own Heat, with the moyst Veins that are in her, produceth those numerous Varieties, which, some she casts forth, and some she keeps in. . . . The Sun ripens the Fruit of the Face of the Earth, it agitates and lightens the Aire, whereby we see and breath: but the Earth is the Mother of all Vegetables, Animals, and Minerals, and could produce a sufficiency of her self, without the Heat of the Sun.\textsuperscript{1102}
\end{quote}

Similar language appears in the \textit{Poems, and Fancies} where Cavendish writes, “So heate within

\begin{footnotesize}
\textsuperscript{1100}. See pp. 279, 292 above, and \textit{Philosophical Letters} 165.

\textsuperscript{1101}. For Harvey there are two stages of generation: conception and gestation (that is, the unfolding of the conception into its complete form). Harvey’s emphasis on the self-sufficiency of the female stems in part from his emphasis on the second stage of generation, on the fact that he focuses on embryology.

\textsuperscript{1102}. \textit{Olio} 1655, 203-4.
\end{footnotesize}
begets with Childe the *Earth, / And heate without is Mid-wife to her Birth,*” and, “Though the *Earth* to all gives *Forme, and Feature, / Yet the Sun is Nurse to every Creature.*” She demotes the sun and its heat to the two subordinate and peripheral feminine roles of midwife and nurse.

The image of a benevolent and fertile mother-earth continues in references to sailors raping the “watry Wombe” of the world with the keels of their ships, and to soil exhaustion where the Earth, for “Bearing often,” grows “*leane, / A Sceleton.*” In Cavendish’s more mature works, this kind of imagery and thought evolves into the personification of Nature as female, into the independence of Nature from God, and into the latency of all natural productions within matter itself.

While the earth is, according to Cavendish, a womb that can bring forth largely of its own accord, it also contains a multiplicity of womb-like entities which in turn bring forth asexually (through transformation), but collaboratively: plant seeds. Cavendish’s ideas here may again reflect Harvey’s. According to him, an egg is “a kind of an exposed *Womb,*” and wombs and eggs are more than merely analogous to plant seeds. All three contain “Vegetative Souls,” that is, the tendency to function in a plant-like manner, “to enjoy Vegetation, Nutrition, Augmentation, and Conservation.” This plant-likeness reflects their intermediateness with respect to systems of classification. For Harvey, an egg is “a *Medium, or thing between an Animate and Inanimate*  

1105. Pollination and the sexual reproduction of plants were not understood until the eighteenth century.
1107. For the points of commonality, see Harvey, *Generation of Living Creatures* 1[3]8, 145, 150.
creature; being neither absolutely impowered with life, nor absolutely without it.”1109 In Harvey’s terminology, eggs, wombs and seeds are “Univocal Agent[s].”1110 The label alludes to the contemporary distinction between “univocal generation” (“normal or regular generation between male and female members of the same species”) and “equivocal generation” (“the (supposed) production of plants or animals without parents; spontaneous generation”).1111 However, for Harvey, the distinction between univocal and equivocal agents in generation does not lie only in whether or not the offspring can be classified according to the species of their producers with certainty. Instead, it lies in the nature of the information contained in the agent of production. A univocal agent of generation contains a single, coherent plan, consisting of matter, form and information, that unfolds itself according to its own internal discursive logic.1112

Cavendish writes that plants, like animals, are formed in womb-like structures1113 and undergo periods of gestation.1114 Like Harvey’s eggs, Cavendish’s seeds are univocal agents, but unlike his eggs, her seeds also employ the assistance of external subordinates. For her, seeds are “transchanged wholly” into their product, and “every part of the seed makes a several production” in that the parts work collaboratively and according to a coherent plan in order to produce the many parts of the resulting organism. However, they do not do this alone, but with “the help of the

1109. Harvey, *Generation of Living Creatures* 137.
1110. Harvey, *Generation of Living Creatures* 549.
1112. See the contrast between equivocal and univocal generation that Harvey sets up in *Generation of Living Creatures* 188.
1113. *Opinions* 1655, 38. Cavendish writes here that minerals also emerge from womb-like structures. In the *Philosophical Letters* she claims that minerals are not produced “by way of seeds” (272).
1114. *Picture* 1671, 599-600.
co-working parts of the Earth,” as if the seeds were surveyors or architects building a house with “the assistance of labourers or workmen.” In the *Grounds of Natural Philosophy*, Cavendish reasons that with respect to a seed, the soil is neither the “Breeding-Parts” (a parent) nor the “Breathing-Parts” (matter used and then released). Instead, the soil is the “Nourishing Parts.” It is external matter that undergoes assimilation to the seed. Seeds reproduce asexually “as religious Orders, where one Convent divides into many Convents of the same Order.” Like a convent, a seed is a “Society” that reproduces univocally by unfolding and multiplying according to a single, coherent, rational design, but collaboratively and conversationally, by involving all of its parts and incorporating into itself external parts that can substantially affect its characteristics, if not its identity. Cavendish balances univocality with collaboration. Seeds that have not yet germinated contain the plant that they will become “buried, intombed or inurned in the power of life.” They contain their final cause, their design, the information that allows them to unfold. When seeds do germinate and eventually produce more seeds, they “divulge themselves in the multiplication of their off-spring.” Generation reveals and disseminates the plant’s design just as written language divulges rational discourse.

Univocal generation in Harvey and Cavendish is an important context for Cavendish’s most intriguing foray into the theme of self-sufficiency in generation, of generation as the

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1115. *Philosophical Letters* 273. Cf. *Observations* 1.40-41, *Blazing World* 44. There is one passage in *Picture* 1671 which presents both the seed and the soil as “parents” together of the plant (601). This differs from the structure of subordination between the seed and the soil that Cavendish’s later works suggest.

1116. *Grounds* 231.


1118. *Observations* 1.41.

1119. *Blazing World* 44.
outworking of information coded within matter: the speculative account “Concerning Restoring-Beds, or Wombs” that appears at the end of the appendix to the *Grounds of Natural Philosophy*. This section of the book imagines the existence of naturally occurring womb-like structures into which human and animal remains may be placed, and which will gradually regenerate the organisms.

This section of the *Grounds of Natural Philosophy* has caused considerable perplexity amongst Cavendish’s modern readers, but it flows logically from contexts internal and external to the book. The appendix to the *Grounds of Natural Philosophy* as a whole addresses religious matters from a naturalistic perspective. The first part discusses matters typical of natural theology such as the existence of immaterial beings, the characteristics of God and the existence of innate intuitions of divine things. The second, third and fourth sections turn to a naturalistic eschatology and resonate with Henry More’s far more extravagant and detailed discussions thereof in the final book of *The Immortality of the Soul*. After Cavendish had covered the natural theological territory already charted by More, she, by her own admission, was enjoying the dialectical process of reasoning so much that she decided to address one more topic; she decided to suggest a naturalistic mechanism for resurrection. She states clearly that this section of the text is an entertaining intellectual exercise that is profoundly speculative. She chooses to give her

1122. See *Grounds* 295 (“if there be any such things in Nature, as Restoring-Beds . . .”), 296 (“to describe their Conceptions of those Restoring Beds, was only to describe Opinions, but not known Truths”), 297 (“The Parts of my Mind were generally of opinion, That it was, at least, probable, there were such things in Nature as Restoring-Beds, or Wombs”). At the conclusion of the book, some of Cavendish’s thoughts proclaim that the whole intellectual exercise has been as fruitless as the alchemists’s search for the philosopher’s stone or the elixir of life, and, although these thoughts are expelled from the mind, the thoughts which effect the expulsion are themselves portrayed as violent
discussion plausibility by grounding it in the observations of two of her most empirically-minded contemporaries, William Harvey and Robert Hooke. She may also have been inspired by Harvey’s eloquent defense of natural philosophers’ use of “imaginations” as stepping stones in the advancement of knowledge.\textsuperscript{1123}

Cavendish speculates that specific parts of the remains of animals may have the same propensity to develop into living organisms as plant seeds. She calls these parts “the Roots, Seeds, or Springs of a Society, or Creature.”\textsuperscript{1124} As the discussion progresses, she decides,

That the Bones, were the roots; the Marrow, the Sapp, and the Vitals, the chief branches of Life. . . . [W]hen an Human Life was restored, the bones did first fill with some Oylie Juyces; and from the bones, and the sap or juyce of the bones, did all the Parts belonging to a Human Creature, spring forth, and grow up to Maturity.\textsuperscript{1125}

This is akin to the regeneration of a plant from its root, except that in the remains of an animal “society,” there are multiple disconnected bones or roots which must develop according to a single, rational plan. According to Cavendish, they require the isolation of a restoring bed appropriate to their species in order to do so.\textsuperscript{1126}

\textsuperscript{1123} Harvey defends the connection he draws between mental and physical conception when he argues, “I know full well, that some scoffing persons will laugh at these conjectures; approving nothing but their owne private inventions. Yet this is the wont of Philosophers, when they cannot clearly discover how things themselves are brought about, to conceive some way consonant to the course of nature, and the next borderer upon truth her selfe, how such matters may be atchieved. And indeed, all those Opinions (which we now cry up) were at first meere figments, and imaginations; until they wrought a solid credit in us, by sensible experiment, and were ratified by their necessary knowne causes. Aristotle saith, That Philosophers are in some sort lovers of Fables, because a Fable doth consist of strange things” (Generation of Living Creatures 546).

\textsuperscript{1124} Grounds 293.

\textsuperscript{1125} Grounds 300.

\textsuperscript{1126} Grounds 296, 302-3. The importance of the restoring beds to regeneration suggests that for Cavendish, as for Harvey, the location of the motive force of regeneration or generation is somewhat
Consider Cavendish’s description of these restoring beds. A restoring bed would be “like Flesh, for Softness, or Spunginess; as also, for Colour.” It “could dilate and contract,” and would be “somewhat like the Stomack of a Human Creature, or of the like Animal, that could open and shut the Orifice.” When a creature has entirely regenerated itself, “the Restoring-Bed would open it self, and deliver it to its own Liberty.”

Restoring beds clearly resemble wombs. Cavendish envisions that these exposed wombs could grow on a small island in the middle of the ocean:

[1] In the Center of the Island was a Creature, like (in the outward Form) to a great and high Rock: Not that this rock was Stone; but, it was of such a nature, (by the natural Compositions of Parts) that it was compounded of Parts of all the principle Kinds and Sorts of the Creatures of this Worlds, viz. Of Elemental, Animal, Mineral, and Vegetable kinds: and, being of such a nature, did produce, out of it self, all kinds and sorts of Restoring-Beds; whereof, some sorts were so loose, that they only hung by Strings, or Nerves, others stuck close. Some were produced out of the middle parts; and some were produced from the lower parts, or at the bottom.

Like Harvey’s wombs, this rock is of an intermediate and unclassifiable nature. Restoring beds grow from it at various levels as if it were a plant. They cling to it with “Strings, or Nerves” as if it were an animal with sinews and a nervous system. At the same time, it is a “Rocky creature” and “as lasting as the Sun, or other Planets.”

Cavendish’s most immediate source for this passage is likely Robert Hooke’s chapter “Of Common Sponges, and several other Spongie fibrous bodies” in the Micrographia. She uses the adjective “Spungy” three times in quick succession in her discussion of restoring beds in order to ambiguous. It clearly resides in the remains of the animal for Cavendish or in the conception for Harvey, but it also resides in the restoring bed for the former and the ovary, uterus and even the rest of the pregnant organism for Harvey the latter. See Harvey, Generation of Living Creatures 168.

1127. Grounds 304.
1128. Grounds 308.
1129. Grounds 309.
describe the fleshy parts of creatures that decompose and need regeneration. While the remains of the creatures which would be put in the beds no longer have matter of this sort, the beds themselves perpetually maintain their “Spunginess” and the connection to life that the quality seems to imply. Cavendish’s repeated resort to the lexical item seems to have put her in mind of the chapter in Hooke which she would have initially read while she was writing the *Observations upon Experimental Philosophy*.

Hooke opens his chapter with the remark that sponges are “Zoophytes, or Plant Animals,” and he comments that he has “never seen nor been enform’d of the true manner of the growing of Sponges on the Rock; whether they are found to increase from little to great, like Vegetables, that is, part after part, or like Animals, all parts equally growing together.” His sponges possess the same kind of intermediate identity as Cavendish’s restoring beds. Hooke focuses on the “infinite number of small short fibres, or nervous parts, much of the same bigness, curiously jointed or contex’d together in the form of a Net” possessed by the sponges that he examines under his microscope. The “Strings, and Nerves” by which Cavendish’s restoring beds hang from the rock parallel these fibres. Hooke observes that he does not know whether sponges are “matrices or seed-bags of any kind of Fishes, or some kind of watry Insect,” he describes finding stones inside of sponges that may or may not have been generated there, and he relates that Aristotle describes spiders “bred in those caverns of a Sponge.” Thus Hooke suggests that sponges may act like

1130. *Grounds* 299.
1131. *Grounds* 304.
wombs. His references to the swelling of wet sponges, to the structure of the holes in sponges, and to the hypothetical formation of sponges through the bubble-like “eruption of the included Heterogeneous substance” and the washing away of “a kind of mucous gelly” all carry connotations related to pregnancy and delivery, and may have contributed to Cavendish’s selection of the sponge as the prototype for her womb-like restoring beds.1135

Of primary thematic concern to my argument is again the univocality, the self-sufficiency, of regeneration in the restoring beds. Although these exposed wombs regenerate an organism instead of producing an original one, they do engage in “univocal generation” in the technical sense of the phrase. They do not transform a being of one species or kind into one of another. Rather, they repeat a stage of sexual generation by causing or allowing for the predictable development of an organism of the same species as the remains. The restoring beds also generate creatures univocally in the looser sense that both they themselves and the disconnected remains of creatures that are placed within them are, like the branches of a sea sponge, elements of a single organization that can apparently act with coherent rational purpose despite lacking the kind of nervous system conducive to the centralization of consciousness. When, in Cavendish’s natural philosophy, “the Souls Language” which is inherent to parcels of animate matter unfolds itself through generation, it does so by means of a kind of internal collaboration and conversation that, like human conversation, moves across spaces between individuals. For Cavendish, information exchange is an irreducible form of force exerted at a distance.

1135. Hooke, Micrographia 139, 136-37, 137, 138.
5.4 Architectural Production in Nature and Poetry

Forms of natural production and poetic creation also share this balance between multiplicity and common purpose, between disconnection and unifying conversation, in the context of a significant characteristic of both forms of creation in Cavendish’s thought: architectural process and structure.

Cavendish’s marriage brought her into a family preoccupied with the design and building of houses. Her husband, William, was a grandson of Bess of Hardwick, whose “insatiable love of building was due to the fact that when she was a young girl a gipsy prophesied that so long as she went on building she would not die.” Bess of Hardwick’s son Charles Cavendish, William’s father, acquired Welbeck Abbey and Bolsover Castle, which were to become his son’s principal residences. Charles Cavendish and his son William continued Bess of Hardwick’s tradition of building by employing the architect Robert Smythson and then his descendants to oversee the rebuilding and extension of Bolsover and Welbeck. When William and Margaret returned to England after the Restoration, they undertook extensive repairs to both estates and a final phase of building at Bolsover. William also began a new architectural project when he purchased the

1136. Turberville 35.
1137. Turberville 14-15, 37, 40; Trease 38; Whitaker 62.
1138. Lucy Worsely, Bolsover Castle (England: English Heritage, 2000) 3; Turberville 41; Trease 39; Whitaker 64; Mark Girouard, Robert Smythson and the Architecture of the Elizabethan Era (London: Country Life, 1966) 175, 194, 201. At Bolsover, William was responsible for the building of the riding house and the “terrace range,” as well as for the decor (frescoes, ironwork, doorways, fireplaces, fountain garden) of the elaborate and fanciful “Little Castle” which has been beautifully restored in recent years (Girouard 217-21, Worsely 4, 9, 15; Turberville 55; Trease 44, 50-51, 59; Whitaker 269-70). For William’s contributions to the buildings at Welbeck, see Turberville 56, Trease 46, 52, Girouard 187-190.
1139. Girouard, 220-21; Worsely 38; Trease 170, 189; Whitaker 236, 270-71; Life of William 93.
ruined Castle of Nottingham. As Margaret writes in her description of her husband’s
“Recreation and Exercise,” architecture ranks with music and poetry as one of his gentlemanly
pastimes. Interest in and appreciation of architecture surfaces in Margaret Cavendish’s own
writings in her many lengthy fictional descriptions of ornate buildings.

The nature of the discipline and practice of architecture as Margaret Cavendish observed
and understood it informs her association of it with both poetic and natural production. For
Cavendish, architecture is a gentlemanly art based in natural philosophy and requiring an
education in the liberal arts, particularly in mathematics and geometry. In this sense, as
Cavendish’s several references to Vitruvius in her works suggest, she is influenced by classical
ideas about the qualifications of an architect. In the classical understanding of the discipline,
architecture includes “Edification, or the Art of Building of Houses: Gnomonica, or Dialling; and
Machinatio, the mystery of Machines, or Engines.” This range of meaning connects
architecture not only to structures, but also to time-keeping devices and to mechanical invention.

1140. Turberville 147-48; Trease 185-86, 206-8.
1141. Life of William 152. For other remarks on William’s fondness for architecture, see Trease 207
and Whitaker 64, 268.
1142. In particular, see the descriptions of the imperial city and palace (Blazing World 11-13, 18)
the two chapels (61-63) and the stables and riding-house (151-52).
1143. Philosophical Letters 508; Picture 1671, 408, 659.
1144. Consider the statement in Vitruvius that an architect “should be a man of letters, as skilful
draughtsman, a mathematician, familiar with scientific inquiries, a diligent student of philosophy,
aquainted with music; not ignorant of medicine, learned in the responses of jurisconsults, familiar
with astronomy and astronomical calculations” (Vitruvius, On Architecture, trans. and ed. Frank
Granger, vol. 1, Loeb Classical Lib. 251 (Cambridge, MA: Harvard UP, 1931) 1.1.3. Allusions to
Vitruvius in Cavendish appear in Olio 1655, A5r; Playes 1662, A7v; Orations 193.
1145. Joseph Moxon, Mathematics Made Easie: Or, a Mathematical Dictionary Explaining the
Terms of Art and Difficult Phrases Used in Arithmetick, Geometry, Astronomy, Astrology, and Other
Mathematical Sciences (London 1679) 15; Vitruvius, vol. 1, 1.3.1.
For Cavendish, through architecture’s association with the public establishment of reputation and with military fortification, it is suitable to “Heroick Spirits.” The association of the architecture of Bolsover Castle with a “revival of chivalry” intensifies this association. In Cavendish’s thought architecture is, moreover, a practical and “profitable” art conducive to national “Strength, Plenty, and Use, which make a Kingdom flourish,” and it is therefore an appropriate pastime for magnanimous men who wish to contribute to the security and economic well-being of their country. It involves a refined and fashion-conscious eclecticism that gathers ideas from disparate places and times through travel and reading. Architecture is therefore a useful analogy for the subtlety and variety that Cavendish observes in Nature.

In tension with this newly revived, classically inspired understanding of architecture and architects exists a native English model that influences Cavendish’s architectural metaphors to an even greater degree. In this model architecture only involves “the Art of building, containing under it all those Arts that conduce any thing to the framing of a house, or Temple.” It includes

1146. *Olio* 1655, 207.
1147. See the chapter on this topic in Girouard (159-74).
1148. *Picture* 1671, 316; *Olio* 1655, 63.
1149. On the “eclecticism” of architecture associated with William Cavendish, see Girouard 179-80, 184-86, Trease 44, 50-51 and Whitaker 269. For passages in Margaret Cavendish’s works associating architecture with the gathering of ideas through travel, see *Picture* 1671, 516-18, and the descriptions of the architecture of exotic places, for instance in the *Blazing World* (see note 1141, above) and in *Picture* 1671, 425-29. Cavendish mocks faddishness in architecture in the character of Madam Malateste in *Playes* 1662, 351. The mockery is ironic since it describes some features actually incorporated into Bolsover after John Smythson’s trip to London (cf. Girouard 186).
1150. Girouard describes the tensions between these models in his introduction (15-49).
the design of buildings, and practical arts such as carpentry and masonry.1152 In the historian Mark Girouard’s account of Robert Smythson and Elizabethan architecture, he indicates that large private building projects were organized on the same pattern as the Royal Works at Whitehall. There was a “surveyor” “in supreme charge of all building operations and nearly always a professional mason or carpenter,” a financial “comptroller,” a “staff of administrative clerks,” and divisions of artificers.1153 While the coordination of a building project ultimately rested with the surveyor, the architectural design was not necessarily his responsibility. Girouard writes, “Designs could be supplied by one or more of the craftsmen actually employed on the building; or by an outside craftsman; or by the employer; or by a friend of the employer; or by a professional with an intellectual rather than craft background, that is to say, someone approaching an architect in the modern sense.”1154 Architectural plans could originate from any number of sources, but they were drawn together into one by the unifying influence of the surveyor. In the seventeenth century, the term “architect” could be equated with “surveyor” in the sense that the architect was the “master-builder,” the “skilled professor of the art of building, whose business it [was] to prepare the plans of edifices, and exercise a general superintendence over the course of their erection,” but the term “architect” could also simply indicate a “builder.”1155 In this native model of organization, architects were as much involved in the coordination and even the accomplishment of practical building activities as they were in the planning of the final product.

Cavendish deploys architectural metaphors for several aspects of natural production from

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1152. See the definition offered in Blount D6r.
1153. Girouard 21.
1154. Girouard 22-23.
the original macroscopic framing of the world by Nature, to the behaviour of subvisible particles
in production, to the growth and decay of organisms. In the first instance, the metaphor both
provides an illustrative parallel and serves an explanatory purpose. In the secular Genesis at the
outset of the Poems, and Fancies, Matter is responsible for bringing materials, Motion for
preparing them, Figure for devising plans, Life for parceling out place and, presumably, time, and
“Nature, she survey’d, directed all, / With the foure Elements built the Worlds Ball.”\textsuperscript{1156}
Cavendish explains the Aristotelian natural places of the four elements by comparison with the
foundation, walls, ceiling and roof tiles of a house. She defends her plenist theory of the cosmos
by comparison of the placement of atoms with the contiguity of bricks and stones required in
order to construct a stable building.\textsuperscript{1157} Her comparison of the planets to “Weather-fans” and of
the sun to “a Diall” suggests the inclusion of the whole range of classical architectural disciplines
in her account of “the architecture of the world.”\textsuperscript{1158}

Architectural metaphors acquire a different heuristic function in Cavendish’s mature
works the Philosophical Letters and the Grounds of Natural Philosophy. There the comparison of
the three degrees of matter to men working on a building project demonstrates the integral role of
each degree. In Cavendish’s summary of her opinions at the outset of the Philosophical Letters,
she labels the “sensitive and rational parts of matter” as “the active parts, the knowing,
understanding and prudent parts, the designing, architectonical and working parts.”\textsuperscript{1159} On account
of the triplets of adjectives it is impossible to attribute the adjectives “designing” and

\textsuperscript{1156. Poems 3.}
\textsuperscript{1157. Poems 5.}
\textsuperscript{1158. Poems 3, Philosophical Letters 489.}
\textsuperscript{1159. Philosophical Letters b2v.}
“architectonical” to one or the other degree of matter alone.\textsuperscript{1160} In this way, when Cavendish wishes to reinforce the interdependence among efficient, instrumental and material causation in production, she evokes the native English model of organizing building projects where the architect is not merely the source of the final cause, the plan, but also the coordinator of and an active participant in the building’s construction:

If an architect should build an house, certainly he can do nothing without materials, neither can the materials raise themselves to such a figure as a house without the help of the architect and workmen, but both are of necessity required to this artificial production; nevertheless, the building of the house is not laid to the materials, but to the architect: the same may be said of animate and inanimate matter in the production of natural effects.\textsuperscript{1161}

The analogy demonstrates the interdependence and collaboration of the animate and inanimate matter, and it implies that the analysis of natural production at the subvisible level reveals the same logical structure as architectural production.

The parallel continues when Cavendish emphasizes the distinction between final and efficient cause in natural production. In sexual generation, the animate matter transferred from the parents to the offspring is “the chief designer, architect and founder,” but more specifically, the sensitive matter is “the architect” and “the rational the designer.”\textsuperscript{1162} Again Cavendish evokes the native English sense of an architect as someone practically involved in the building process. Her

\textsuperscript{1160.} \textit{Philosophical Letters} 152 (“the General actions of Nature are both life and knowledge, which are the architects of all Creatures”), 167-68 (“I say, My sensitive and rational corporeal Matter is Sense and Reason it self, and is the Architect or Creator of all figures of Natural matter”), 306 (“the chief Architect of all Creatures, is sensitive and rational Matter”), 525 (“the Animate part of Matter, which is sense and reason, life and knowledge, is the designer, architect, and creator of all figures in Nature”), 530 (“my meaning is, that the Animate matter produces infinite effects: For, it being the Designer, Architect, and Creator of all Figures, as also the Life and Soul of all Creatures, it must needs be infinite in its effects, as also infinite in its duration”).

\textsuperscript{1161.} \textit{Philosophical Letters} 531.

\textsuperscript{1162.} \textit{Philosophical Letters} 424.
“designer” is equivalent to the gentleman educated in the liberal arts who develops or selects
plans for a building, but delegates the actual process of construction and coordinating construction
to the workmen and surveyor. This dissociation of final cause from efficient cause appears in the

*Grounds of Natural Philosophy.* There Cavendish describes the three degrees of matter:

The Self-moving Parts of Nature seem to be of two sorts, or degrees; one being
purer, and so more agil and free than the other; which (in my opinion) are the
Rational Parts of Nature. The other sort is not so pure; and are the Architectonical
Parts, which are the Labouring Parts, bearing the grosser Materials about them,
which are the Inanimate Parts; and this sort (in my opinion) are the Sensitive Parts
of Nature; which form, build, or compose themselves with the Inanimate Parts, into
all kinds and sorts of Creatures, as Animals, Vegetables, Minerals, Elements, or
what Creatures soever there are in Nature: Whereas the Rational are so pure, that
they cannot be so strong Labourers, as to move with Burdens of Inanimate Parts,
but move freely without Burdens. 1163

When Cavendish attempts to imagine worlds made of only rational and sensitive matter
respectively, she comments that “the Sensitive Architects would be very Irregular, wanting their
Designing Parts, which are the Rational Parts.” 1164 Usually, the sensitive matter enacts the role of
the traditional “architect” or master-builder directly engaged in the construction, while the pure
and even noble rational matter is fit only for intellectual effort, for providing the final cause.
Cavendish explains, “the Rational Parts are industrious to design the manner and way, and the
Sensitive Parts are industrious to put those Designs in execution.” 1165

A problem arises in terms of the application of these structures of organization to the mind
and to literary production. Cavendish, as I have elsewhere shown, teaches that the rational matter

1163. *Grounds* 4-5.
1165. *Grounds* 76.
in the mind “moves by it Self, and in it Self.” She also frequently equates fancies with buildings having an actual structural existence in the mind. The mind of a poet (which, like the world, is already an architectural entity in its own right) produces “Towers of Conceptions,” “Castles of Imaginations,” “Poetical aery Castles,” “Towers of Imaginations,” and “Cottages of Prose and Rhime,” much as the mind of a builder mentally conceiving the architecture of a house literally produces a model of the structure out of his rational matter. If the rational matter builds itself into such structures, what happens to the division of forms of causation seen when all three degrees of matter are involved?

Cavendish seems to suggest that a redistribution of the division of causation and labour can occur when a single degree of matter is involved. In the Grounds, the greater part of her mind concludes “That the Rational Corporeal Actions were free; and all their Architects were of their own Degree.” She briefly suggests that the practical position of architect or surveyor may be assumed by portions of the rational matter rather than by the sensitive. Immediately afterwards, however, she argues that the three degrees of matter are so inseparable that such a situation never arises. Nevertheless, she never actually rejects the notion that the mind and its conceptions are constituted of rational matter alone. The reader must either downplay Cavendish’s assertion of the

1166. Opinions 1663, 43. Cf. p. 70.
1167. Picture 1671, 269-70, 697.
1168. Picture 1671, 272; Olio 1655, 100, 106; Playes 1662, A7v. Cf. Playes 1662, 312, Sociable Letters 226-29. These structures may be evanescent (Cavendish frequently describes them as “airy”), but when the sensitive matter translates them into printed works, they become like buildings with foundations and rooms (Philosophical Letters b2r-v; Opinions 1655, a2v) that are stubbornly solid and, as I have elsewhere indicated, more enduring than actual stone monuments and buildings (Olio 1655, A3v; Sociable Letters 227).
1169. Philosophical Letters 422.
concrete existence of nascent literary and otherwise imaginative productions, or she must assume
that the rational matter in fact subsumes its own final, efficient, instrumental and material causes
and indeed acts self-reflexively. Cavendish’s works incline to the latter option even though this
option undermines the explanatory power of the building-project imagery by removing the
necessity of the division of forms of causation between the degrees of matter.

The architectural nature of the growth and structure of living organisms comes with no
such complicating factors. Cavendish asserts this architectural characteristic of organisms from
her earliest works. In her *Philosophical Letters*, Cavendish indicates that the *Philosophical and
Physical Opinions* primarily addresses “the production and architecture of Creatures.” The
architectonic animate matter translated in sexual generation “creates or lays the foundation of the
Produced, on which other innated Matter or Spirits (brought by the way of nourishment) do
build.” Like a surveyor or architect, this founding matter rationally selects additional materials
according to their fitness for a given role in the development of the creature, “like as a man which
builds a House, makes the beames of the House of such wood, which is tough, and strong,
because he knows otherwise it will breake . . . but to make Laths he takes his Wood and cuts it
thin, that the Nayls may easier passe through.” The quality both of the materials chosen and of
the building motions of the architectonic matter determine the aesthetic characteristics of the
organism. The fact that organisms are architectural structures speaks to their complexity and

1172. *Picture* 1671, 601.
1173. *Fancies* 18.
the significance of surfaces in Cavendish’s understanding of the world. It also speaks to the presence of rational choice and information exchange amongst both the rational and the sensitive matter.

Interestingly, Cavendish’s use of architectural metaphors for both physical and mental productions tends to point to matters of duration and durability, to time. In *Natures Picture*, Cavendish refers to physical bodies as time’s “Architecture” and to growth and decay as “Time’s Buildings” and “Time’s Ruins.” Structures, whether they be living organisms or poetic conceptions, endure in proportion to the strength of their materials and the quality of their construction. As I have shown, Cavendish believes that poetical conceptions may be particularly “airy” and evanescent, but she also believes that when they are printed, they paradoxically endure longer and draw more attention than the most monumental physical structures. All structures, be they concrete or imaginative, require more time and effort in the construction (and reconstruction) than in the decay.

Gestation periods, in particular, are determined by the details of the construction required—the nature of the builders, of the materials with which they work, and of the structures they are erecting. As I have shown, Cavendish argues that no embryo is conceived fully formed. The womb is “the place of the architecture” where subvisible processes of “framing”

1175. On Cavendish’s interest in surfaces, see section 2.6. See also *Opinions* 1655, 44.
1176. *Picture* 1671, 295, 26[8].
1177. *Fancies* 64.
1178. *Fancies* 24-25; *Philosophical Letters* 426; *Grounds* 45.
gradually may gradually produce “a stately building.” In the She-Anchoret’s very biblical phrasing, there is always “time and degrees in forming of the formed.” The length of gestation is, for Cavendish, one of the sole differences between mental and physical conception and production. For her, the rational matter of the mind can move in the same three-dimensional architectural or sculptural fashion as the sensitive matter in the world at large, the only difference being that “the Rational motions Create in an instant of Time, whereas the Sensitive Motions Create by Degrees.” If the sensitive matter were not weighed down by inanimate matter, “a Child in the womb would as suddenly be framed, as it is figured in the mind; and a man would be as suddenly dissolved as a thought.”

Mental conception and physical development are one and the same natural, rational and architectural process. Poetic creation therefore allows a human being to participate in natural production, to function as a piece of the “servant of God,” Nature. The generation of organisms differs from poetic production only in that the immediate agents, instruments and materials of creation originate from different points on a spectrum of agility and refinement. Furthermore, Cavendish’s characterization of sensitive matter as the architect and rational matter as the designer of natural productions extends the purview of rational choice and collaboration beyond not only the unified consciousness of animals, but beyond the rational matter, to the sensitive as well. For Cavendish, reason in the human mind may consist solely in rational matter, but reason in

1180. Philosophical Letters 426, 424.
1181. Picture 1671, 599. Cf. Picture 1671, [600]; Poems 4; Opinions 1655, 40; Philosophical Letters 152; Grounds 35, 40; Opinions 1663, 30-31.
1182. Opinions 1663, 57.
1183. Observations i1v.
Nature clearly belongs both to the rational and the sensitive. In Nature, “the Souls Language” becomes the irreducible force in all animate matter that operates across distances to unify parts according to coherent plans, and to explicate the information of matter itself into objective, material beings. Just as God declared, “Let us make man in our image,” just as the natural philosopher may produce her theories through dialogue between the parts of her mind, so Nature generates her particulars by means of rational discussion amongst her parts. The generative processes of God, of the mind, and of Nature are rooted in discourse.
Conclusion

To most modern readers, Margaret Cavendish’s natural philosophy seems frequently self-contradictory, often ludicrously fanciful, and almost always wrong. However, this dissertation has shown that these qualities of her philosophy must be understood within the context of her methods and her historical circumstances. The tendency of Cavendish’s works to contradict one another emerges from her explicit ongoing revision both of her terminology and of her theories, for example in her articulation, at different stages in her career, of three distinct models of perception. The fanciful aspects of Cavendish’s philosophy emerge as a consequence of at least two strategies that she employs. As recent scholarly work has suggested, early in Cavendish’s writing career she uses fancy as a rhetorical strategy for gaining entry into a philosophical discussion for which she lacks the prerequisites of education and masculinity. Later in her career, the most fanciful aspects of her philosophy (such as the restoring beds and the island that grows them) are the product of self-consciously speculative intellectual exercise and play. Even the tendency for Cavendish to be wrong in her theories should not be grounds for dismissing the significance of her natural philosophy. I have shown at various junctures in this dissertation, for instance in the comparison between Cavendish’s, Hobbes’s and Descartes’s explanations of thunder, that Cavendish’s opinions are no less correct or even less reasonable than those of her well-known and still highly esteemed contemporaries. There are sound and mitigating reasons for the qualities of Cavendish’s natural philosophy that have led to the philosophy’s mockery and dismissal both in its own age and in ours.

The question remains, however, of why explore a philosophy that is self-contradictory, fanciful and incorrect. My interest in Cavendish arose from a desire to gain insight into John
Milton’s extraordinary articulation and depiction of vitalist and monist ideas. Apart from its Aristotelian precedents, Milton’s vitalism seemed to lack any historical sources and contexts, except those to be found in scriptural and literary, rather than philosophical, works. Margaret Cavendish was an immediate contemporary of Milton who wrote at much greater length on vitalist themes than he did, and whose philosophy had not yet been exhaustively examined by scholars. The extent of her writing has allowed both this dissertation and other scholars to place Cavendish’s vitalism within a large web of contemporary contexts that flowed from at least four different traditions of philosophical thought. These traditions include: the medical tradition constituted by the likes of William Harvey, Walter Charleton (in his medical writings) and Francis Glisson; the Paracelsian tradition which was represented by J. B. Van Helmont and F. M. Van Helmont; the Cambridge Platonist tradition to which Henry More and Ralph Cudworth belonged; and the tradition of the major natural philosophers of the day, such René Descartes and Thomas Hobbes, who used vitalist language as they grappled for words for their new and often decidedly non-vitalist concepts. Cavendish’s vitalism forms a nexus point at which several of the vitalist philosophical traditions of her age meet and are discussed. As such, it grants some insight into the context of Milton’s ideas.

Like Milton’s vitalism, Cavendish’s is both literary (in the sense that she uses vitalist tropes in order to depict the world) and philosophical (in the sense that she believes that fundamental units of matter are somehow alive). I have shown that unlike Milton, however, Cavendish posits an abrupt discontinuity between matter and spirit, and she focuses wholly on the former. I have suggested that she relocates Milton’s monistic continuum of matter and spirit into the realm of matter itself, where she finds a continuum of matter and mind. Consequently, as I
have explained throughout this dissertation, Cavendish’s natural philosophy is not merely vitalist. Because it locates reason and consciousness not only within complex beings, but also within the most disorganized aggregates of matter, her philosophy is at once materialist and animist.

As I began to focus on Cavendish’s works, I became aware that both her literary writing and her philosophical writing dwelled on the theme of discourse. I realized that she saw themes of language, communication and representation as central both to the world of human interaction and to the world of natural phenomena. Her doctrine of the presence of consciousness within matter itself clearly formed the bridge which allowed discourse to inhabit both worlds.

Since Cavendish’s own theorization of discourse encapsulated not only linguistic but also aesthetic concerns, I became interested in the ways in which the vibrant artistic culture that surrounded Cavendish might appear in her natural philosophy. I hoped to find very concrete connections not only to her theory of language, but also to this artistic milieu. I hoped, for example, to listen to specific pieces of music by Christopher Simpson and then to be able to say, “Cavendish heard this, and in it she heard the elaborate composition and division which she later described in matter.” I hoped to see particular paintings by Anthony van Dyck and to be able to argue, “Cavendish saw this, and in it she saw the vibrance that characterizes her concept of Nature.” I hoped to consider the ornate ceiling decorations in the Little Castle at Bolsover and to be able to observe, “When Cavendish conceived of Nature in terms of lines and surfaces, it was these of which she thought.” I sought very concrete indications of an aesthetic within her natural philosophy that I could associate with equally concrete historical artefacts. Unfortunately, both the abstract quality of Cavendish’s writing, particularly in her mature natural philosophy, and the historical complexities of identifying exactly which works of art she would have encountered have
made this degree of concreteness impracticable.

Nevertheless, this dissertation has been able to suggest some of the aesthetic dimensions of Cavendish’s natural philosophy. It has demonstrated, for instance, that the art of playing divisions informs the intricacy and variety of combinatory possibility in her concept of Nature. It has demonstrated that Nature as she conceives it is subject to the same structures and exerts the same rhetorical forces as declamatory song. It has indicated that Cavendish’s familiarity with textiles and needlework has influenced her descriptions of matter and physical and chemical processes. It has shown that specific styles of dance inform motion and causation in her philosophy, that the technique of painting with a camera obscura informs her doctrine of perception by “patterning out,” and that her understanding of the organization of building projects influences her theory of generation. It has shown that in spite of the abstract language of Cavendish’s natural philosophy, this philosophy depicts a world that shares in the aesthetic qualities of the early Baroque arts.

The possibility of finding such aesthetic elements within Cavendish’s natural philosophy stems from the breadth of her theory of discourse and of the essential role of this theory within her natural philosophy. This dissertation has shown that there are not merely parallels between Cavendish’s theories of discourse and her theories of Nature, nor do her writing style and her opinions concerning communication and representation only emerge logically from her opinions regarding the natural world. Rather, for her, discourse already exists within Nature. Linguistic combinatory possibility, rhetorical persuasion, writing, dance, painting, poetic composition and rational discourse are all inherent not only to human beings, but also to the most minuscule particles of matter. In modern terms, discursive processes are for Cavendish as much in the
domain of physics as in the domain of psychology. In fact, as I have argued at the end of my final chapter, for Cavendish, discourse operates in Nature like an irreducible force.

This dissertation has ascended in its exposition of Cavendish’s doctrines from fundamental mathematical matters, through the structure of objects, through motion and causation, and through perception to attain to the culminating, creative doctrine of generation, of natural poiesis. In the course of this ascent, however, the trajectory has become circular. The dissertation began by addressing the theme of reason in the cosmos, and it ended on the same theme. The apex of the argument, the discussion of imaginative creation in Nature, was already latent within the first chapter under the guise of sympathy, of natural rhetorical persuasion. This cyclic path has emerged, because while this dissertation offers an overview of many of Cavendish’s natural philosophical doctrines, it really focuses on a single one: her discursive panpsychism. The dissertation’s argument may be reduced to a single observation, namely, that something much like the human ability to process, express and communicate information is characteristic of Cavendish’s Nature in all of its parts, and consequently forms a basic element of her physics.
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