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**Vitalism and the New Science: Anne Conway's Response
to the Mechanization of Nature**

Patricia Sheridan

A Thesis

in

The Department

of

Philosophy

**Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Arts at
Concordia University
Montreal, Quebec, Canada**

March 1994

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ABSTRACT

Vitalism and the New Science: Anne Conway's Response to
the Mechanization of Nature

Patricia Sheridan

Anne Conway, 1631-1679, was a Seventeenth century woman philosopher whose one published work is entitled *The Principles of the Most Ancient and Modern Philosophy*.** In this work, Conway presents her spiritualistic cosmology, which displays an integration of the vitalistic theory of matter with the empirical methodology of the various mechanical sciences. Conway presents her system as an answer to the problem she saw inherent in the foundations of the mechanical theories of nature. Conway specifically attacks the theories of Descartes, Hobbes, and Spinoza. By asserting that matter is dead, Conway argues that these philosophers rest their studies of the world upon faulty assumptions. Conway did not dismiss the new sciences entirely, but she tried to prove that spiritualistic explanations could be consistent with rigorous science. This thesis will begin by examining Conway's cosmology and her vitalistic response to mechanical concepts of nature. I will focus primarily on the theories of Descartes, and will show that Conway's critique of his mechanical theory is most effective when she exposes the faulty assumptions upon which Descartes' scientific system is built. By way of demonstrating Conway's pertinence to current philosophical debate, I will illustrate the relevance of her arguments to the present feminist critiques of

** Anne Conway, *The Principles of the Most Ancient and Modern Philosophy*, ed. Peter Lopton (Boston: Martinus Nijhoff, 1982)

modernist epistemological paradigms in the hard and social sciences. It will be seen that Conway is important for her contribution to current debates, as well as for her place in the history of philosophy, and women's place in that history.

Table of Contents

Introduction	p. 1
 Chapter 1	
Conway's System: The Defense of Organic Matter	p. 9
 Chapter 2	
Descartes' Mechanistic Commitment and Conway's Vitalist Response	p. 33
 Chapter 3	
Conway and Feminist Post - Modern Critiques	p. 56
 Conclusion	 p. 75

Introduction

This thesis focuses on the work of Anne Conway, a little-known woman philosopher, who contributed to the intellectual debates of the Seventeenth century with her work, *The Principles of the Most Ancient and Modern Philosophy*¹. Although Conway was not a major figure in the history of philosophy, she nonetheless plays an important role on two levels: first, she demonstrates that women were active participants in philosophical circles as early as the seventeenth century, and; second, she offered an original philosophical theory which not only was in direct opposition to the some of the most influential theories in her own period, but is also relevant and radical even today.

In recent years, there has been a move in academic circles to reconstruct much that has been lost in the history of women. In many disciplines, there has been a move back in time to reclaim the tradition of women who actively participated in fields that were considered to be, until recently, entirely male. In fact, many current scholars have found evidence of the active presence of women who contributed to numerous non-traditional fields as far back as the pre-Christian era. These findings to date are sporadic and the field is growing, but slowly. The reason for this is that often the works of these early women have not been published in any recent editions, and are usually only to be found after much searching in rare book departments. Even then it is often the case that no more than a few copies of their works are in existence. Thus, the field requires much digging and reliance upon little or no secondary resource material. Anne

¹Anne Conway, *The Principles of the Most Ancient and Modern Philosophy*, ed. Peter Lopton (The Hague: Martinus Nijhoff, 1982)

Conway, for example, is still virtually unknown, and to date there are only a handful of articles about her, and minimal reference to her in histories of her period. Apart from the recent work done by the editor of the current edition of her book, Peter Loftson, there have been few rigorous philosophical examinations of her theories. Thus, research on Anne Conway relies mainly on primary-source reading and a few biographical and systematic articles, which contain very general overviews of her theories. An added research problem lies in the printing history of Conway's text. It is a culmination of her notes, which she never intended for publication. After her death they were translated from English into Latin. To this edition were added chapter headings and the point-form summaries which appear at the beginning of every chapter. The edition we now have available was translated back into English. The chapter headings and summaries remain. It is not known what was added or taken out by the original editor.

It is important to understand that not only is it historically interesting to uncover the presence of previously unknown women in traditional academic disciplines, but often these women offer new evidence in a field, or present viewpoints which contribute to the history of the field as a whole. In this sense, Conway is important as a woman writer active in the philosophical debates of the enlightenment period, which up-to-now has recognized few, if any, women contributors. However, she is also of great interest for the philosophical position she presents. Her theory offers a unique approach to the philosophical trends of the seventeenth century, by attempting to fuse the rigorous scientific method of the mechanical philosophies with the spiritualistic metaphysics of the vitalist position. Thus Conway presents an important figure in her own right, as a woman and as an innovator with her particular answer to the problems she saw inherent in the major philosophical theories of her time.

Carolyn Merchant, in her book *The Death of Nature*², examines the rise of various mechanistic theories in the seventeenth century, and the prevalence they still have today in modern western attitudes towards women and the environment. Merchant offers a brief account of alternative cosmologies to the mechanistic outlook, and touches upon Conway as representative of a female, organic approach to the world. While I take issue with Merchant's thesis that mechanism and organicism are the respective representatives of the male versus female outlook, and with her somewhat overstated arguments that link mechanistic theories and the current environmental crisis, I appreciate the fact that Merchant is one of the few philosophers who has examined Conway in any depth.

My work on Conway also includes an examination of the relation of her ideas to those of Leibniz, and subsequently I became interested in her specific reaction to the new science movement. Virtually no major works on Conway exist in English, apart from the Loptson introduction to her own work, and Marjorie Nicolson's edition of the correspondence of Conway and the Cambridge Platonist, Henry More.³ No other book-length works deal with Anne Conway at present, so the research for the sections of this thesis dealing with Conway has relied upon her own work and a small number of articles, obtained through computer searches and extensive cross-referencing.

This thesis examines Conway's theories of the monistic union of spirit and matter and subsequent accounts of physical principles specifically as these views can be understood as a reaction to Cartesian dualistic mechanism, although Conway also objects to the even more extreme materialistic mechanism

²Carolyn Merchant, *The Death of Nature* (New York: Harper & Row, 1980)

³Marjorie Nicolson, ed. *Conway Letters* (New Haven: Yale UP, 1930)

of Hobbes. This thesis will narrow its focus to a consideration of Descartes' mechanistic commitment, and the objection Conway raises to his theoretical assumptions.

Chapter 1 begins by examining the cosmology Anne Conway presents in the *Principles*. It will outline the vitalistic standpoint evident in her assertion of the interconnectedness of spirit and matter. Her method relies upon empirical examples and an assertion of the ultimate authority of God as divine creator. Conway asserts that all earthly substance comprises both spirit and matter. God provides the foundation for this belief in the unity of spirit and matter, as He imbues all creatures with His spiritual essence. This chapter will present Conway's system and the methodology by which she proves its validity, in order to show that Conway is presenting an alternative system which approves of the mechanistic emphasis on empirical evidence while it avoids the conclusion that matter is dead. Conway believes that it is not necessary to abandon spiritualistic metaphysics in order to have an empirically derived and systematic scientific theory. This chapter acquaints the reader with Conway's ideas, and her concept of vitalism, and presents the cosmology she offered as an alternative to that of the Cartesian and Hobbesian mechanisms.

Chapter 2 shows that Conway's arguments against the various mechanistic theorists are most effective as critiques not of their empirical arguments, but of the assumptions upon which their physics are based. The chapter focuses on the particular mechanistic theory of Descartes, who acknowledged the two spheres of spirit and matter, but was forced to effect a split between them in order to establish the mechanistic assertion of matter as lifeless and bound to universal physical laws. This chapter focuses the debate not on the conclusions the two thinkers reach, but the diverging theoretical commitments upon which their conclusions are based. It is here that Conway's

criticism is most interesting. Her vitalistic commitment is presented as a direct response to the mechanistic assumptions behind Descartes' theories.

Chapter 3 brings Conway's arguments into contemporary debate. Conway was concerned that the mechanist denial of life in matter led to an erroneous conception of nature. Conway felt that their view of matter as dead provided mechanical theories with a faulty basis upon which to base any studies of nature. Thus, Conway was attacking the philosophical foundations of various mechanical theories as insufficient for achieving a complete and sympathetic study of the world. The bias of the mechanical theories meant, for Conway, that they were bound to a misunderstanding of the true nature of the world. This chapter will examine the critique Conway makes toward mechanical bias in empirical research, in the context of current feminist critique of the bias science harbours concerning the nature of the world and the implications these theorists see inherent in this supposedly objective and value-free discipline. Although since the mid-50s, and the Kuhnian critique, scientists have been more critically aware of this belief in value-free objectivity. However, feminist critics believe that there is still a lingering bias toward value-free objectivity as an epistemological ideal in current social science research. While some may argue that no single modern epistemological perspective exists that still exhibits these values, the feminist theorists would counter that it is not a particular viewpoint, like Positivism, for example, that they are criticizing, but a general acknowledgement in social and hard sciences that detached, value-free objectivity is still a desirable goal. Lorraine Code explains: "this ideal of objectivity claims a remarkable degree of respect in epistemological, scientific, social scientific, and other circles."⁴ The feminist debate has been chosen because it presents a unified

⁴Lorraine Code, What Can She Know? (Ithaca: Cornell University Press, 1991) 36.

theoretical critique of scientific bias, based upon the common desire for a more unified epistemology which acknowledges the value of subjective knowledge, as well as the goal of objectivity. Conway bears relevance to this debate as a contemporary critic of early modern scientific assumptions.

This thesis argues that Conway's critique of mechanical theories, specifically Cartesian mechanism, is most effective as an attack on the biased perspective with which the various mechanical theorists approach their study of the world. Furthermore, Conway's critique is currently relevant in light of the criticisms prominent right now of scientific bias and the epistemological reliance of scientific method on the paradigm of objectivity.

The vitalism of Anne Conway shares with all vitalistic theories a belief in the principle of life or energy inherent in living matter. However, in this thesis it is important to remember that the vitalism referred to is that specifically propounded by Conway, which asserts that all matter shares a certain ratio of spirit, along a continuum that stretches from mostly matter to mostly spirit. Conway's vitalism is a spiritualistic cosmology which asserts a monistic definition of substance, which is comprised of both elements together, and which sees all particles of matter as contributing to the whole. Her vitalism is fundamentally anti-Cartesian in its insistence on the monistic concept of spirit and matter.

Mechanistic theories are referred to in Conway's work in both general and specific contexts. Descartes and Hobbes were engaged in the mechanization of the world picture, in the sense that our conceptions of matter would no longer be confused with metaphysical beliefs and speculations. The world is composed of dead matter in motion, according to the specific laws of nature, much as a machine. In the case of Descartes, allowance was made for a spiritual world, but this was entirely separate from the external world of

extended matter. The general mechanistic system defined nature in terms of predictable actions of material particles, and wholly detached from any spiritual activity. Descartes did account in his mechanistic theory for spirit, but it was his dualistic system which allowed him to maintain a spiritual realm while asserting a mechanistic concept of matter as dead. Descartes asserts that matter, or body, is devoid of any principles of life. He writes: "it is not necessary to conceive of this machine as having any vegetative or sensitive soul or other principle of movement and life."⁵ Descartes is here referring to both human and earthly matter. In this thesis, mechanistic theories will be referred to generally as denoting any theory of the world which asserts that particles of matter are free of such notions as entity, organization, or teleology, but move in an isolated way according to absolute natural laws. Descartes' own form of mechanistic theory will be specifically named, to represent his specific theories.

It is understood in this thesis that the general mechanistic perspective has dominated the modern epistemological paradigm up to the present. It has been asserted by many contemporary critics, namely such writers as Sandra Harding, Evelyn Fox Keller, and Susan Bordo, that the modern scientific focus believes that science is freed from the subjective experience of the individual and is a purely objective study of the laws of nature. Descartes' dualistic stance has been instrumental in adding to the modern epistemological paradigm, according to such theorists as those above-mentioned, a structure of dichotomous absolutes which serves to compartmentalize the world. The paradigm referred to is that which is based upon the early modern scientific programs of such thinkers as Descartes. It is held by many post-modern critics

⁵Descartes, Rene, "Treatise on Man," The Philosophical Writings of Descartes, vol. 1, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge UP, 1985) 108.

that the epistemological frameworks established by early modern scientists are still predominant in current natural and social sciences. This is not to say that all scientists subscribe to these frameworks, but rather that there is a pattern of thought that can be generally discerned in academic research in natural and social science fields. These arguments will be examined throughout the thesis.

Many of the intellectual pursuits which claim to be sciences follow the epistemological pattern of the natural sciences. Otto Ulrich, in his article, "Counter Movements and the Sciences: Theses Supporting the Counter Movements to the 'Scientisation of the world'",⁶ argues that all studies that call themselves scientific conform to the ideal of rationality established by the various mechanistic theorists of the seventeenth century. It is of key importance not only to recognize this paradigm epistemology, he argues, but also to understand that it is an historically situated metaphysical commitment. He writes: "[The scientific pattern] is achieved only by isolating a specific process, taking it out of its natural context, and reconstructing it within an experimental setting in such a way that the desired process ... takes place in a controlled and reproducible way."⁷

It will be shown that the counter-movement to the modern scientific paradigm observes a similar problem inherent in supposedly objective scientific assumptions as Conway perceived in the early modern mechanical theories. Descartes' dualistic framework serves to further entrench the concept that human rational observation is capable of mastering the material world, and that it is possible thereby to understand its true nature. While this thesis does not intend to hold Descartes responsible for current problems, it is important to

⁶Otto Ulrich, "Counter Movements and the Sciences: Theses Supporting Counter - Movements to the 'Scientisation of the World'," Counter Movements in the Sciences: The Sociology of the Alternatives to Big Science, ed. Helga Nowotny and Hilary Rose. *Sociology of the Sciences*. vol. 3 (Dordrecht, Holland: D. Reidel Publishing, 1979)

⁷Otto Ulrich, "Counter Movements and the Sciences" 130.

recognize the extent to which mechanical, and specifically Cartesian mechanical, ideologies still dominate the epistemological framework of western research, in order that we may understand the perception of Conway's objections, by placing them within the current field of similar counter-science debates.

Chapter 1

Conway's System: The Defense of Organic Matter

Anne Conway offered a philosophy which asserted her vitalistic belief in the organic nature of the world, and the unity of matter and spirit. Her interest in Platonism and Cartesianism, influenced by her close friendship with Henry More, laid the foundations for her spiritualistic philosophy. Her only work, *The Principles of the Most Ancient and Modern Philosophy*,⁸ was a culmination of many years of study, thought, and correspondence with some of the great thinkers of her period. It has even been postulated by some researchers that she was influential on the monad theory propounded by Leibniz, although this remains an area of some debate. This chapter will begin with an examination of the background of her intellectual development, and the evolution of her ideas through Henry More and Francis Mercury Van Helmont.

Anne Conway lived from 1631-1679. Although in this period women had no access to formal education, many engaged in self-guided studies, or tutored learning. Anne Conway was born into a wealthy and illustrious family of political and intellectual fame.⁹ She educated herself in youth and taught herself enough Latin and Greek to engage in intense philosophical study. Conway's brother, John Finch, introduced her to his peers and professors at Cambridge, many of whom comprised the Cambridge Platonist circle. Conway

⁸Anne Conway, *The Principles of the Most Ancient and Modern Philosophy*, ed. Peter Lopton (The Hague: Martinus Nijhoff, 1982)

⁹Peter Lopton, introduction, *The Principles of the Most Ancient and Modern Philosophy*, by Anne Conway (The Hague: Martinus Nijhoff, 1982) 3.

thereafter began a correspondence with its leader, Henry More. More and Conway's correspondence began in 1650 and over time the two enjoyed a reciprocal relationship of learning and intellectual growth, inspired by Cartesian and Platonic ideals. ¹⁰ More had an enormous impact on Conway's intellectual development, introducing her to the new ideas of that scientific age, and providing her with the background for her critical writings on Hobbes, Spinoza, and Descartes. ¹¹ It was through More that Conway became acquainted with the major intellectual debates of her day. Through this experience, Conway was able to develop her particular vitalism, in answer to the mechanistic philosophies so influential in her period.

Henry More was one of the people to lead the revolt against Aristotelianism at Cambridge. As Marjorie Nicolson, the editor of the Conway - More correspondence, writes, "More found Cambridge Medieval; he left it modern."¹² He brought to the university a respect for the sciences and the teachings of Newton. More was determined to imbue the university with the new teachings of the scientific age. He moved from Aristotelianism to Neo-Platonism, and developed an interest in the theories of Descartes. ¹³ His teachings at Cambridge introduced the students to a Neoplatonic conception of the nature and origin of the soul. ¹⁴

¹⁰Mary Ellen Waithe, ed., A History of Women Philosophers, vol. 3 (The Netherlands: Kluwer Academic Publishers, 1991) 41.

¹¹Marjorie Nicolson, ed., Conway Letters (New Haven: Yale University Press, 1930) 42.

¹²Nicolson, Conway Letters 41.

¹³Nicolson, Conway Letters 42.

¹⁴Nicolson, Conway Letters 42.

The Cambridge Platonists were a group of philosophers who appreciated immensely the scientific method, which valued objective empirical fact as the basis for truth, but who saw lacking in this system what they felt was the ultimately spiritual fabric of nature. More saw in the framework of the Jewish mystical work, the *Kabbala*, the possibility for the perfect fusion of the new science with the spiritual understanding of Platonism. More offered a new system which would, he believed, enrich the spiritually empty, and therefore, imperfect cosmology of the mechanistic theorists.¹⁵ Conway agreed with More that the new scientific theories were incomplete in their concept of nature and needed spiritual enrichment in order to fully understand the causal relations between all aspects of created, earthly life. For most of her life, Anne Conway relied upon More as her foremost intellectual companion, and his impact upon the evolution of her ideas is undeniable.

Late in her life, beset with the headaches which periodically debilitated her, another physician in a long line of reputed physicians, was sent to her aid. Francis Mercury Van Helmont was sent with correspondence to deliver to More, involving their mutual interest in the *Kabbala*. Upon his arrival in 1670, Van Helmont was asked to see Anne Conway, to try to cure her ailment. Van Helmont was a scholar and a physician, whose father had been the translator of the *Kabbala denudata*, a work which came, through van Helmont, to greatly influence Conway's thought.¹⁶ He was to become another very influential thinker in Conway's life, leading her to her profound conversion to Quakerism. More disagreed with Quakerism, and it is the influence of the Quakers, and

¹⁵Richard H. Popkin, "The Spiritual Cosmologies of Henry More and Anne Conway," *Henry More (1614 - 1687)*, ed. S. Hutton (The Netherlands: Kluwer Academic Publishers, 1990) 98.

¹⁶Conway, *Principles* 5.

Conway's sympathy with their beliefs which led to her monistic view of the relation of spirit and matter, and caused a final split between the philosophies of Conway and More.¹⁷ The Quakers believed in the inward presence of God, and the vitality of all things, soul or matter. This view was very close to that of the Kabbala. Although considered a suspicious movement at the time, it seems there was much which would have attracted Conway to the Quakers.

Conway wanted to reassert the organic unity between mind and matter. She believed in a monistic view of mind and body. While More wished to bridge the gap between mind and matter through the assertion of plastic natures and organic links, he still maintained a dualistic stance on the mind-matter relation.¹⁸ Conway and he disagreed on the extent of unity between mind and matter, and on how much to emphasize the living principle in matter. Conway's vitalism gave a great weight to the principle of life in all things. In breaking down the separation of mind and matter, her perspective saw in all nature an integral vital force.¹⁹ She believed that all substances are both mental and physical, participating in each to varying degrees.²⁰ She saw nature as a continuum, and all movement as the result of a vital principle. This is a principle of life which explains all activity. She thus opposed the mechanistic notion that matter is inert, a view also shared by More and the Cambridge Platonists, and, she insisted on the need to imbue it with a living principle.²¹ Although Van Helmont only knew Conway in the last ten years of her life, he played an

¹⁷Carolyn Merchant, The Death of Nature (New York: Harper & Row, 1980) 256.

¹⁸Merchant, Death of Nature 253.

¹⁹Merchant, Death of Nature 254.

²⁰Conway, Principles 15.

²¹Conway, Principles 58.

influential role in her life. He introduced new possibilities for her in the Quaker movement, and gave her intellectual companionship and support, during the time she was writing her philosophical tract.

This section has concentrated on some of the most influential aspects of Conway's intellectual development. Anne Conway was an extraordinarily gifted woman, not only intellectually, but materially. She was open to many opportunities for scholarly pursuits which simply were not available to most women of her period. She received a great amount of encouragement in her studies from her brother, from More, and from Van Helmont and the Quakers. I will now examine the philosophy which is presented in the *Principles*.

Conway's method proceeds to prove the validity of her ideas via reasoned assertions concerning the nature of the world and empirical evidence from nature. Conway employs the scientific method, by ensuring that she makes no assertions that are not based on empirical fact. Conway, therefore, demonstrates that the spiritual nature of the world can in fact be proven using the scientists' own inductive method of reasoning, thus showing that the two realms, scientific and spiritual, are more related than the mechanists would admit. This section will examine Conway's cosmology, and will outline the attack Conway makes on the mechanistic viewpoint.

I shall first clarify the terms Conway employs in her discussion of the two realms, matter and spirit. Conway posits that all created beings** fall under the basic category of *substance*. All created beings are, she asserts, but one substance. This concept is used almost interchangeably with the term *essence*,

** For Conway, the term created being or creature, can refer to humans, animals, and all other specie of matter in the world (for example: rocks, water, etc..)

which implies the basic nature of a particular being. The three different types of essence for Conway are God, Christ, and created beings. Thus, all have a different substance/essence, and created beings, therefore, all fall into the same category.

Substance of created beings, according to Conway, comprises two types of being which work together as one; these are, *spirit* and *matter*. In this way their essence differs from God and Christ who are pure *spirit* combined with pure wisdom and goodness. At the level of created beings the definition of 'spirit' is much more limited. *Spirit* is defined as penetrable and indivisible. *Matter*, by contrast, is impenetrable and divisible. *Body*, while often used in the same way as 'matter', presents an accommodation, which is plastic in nature, for spirit, and alters in accordance with the changes the spirit undergoes. *Spirit* is used to denote either that which is not created, which would be God and Christ, or that which is created, which is then called *soul*. *Spirit* is used more often in the work to emphasize the religious nature and origin of the spiritual aspect of matter, the soul. Conway uses the terms *corporeality* and *incorporeality* to denote manners of being. They are descriptive of the two spheres of existence, spiritual and material, in which all creatures exist to varying degrees, from human beings all the way to something as apparently inanimate as a rock. This notion of degree will be taken up in more detail later in the text.

Conway begins her work by explaining the nature of God, and seeks to unite all creatures under God's power. Through her interpretation of God, Conway hopes to establish the existence of the living spirit with which all creatures are imbued, and through which they are all united in successive levels of being, from most to least corporeal. This section, therefore, sets the groundwork for her attack upon the Cartesian mechanistic separation of mind and body.

Conway places God at the foundation of all order in the world. She seeks thereby to uncover the necessary order which lies in the interconnectedness of all God's creatures. She does not here, however, offer a proof of God's existence. For Conway's system works from the premise that God is the creator of all existence and order in the world. In keeping with her understanding of the necessary interaction of the scientific and the spiritual perspectives, her method, backed up by empirical observation, is based on reason, as well as religious dogma.

Conway offers a definition of created beings as beings in time. Conway's discussion of time opens up two important aspects of her thought. She presents the notion of progressive change as necessary to beings in time, as well as the concept of the infinitude of God's creations. This establishes a basis for the concepts of organization and teleology, which are key aspects of her anti-mechanism. Mechanistic theories rest on the belief that matter is particulate, isolated, and bound solely by absolute natural laws. Conway's insistence on the potential for evolution of all creatures invites the notion of a continuum along which all creatures move. She demonstrates the limitless possibility for change in creatures. Conway explains that there was no beginning of creation. God has created beings out of eternity, and therefore, according to Conway, the possibilities for God's creations are infinite. Conway offers the example of the ocean, which creates constantly, but never loses any of itself:

And shall not this Ocean perpetually flow, and send from it self Living Waters? And shall not this Ocean perpetually abound with its own Efflux to the Production of Creatures, and that with a certain continual Stream? ²²

²²Conway, *Principles* 154.

Conway explains that in the same way, God creates boundlessly and yet loses nothing of His own power. Conway is here establishing the notion that time is infinite, for any definite limit on time would imply the limit to God's infinity. Those who place a limited duration on the existence of the world, for example: "limit the Power of God to a certain Number of years".²³ Because God is infinite, and will always fulfill his creative essence, Conway concludes that the number of creatures is infinite as well. "It is an Essential Attribute of God, to be a Creator, and so by Consequence God ever was a Creator, and ever will be a Creator, because otherwise he would be changed."²⁴ Conway is establishing here that God is infinite and timeless. She is laying the basis for her theory of time, which rests on the concepts of change and motion, and the infinite creation of earthly beings. God creates but loses nothing of himself in the process.

Conway explains that we are, as created beings, bound by time, unlike God. This notion we have of time comes from our imperfection, and necessity we feel to achieve ever greater perfection in the example of our infinitely perfect creator. We are subject to change and progression, for we are constantly moving toward the paradigm of Godly wisdom and virtue. Change, the essence of time for Conway, is therefore motivated entirely by teleological considerations. We are imperfect, and are bound by our constant striving to perfection, which marks us as time-bound creatures. God does not move successively, for this would imply a striving, and God in his perfection does not seek anything greater. Time involves succession and change, according to Conway, and God is beyond these constraints, and is unchanged by them. Conway offers the following illustration:

²³Conway, Principles 154.

²⁴Conway, Principles 155.

Suppose a great Circle or Wheel to be moved by a Centre, whereas the Centre always remains in one place, even as some do think the Sun after this manner to be moved about his Centre within the space of so many days. Now albeit the Centre moves the whole Wheel, and causes a great and continual Motion in the same; yet that always resteth, neither is it in the least moved. ²⁵

Motion, being successive, does not have place in God. However, it is through God that created beings have their movement.

Thus, created beings are bound inextricably to a teleological system. Conway defines created beings by their movement in progression for they are constantly striving towards a more perfectly rational state. To be in time is to be changing, for it is the successive nature of human movement which defines our notion of time- the progression from one movement to another. Conway writes:

such is the Nature of every Creature, that it is in Motion, or hath a certain Motion, by means of which it advances forward, and grows to a farther perfection. And seeing in God there is no successive Motion or Operation to a farther perfection; because he is most absolutely perfect. Hence there are not Times in God or his Eternity.²⁶

In God we find ultimate freedom and ultimate necessity. God, by his very nature, by his very definition, can only act in a certain way. Yet that is because it is his essence. This is not an external constraint, but rather it is the most free expression of self-fulfillment. God is most free to act according to his nature. Conway explains that God is the most free of beings, without any external constraint. The freedom God enjoys differs from the freedom open to humans. God has no option to do wrong. This does not imply that God's freedom

²⁵Conway, Principles 161.

²⁶Conway, Principles, 155.

is curtailed, but rather that God is simply incapable of acting for any but the right interests. Conway explains: "though he be the most free Agent, yet he is also above all the most necessary Agent; so that it is impossible that he should not do, whatsoever he doth in or for his Creatures." ²⁷The essence of God is goodness and he cannot bypass this essential nature. The world, Conway explains, was created out of this goodness.

Because all earthly beings were created out of infinite possibility, there is an infinity of creatures which have been created. Conway states: "For seeing God is infinitely powerful, there can be no Number of Creatures so great, that he cannot always make more." ²⁸ We cannot limit the number of creatures with our notion of number, for that would be placing a limit on God's ability. Thus, according to Conway, all creatures can be divided infinitely. Conway's notion of God and creation establishes his presence in any number of beings, all existing in any number of possible times, places, or ways, and are which are specifically divided by God in such a way as to be useful in the world. Conway explains that it is by this understanding that we come to see the connectedness of all creatures. This is an important aspect of Conway's thought. It presents the infinite potential in all created things, and presents an objection to the concept of matter as dead and finite. It is this infinite divisibility that generates motion. No creature is divided into its least part because, Conway explains: "then all Motion and Operation in Creatures would cease; (for it is the Nature of all Motion to wear and divide a thing into subtiler parts)"²⁹

²⁷Conway, Principles, 158.

²⁸Conway, Principles, 158.

²⁹Conway, Principles, 163.

Conway has thus established the basic principle that God as pure Spirit is at the centre of all motion, which is the essence of all earthly creatures. By defining the nature of God and God's relation to his creations, Conway has established the basis for her theory of the interaction between spirit and matter, and all movement as the outcome of this relationship. In Chapter 6, Conway begins to examine the nature of creatures; of body, soul, and the nature of thought. All creatures, she reiterates, are changeable; only God is immutable. The essential natures of things do not change, but certain properties or characteristics of objects do. To what extent can this change take place? Conway explains that here are three types of essence, which are distinct, and the essence defines the being; God, Christ, and Creatures. Of these types of essence, only that of creatures are changeable. The mutability of creatures applies to all without exception. If they were not mutable they would be like God, and that is impossible. The essence of creatures cannot change, only their manner of existence. God's creatures may achieve a higher or lower level of perfection. Conway explains; "daily experience teaches us that the *Species* of divers things are changed, one into another, as Earth into Water, and Water into Air...and so also Stones are changed into Metals, and one metal into another..."³⁰ Conway explains that creatures are capable of transmuting from one thing to another, and cites several instances, as above, of such changes in nature to prove the verity of her point.

Conway presents an evolutionary theory of mutation and change to show that the created beings are not really so distinct from one another as we may believe, and that there is rational and empirical justification for the potential of transformation of created being from one level of being to another. God has

³⁰Conway, Principles, 182.

created every being with essential goodness, and has imbued in all creatures the potential for greater goodness. The element of change is key to Conway's cosmology, for the spiritual element of all creatures is what drives them to change, in their desire for ever greater spirituality. It can be seen from this argument that Conway is basing her concept of motion on the prior metaphysical belief in the infinite perfectibility of inferior beings, who see in God the supreme goodness and spirit. Conway writes:

And seeing such is the Nature of every Creature, that it is always in Motion or Operation, which doth most certainly tend unto an higher degree of Goodness, as the Reward and Fruit of its Labour: unless the Creatures hinder that good by a voluntary Transgression, and abuse of that indifferency of Will which God placed in them in their Creation. ³¹

This theory of creation includes the concept that although God plays an integral role in the physics of Conway as the supreme creator and inspiration for change, He must also be understood as having provided free will, which allows for different levels of perfection in all of created beings. It is important to understand that this notion of transformation in creation is literal in Conway's system. It is not merely metaphorical. Conway believed that any form of created being can physically alter at some point in its stage of perfectibility to a higher level of spirituality. She argues: "And in the Creation of this World, did not the Waters at the Command of God produce birds and Fishes? And did not the Earth also at the same Command bring forth Beasts and Creeping Things; which for that Cause were real and proper Parts of the Earth and Waters?"³²

³¹Conway, Principles 180.

³²Conway, Principles 183.

It is apparent from this that although soul and body work together as one substance, there is a desire in creatures for greater soul to body ratios. As a creature becomes driven by the soul more than the body, the closer to the ideal of God's spiritual perfection it comes. Conway explains: "how much more a Creature is a Spirit ... so much the much the nearer it approaches to God, who is the chiefest Spirit."³³ As the body changes, it has more or less degree of influence of the soul upon it. As she explains later in her text, Every creature has a body and a spirit, or soul. Without body, Conway explains, the spirit would be ephemeral and easily lost and forgotten. Without spirit, the body would have no identity. The two are inseparable and are each composed of a vast infinity of bodies or souls, respectively, compacted into one body. The spirit needs body to give it physical identity, and the body needs the spirit to give memory, or identity over time.³⁴ Thus, the two spheres work together. However, because Conway sees change in nature, she must account for an explanation of this change. Her assertion of God's perfection supplies an account of change based upon his example of pure spirit and goodness. We are ever bound to our bodies, and our spirits cannot survive without it, but it is desirable to reach the highest level of spirit we can. This infinity implies the potential for change inherent in creatures. Time is infinite, because the number of creatures and the subsequent movement of those creatures is infinite. Created bodies all have spirit, and the degree of spirit changes, but not the essential presence of it. Conway states that the more dense body becomes, the more it is of matter and less of spirit. She writes:

³³Conway, Principles 192.

³⁴Conway, Principles 189.

And indeed every Body is a Spirit, and nothing else, neither differs anything from a Spirit, but in that it is more dark; therefore by how much the thicker and grosser it is become, so much more remote is it from the degree of Spirit, so that this distinction is only modal and gradual, not essential or substantial.³⁵

Conway, in arguing that matter and spirit are inherent in the make-up of every created being in a matter of degrees, is effectively denying any irreducible dualism of these two spheres. The two spheres are not separate as in Cartesian dualism, but are inextricably connected to such a degree that they cannot work alone. Thus, for Conway, all created beings must by definition have a certain ratio of spirit and matter working in unison for them to exist in the world. She is asserting that the various created beings in the universe, animal and non-animal, are all of one type, differentiated only by degrees from each other. Peter Lopton, in the introduction to his edition of her work, writes: "She favours the spiritual, of course, but her ontological telescope has two ends, and one can as well see her universe as one where thought is, certainly real and active, but on a continuum of with the central states of non-living things, including machines."³⁶

Conway seeks, through her various arguments, to demonstrate that within every body lies a spirit. It is this spirit which provides all the experience of passion and understanding. The more a body has of this spirit, the more closely it approaches the purity and goodness of God, and can become so *ad infinitum*.. She explains: "every Body is a certain Spirit or Life in its own Nature, and that the same is a certain intelligent Principle, having Knowledge,

³⁵Conway, Principles 190.

³⁶Peter Lopton, introduction, Principles 55.

Sense, Love, Desire, Joy, and Grief ... and by consequence hath Activity and Motion, *per se.*"³⁷

Conway explains that no creature can become infinitely corporeal, in order to eliminate any suggestion that matter could degrade to the point of being without spirit entirely. Every object has some spirit. All creatures, she explains, come from God's goodness. No dead thing, which can, by definition, have no knowledge or passion, could be produced from God, for God does not create dead matter. Because dead matter cannot be of God it is, Conway concludes, a mere fiction. She writes: "I demand, in what dead matter is like unto God? If they say again in Naked entity, I answer, There is none such in God or his creatures: And so it is a mere *non ens*, or nothing."³⁸ Conway explains that no matter how great a degree of corporeality a being exhibits, the spirit will always find a home in the body. Conway asserts that no matter how thick the body, there is a softer, thinner part of it that may not be immediately visible. Thus, in harder bodies, which are more corporeal, the spirit is not as dispersed as in the softer, less corporeal bodies. Conway sees an example of this in nature which she feels will easily prove her position. Conway writes:

we may observe this departure of the subtler and stronger Spirits, out of the harder and grosser parts of the Body, into the more soft and tenuious (sic), in a certain Spirituous Liquor, which is congealed with great cold, where the stronger Spirits...do gather themselves into the middle Part of the Body, which is always subtile and thin.³⁹

³⁷Conway, Principles 191.

³⁸Conway, Principles 197.

³⁹Conway, Principles 194.

Conway sees an example of the relation between the spirit and body, as well, in the love a spirit can have for a body. Conway attempts to prove an affinity between body and soul, by exhibiting that the soul unites with the body so willingly. The nature of this affinity appears to involve a likeness between them. If the soul remains in the body, it must have a great affinity towards the body, upon which it relies. That the soul and body are similar substances is shown by this affinity and the easy relationship they share. Conway writes that one of her reasons for asserting the inextricable relation of soul and body is: "drawn from the great Love and Desire that the Spirits or Souls have towards Bodies, and especially towards those with which they are united, and in which they have their Habitation."⁴⁰

Conway looks at the attributes assigned to each, which are said to prove their distinctness of their nature. The body is impenetrable while the spirit is penetrable. The corporeal is divisible, while the spiritual is indivisible. Many, she says, would now argue that due to these seemingly contradictory attributes, body and spirit are entirely distinct. Conway however, states that there is no need for them to be seen as contradictory. They may, in fact, be attributes of degrees, rather than absolutes; a body may be more or less impenetrable, a soul may be more or less penetrable. Conway explains that those who would deny any relation between body and spirit would argue that there is no way around the fact that these two spheres of existence, body and spirit, possess diametrically opposed attributes. She writes: "yea, nothing in the whole World can be conceived so contrary to any Thing, as Body and Spirit, in the opinion of these Men."⁴¹ However, she goes on to argue that it is only because these philosophers

⁴⁰Conway, Principles 198.

⁴¹Conway, Principles 201.

have structured the world in terms of the polar opposites, soul and body, that they do not see any other possibility but that all evidence in nature shows the truth of their position. She directly questions Descartes' position here by focusing on the opposing theorists' attribution of extension, and therefore impenetrability, to matter exclusively and entirely. Conway is here attacking the dichotomous structure by which Cartesian dualism has recreated the nature of the world, as well as the other mechanisms which assert that matter has no spirit in it. She writes:

Why may not Body be more or less impenetrable, and Spirit more or less penetrable, as it may indeed doth happen in all other attributes? For *ex. gr.* some Body may be more or less heavy or light, condensed or rarefied, solid or liquid, hot or cold; then why may it not also be more or less penetrable or impenetrable?⁴²

Conway is criticizing the dichotomous viewpoint of the Cartesian dualistic system, as well as the conclusions reached by Hobbesian materialism, which also assumes that spirit and matter are so different that spirit can be eliminated from the world picture, while leaving the material intact. Conway, here, is pointing to the limited vision of nature inherent in the foundational assumption of these various mechanisms. By looking at the concepts of spirit and matter from a different perspective, she argues, they take on a new significance. Conway proposes that the differences may not be so great if we reject strictly dichotomous thinking about body and spirit and we rethink our definitions of extension. First, Conway suggests that extension may not strictly be a property of matter, but may be a property of spirit as well. Conway explains that although the mechanists insist that impenetrability is an essential aspect of extension, there

⁴²Conway, Principles 202.

is no reason to think that impenetrability is not, like many other attributes, a matter of degree.

Conway goes on to explain that although a body may not be penetrable by another body of equal density, it may be penetrated by a body that is less dense than itself. Conway offers hot iron as an example. She explains that when iron is red hot, the fire has penetrated it and has made it soft, and can even cause it to, as she says, melt. ⁴³Conway insists that unless it can be proven that body and spirit are distinct substances, it is not clear that one is more penetrable than the other. And she asserts that the mechanists have not sufficiently proven the absolute distinction between spirit and body. ⁴⁴ She accuses these theorists of building their scientific systems upon preconceptions about nature, rather than upon proven facts. Conway concludes that there is no significant difference between body and spirit, if one rejects the view that matter is dead. Conway's theory explicitly rejects this latter view by asserting the inextricable link between the two created substances. Conway writes: "Neither is there any difference between Body and Spirit ... but this that a Body is the grosser part of a thing, and Spirit the subtler, whence also Spirit hath it's (sic) name from the Air." ⁴⁵

Anne Conway also uses the fact that the soul feels sorrowful when the body feels pain, as evidence to prove that the soul and body are united. If they were distinct the soul could simply ignore the pain the body endures. For that matter, Conway argues, if the body is dead and lifeless, how is it that it can have pain? She writes; "If it be said, the Body only feels the pain, but not the soul; this is contrary to their own Principles, because they affirm that the body hath no

⁴³Conway, Principles 203.

⁴⁴Conway, Principles 204.

⁴⁵Conway, Principles 205.

life or sense." ⁴⁶Yet, we do know pain, and therefore the soul must experience the damage done to the body in some significant way, for how else can the knowledge of pain be explained. Conway writes:

If it be granted, that the soul is of one Nature and Substance with the Body, although it is many degrees more excellent in regard of Life and Spirituality...then all the aforesaid difficulties will vanish, and it will be easily conceived, how the Soul moves the Body, and suffers by it or with it. ⁴⁷

Descartes offers a theory of pain which attempts to reconcile exactly the problem Conway sees with his dualistic framework. However, Conway asserts that the problem is simply eradicated if it is understood that the feeling of pain is a direct result of the intimate union of soul and body. If one denies this, it is not possible, according to Conway, to sufficiently explain the phenomenon of pain.

Conway offers another argument for the fusion of the body and spirit. This argument, she explains, is drawn from what can be observed in earth, water, and stones, among other things. Using empirical evidence, Conway points to the fact that animals are produced from water: "so that a Pool fill'd with Water may produce Fishes, though none were ever put there to increase or breed."⁴⁸ Conway asserts that these animals are alive, and that their spirits must have been in the water already. Conway asks, if it can still be asserted that the spirit and body are separate, then are the spirits, such as those of fish, contained in the body, in this case the water, actually or potentially. If the answer is actually, then Conway asks how all these spirits could exist as essentially distinct, unless the

⁴⁶Conway, Principles 214.

⁴⁷Conway, Principles 214.

⁴⁸Conway, Principles 216.

spirits are an intrinsic presence. A body, she argues must have only one particular spirit attached to it, or else it becomes difficult to explain how that body does not produce many and varied different bodies, rather than one just like its own, which is the case. She writes: "for we see that Nature keeps her order in all her Operations; whence one Animal is formed of another, and one *Species* proceeds from another."⁴⁹

If it is argued that they are present potentially, then Conway argues, in this case body and spirit must be the same thing; that is, one can be changed into the other, lifeless matter to spirited matter. Conway compares this to the instance of wood turning to fire, or water to air. Why, Conway asks, if subtler forms can separate from grosser forms, as in the case of air from water, does not spirit separate entirely from body? Spirits do remain in hard and dense bodies, because they are, in fact, nothing but subtle and thin bodies themselves.⁵⁰ Thus, Conway argues from the instance of transmutation of substances, and from empirical observation that while spirit is perhaps mostly dormant in some substances, it does apparently transfer in evolution from one stage of existence to another. If the spirit could simply leave a dense body for a lighter one it would, but it apparently does not, as the instance of water producing fish shows.

Conway now turns to specific theories and begins to look at the Cartesian separation of dead matter and lively spirit. She writes that this is the natural conclusion for anyone who insists on asserting the absolute separation of body and spirit, and that this is quite contrary to: "the grounds of this our Philosophy."⁵¹ Conway insists that hers is a counter-theory to

⁴⁹Conway, Principles 216.

⁵⁰Conway, Principles 217.

⁵¹Conway, Principles 222.

Cartesianism, rather than an edifice built upon the Cartesian foundation. Conway acknowledges that Cartesianism has become a standard point of reference for scientific cosmologies, and is quick to assert that her system is entirely different and contrary.. She writes of her theory in relation to that of Descartes:

Wherefore, it is so far from being a *Cartesian Principle* under a new mask, that it may be truly said it is *Anti-Cartesian* , in regard of their fundamental principles; although it cannot be denied that *Cartes* taught many excellent and ingenious Things concerning the Mechanical part of Natural Operations.⁵²

She explains that although Descartes has made important discoveries concerning mechanical motion in creatures, he does not acknowledge that there is anything but mechanical motion. As she has shown already, this theory is open to contradictions concerning the nature of spirit, and Conway criticizes his impoverished notion of living creation. She writes:

But yet in Nature, and her Operations, they are far more than merely Mechanical; and the same is not a mere Organical Body, like a Clock, wherein there is not a vital Principle of Motion; but a living Body, having Life and Sense, which Body is far more sublime than a mere Mechanism, or Mechanical Motion. ⁵³

Conway also looks at Hobbes, and asserts that he is more extremely opposed to her position than was Descartes. She explains that while Descartes maintained the truth of the spiritual realm in a dualistic manner, Hobbes denies its necessity altogether in theories of the material world. Conway begins by explaining that although her method and conclusions may at first seem

⁵²Conway, Principles 222.

⁵³Conway, Principles 222.

to be Hobbesian, in their assertion that all creatures are originally one substance, in fact, they are the opposite. She asserts:

I grant that all Creatures are originally one Substance, from the lowest to the highest, and consequently convertible or changeable, from one of their natures into another; and although *Hobbs* saith the same, yet that is not prejudice to the Truth of it.⁵⁴

She explains that although Hobbes believed all creatures to be one substance his view of substance was purely material, with none of the spiritual aspects of Conway's ideas. Hobbes, Conway explains, also believed in the mutability of substances, but explained this purely mechanistically, denying that concept of vital spirit essential to her theory. Conway explains first that the Hobbesians deny transmutation of one thing into another. They assert that when a created substance is annihilated, a completely new one is produced independently. They insist that a living animal is produced without life or soul, and that these are derived later from an immaterial and foreign source. Matter has no life in itself, according to the Hobbesians, and therefore cannot possibly bring forth life.⁵⁵ However, Conway explains they are unable to account for the source of this soul, if it is not one with the body, and why particular creatures are given particular souls. She believes they do not answer their opposition sufficiently, but merely assert their theories based on prejudiced assumptions. "But if it be demanded of them, from whence this spirit is sent, and who sendeth it; Also why a Spirit of this *Species* is sent, and not of another; here they are at a stand, and yield themselves to their Adversaries."⁵⁶

⁵⁴Conway, Principles 223.

⁵⁵Conway, Principles 223.

⁵⁶Conway, Principles 224.

Conway asserts that it is the notion of dead matter that has led to the belief that it has no intrinsic force for motion, concepts that have traditionally been imputed to spirit. However, all matter has intrinsic motion according to Conway, for as she has explained, all created substances are always in a state of flux, which is their nature as created substances. Conway does not believe that matter is self-moving. It requires the vital force provided by spirit. Conway formulates the distinction between material and virtual extension. Mechanical extension is possessed by matter in absence of any spiritual consideration. But, she writes: "every Motion, proceeding from the proper Life and Will of the Creature, is vital; and this I call a Motion of Life, which is not plainly Local and Mechanical as the other, but hath in it a Life, and Vital Virtue, and this is the Virtual Extension of a Creature."⁵⁷

The Cartesian mechanistic philosophers, Conway explains, have made a complete split between the two; spirit as life-force and matter as dead and inert. The Hobbesian mechanism eliminates spirit from discussion of matter altogether. In accordance with her system, resistance makes motion, and this resistance arises between the penetrable and impenetrable natures of body and soul. If one were completely independent of the other, this resistance would not occur. Thus, Conway argues that if motion is considered to denote life in bodies, then how can those who believe this explain the way in which spirit causes this movement if the two substances are completely separate? There must be some impenetrability in spirit, if there is to be the resistance necessary to cause motion, as is evident in the movement caused by the collision of two bodies. She explains: "But if there were no impenetrability, as in the case of Body and Spirit, then there could be no resistance, and by consequence the Spirit could make no motion in

⁵⁷Conway, Principles 230.

the Body."⁵⁸ Conway offers by way of example the movement of a ship due to the wind in its sails. Conway explains that the fewer the holes in the sails, the faster the ship will go, and obviously, if the sail were made of netting, the wind would not go anywhere.⁵⁹ Conway believes that the various mechanistic cosmologies have no way, in their physics, of explaining how movement occurs, or change takes place. Conway uses the concept of local motion, but adds what she considers the essential explanatory feature that the mechanistic theories lack - vital force. Conway is not dismissing mechanical physics, but attempting to improve upon it, so that it will provide a complete picture of the nature of the world. Mechanical physics is combined, in Conway's system with the concept of vital spirit.

In this chapter, I have summarized the work of Conway, and have presented the method and conclusions of her vitalist standpoint, concerning the nature of matter and its relation to spirit. Arguments she directed at the various mechanistic thinkers are sophisticated and insightful. Conway provides a reasoned, contemporary criticism of the incomplete concept of matter expounded by the mechanistic physics of her period. The next chapter will examine Conway's further arguments against the Cartesian mechanistic system, and will examine her theoretical criticisms in such a way as to show their relevance to post-modern critiques of enlightenment epistemological paradigms. I will look in detail at the mechanical theory of Descartes, as an exemplary case of the kind of thinking Conway considered so threatening to philosophy and science. I intend to show that the importance of Conway's thought lies not in her specifically scientific conclusions, which it is not the intent of this thesis to evaluate, but

⁵⁸Conway, Principles 213.

⁵⁹Conway, Principles 213.

rather in the intent behind her scientific arguments. Conway's vitalistic assertions are not argued, in this thesis, to be solutions to current post modern critics of scientific method. Conway sought to expose the weakness of the mechanists, and to show that their view of the world would infect and distort any of their experiments. It is this firm commitment to exposing the weakness of the mechanist position that makes Conway so interesting, for the present-day reader. She successfully points out inadequacies of the mechanistic viewpoint.

Chapter 2

Descartes' Mechanistic Commitment and Conway's Vitalist Response

Seventeenth century mechanistic theory sought to establish a new scientific perspective based on the clear rationality of objective thinking, free of the beliefs and assumptions of subjectivism. It sought to disassociate the material world from values and contexts with which humans tend to view the living world. Mechanistic theories assert that the world is constructed much like a machine, with atomized parts which act in predictable ways according to universal laws of physics. The machine metaphor relies upon the prior assumption that the world is constituted of inanimate matter moved by external forces. Descartes' definition of the material world, in particular, consisted only of extension. He sought to eliminate any occult, spiritual qualities from matter, for he believed that nature was not so complex that human intellect could not rationally understand its nature and laws.

Conway offered a theory of the world, which added to the new scientific vision a spiritual cosmology which would place the findings of the empirical scientists in a larger context, and which would lessen the gap the scientists had established between themselves and their objects of study. In her work, she presents a system which she hopes will counter the mechanistic viewpoint, and directly attacks those of Descartes and Hobbes as incomplete. Conway's criticism points to a fundamental flaw in the scientific standpoint. She emphasizes the danger of building on limited and narrow beliefs about the world, and asserts that science, in seeking only certain truths, has rejected

essential aspects of lived experience. Conway understands the implications of the mechanistic perspective, and emphasizes that by asserting that matter is devoid of spirit, and therefore, in itself, dead, mechanists not only distance themselves from their objects of study, they limit their understanding, according to Conway, of the complex nature of the world.

In the final section of her work, Conway argues that the "so-called" philosophers who have maintained a strongly dualist stance have been the cause of many grave errors and inconsistencies, not only in philosophy but in religious matters as well.⁶⁰ A grave philosophical misunderstanding lies at the heart of what she considered the serious misdirection of philosophy and religion, and she traces this crisis back, in her work, to the theories specifically of Descartes, Hobbes, and Spinoza. In her criticism, Conway understands that these thinkers are the influential new voices of mechanistic science. "That all this philosophy is no other than that of *des Cartes* and *Hobbs* under a new Mask."⁶¹ Conway does not reject the new science of the Seventeenth century, with its reliance upon empirical data, and deduction. However, she believes that it is wrong in its basic assumptions about the nature of its object of study. She argues that the earth need not be reduced to dead matter in order that it may be understood with precision. She offers a scientific system which coexists with a vitalist position. By examining the mechanism of Descartes as a theoretical commitment, this chapter will show that although for the contemporary reader Conway's solution of spiritual vitalism may sound unrealistic in the secular world of the Twentieth century, her employment of vitalism as a critique of scientific beliefs serves to

⁶⁰ Anne Conway, The Principles of the Most Ancient and Modern Philosophy, ed. Peter Loptson (Boston: Martinus Nijhoff Publishers, 1982) 221.

⁶¹ Conway, Principles 221.

expose the underlying assumptions of a supposedly purely objective scientific method.

Mechanism and vitalism are both propounded as scientific theories, by those who subscribe to them. Conway and Descartes both considered the ideas they were presenting as scientifically testable accounts of natural phenomena. However, they were both theorists who based their physics on metaphysical assumptions concerning the structure of the world. As Hilde Hein explains, in her article "Mechanism and Vitalism as Meta-Theoretical Commitments", : "... theories are scientific if and only if they are testable in some sense or another..."⁶² Theories on the meta-level are not required to be testable; rather, they provide the guidelines by which scientific theories will be developed. Mechanism and vitalism perform just this function. They are theories about the theories of nature. They are presuppositions about the world which provide the framework for further investigation. "A meta-theory is not a way of ordering events which can be justified by an appeal to the events themselves."⁶³ These theories are systematically formulated not by observation of events, but independently of experience. So it is for the theories of Descartes and Conway. Both thinkers are presenting theories of nature which are based on purely metaphysical grounds. Each thinker has begun with a prior assumption about the nature of the world and built what they consider a scientific theory around it. In the previous chapter, I described Conway's cosmology. I will now examine Descartes' theories of matter and motion, and show how he is committed to a meta-theoretical position - mechanism. It is at the meta-level that Conway's

⁶²Hilde Hein, "Mechanism and Vitalism as Meta-Theoretical Commitments," The Philosophical Forum Fall (1968): 186.

⁶³Hein, "Mechanism and Vitalism" 186.

quarrel with Descartes is most effective, for she is attacking the presuppositions upon which his theories concerning the world are grounded, rather than attempting to disprove specifics in his writings.

Descartes writes that matter consists "simply in its being something which is extended in length, breadth, and depth."⁶⁴ He makes the distinction between this extended type of substance and thinking substance. Descartes writes, in the *Sixth Meditation*, that: "on the one hand I have a clear and distinct idea of myself, in so far as I am simply a thinking non-extended thing; and on the other hand I have a distinct idea of body, in so far as this is simply an extended, non-thinking thing."⁶⁵ He goes on to say in his *Fourth Set of Replies*: "the concept of body includes nothing at all which belongs to the mind, and the concept of mind includes nothing at all which belongs to the body."⁶⁶ In order to impress the point that matter is pure extension, Descartes eliminates from it all other qualities, and concludes that he cannot conceive of a piece of matter that has no extension. Descartes writes in the *Principles* :

I considered in general all the clear and distinct notions which our understanding can contain with regard to material things. And I found no others except for the notions we have of shapes, sizes, and motions and the rules in accordance with which these three things can be modified by each other - rules

⁶⁴Rene Descartes, "Principles of Philosophy," The Philosophical Writings of Descartes, vol. 1, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge UP, 1985) 224.

⁶⁵Rene Descartes, "Meditations on First Philosophy," The Philosophical Writings of Descartes, vol. 2, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge UP, 1985) 54.

⁶⁶Rene Descartes, "Objections and Replies" The Philosophical Writings of Descartes, vol. 2, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch (Cambridge: Cambridge UP 1985) 158.

which are the principles of geometry and mechanics.⁶⁷

There is, in other words, no other aspect of matter than the purely physical for Descartes. This is a very important metaphysical conclusion for Cartesian physics, for it acts throughout his subsequent writings on nature as the methodological assumption upon which scientific theories should be constructed. Desmond M. Clarke writes, in his work, *Descartes' Philosophy of Science*, that Descartes' assumption concerning matter: "is a summary statement, not only of the exclusion of scholastic forms from science, but also of the commitment to providing mechanical explanations of many of the other qualities which material bodies can be known to have, such as color, magnetism, inertia, etc..."⁶⁸ Descartes' assertion that matter is pure extension signals a commitment not to a theory of nature, but to a prior assumption upon which his theories of nature will be built. Conway appreciated the difficulty Descartes experienced in establishing a mind/body dualism and sought to repair this split by asserting a monistic theory of mind and body. Because Descartes accounts for spirit, however distinct from matter, his mechanism is not as extreme as Hobbes'. Descartes rests his physics ultimately on God's omnipotence as creator and sustainer of the world. This chapter focuses primarily on Descartes account specifically of matter, for it is at this level that Conway feels Descartes falls into erroneous mechanistic assumptions concerning the world.

Descartes believed that matter is pure extension and entirely distinct from spirit, and in asserting this distinction further defined matter as infinitely divisible and soul as indivisible. In the *Sixth Meditation*, he explains:

⁶⁷Descartes, *Principles* 288.

⁶⁸Desmond M. Clarke, *Descartes' Philosophy of Science* (Manchester: Manchester UP 1982) 96.

"The first observation I make at this point is that there is a great difference between the mind and the body, inasmuch as the body is by its very nature always divisible, while the mind is utterly indivisible."⁶⁹ The mind is understood to be single and complete, while matter is seen as composite and, as we shall see, dependent on the motions of its many parts for identity. All extension is the same for Descartes, and thus regardless of what the object is, it follows the same mechanical laws as all other extended substances. He explains: "we are now considering extension as something general, which is thought of as being the same, whether it is the extension of a stone or of wood"⁷⁰ Because all there is in body is extension, the only way bodies can be individuated for Descartes, is through motion. Descartes explains of matter that: "All the properties which we clearly perceive in it are reducible to its divisibility and consequent mobility in respect to its parts, and its resulting capacity to be affected in all ways which we perceive as being derivable from the movement of the parts."⁷¹ Thus, built upon Descartes' initial metaphysical assumption concerning matter is an entire theory of differentiation of matter and motion.

Motion is naturally, therefore, an important concept for Cartesian physics. It is in fact the single factor responsible for all physical principles in nature. He writes that: "nature is the principle of motion and rest. And what [the philosophers] meant by nature in this context is what causes all corporeal things to take on the characteristics of which we are aware in all experience."⁷² Descartes is careful to note that his concept of nature is nothing more than

⁶⁹Descartes, Meditations 59.

⁷⁰Descartes, Principles 228.

⁷¹Descartes, Principles 232.

⁷²Descartes, Principles 232.

material. In *The World* he writes that his notion of nature is not taken from ancient folklore, but is concretely defined. He writes:

Note in the first place, that by 'nature' I do not here mean some goddess or any other sort of imaginary power. Rather, I am using this word to signify matter itself, in so far as I am considering it taken together with all the qualities I have attributed to it, and under the condition that God continues to preserve it in the same way that he created it.⁷³

In this passage of *The World* Descartes emphasizes his particular justification for his mechanistic laws of the world. They result from God's creation of the world and His desire for its continued existence in a state of constant and efficient organization. The world, according to Descartes, consists both of divine power and the mechanical movements of matter. Just as humans have free will, matter has its own particular laws. Descartes explains that God has established the basic rules of motion, just as he set down the basic rules for human conduct. However, just as our wills can have different inclinations from what is right, so matter can have different motions. "God alone is the author of all the motions in the world in so far as they exist and in so far as they are rectilinear; but it is the various dispositions of matter which render them irregular and curved."⁷⁴ In Descartes' universe there is a unity between divine power and mechanical laws. It is through an appeal to God as divine creator of the world that Descartes justifies his understanding of the laws of nature. In Descartes' system, God created the world which embodies eternal truths, and these truths are comprehensible to human reason. God initiated motion at creation, and sustains it constantly. Thus,

⁷³Rene Descartes, "The World," *The Philosophical Writings of Descartes Vol. I*, trans. John Cottingham, Robert Stoothoff and Dugald Murdoch (Cambridge: Cambridge University Press, 1985) 92.

⁷⁴Descartes, *World* 97.

once humans understand the laws by which the world abides, we can be certain that these are predictable and constant laws. He writes:

God imparted various motions to the parts of matter when he first created them, and now preserves all this matter in the same way, and by the same process by which he originally created it ... From God's immutability we can also know certain rules or laws of nature, which are the secondary and particular causes of the various motions we see in particular bodies.⁷⁵

Descartes asserts that the rules of nature follow from the fact that God is immutable and constant. Thus if matter is constantly transferring or retaining motion, it can be understood that God causes it to continue doing so. God is the basis for the conservation of the laws of nature. As M. Gueroult explains, God is indispensable to Descartes' physics. God's creative power is the immediate source of its forces, and his immutability provides the foundation upon which the invariants governing forces rest.⁷⁶

Descartes can now present the laws of motion in the belief that he has thoroughly grounded them in an incontrovertible source. The laws of nature present the key to understanding the mechanical movements of matter, and thereby the prime functioning principle in matter. Descartes focuses on a particular concept of motion, as he explains: "By 'motion', I mean local motion; for my thought encompasses no other kind, and hence I do not think that any other kind should be imagined to exist in nature."⁷⁷ Descartes, in the *Discourse*,

⁷⁵Descartes, Principles 240.

⁷⁶Martin Gueroult, "The Metaphysics and Physics of Force in Descartes," Descartes: Philosophy, Mathematics and Physics, ed. Stephen Gaukroger (New Jersey: Barnes and Noble, 1980) 196.

⁷⁷Descartes. Principles 233.

refers to the laws of mechanics as: "identical with the laws of nature."⁷⁸ It is through an adherence to mechanics that humans may come to an understanding of these laws.

Motion for Descartes is not mere change of place, but of transference. Descartes explains that his definition of motion is different from the more colloquial sense of the term - which is that of a body traveling from one place to another. Descartes' understanding of motion is, he explains, in accordance with the truth about matter. Descartes' definition is as follows: "motion is the transfer of one piece of matter, or one body, from the vicinity of the other bodies which are in immediate contact with it, and which are regarded as being at rest, to the vicinity of other bodies."⁷⁹ Descartes explains that he uses the word transfer instead of force or action to indicate that motion is in the moving body, not in the body which causes the movement. Thus, it is emphasized that motion is a mode of a thing not a thing in itself. Descartes writes: "... the motion of something that moves is, like the lack of motion in a thing which is at rest, a mere mode of that thing and not itself a subsistent thing..."⁸⁰ The reason for this distinction between motion as a transference and motion as an action, is twofold for Descartes. For one, it is important to understand that rest should not be seen as simply the lack of movement. Rest is rather a mode that requires as much action as motion. For, according to Descartes, to put a moving body to rest takes as much effort as putting a body at rest into motion. Descartes writes:

⁷⁸Descartes, Discourse 138.

⁷⁹Descartes, Principles 233.

⁸⁰Descartes, Principles 233.

We are dealing here not with the action which is understood to exist in the body which produces or arrests the motion, but simply with the transfer of a body, and with the absence of a transfer, i.e. rest. So it is clear that this transfer cannot exist outside the body which is in motion, and that when there is a transfer of motion, the body is in a different state from when there is no transfer, i.e. when it is at rest. This motion and rest are nothing else but two different modes of a body.⁸¹

This passage explains also the second difference between Descartes' definition and the vulgar definition of motion. The vulgar definition involves movement from one place to another. However, this involves a relativistic notion of place, relative to an arbitrary point of reference. Thus, as Daniel Garber explains in his article, "Descartes' Physics", the vulgar definition of motion as the change of place provides no real evidence that a body is in motion because the point of reference is too arbitrary.⁸² Descartes overcomes this difficulty by asserting that the transference occurs "from the vicinity of contiguous bodies ... given that only one set of bodies can be contiguous with the same moving body at any one time."⁸³ Garber explains that motion is the essential aspect of Descartes' physics, for it is motion which, as quoted above, is the key single differentiating factor of matter. Garber explains that if this is the case, then a purely arbitrary distinction between rest and motion, as in the vulgar definition, would mean motion could not, for Descartes, fulfill the function he gives to it. As Garber writes: "... for Descartes, if there is no non arbitrary distinction between motion and rest, then motion isn't really real, and if it isn't really real, then it

⁸¹Descartes, Principles 234.

⁸²Daniel Garber, "Descartes' Physics," The Cambridge Companion to Descartes, ed. John Cottingham (Cambridge: Cambridge UP, 1992) 306.

⁸³Descartes, Principles 234.

cannot occupy the place he sets for it in his physics.”⁸⁴ On Descartes’ definition, a body has only one immediately contiguous neighbour, and therefore only one motion proper to it. Descartes writes: “Each body has only one proper motion, since it is understood to be moving away from only one set of bodies, which are contiguous with it and at rest ... So it is enough to confine our attention to that single motion which is the proper motion of each body.”⁸⁵ Descartes’ primary concern is that the distinction between motion and rest be absolutely clear. As Garber explains,

If motion is understood as the mutual separation of a body and its neighborhood, then it is impossible for a body to be both in motion and at rest at the same time insofar as it is impossible for that body to be in transference and not in transference with respect to the same contiguous neighborhood.⁸⁶

For Descartes, explanation of physical phenomena meant first specifying its efficient causes and secondly describing the mechanism by which the phenomenon results from them.⁸⁷ Thus, Descartes focuses, for an explanation of motion, on the interactions of the particles of matter. He is explicitly denying any spiritual explanation for motion. The causes of motion are found in the interaction of the particles of matter, admitting of no spiritualistic factors like vital motion. Descartes thus provides a definition of motion which is purely local, and based on a firm distinction between rest and motion - in order

⁸⁴Garber, “Descartes’ Physics” 307.

⁸⁵Descartes, Principles 236.

⁸⁶Garber, “Descartes’ Physics” 310.

⁸⁷Desmond M. Clarke, Descartes’ Philosophy of Science (Manchester: Manchester University Press, 1982) 109.

that the notion of rest and motion as modes of being be understood. Motion is not, for Descartes, a thing in itself. Unlike the vitalist concept of motion which involves an inner active life force, motion for Descartes has no such ethereal existence. It is merely a mechanically explicable mode of being, as opposed to the mode of rest, and can be understood by the particle-based nature of matter, and the interaction of these particles.

A meta-theory, like mechanism, establishes a framework in which to approach phenomena. As previously stated, Descartes is working on a meta-theoretical level. He is not providing a theory of nature *per se*, but rather a way of interpreting nature prior to any formal scientific investigations. His theoretical assumptions are not testable. In looking for the material and efficient causes of natural phenomena, Descartes argues in a reductionist way that the properties of matter can be understood solely in terms of the size, shape, and motions of the particles of which it is composed. Thus, any examination of natural phenomena in Descartes system starts from a basic mechanistic assumption concerning the approach to nature. Descartes is laying out a system of investigation which provides the foundation for empirical research into the nature of the world. Desmond M. Clarke, in his article, "Descartes' philosophy of science and the scientific revolution," explains: "... Cartesian scientific explanations must be hypothetical, and one of the reasons for this admission was the unobservability of the particles of matter in terms of which the explanation of natural phenomena must be constructed."⁸⁸ Clarke goes on to explain that Descartes assumed that we must construct a metaphysics first in scientific method, and then consider

⁸⁸Desmond M. Clarke, "Descartes philosophy of science and the scientific revolution," The Cambridge Companion to Descartes ed. John Cottingham (Cambridge: Cambridge UP, 1992) 266.

physical theories consistent with this metaphysical foundation.⁸⁹ Descartes' metaphysical foundation is the acceptance of the mechanical explanation of nature. It would seem that the separation of mind from body is reflected in this meta-theoretical commitment, for no mechanistic hypothesis could hold if it were not first established that all matter is pure extension, and that things spiritual are of an entirely different dimension. As Hilde Hein explains the crucial difference between mechanists and vitalists is: "not based on their views regarding the existence of biological laws, but upon their conviction concerning the *necessity* of their being such laws ... they disagree on the sufficiency or insufficiency of physico-chemical laws..."⁹⁰ The basis of the disagreement rests not on the validity of scientific findings, but on the assumptions upon which science is based - be it mechanistic or vitalistic.

I will now examine Conway's arguments against the mechanistic viewpoint, and the commitment she makes to the vitalistic world view. Conway explains that in her system the concept of matter, or body, is defined in such a way as was, she writes: "never discovered to *Hobbs* or *Cartes*, otherwise than in a dream."⁹¹ Their definition, she calls superficial and ignorant, for they define matter as no more than extension and impenetrability. They have ignored the most important attributes of matter, according to Conway; spirit, or life, and light. Conway explains that it is these qualities which provide the capacity for feeling, sense, knowledge, love, and virtue, among others.⁹² All matter has the capacity for greater and greater amounts of spiritual enlightenment, and this

⁸⁹Clarke, "Descartes' Philosophy of Science" 272.

⁹⁰Hein, "Mechanism and Vitalism" 196.

⁹¹Conway, Principles 224.

⁹²Conway, Principles 225.

spiritual potential is this essential concept of the continuum of life missed by the mechanistic theories of Hobbes and Descartes. Conway explains that life and figure are distinct but not contrary attributes of the same substance. The figure, the shape of the body and its physical abilities, provides the perfect vehicle for the operations of life, which are performed by the spirit. For, as Conway has argued, matter cannot move itself, movement comes from spirit. "So that," Conway writes, "Life and Figure consist very well together in the one Body, or Substance, where Figure is an Instrument of Life, without which no Vital Operation can be performed."⁹³

The vital operations are distinct from local and mechanical motion, which are, she explains, the movements of body from place to place. Conway explains that vital operations cannot be performed without mechanical motion, and the relationship between the two is analogous to that between spirit and body. "So the eye cannot see, unless light enter it, which is a Motion and stirs up a Vital Action in the Eye, which is Seeing; and so in all other Vital Operations in the whole Body."⁹⁴ Hobbes errs, according to Conway, when he asserts all sense and knowledge is no more than local and mechanical motion. Conway explains that motion is an 'Intrinsecal Presence', a manner of the subject's being.⁹⁵ This motion is conveyed from body to body once it has originated from within the subject. Conway gives as an empirical example, the rings of waves resulting from a rock thrown into a pond, moving from the central point to the outermost edges

⁹³Conway, Principles 226.

⁹⁴Conway, Principles 227.

⁹⁵Conway, Principles 227.

until it can no longer be perceived: "not conveyed (sic) thither by any Body or Substance, carrying this motion with it from the stone."⁹⁶

Motion, according to Conway, is transmitted by a penetration other than that a body is able to make. It is this intrinsic presence which radiates from the subject that causes motion. Vital motion proceeds from the innermost parts of a creature, as opposed to external motion which proceeds from an external source. Vital motion proceeds from the life of the creature, and is the virtual extension of the creature which increases in power in proportion to the incorporeality of the creature. This vital action can be transmitted, Conway explains, if the correct medium presents itself. Conway offers the example of the light from the candle which can be carried through crystal, but not through wood, although wood is more porous and less dense than crystal. Crystal is the best medium for the transmission of the light. Motion therefore requires its proper medium. Thus, it is wrong to mistake the source of the motion with its medium.⁹⁷

The source of motion is twofold, and it is essential to a proper understanding of motion that one not confuse the medium of the motion with its source. Intrinsic presence asserts itself as local through the proper material medium. Local mechanical motion is motivated by intrinsic vital energy, and this energy can only be expressed through the medium of mechanical motion. Mechanical theories of motion therefore tell only half the story.

Conway's defense of vital motion suggests a weakness in the mechanical theory of motion, which refuses to account for the reasons behind action. As Conway acknowledges, the mechanists provide a good theory of

⁹⁶Conway, Principles 228.

⁹⁷Conway, Principles 228.

mechanical motion, but this does not explain why actions happen, only how. Conway's attack presents a complete cosmology in answer to the mechanistic theorists, a cosmology which fuses the two worlds of matter and spirit. Conway constructs this system carefully, ensuring that she employs the new scientific method, through the use of empirical examples, to achieve accuracy and precision. Conway thus attempts to prove that one can fuse the spiritual and scientific realms. Conway wants to show how the two realms need each other, in a similar way to the mutual need of spirit and body. It appears under Conway's system that science is incomplete without the spiritual realm, just as the spiritual explanations are too ephemeral if not backed up with scientific data. As Popkin writes: "This spiritology is not intended to oppose modern science, but rather to make it intelligible."⁹⁸

The major source of debate between the two positions is that the mechanists see matter as dead, and assert the sufficiency of physico-chemical laws alone to account for natural phenomena. The vitalist position, on the other hand, questions this basic assumption of sufficient explanation. As Hein points out: "... just as the existence of biological laws does not constitute evidence of vitalism, so the actual reduction of biological laws to physico-chemical laws ... does not constitute proof of mechanism."⁹⁹ In other words, the two positions are not empirically provable, and the debate will not be resolved by empirical proof. They each constitute a position from which scientific investigation will follow. They each represent a perspective of natural phenomena which will influence the approach and outcome of experiments. As I will show in the next chapter, this debate ties in with the contemporary debate on the myth of objectivity in science.

⁹⁸Popkin, "Spiritualistic Cosmologies" 105.

⁹⁹Hein, "Mechanism and Vitalism" 196.

Although Conway's belief in the spirituality of all matter is as impossible to prove as Descartes' belief in the strict division of spirit and matter, it is these positions that are primary in the subsequent scientific investigations of the two philosophers. The disagreement between the two positions is, as Hein writes: "a matter of modalities."¹⁰⁰ Conway, as a vitalist, considers mechanistic models such as Descartes' to be an oversimplification of natural phenomena. Descartes, in accepting the mechanist model seeks to reduce all phenomena to fit that model, and Conway sees this as a limited perspective. Hein explains that the vitalists see mechanism as rearranging nature to fit its program. Hein writes: "The difficulty is not merely that there is an unaccounted for residue that does not fit the pattern, but that the whole system of corseting nature involves a distortion of her unencumbered amplitude."¹⁰¹

Anne Conway is not questioning the value of scientific method, rather she is exposing what she sees as the problem of too narrow a field of vision. Descartes and Hobbes created new understandings of truth which were immediately accepted by many as the most progressively asserting the ultimate power of human reason to deduce the nature and laws of the world. Both thinkers sought to extricate science from spirit, to reject a spiritual cosmology for a materialistic - mechanistic one, which left matter and spirit in opposing realms in the case of Descartes, and matter the sole realm in Hobbes. The organic view of nature was replaced by the view of nature as machine, and the truths of nature were to be found by purely mathematical principles. Carolyn Merchant, a feminist proponent of the vitalist position, writes:

¹⁰⁰Hein, "Mechanism and Vitalism" 196.

¹⁰¹Hein, "Mechanism and Vitalism" 197.

The rise of mechanism laid the foundation for a new synthesis of the cosmos, society, and the human being, construed as ordered systems of mechanical parts subject to governance by law and to predictability through deductive reasoning.¹⁰²

Mechanism sought to make the world orderly and predictable, thus rejecting the spiritual world, which could not, it was believed, be subjected to the same kind of rigorous mathematical examination. Conway sought to show the mechanists that this assumption was a faulty one, that the spiritual world view could in fact enrich the mechanistic one. Conway was placing in question the driving assumptions behind the research methods of the mechanistic thinkers, and suggested a re-thinking of their goals as scientists. Conway writes of the mechanists that they:

have generally erred and laid an ill foundation in the very beginning, whence the whole House and superstructure is so feeble, and indeed so unprofitable, that the whole Edifice and Building must in time decay.¹⁰³

Conway presents a theory based upon a theological and spiritual view of the nature of earthly life, and insists that mechanism does not have the ability to see this aspect of the world, considering its limited theory of matter. Conway's arguments have theoretical strength. In considering the standpoint she is assuming towards the mechanist theorists, Conway makes a sustained attack on what she believes to be the superficial approach mechanism takes to matter, and therefore to the nature of the world. It is on this level, I believe, that Conway's theories have relevance to contemporary debate. Although she makes

¹⁰²Carolyn Merchant, Death of Nature 214.

¹⁰³Conway, Principles 221.

an interesting attempt to fuse the mechanistic and vitalistic theories, the commitment to a vitalist position becomes more impressive as an attack on mechanistic theory, than as a practical theory of nature itself.

My point in this chapter can be summarized as follows: vitalism is a meta-theory of nature, and serves as a critique at the meta-level of the mechanistic theory of nature. Hilda Hein explains that meta-theories are not justified by appealing to events themselves. "Scientific experimentation does not even test, much less validate, theories of this type; yet it is not irrelevant to them."¹⁰⁴ Vitalism is not *proven* via scientific experimentation, so much as it is assumed as the basis for scientific experimentation. Conway's scientific examples are all evidence of this, for her results could only be accepted from a prior vitalistic standpoint. Conway's scientific arguments may be difficult to accept, but her theoretical commitment to vitalism as the basis of her critique is of much more relevance to modern feminist debate. Conway's examples are meant to prove the prevalence of inner life force in all matter. It does not prove this necessarily, not unless one is disposed to vitalism beforehand. However, her assertions place an onus of proof on the mechanists' own theoretical stance.

Conway's empirical examples, while illustrative of her own position, are too weak as convincing scientific deductions, to prove that mechanism is wrong. It is apparent that her evidence is drawn from as biased a position as that of the mechanists. Vitalism and mechanism will not be solved on scientific grounds, by an appeal to facts.¹⁰⁵ Their dispute concerns theoretical commitment, and prior assumptions. Conway saw in the conflict of these two theories a possibility of a resolution, which fuses the best of the two positions.

¹⁰⁴Hein, "Mechanism and Vitalism" 186.

¹⁰⁵Hein, "Mechanism and Vitalism" 201.

This chapter has examined the argument Conway makes against the mechanist position. I have not sought to prove that either theory is scientifically more valuable than the other, but that it is important to understand the value-ladenness of scientific writing. Conway provides an important insight into the narrowness of the mechanistic perspective. While Conway and Descartes both argue by offering empirical examples, and thus, believe the proofs of their theories to be in concrete scientific data, I consider the debate actually to be taking place on the meta-level. As Hein writes: “[Vitalists] do an invaluable service in calling to attention the fallibility of the grounds upon which mechanism rests.”¹⁰⁶

The mechanism of Descartes has been blamed by some contemporary theorists, most vehemently by Carolyn Merchant, for setting the intellectual climate for the present ecological crisis. Although Merchant tends to make some tenuous connections between Descartes and the capitalist ethic, she does make an interesting connection between mechanism and the desire to control and master nature. Merchant writes: “In seventeenth century mechanics, emphasis on either logic, order, and predictability or on power and activity led to different styles of science and to different modes for dominating and controlling nature.”¹⁰⁷ Descartes indeed sought a level of certainty about nature that did not exist in the traditional science. Descartes envisioned a nature that anyone who is suitably instructed could comprehend, and that was, in principle, predictable and clear to the human understanding. Descartes believed that through mechanistic principles the world would be ordered and bared to the human mind. In the *Discourse*, Descartes explains that he sought a more

¹⁰⁶Hein, “Mechanism and Vitalism” 200.

¹⁰⁷Merchant, Death of Nature 217.

practical philosophy than, up-to-then, had existed. He writes: "Through this philosophy we could know the power and action of fire, water, air, the stars, the heavens and all the other bodies in our environment ... for all the purposes for which it is appropriate, and thus make ourselves, as it were, the lords and masters of nature."¹⁰⁸ The certainty about nature that Descartes sought sprung from a desire for humans to be entirely in command of the world, able to predict its movements and understand its nature as if it were an open book. Descartes believed in the ultimate potential of human reason, and sought with the most noble intentions to rigorously free the mind from relying on such hindrances as imagination and sense-perception in understanding the world. It is not my intent to argue that Descartes willingly sought any but positive goals for human intellect - male or female. However, in the view of nature he expounds, he has reduced nature to something mechanical and potentially predictable, without anticipating the superiority over nature which humans came to believe they held, in consequence of the control they could wield over it once its laws were understood.

Descartes sought to eradicate all his former beliefs in order to pave the way for a radical new epistemology based on the principles of clarity and distinctness found in mathematics. He is certainly trying to combat skeptical attacks, to which traditional philosophy was open. But he is also laying the foundations for his scientific method. The distinction he makes between mind and body establishes the ground on which to build his theory of extension and mechanistic principles. In the *Meditations*, Descartes asserts that mathematics is the one form of knowledge that is certain and irrefutable. By building on mathematical principles

¹⁰⁸Rene Descartes, "Discourse on Method," The Philosophical Writings of Descartes Vol. I trans. John Cottingham, Robert Stoothoff and Dugald Murdoch (Cambridge: Cambridge University Press, 1985) 142.

as an epistemological goal, Descartes establishes his scientific system. He explains: "Once the foundations of a building are undermined, anything built upon them collapses of its own accord."¹⁰⁹ Daniel Garber argues that Descartes is doing exactly this in the *Meditations*. Garber writes of Descartes' intent:

By delineating the proper path to knowledge, the priority of the intellect and its clear and distinct perceptions over the deliverances of the senses, Descartes is intending to lay the epistemic groundwork for his revolution in physics, and for the arguments that establish the world of mechanism^{110**}

Descartes believes that reason will deduce the true nature of matter, as pure extension. With this understanding Descartes can build an entire theory of physics, and the nature of matter. He writes: "I realized it was necessary... to demolish everything completely and start again right from the foundations if I wanted to establish anything at all in the sciences that was stable and likely to last."¹¹¹ Mathematical principles are these foundations in Descartes' scientific system. He asserts that these principles are capable of explaining all natural phenomena, and that as corporeal things are comprised solely of extension, mathematics forms the basis of his concept of the nature of the material world. In the *Principles*, Descartes explains: "I will admit as true only what has been deduced from indubitable common notions so evidently that it is fit to be

¹⁰⁹Descartes, *Meditations* 12.

¹¹⁰Daniel Garber, "*Semel in vita* : The Scientific Background to Descartes' *Meditations*," *Essays on Descartes' Meditations*, ed. Amelie Oksenberg Rorty (Berkeley: U of California P, 1986): 108.

** This view might be contended by those who put emphasis on *Le Monde* , however, Garber's view is defensible based on evidence in the *Meditations* of Descartes'.

¹¹¹Descartes, *Meditations* 12.

considered as a mathematical demonstration. And since all natural phenomena can be explained in this way ... I do not think that any other principles are either admissible or desirable in physics.¹¹²

The epistemologies set down by mechanist thinkers of the 17th century have been the paradigms for rational thought down to the present century. Modern epistemologies remain as epistemological givens. Sandra Harding writes:

Their perceptions of the nature and activities of what they took to be the individual, "disembodied", but human mind, beholden to no social commitments but the willful search for clear and certain truth, remain the foundations from which the questions we recognize as epistemological arise.¹¹³

Cartesian dualism lies at the heart of enlightenment visions of science, and this tradition has become entrenched in current scientific thinking.

Unequivocal faith in the value-neutrality of scientific method is still prevalent. The belief that a theory is objectively true because it is empirically verifiable was a universally accepted notion in modern science, prior to the mid-50s, however there are still many post-modern critics who see this notion as persistently influential in the hard and social sciences. Lorraine Code writes: "Even if no practicing scientist believes it is possible to achieve such perfect objectivity, mainstream epistemologists commonly assume that knowledge properly so-called must be modeled on scientific criteria, construes in these stringent objectivist terms."¹¹⁴ Code and other feminist critics maintain that the

¹¹²Descartes, Principles 247.

¹¹³Sandra Harding, The Science Question in Feminism (Ithaca: Cornell UP, 1986) 141.

¹¹⁴Lorraine Code, What Can She Know? (Ithaca: Cornell University Press, 1991) 32.

positivist project for social science is: "still visible, particularly in the hegemony enjoyed by behaviourism in psychology."¹¹⁵ However, the truths of science are not objective, but couched in a prior assumption concerning theories of nature. It is only recently that criticism has grown concerning the values science holds prior to its investigations. What was always considered value-free is now being seen more and more to be quite value-laden. Conway sought to show that what Descartes was proposing were not strict truths but conclusions based on a prior commitment to mechanistic theory. As Merchant writes: "... it is widely assumed by the scientific community that modern science is objective, value-free, and context-free knowledge of the external world. To the extent to which the sciences can be reduced to this mechanistic mathematical model, the more legitimate they become as sciences."¹¹⁶ Conway's critique of the mechanistic theories of her time is therefore relevant to the contemporary debate on the validity of the current scientific standpoint. The meta-theoretical commitment of modern science shapes the research and the scope of investigation that will be conducted. The next chapter will examine the current critique of science from the feminist position, and the shared concerns of Anne Conway with the current debate.

¹¹⁵Code, What Can She Know? 33.

¹¹⁶Merchant, Death of Nature 291.

Chapter 3

Conway and Feminist Post - Modern Critiques

Descartes was a major contributor to the mechanistic viewpoint, offering a specific form of dualistic mechanics. Although it cannot be argued that mechanism still dominates the western epistemological standard, it has left certain marks. It is these firmly entrenched assumptions which current post-modern critique is attempting to eradicate. Science and society today still engage in dualistic thinking carried down to us from Cartesianism. The scientific ideal of pure objectivity, has become the standard for western epistemology in social sciences as well. Sandra Harding, a current critic of scientific traditions explains the overall perspective feminist critics present of the influence of science, when she writes: "The anticipation and fear are based on the recognition that we are a scientific culture, that scientific rationality has permeated not only the modes of thinking and acting of our public institutions but even the ways we think about the most intimate details of our private lives."¹¹⁷

Conway, as a contemporary of the scientific revolution, offers an interesting critique of mechanistic theories. Analyzing her vitalist philosophy offers an alternative perspective on the development of the modern intellectual paradigms of dualistic rationality and pure objectivity. Through an examination of Conway, it is possible to better comprehend the significance of these paradigms, for it is in understanding the alternatives that mechanism sought to

¹¹⁷Sandra Harding, The Science Question in Feminism (Ithaca: Cornell UP, 1986) 16.

replace that we can more clearly see what it was that the mechanistic models meant to accomplish.

There has been much debate in recent years concerning the traditional view of science as purely objective, value-free, and immune to criticism from the layperson. It has become the paradigm for social studies as well, which have sought to eliminate common beliefs or assumptions from their studies and rely on pure hard fact. Otto Ullrich, in his study of the counter-movements to the sciences, writes that scientists, since the seventeenth century, have sought to perfect the interpretation of natural processes in accordance with mathematical principles. Ullrich writes: "This is achieved only by isolating a specific process, taking it out of its natural context, and reconstructing it within an experimental setting in such a way that the desired process ... takes place in a controlled and reproducible way."¹¹⁸ This is not to say that there is an inherent problem with lab work, but rather with the reliance upon it by some scientists for the construction of scientific theories. This can be seen, for example, in current sex research, which has been largely criticized for making conclusions about human sex/gender differentiation based on laboratory experiments alone. Ullrich explains that this concept of rationality, has been integrated into the general modern conception of rationality, to date. He writes; "It will take us some time to free ourselves from the compulsions of this rationality in our thinking and in the reality created by men."¹¹⁹

¹¹⁸Otto Ullrich, "Counter Movements and the Sciences: Theses Supporting Counter - Movements to the 'Scientisation of the World'," Counter-movements in the Sciences, ed. Helga Nowotny and Hilary Rose. *Sociology of the Sciences*. vol. 3 (Dordrecht, Holland: D. Reidel , 1979) 130.

¹¹⁹Ullrich, "Counter Movements" 131.

While it is not the intent of this chapter to explore the question of androcentrism in the scientific perspective, Ullrich's point is relevant to the discussion in pointing to the elements of seventeenth century mechanical science and examining how its theoretical assumptions have permeated the modern western mind, even today. He writes that counter-movements will have to educate their adherents to an entirely new way of thinking, divorced from the rationality of the modern scientific tradition.

Within the counter-movements they will have to train their practical imagination for alternative ways of life and ... they will have to free themselves more widely and thoroughly of the metaphysics on which the industrial system is based. A key issue which may reflect such metaphysics, which is central to the rationality of the industrial system, and which has direct bearing on the prevailing social sciences, is the rationality of the sciences.¹²⁰

While Ullrich engages in a Marxist critique in his equation of scientific thinking with the industrial system, and later in the article, the exploitation of labour, he also proposes a view of scientific epistemology which adheres still to the early modern paradigms of objectification of nature and decontextualization of the object of study. Ullrich provides a good understanding of the basis upon which the following critiques derive their notions of scientific and mechanistic assumptions, and the unifying concern between current critics and Conway.

Current feminist debates seek to weaken the dualistic framework as well. Not only is science value-laden, they argue, but it is laden with dichotomous, exclusionary thinking which separates the scientist from the object of study, from anything considered non-rational. The more extreme arguments

¹²⁰Ullrich, "Counter Movements" 130.

seek to root the current environmental crisis in this framework as well. Again it must be stated that it is not the intent of this thesis to evaluate the strength of such environmentalist arguments, such as are found in Merchant. This chapter will consider the various feminist arguments against the Cartesian scientific tradition, as growing out of similar concerns to Conway's, although formulated 300 years later. The feminist debate has been chosen as representing a unified group of thinkers, who seek to strengthen the modernist epistemological framework with a more unified understanding of human nature and the material world.

This thesis will examine Conway's relevance to the feminist debate specifically, in the interest of grounding this debate historically in the tradition of women thinkers. I will focus on the concerns shared by Conway and feminist thinkers, which are; first, that dualism sets up false dichotomies which do not necessarily reflect the real nature of the world; second, that in seeking ultimate objectivity, Cartesian thinking subscribes to a particular set of values, in spite of itself, which colors any studies it makes of the world and lends it an undeniably subjective outlook; and third, that the Cartesian tradition isolates the thinker from any connection with the objects in the world and creates a serious detachment from the world conceived of as a living entity deserving of respect. Feminist critiques have offered some interesting objections to the ideal notion of scientific objectivity, and the implications of the dualistic dichotomies upon which the modern intellectual ideal rests. The feminist theorists share with Conway a desire to repair the dichotomies like; mind/body, objectivity/subjectivity, and propose, as Conway did, to create a scientific vision which integrates both subjective and objective perspectives without seeing this as a sacrifice of objective truth. These theorists argue that it is essential that matter be seen as closely bound with notions of life and spirit, rather than as its

opposite. Thus, they are offering a more organic world view coupled with an acceptance that no study can be purely objective. The subjective influence, according to this position, must be recognized and even integrated. Cody writes:

A viable theory of knowledge that is in touch with the diversity of cognitive experiences has no place for the standard objective/subjective dichotomy according to which knowledge is *better* to the extent that it is purely rational, theoretical, abstract, or universal.¹²¹

The feminist critics are not proposing an alternate unified system, so much as the possibility of integrating what they consider a more complex and accurate view of human rationality. Feminist theorists are seeking to expose science as not only value-laden, but as following a specific agenda, the consequences of which are an impoverished and destructive view of the world. I will concentrate on this aspect of the feminist arguments.

These theorists make a connection between subjectivity and body, and the traditional nature of woman as irrational and more closely tied to earthly matter. They argue that the dualistic theory of Descartes, and the scientific tradition which built upon it, has sought to denigrate women based on the traditional view of the nature of woman, as fitting all the negative stereotypes of its dichotomous structure. While it is true that these stereotypes exist, it is not at this level that these arguments are relevant to the writings of Conway. The arguments are too speculative at this level to offer the most convincing or relevant critiques of dualism and scientific paradigms. However, in their critiques of the myth of objectivity and dichotomous thinking, their arguments are not only important for questioning the basic assumptions of modern thinking and its implications, but are rooted in a long tradition of holistic theories like

¹²¹Lorraine Code, What Can She Know? (Ithaca: Cornell University Press, 1991) 30.

Conway's. It is interesting to examine these arguments, for although I do not believe that dualism necessarily means to target or exclude women, I think that as a group that has been largely excluded from the professions which emulate the dualist framework of Cartesian mechanism, women theorists are more likely to understand that the agenda of mechanism is in some respect exclusionary in its basic framework, and in need of a more integrated approach. Harding sums up the feminist standpoint in the following passage:

The feminist standpoint epistemologies ground a distinctive feminist science in a theory of gendered activity and social experience. They simultaneously privilege women or feminists (the accounts vary) epistemically and yet also claim to overcome the dichotomizing that is characteristic of the Enlightenment/bourgeois world view and its science.¹²²

Conway serves a relevance to this current debate as an intellectual woman, contemporary to the birth of mechanistic ideology, who, as an outside observer, could understand the implications and faults of this supposedly pure and objective system. Carolyn Merchant articulates the importance of understanding alternative theories in history when she writes: "By critically reexamining history from these perspectives, we may begin to discover values associated with the premodern world that may be worthy of transformation and reintegration into today's and tomorrow's society."¹²³

Current feminist critics of modern epistemological paradigms, stress the importance of understanding that these paradigms have been chosen, created, by a particular group of people with a particular agenda. Once this

¹²²Harding, Science Question 141.

¹²³Merchant, The Death of Nature (New York: Harper & Row, 1980) xix.

group has been defined and their agenda understood, it becomes clear that there is room for change when that agenda no longer fits the needs of society as a whole. These theorists think that this agenda has been created by a privileged group of people which excludes the needs of minority groups, women, and the earth which, they argue, have all suffered by the limited vision of the mechanistic view of the world and its dualistic perspective.

The androcentric ideology of contemporary science posits as necessary, and/or as facts, a set of dualisms - culture vs. nature; rational mind vs. pre-rational body and irrational emotions and values; objectivity vs. subjectivity; public vs. private ... Feminist critics have argued that such dichotomizing constitutes an ideology in the strong sense of the term; in contrast to merely value-laden false beliefs that have no social power, these beliefs structure the policies and practices of social institutions, including science.¹²⁴

Sandra Harding's quote above illustrates the importance feminist critics place on the role of dichotomous thinking on the thoughts and practices of western society. This way of structuring knowledge has led to a hierarchy of reasoning which places a detached objectivity towards the object of inquiry at the pinnacle of rational achievement. The problem is that such thinking provides a limited potential for understanding the world, for the researcher is forced to make data fit one of two categories regardless of whether this may be appropriate, as well as leading to a detachment of the observer from the object of inquiry. Lorraine Code writes:

... constructing distinctions as polar opposites, conceiving their boundaries as fixed and rigid, and confining inquiry within the limits those boundaries impose are unduly restrictive of philosophical insight. When theorists use such dichotomies to mark

¹²⁴Sandra Harding, *Science Question* 136.

distinctions that are both hierarchical and polar, they establish a set of exclusionary, oppressive constraints and imbalances 125

Descartes sought to make philosophy more scientifically certain and saw the answer in eliminating subjective influences in knowledge, thus advocating a purely deductive method. Conway, in relying on both subjective metaphysical assumptions and objective fact sought to integrate the two into a more unified theory of the world - both its physical and spiritual aspects. Code suggests a similar melding of the two ways of seeing the world. Code explains that the aim of pure objectivity forces cognitive agents to pick sides - pure objectivity or rampant subjectivity. However, the world is not always so easily categorized. Code argues: "If the overriding aim is to acquire an understanding of the experiential world, then it is not easy to see how a mode of thinking that is formal rather experientially based can contribute to that end."¹²⁶ Code maintains that it is necessary to have an intermingling of the two ways of knowing the world. It is not necessarily better to evade subjectivity, merely easier, for it eliminates possibilities for explanation. Code suggests that: "... specific instances of knowledge fall along a continuum, where some are more purely objective; others manifest a greater interplay of subjectivity and objectivity; other again are more purely subjective."¹²⁷

Code is attacking what she sees as the dominant paradigm in western scientific circles which has influenced many aspects of the social sciences. Code suggests a more integrated theory valuing both subjective and

¹²⁵Lorraine Code, What Can She Know? 28.

¹²⁶Code, What Can She Know? 30.

¹²⁷Code, What Can She Know 31.

objective knowledge. Like Conway, Code objects to the dichotomous thinking that limits how we view the world.

The time seems overdue for some fresh approaches to the Meditations, readings which will incorporate and reflect our changed understanding of the modern scientific project and the new insights made available as a result of our growing critical detachment from that project.¹²⁸

Susan Bordo argues also that modern dichotomous thinking has managed to limit our potential for understanding the nature of the world. She writes: "The mutual exclusion of *res extensa* and *res cogitans* ... established the utter diremption - detachment, dislocation - of the natural world from the realm of the human."¹²⁹ Bordo argues that the supposedly objective and value-free paradigm of Descartes' was in fact very much based on a prior metaphysical system with which he would approach the world. Descartes established the boundaries of the human relationship to the material world. By making a firm distinction between the spiritual and the physical, Descartes' primary concept of dead matter vs. living spirit set up the parameters of any subsequent approach to the study of the world. Bordo writes: "More important, it means that the values and significances of things in relation to the human realm must now be understood as purely a reflection of how we feel about them, having nothing to do with their "objective" qualities."¹³⁰ Thus, Bordo is arguing that in fact the world is seen, in the Cartesian system, not as something existing independently,

¹²⁸Susan Bordo, The Flight to Objectivity: Essays on Cartesianism and Culture (New York: SUNY Press, 1987) 2.

¹²⁹Susan Bordo, "The Cartesian Masculinization of Thought," Sex and Scientific Inquiry, ed. Sandra Harding and Jean F. O'Barr (Chicago: U of Chicago P, 1987) 258.

¹³⁰Bordo, "Cartesian Masculinization" 258.

but only as it exists in relation to human beings. In fact, Descartes, according to Bordo, is setting up a quite subjectively defined framework for viewing the world.

Bordo examines Descartes' project of dualistic mechanism as one resulting from the psychological need for firmly defined separation from the world of the unknown, from the bodily and emotional dimensions of experience. Bordo writes: "In an important sense the separate self, conscious of itself and of its own distinctness from a world "outside" it, is born in the Cartesian era."¹³¹ Bordo is here concerned that the dichotomy Descartes establishes between spirit and matter isolates the thinker in such a way as the individual observes but cannot really experience the world she or he is studying. Bordo examines Descartes' dualism as emerging from a 'separation anxiety', that the marker of this anxiety is his method of doubt. Descartes was concerned with the chaotic potential of subjective impressions. Descartes placed his faith not in the ability of the senses or our beliefs, but in the ability of the mind to discriminate between subjective and objective knowledge. Bordo explains that Descartes' disembodied ideal of reason is not a part of the world, and has, for him, no need to be. "Assured of his own transparency, he can relate with absolute neutrality to the objects he surveys, unfettered by the perspectival nature of embodied vision."¹³² Carolyn Merchant is another feminist theorist who has targeted the intellectual climate of the 17th century as the source of the dualistic thinking which dominates the western intellectual world in this century. She writes: "As the unifying model for science and society, the machine has permeated and reconstructed human consciousness so totally that today we scarcely question its

¹³¹Bordo, Flight to Objectivity, 7.

¹³²Bordo, Flight to Objectivity 95.

validity.”¹³³ The mechanical framework sets up a distinction between rational soul and inert matter which Merchant sees as the basis for our conception of nature today. The mechanist philosophy rests on the notion of clarity and distinctness, an objective outlook free of the constraints of subjective belief systems and bodily sense organs. “Descartes reduced the imagination, source of universal knowledge in the holistic world view, to an individual operation of individual souls.”¹³⁴

Merchant accuses the mechanists of producing a limited view of the world which has reduced and simplified its nature in such a way that it can be orderly and predictable. The mechanistic view, according to Merchant, established its own parameters for the nature of the world, in spite of its goal of clear and objective study. She explains: “The rise of mechanism laid the foundation for a new synthesis of the cosmos, society, and the human being, construed as ordered systems of mechanical parts subject to governance by law and to predictability through deductive reasoning.”¹³⁵ Merchant’s study is concerned with the implications of mechanistic thinking. She stresses that mechanism is a vision of reality that is constructed by the human mind, and not an objectively accurate vision of the true nature of the world. Merchant considers it to be an impoverished view of the world which places humans in a position of superiority over what the mechanists see as merely the dead matter which constitutes nature. She argues: “The domination of nature depends equally on man as operator deriving from an emphasis on power and on man as manager deriving from the stress on order and rationality as criteria for progress and

¹³³Merchant, Death of Nature 193.

¹³⁴Merchant, Death of Nature 205.

¹³⁵Merchant, Death of Nature 214.

development."¹³⁶ Merchant suggests that the mechanistic thinking that is still prevalent needs to be integrated with a more holistic view of nature, in order that a more comprehensive view of the world may be developed. Merchant explores vitalism, specifically that of Conway's, as providing the basis of anti-mechanistic theory. Thus, Merchant actually looks to 17th century vitalism as a source of alternatives to the present day preoccupation with mechanistic, dualistic frameworks. She presents an alternative cosmology very similar to that of Conway's. Merchant asserts that ecology is a modern science built on the principles of holism, and that it is a current example of such thinking. She writes:

The cycle itself is a dynamic interactive relationship of all its parts, and process is a dialectical relation between part and whole. Ecology necessarily must consider the complexities of the totality. It cannot isolate the parts into simplified systems that can be studied in a laboratory, because such isolation distorts the whole.¹³⁷

Feminist theorists in the past few years have been actively questioning the myth of objective research, specifically in the scientific community. These thinkers have sought to expose the primary assumptions of science as value - laden and therefore not as airtight as the mainstream scientific community likes to claim. Feminist critics argue that the scientific establishment has consistently denied the worth of what they term subjective concerns, which would include any concept of reality beyond the empirically identifiable. Sandra Harding explains:

Feminist empiricism holds on to the idea that a goal of science is to produce less biased, more objective claims, but it also insists on what is overtly forbidden in empiricism - the importance of analyzing and

¹³⁶Merchant, Death of Nature 235.

¹³⁷Merchant, Death of Nature 293.

assigning different epistemological values to the social identities of inquirers.¹³⁸

Harding examines many of the current criticisms feminists have directed toward the scientific community. Like the aforementioned theorists, Harding believes that the dualistic framework which pits objectivity against subjectivity has infected not only our sciences but has shaped our societal attitudes. The scientific paradigm of detached objectivity has distorted our world-view by forcing it into dichotomous strictures. Interpretation of the world is a human endeavor which invariably suffers with a narrow field of vision. The findings of scientists are predictable and on the surface successful, but the object of inquiry answers only the questions posed by the subject of inquiry. Feminist critics have emphasized that because of this, scientists create the objects of study by approaching the objects with a particular value-system, thereby anticipating the desired results. Harding explains: "The objects of inquiry "speak" only in response to what scientists ask them, and they speak in the particular voice of their historically specific conditions and locations."¹³⁹

Ruth Hubbard asserts that 'making' science is a social process, and the people in charge producing it are from a specific community of primarily white, middle class men. These men uphold a tradition of research, that, as Hubbard explains, demystifies the world, and they believe it can be understood through objective understanding alone. Hubbard makes the twofold argument that not only is the notion of pure objectivity a myth, as was explained above, but

¹³⁸Sandra Harding, "Feminism, Science, and the Anti-Enlightenment Critiques," *Feminism/Postmodernism*, ed. Linda J. Nicholson (New York: Routledge, 1990) 93.

¹³⁹Harding, "Feminism, Science" 124.

that it is not even a desirable goal. The world cannot be understood except by a fusion of objective and subjective perspectives. Hubbard argues:

we have been socialized to think in particular ways and have familiarized ourselves with that narrow slice of human history and culture that deals primarily with the experiences of western European and North American upper class men during the past century or two.¹⁴⁰

Hubbard asserts that science sees nature as object, as predictable, constant, and quite separate from themselves. Hubbard believes that the problem lies in not fully understanding our objects of study, and ignoring the very undeniable ties we have to everything on this earth. Hubbard writes:

Natural scientists attain their objectivity by looking upon nature in small chunks and as isolated objects. They usually deny...their relationship to the "objects" they study. In other words, natural scientists describe their activities as though they existed in a vacuum.¹⁴¹

Hubbard makes an interesting point in her analysis of the privileged position in which natural scientists see themselves. However, this point can also be applied to the social sciences which have emulated the scientific method in the use of hard isolated facts and the goal of pure objectivity. It is an elite position, which has created its own particular world, a seen through its chosen framework. Because the same group of the population, as Hubbard points out, has dominated science for so long, it is easy to see that it has remained fairly much committed to the same objectives. It is possible to see why a theory proposed by someone like Conway, could have been so easily ignored, as it was proposed by

¹⁴⁰Ruth Hubbard, "Science, Facts, and Feminism," *Feminism and Science*, ed. Nancy Tuana (Bloomington: Indiana University Press, 1989) 120.

¹⁴¹Hubbard, "Science, Facts" 125.

someone outside the academic circles and suggested a radically new way of approaching research. There is the notion of privileged position which is apparent in the form the research takes, in its distanced, objective method. Hubbard makes an interesting point here for understanding the fusion of the scientific ideal and the maintenance of the social position of authority held by natural, as well as social scientists.

Evelyn Fox Keller questions also the objectivity of science, and accuses scientific research of harboring preconceptions about the world which shape its results. She writes: "I will suggest that we might even use feminist thought to illuminate and clarify part of the substructure of science (which may have been historically conditioned into distortion) in order to preserve the things that science has taught us, in order to be more objective."¹⁴² Keller examines feminist critiques of science, all of which challenge the basic assumptions and supposed neutrality of the field. The critiques she focuses on stress a male bias in scientific research, and for the purposes of this thesis, it is interesting to note that these critiques challenge the basic assumption of value-free science. Keller explains that it is possible to extend feminist critiques into even the hardest sciences, as it has now become accepted that sciences are as socially constructed as any other field. She explains:

... as the philosophical and historical inadequacies of the classical conception of science have begun to identify the ways in which the development of scientific knowledge has been shaped by its particular social and political context, our understanding of science as a social process has grown. This understanding is a necessary prerequisite, both

¹⁴²Evelyn Fox Keller, "Feminism and Science," *Sex and Scientific Inquiry*, ed. Sandra Harding and Jean F. O'Barr (Chicago: University of Chicago Press, 1987) 233.

politically and intellectually, for a feminist theoretic in science.¹⁴³

Thus Keller asserts that science is in fact deeply rooted in the social context of the scientist and the assumptions of the society in which the individual lives, which opens the way for feminist critics to suggest new ways of approaching science. However, she cautions against the abandoning of objectivity and embracing a relativistic, purely subjective framework, as some feminist critics have suggested. Like Conway and the above theorists, Keller seeks an integrated approach in which subjective and objective elements combined become the goal of rational study. Keller explains: "A first step, therefore, in extending the feminist critique to the foundations of scientific thought is to reconceptualize objectivity as a dialectical process so as to allow for the possibility of distinguishing the objective effort from the objectivist illusion."¹⁴⁴ Keller calls for critical self-reflection combined with an ideal of objectivity. She explains that rather than abandon the goal of understanding the world in rational terms, that goal must be refined with the understanding of social context and bias. "In this way," she writes, "we can become conscious of the features of the scientific project that belie its claim to universality."¹⁴⁵ Keller argues that in the historical examination of the dominance of certain theories over others we can find the source of the guiding ideology of contemporary science. For it is in examining what the dominant ideology overcame that we can best understand the significance of the ideology and what it hopes to accomplish. "In the historical effort, feminists can bring a

¹⁴³Keller, "Feminism and Science" 237.

¹⁴⁴Keller, "Feminism and Science" 236.

¹⁴⁵Keller, "Feminism and Science" 238.

whole new range of sensitivities, leading to an equally new consciousness of the potentialities lying latent in the scientific project.”¹⁴⁶

The scientific community is accused by feminist critics of distancing themselves from community at large, and harboring research biases which render their findings even irrelevant to the non-scientific community. Science is accused by these critics of fitting the field of study to its particular agenda or bias. These women do not question the value of science itself, but the value of science as it is presently being practiced. Science must question the objectivity it so values, and allow for a new approach to its objects of study. Conway's attack on mechanism, and her attempt to enrich its perspective with a spiritual viewpoint, is not literally the solution the feminist critics are suggesting. However, their suggestion that science question the limited perspective it holds of the world, and admit of a more complex and diverse field of study, echoes Conway's concerns. Conway believed that scientific research was built upon faulty assumptions, which would only result in failure. No complete theory of the world, according to Conway, could be produced from incomplete beliefs concerning the nature of that world. Thus, Conway is questioning not the enterprise of scientific research but the belief system upon which that research is built, and the values it considers important. This thesis has presented the cosmology of Anne Conway as a well ordered attack on the mechanistic perspective of the seventeenth century scientific community. Conway's criticisms remain relevant today for they address the same basic concerns of the modern feminist critiques of scientific bias.

Conway makes a strong attack on the theoretical commitment of the mechanistic models. As I have shown, Conway's most effective criticism is

¹⁴⁶Keller, "Feminism and Science" 246.

directed at the assumptions of the various mechanistic standpoints. The mechanists experiment and draw conclusions based on dead matter. According to Conway, this belief in matter as dead ignores that possibility of living matter, which cannot be explained in purely physico-chemical, mechanical, laws. Thus, the mechanistic theories are reducing matter to fit their limited model. Conway asserts that matter is not created according to these laws. The important point here is that mechanistic thinking ignores the complexity of matter. Vitalism asserts that matter is many faceted, and necessarily subject to more than one single interpretation. Merchant illustrates the position Conway is taking against the popular seventeenth century mechanistic models of the universe. Conway considered these as simplistic visions of the complexity of existence. Merchant explains the extent of mechanical metaphor that has become prevalent since the scientific revolution:

As the unifying model for science and society, the machine has permeated and reconstructed human consciousness so totally that today we scarcely question its validity. Nature, society, and the human body are composed of interchangeable atomized parts that can be repaired or replaced from outside.¹⁴⁷

Conway's vitalist theory questions the poverty of the mechanistic constructs of nature. Conway criticizes the mechanistic models as commitments to a particular understanding of the nature of physical phenomena. Conway believes that the vitalist position assumes nothing about nature, asserting that she merely understands nature as it is, lets nature speak for itself, in effect. As I stated earlier, Conway's approach to nature produces equally dubious empirical results. Therefore, it is important to concentrate on the meta-level attack Conway

¹⁴⁷Merchant, Death of Nature 268.

is making, through her vitalist position, on the basic theoretical assumptions of the mechanists.

On this level, Conway and the modern feminist critics of scientific method are arguing a similar position. Conway can be said to represent a seventeenth century reaction to scientific assumptions, which has been taken up again by present-day feminist theorists. Science has assumed as a basis for its research a decidedly mechanistic epistemological model, and this model distances the researcher from the object of study by providing ready-made 'facts' concerning its nature. The assumption that modern science is value-free and context-free is widely criticized by modern feminists, and Conway contributes to this debate in her criticism of the very context and set of values mechanists employ in their research. Merchant agrees with Conway's position when she explains that mechanistic assumptions only work in very limited context, when applied to limited, and fairly simple systems. She writes, "Mechanistic assumptions about nature push us increasingly in the direction of artificial environments, mechanized control over more and more aspects of human life, and a loss of quality of life itself."¹⁴⁸ Conway saw the mechanist position as stemming from an impoverished notion of physical phenomena. I have shown in this thesis that her argument, on a meta-theoretical level, shows the weakness of the mechanist viewpoint by questioning its bias. This is a strong criticism in light of the present debate on this very same point from the feminist critics. Conway's system as a practical solution to the mechanist position is not necessarily viable, however her point of contention with mechanist assumptions is a formidable criticism which is still held today against the scientific establishment.

¹⁴⁸Merchant, Death of Nature 291.

Conclusion

This thesis has presented an examination of Conway's vitalistic philosophy. It has shown that her monistic integration of spirit and matter was proposed as an answer to the dualism of Descartes, as well as being an answer to other mechanistic theories that proposed that matter was dead. Conway saw a great value in the new science and employed an empirical approach to her arguments. However, she sought, in her work, to show that it is not necessary to divorce matter from spirit in order to maintain an empirical science. Conway attempted to demonstrate that physics and metaphysics are not necessarily diametrically opposed, and that an integration of these two empirical frameworks could be possible. It was not the aim of this thesis to evaluate the scientific accuracy of her writings, but rather to examine her ultimate purpose, which was to expose the weaknesses of the various mechanistic assumptions. Conway's vitalism is an attempt to integrate a more complete understanding of the nature of the world than that of dead matter, with the rigorous empirical method of the new science. Conway will never be a major philosopher, but her work does offer an interesting example in the history of anti-mechanistic philosophy. Conway did not reject the new scientific project, but sought to save it from the limited perspective it had adopted.

This thesis has also shown that not only has Conway made an interesting contribution to the historical debate between the mechanistic theories and their contemporary opponents, but she represents one of the active and original contributions that has been made by women in the history of philosophy.

Although her spiritualistic cosmology does not provide a realistic practical alternative, the overall intent of the work presents a well-constructed

attempt to expose the limits of the various mechanisms, first by presenting the problems she considered inherent in a physics which was founded on a theory of inactive matter, and second by offering an alternative system which attacks scientific thinking, while leaving the scientific project intact. As Popkin writes, in Conway's system: "One did not have to dethrone Christianity and turn religion into deism and atheism to make it fit with science."¹⁴⁹ Popkin explains in his article that the cleavage between the scientific and religious outlooks is getting wider in the present day, and he implies that our western emphasis on scientific explanation is very much based upon the epistemological systems western society has chosen to value. He writes: "It is intriguing to contemplate what would have happened if the spiritology of More and Anne Conway remained central to the scientific community. Where would we be, and what sort of a world would we now be living in?"¹⁵⁰

This thesis has presented an examination of Conway's place in philosophical debate. To date there have been a few papers written on Conway's vitalism and her disagreement with the theories of Descartes and Hobbes. However, until now there has been no study that has examined in depth the significance of Conway's arguments for her alternative theoretical foundations for modern scientific epistemology, that has also situated Conway within current realm of debate.

If Conway is to be recognized in the mainstream history of philosophy it is necessary to demonstrate the ways in which her thought had significance for her own period, as well as how it is significant for present-day philosophy. Conway's attempt at offering an integrated metaphysics to the

¹⁴⁹Popkin, "Scientific Cosmologies" 111.

¹⁵⁰Popkin, "Scientific Cosmologies" 112.

scientific program has here been shown to bear a striking resemblance to the debates surrounding the question of scientific assumptions, which are currently active.

Descartes and Conway were both attempting to lay the philosophical foundations for the new science. Descartes answered the mood of skepticism predominant in a period when scholastic philosophy was losing its credibility, by offering a system of absolute certainty which required an appeal to no authority but one's own reason. Richard Tarnas writes: "Using such a method, Descartes would be the new Aristotle, and found a new science that would usher man into a new era of practical knowledge, wisdom, and well-being."¹⁵¹ Descartes indeed opened the way for a new approach to reasoning which placed ultimate faith in the capacity of the human mind to grasp fundamentals of the world. Conway was extremely interested in the scientific developments of the period, and engaged in it actively. She too offered a philosophical foundation for the new science, and appealed to her reason as well for proof of her theories. However, what Conway offered was a more traditional conception of nature which apparently was not welcome in an age of excitement and discovery, and which also was making nature into another area over which humans could gain mastery. Humans were placed at the center in Cartesian theory, for individual reason was the ultimate source of knowledge. It was not desirable to accept humans as merely part of a larger chain of being. Wolfgang van den Daele, in his article, "The Social Construction of Science", writes:

The normative (social, political, religious) neutralization of the knowledge of nature, which for us is an essential element of the 'positive', objective,

¹⁵¹Richard Tarnas, The Passion of the Western Mind: Understanding the Ideas that have Shaped our World View (New York: Harmony Books, 1991) 276.

and concrete character of scientific knowledge, was a condition for the institutionalization of science in the seventeenth century. The confrontation with alternative concepts and claims of natural knowledge was by-passed or ended by institutional decisions.¹⁵²

Conway sought more of an integration of metaphysical theories with the new science. She believed it was possible to progressively embrace the methodology of the new science while maintaining a grasp of the place of human beings in relation to the natural world. Hers was an alternative theory which was too extreme in its appeal to vitalism to please the converts of the new scientific spirit. van den Daele identifies the cognitive factors which motivated the various mechanical philosophies to gain precedence over alternative theories like Conway's:

the limitation of the inquiry to Nature as its object, the methodical character of the investigations (experiment, induction, hypothesis), the separation of secular from religious knowledge, the renouncement of explanations based upon 'first principles', the predominance of mechanical philosophy over Christian and magical natural philosophies.¹⁵³

This study has argued that Conway's theory offered a formidable argument against the assumptions upon which the new scientific methodology was built. It is only now, however, when the modernist conception of the world is coming into question, that Conway's writings can be fully appreciated as offering an alternative epistemology based on integrated spiritual and mechanical considerations. Phyllis Colvin writes of the mathematization of nature in modern

¹⁵²Wolfgang van den Daele, "The Social Construction of Science: Institutionalization and Definition of Positive Science in the Latter Half of the Seventeenth Century," The Social Production of Scientific Knowledge, Sociology of the Sciences 1. ed Everett Mendelsohn, Peter Weingart, and Richard Whitley (Dordrecht, Holland: D. Reidel Publishing, 1977) 28.

¹⁵³van den Daele, "Social Construction of Science" 32.

science, referring to it as the arithmomorphism of science. She explains that in looking for alternatives, it will be necessary to systematically search out the non-arithmomorphic theories. She writes: "Such an investigation will undoubtedly lead backward in time to intellectual and social developments which may have been overwhelmed historically by the ideological capacities of arithmomorphism."¹⁵⁴

Thus, Conway offers interesting fodder for investigation in both the post-modern critiques of science, and in the area of research on the history of women in philosophy. Further study is almost unlimited in its potential, for so little has been done, to date, with her writings. There has been no systematic discussion of her work in relation to Henry More and the Cambridge Platonists. Also, Conway specifically criticizes the work of Spinoza and Hobbes, and no systematic studies have been done in that area. Although her influence on Leibniz, which has been argued by Merchant, is based on a small amount of evidence, her relation to the ideas of this thinker would present a good basis for understanding the vitalistic theories upon which he built his system. Conway's work has been used as an example of ecologically sound science by Merchant, and it has been speculated by such thinkers as Popkin that a science based upon Conway's theory would have warranted very different results. Thus, there is certainly much that may be learned and explored through studies of Conway's work. Conway offers a theory which is extremely interesting in the current climate of anti-enlightenment critiques and the growing interest in the history of women in nontraditional disciplines.

¹⁵⁴Phyllis Colvin, "Ontological and Epistemological Commitments and Social Relations in the Sciences: The Case of the Arithmomorphic System of Scientific Production," The Social Production of Scientific Knowledge, Sociology of the Sciences, vol. 1 ed. Everett Mendelsohn, Peter Weingart, and Richard Whitley (Dordrecht, Holland: D. Reidel Publishing, 1977) 125.

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