“TO UNSPHERE THE STARS …” : EXPLORING THE EARLY MODERN ONTOLOGICAL/COSMOLOGICAL CRISIS IN ENGLISH RENAISSANCE LITERATURE

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"They say miracles are past; and we have our philosophical persons, to make modern and familiar, things supernatural and causeless. Hence is it that we make trifles of terrors, ensconcing ourselves into seeming knowledge, when we should submit ourselves to an unknown fear."
-William Shakespeare, *All's Well That Ends Well* (2.3.1-6)

The early modern era is traditionally defined by its significant shifts in a myriad of fields. Advances in one of these fields, astronomy, eventually redefined the physical and philosophical/theological nature of the known universe. While modern scholars may view these conceptual changes as a mere shift in physical perception, they meant much more to the people of the Renaissance, a culture that venerated astrology and "signs" in the heavens. They signaled the end of a deeply held philosophy that included a theology based on the exclusivity and prominence of man. Simultaneously, the monolithic nature of the Catholic Church was challenged by Luther and Calvin.[2] At a time of heightened challenges to authority, the new cosmological theories of the early Renaissance represented the ultimate authoritarian challenge – a challenge to God's heaven itself.

In essence, this study attempts to connect much of this societal unrest to another previously neglected factor – the impact of Copernicanism on Renaissance thought. This work, epistemological in nature, will explore the manner in which selected Renaissance writers responded to the shifts in philosophy and cosmology that affected their culture. The growing acceptance of Copernicus's theory, confirmed by Galileo, of a heliocentric cosmic model corroded the monolithic nature of the previous model of the universe – Aristotle's

[1] *Hamlet* 1.1.118

[2] While this study alludes to the threat that Protestantism presented to early modernists, particularly the way it represented the destruction of a major unifying factor within their culture, this study will be limited to the impact of the cosmological discoveries of the era that redefined their known universe. Although this study will explore various ideas related to the concepts of heaven and hell, those representations will not be complicated by specific doctrines of denomination as those complications are beyond the scope of this study.

geocentric model. This lost certainty was eventually replaced by an alternate form of certainty as defined by Francis Bacon's scientific method and reified in the body of the Royal Society of the mid seventeenth century. This development also led to the permanent separation of cosmology from theology. As the former concept of the microcosm/macrocosm model was destroyed, these writers attempted to turn its fragments into metaphors or similes which were devoid of the validating foundation which gave them their substance as well as their attraction. Renaissance writers responded to these shifts in various ways, adopting metadramatic tropes lifted from the "new philosophy" into their works in an effort to process and aestheticize the new world order.

Renaissance science historians have focused on primary works, mainly scientific treatises, journals and letters of prominent astronomers and theologians as critical sources primarily focused on the history of the discipline itself. This methodology does not address the extent to which astronomical theory was represented, much less experienced, within Renaissance culture itself or the way in which it was appropriated into Renaissance literary works as a result.[3]

This study examines comparatively three Renaissance literary works in chronological order. In chapter 1 I analyze Christopher Marlowe's treatment of the new science in *Doctor Faustus*, written between 1588 and 1592, which reveals Marlowe's enthusiastic acceptance of the refined mathematics and new ideas that were beginning to emerge from the continent. Marlowe sees the exciting aesthetic potential inherit in these disruptive new ideas and uses

[3] In my research, I found scholarship centered on the history of astronomy or Renaissance science, including texts that charted the inception and expansion of the scientific revolution. Literary sources that focused on interpretation and interaction with that science were more elusive, particularly criticism that analyzed or evaluated the impact of astronomical concepts through the lens of its own esoteric vocabulary. In this study, I explore certain passages and tropes within Renaissance literature, applying readings of scientific discourse together with readings of literary discourse in an attempt to interpret the impact that astronomical concepts had in Renaissance drama and poetry by charting and contextualizing this esoteric language as it appears in several samples of Renaissance texts.

his plays to communicate his pleasure in the loss of old certainties. Unlike Shakespeare, whose plays reflect his melancholy at this new shift, Marlowe's plays celebrate the unlimited potential that these new radical ideas could incite and unleash on stage. In Chapter 2 I examine William Shakespeare's[4] *Hamlet*, believed to have been written between 1599 and 1601, which represents his struggle with the new philosophy. Shakespeare's reaction is expressed through the tragic tropes of this drama written at the turn of the seventeenth century, which reflect the possible loss of venerated institutions within his culture. In Chapter 3 I conclude with an analysis of John Donne's poetry, specifically three of his pivotal works, *An Anatomy of the World: The First Anniversary*, written in 1611, *Ignatius His Conclave*, also written in 1611, and *Of the Progress of the Soul, the Second Anniversary* written in 1612, which demonstrate Donne's epiphanic application of the new philosophy that threatened to separate theology and cosmology permanently and irreconcilably. Donne reacts to the idea of a plurality of worlds and an infinite universe with neither Marlowe's enthusiastic stage performativity nor Shakespeare's intellectualized moroseness, but with poetic inspiration as he redesigns and expands the metaphysical world of poetry to match the redesigned and expanded cosmos. This approach permits him to divorce himself from scientific obsession with quantification as impossibly misapplied to an infinite world, allowing him to both acknowledge and disavow the new cosmic discoveries.

The fundamental discrepancies between these three writers are even more striking when it is noted that all were formulated within a quarter-century. This brevity demonstrates that these diverse views coexisted, more or less, at the same time and place, revealing how

[4] I am aware that all of Marlowe's plays and the vast majority of Shakespeare's plays were written before Galileo's *Sidereus Nuncius* (*Starry Messenger*) was published in 1610. Copernicus's *De Revolutionibus Orbium Coelestium* (*On the Revolutions of the Celestial Spheres)*, however, was published in 1543 and had been distributed throughout England during this era, particularly through translations such as the almanac edition that Thomas Digges published in 1576 and reprinted six times during Elizabeth's reign.

controversial the new science/math was to early modernists and this is the ‘moment’ that defines this study. Even within this diversity, there was, however, a certain evolutionary process in place, separating the zeitgeist of Marlowe, greatly influenced by Copernicus and Bruno, with that of Shakespeare, who is also greatly influenced by Copernicus but is also deeply influenced by Tycho Brahe and Johannes Kepler’s research, and Donne, who is confronting the certainty of both Kepler and Galileo’s empirical evidence.

Certain passages from these works allude or directly refer to astronomical concepts, and a focused study of the terms and concepts within these passages reveals a deeper meaning. I argue that these references have enormous stakes attached to them not always recognized by literary critics who traditionally treat them as poetic ornaments or metaphors. These references identify terminology that became associated with heretical ideas, specifically a heliocentric cosmic model located within an infinite universe. The use of these terms by these writers indicates that these ideas were beginning to appear in the pubic domain, and demonstrates their willingness to implement them into their works for effect.

One overarching theme of this study is that these competing cosmological, philosophical and theological systems had a powerful effect on Renaissance culture, as the ramifications of a new model affected theological and philosophical thought about humanity’s place in the universe, protoscientific theories about motion, and even popular cultural institutions such as astrology, a widespread practice. Cosmology was a problematic concept to understand. Renaissance astronomers were forced to reconcile theological and philosophical mysticism with some sort of predicable mathematical schema and they struggled to broker a concept that would meet these qualifications. The concept of a

heliocentric universe threatened the idea of "De Sphaera Mundi,"[5] a homocentric physical system of the cosmos that had become associated with a metaphysical design that animated or deified the heavens during the middle ages. A heliocentric universe represented a shift for humanity from the center of the universe, philosophically as well as physically, downgrading their planet to only one of a "plurality of worlds."[6] The shift also indicated a new autonomy for humanity, and humanists, who were witnessing a great expansion of their known universe – a universe with God jettisoned to its periphery.

"…The Smallest Orb…In His Motion Like an Angel Sings"[7] : Aristotle's Celestial Spheres and Medieval Motion Theory

Medieval cosmology had been greatly based on Aristotle's theories of movement as described in his *De Anima* and *De Caelo.* The celestial sphere structure of the universe rose from Aristotelian ideology. Aristotle's concept extended his terrestrial laws of motion, based on an attraction force between the four basic elements, into the heavenly realm and the idea of the First Mover became identified with the God of Christian theology. The philosophical components of Aristotle's cosmic model, however, were just as influential on subsequent cultures as its physical components. The particular cosmology Aristotle proposed arose from a kind of metaphysical assumption about the basic structure of the universe, a non-empirical assumption that relied on faith rather than observation. Edward Grant, in *The*

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[5] *De Sphaera Mundi* (*On the Sphere of the World)*, sometimes called *The Sphere of the Cosmos*, was a medieval text that served as an introduction to the basic elements of astronomy written by Johannes de Sacrobosco around 1230. Based heavily on Ptolemy's *Almagest*, and drawing additional ideas from Islamic astronomy, it was one of the most influential works of pre-Copernican astronomy in Europe (Laird 19).

[6] Cosmic pluralism, the plurality of worlds, or simply pluralism, describes the belief in numerous other worlds which harbor extraterrestrial life. When the Ptolemaic-Aristotelian system was challenged in the early modern era, the idea of pluralism increased in popularity, first by scholastics and then more seriously by followers of Copernicus. Galileo's telescopic discoveries appeared to "prove" that a multitude of worlds that sustained life was reasonable and could be seen as an expression of God's creative omnipotence. Prominent astronomer such as Johannes Kepler were willing to admit the possibility of pluralism without truly supporting it, bringing ethos to the debate, albeit indirectly.

[7] Shakespeare, William. *Merchant of Venice* 5.1.67-68.

Foundations of Modern Science in the Middle Ages: Their Religious, Institutional, and Intellectual Contexts, provides a clear synopsis of the process by which Aristotelian thought merged with Christian theology and came to define scholasticism during the late Middle Ages. During the early Renaissance, when a form of empiricism began to emerge as a replacement for scholasticism, Aristotle's geocentric model of the cosmos became less viable as it could not be confirmed by observation or newly refined mathematical calculations. Copernicus' heliocentric model, officially published as *De Revolutionibus Orbium Coelestium* in 1543, was the first direct challenge to a threatened system. Aristotle's theory was further challenged by Tycho Brahe's observation of a supernova or "new star" in 1572. By this time, Brahe was able to determine mathematically that this new star could not be located beneath the lunar sphere – the sphere that delineated the imperfect, mutable earth, in contrast to the perfect, immutable heavens.[8] Other astronomers who had tracked the elliptical orbits of various comets had previously contended that such objects dismissed any ideas of a crystalline sphere model of the universe.

In 1610 Galileo published his account of the extra solar moons of Jupiter; crescents of a waxing and waning Venus; a cratered lunar surface; and sunspots that moved across the face of the sun; all of which nullified Aristotle's ideas that the heavens were unchanging and flawless. The heavens were found to be subject to nature's laws as well, including the inevitable decay of its various components.

"The Time is Out of Joint"[9]: Cultural Disorientation as Represented in Renaissance Works

[8] There is evidence that Thomas Digges performed the same experiments in England when the supernova appeared in 1572.

[9] Shakespeare, William. *Hamlet* 1.5.188.

These developments conflicted with conservative or traditional accounts of the place of the earth, and thus humanity, in the cosmos. The new theories meant the collapse of a system that had ensured men's exclusive relationship with God as defined in the *Genesis* chapter of the Holy Scriptures. A prominent concern was the possibility of a plurality of worlds with the resultant loss of man's supposedly unique relationship with God, an idea explored in relation to John Donne's work in this study. This threat resulted in an ontological crisis as the Aristotelian great chain of being, which had defined an ordered hierarchy for both heaven and earth, was also threatened – with no reassuring philosophical model emerging to replace it. Another immediate concern was the invalidation of Aristotelian movement theory, a theory that had been based on a geocentric model of the universe. Until Newton's gravitational theories were proposed, a viable explanation for physical movement on earth or in the heavens remained an obscurity.[10] In this way, the loss of the Aristotelian cosmic model affected the study of physics in addition to the study of philosophy.

Much of this uncertainty is reflected in Renaissance literary texts. Many Renaissance works, including those of a particular genre, the Elizabethan revenge drama, have elements that seem to have originated from this distress and uncertainty. Tropes of thwarted revenge, abdicated, absent or perverted authority that triggers massive loss, and echoes of societal anarchy and loss of certainty permeate Elizabethan drama and Renaissance poetry. I argue that the inability to empirically prove a cosmological model that was physically demonstrable and the inability to accommodate a supreme deity within this new physical schema

[10] There was some speculation that Gilbert's magnetism might play a part in the "attraction" of one body of matter to another (Fletcher 17).

heightened and defined these themes of loss, authoritarian anarchy and societal decay in Renaissance texts.

This study will focus on applicable passages within Renaissance literature that reflect these new developments, as Renaissance literature is frequently infused with astronomical representations that echo the influence that cosmology had on early modernist litterateurs. Christopher Marlowe embedded remote cosmological references from Europe into his mesmerizing plays; William Shakespeare's plays include obscure references to astronomy; and John Donne appropriated examples from astronomy in his poetry as extended conceits, including some based on very explicit astronomical terms and concepts. These applications demonstrate a growing awareness that these theories and discoveries were impacting early modern culture, and collectively, they form a narrative that traces the anxiety surrounding the concepts and the controversies thereof.

These works contain distinct elements of displacement and its resultant loss, decay and lack of authority, which are in some cases mourned and in other cases celebrated. Marlowe's *Doctor Faustus* is a play that exploits the prevailing cosmological and philosophical uncertainty of his time. Marlowe used the stage in *Doctor Faustus* to exploit the ideas implicit in this "new philosophy," manipulating his audience through spectacular displays and discussions of the latest controversial theories in natural philosophy as a means of enticing its members to return to the theater as a safe place to enjoy the aesthetic presentation Marlowe allowed them to experience without consequence. In Shakespeare's *Hamlet*, the new ideas echo the ensuing social anarchy that accelerates the tragedies that unfold. *Hamlet* is a play centered on doubt. Hamlet grapples with doubt, questioning if the ghost is really his father's ghost, if the phantom could be believed, and if he should take his

revenge or acquiesce to the existing hierarchy or authority in place. Donne appropriates the new science to expand his sense of the scope and mystery of the universe, which then allows him to discount scientific efforts to measure and master the natural world as essentially hopeless when he is faced with the infinite wonder of it all. This allows him to simultaneously embrace and reject science.

These works all contain passages that are often interpreted as mere poetic device or dramatic plot detail, but are often representative of actual configurations or astronomical concepts. This reading adds a layer of meaning to these works. The examination of these passages on astronomy reveals additional meanings within the texts for a culture in flux. These passages also reveal the writers' familiarity with contemporary astronomical theory and their projected audience expectation of this knowledge, thus enhancing the more cryptically technological history of astronomy found in existing criticism. My approach in this study is cross disciplinary, as an application of texts from historical, literary and astronomical criticism. It includes a revised interpretation resulting from the reexamination or decoding of certain phrases in poetry or drama. I propose that certain phrases within early modern literature may be more significant within a reframed context situated in the realm of science, and that this significance is not initially apparent. I maintain that explication of these terms can alter their traditional interpretations.

Some of this terminology is associated with various ontological shifts of the era that signify an expanded world and cosmos. These expanded realms become visible onstage and in print through the expansion of the Elizabeth stage beyond localized settings and in the expansive nature of Donne's cosmic conceits. One example of this trend can be seen in Shakespeare's explicit instruction to his audience to visualize an expanded setting that would

allow "…this cockpit [to] hold / The vast fields of France," in the opening of *Henry V*, specifically requesting "On your imaginary forces work" (1.1.11-12). Marlowe, in turn, allows his audience to envision Faustus's earthly and cosmic voyages as described onstage. I maintain that this expansion is reflective of the expansions in the world – both the new world and the cosmic realm that is being redefined. I argue that the discoveries within these worlds appear on stage and their ramifications for humanity are debated and processed in Renaissance drama and later circulated in Renaissance poetry.

"A Lewd Compiler of the Labor of Old Astrologers"[11]: An Analysis of Geoffrey Chaucer's Aristotelian Cosmology as Medieval Literary Precedent

Before I turn to the Renaissance texts, I want to examine the prehistory of the literary response to the new science. Chaucer provides the most applicable model of this literary prehistory. Chaucer represents the freedom of speculation about science that medieval writers enjoyed before the new discoveries of the early modernists. Chaucer is allowed to explore speculative scientific ideas both in and outside of his literary writings without concern about the theological or ontological implications. Because he belongs to a culture innocent about science, he can contemplate the movements of a heavenly realm disassociated with any underlying meanings of those motions. As such, he provides a valuable contrast to the Renaissance writers who knew and faced the fact that science had become a problem that they would have to address. They had to either embrace it, as Marlowe does, fear it, as Shakespeare does, or attempt to separate it from theology, as Donne does. Chaucer's work demonstrates how compatible poetic metaphor and symbolism worked within a cosmos fashioned around the major subject of that symbolism, humanity, in a hierarchal universe that adhered to the accepted theological ideas of the time.

[11] Chaucer, Geoffrey. "Treatise on the Astrolabe."

Geoffrey Chaucer's poetry and non-fiction science treatises serve as examples of the typical literary treatment of cosmology during his era. Chaucer, whose work is infused with astronomical references, both tangible and metaphorical, demonstrates how it was possible during the Middle Ages to add passages and themes from recovered classical works into Christian poetry without threatening the existing theological world order, or add revised mathematical calculations and concepts into "science" treatises without threatening the existing physical world order, a practice that would prove problematic two hundred years later.

Medieval literature explores tropes based on the homocentric, geocentric, humanity centered nature of the cosmos during that time, and by extension, God's dominant place at its zenith. Although Chaucer, like Marlowe, claimed that there was no sensory proof of an *empyrean* heaven beyond the visual plane of the solar system, he could do so with impunity, even as a prominent courtier associated with the court. His society held that almost every tenet of its philosophy was a matter of faith. Chaucer also enjoyed the freedom of theological expression allowed during the time of a unified church. As this societal hegemony began to unravel on both cosmological and theological fronts, it would become more difficult for writers to explore new ideas without alarming a culture increasingly in crisis. Once happily integrated into a larger, stabilized cosmological model during Chaucer's era, science became increasingly detached from its place within the traditional worldview, thus becoming progressively more associated with heresy, becoming dangerous to its practitioners.

Elements from classical philosophy were comparatively entrenched in medieval writing, as astronomy had become conflated with not only concepts of Platonic and

Aristotelian ideas of perfection, but with theological concepts as sidereal eschatology[12], eventually evolving into recurring tropes in medieval poetry. One such idea is the belief that the eternal resting place of the soul was in the empyrean realm, after a sojourn with a spirit guide, often Mercury, who would direct the soul up through the celestial spheres after death, purging itself of negative traits as it passed each planet associated with a particular fault. Chaucer included this concept in several of his poems, such as *Troilus and Cressida* and his "dream-sequence" work "House of Fame." The new discoveries of the Renaissance scientists, however, destroyed this idea. The empyrean heaven, the final destination of the soul, could no longer be located at the zenith of the universe from the vantage point of the earth beyond the sun. The soul's metaphysical ascension was disrupted by the new structure of the universe and the corrupted heavens.

An example of this idea of a metaphysical philosophy connected to the physical structure of the cosmos is the dual nature of Aristotle's Prime Mobile or "First Mover" of the universe. The First Mover was thought to be physical catalyst that triggered the motions that moved all of the spheres in the universe. The First Mover was also thought to be a metaphysical representation of God himself, or at least a manifestation of his power. Chaucer's versatile treatment of concept of the First Mover is an example of his ability to shift between these tropes literally or figuratively. In the closing section of *The Knight's Tale,* Chaucer describes the concept as a philosophical, allegorical representation of God:

[12] Sidereal eschatology was based on the pagan Greek and Roman worship of the stars and planets. It held that after death the soul, if virtuous, ascended through the heavens and was purged through its interactions with the various planets it passed on its journey. For example, soul was purged of lust as it passed Venus or anger as it passed Mars. This concept allowed the medieval soul to "look down" on a lapsed world with a detached viewpoint, as Troilus does in Chaucer's *Troilus and Cressida* or Arcite does in Boccaccio's *Il Teseida del Nozze d' Emelia*. (Cumont 110). The new cosmological model would have rendered this philosophy untenable as the planets would no longer line up in the order that a subject could "look down" on the earth as the inception of its journey. It was a philosophy that was intractably connected to the idea of a cosmic hierarchy.

> The First Mover of the cause above, when he first made the fair chain of love, great was the effect, and high was his intent. Well knows he why and what whereof he meant, for in that fair chain of love he bound the fire, the air, the water and the land in certain bounds, that they may not flee. That same Prince and that Mover, Quod he, 'Hath stabilized in this wretched world around Certain days and duration to all that is engendered in this place, over the which day they may not pace, or know yet the days well abridged.[13] (Chaucer *KnT* lines 2987-2999)

In this passage, Chaucer demonstrates the role that Aristotelian theory played in the accepted medieval cosmic model.[14] Chaucer describes a Christianized Aristotelian system in which God, as the "First Mover," and creator of "the fair chain" has bound the elements into their own domains to "stabilize" the "wretched world." Chaucer also depicts a mysterious God, who "well knows…why and whereof he meant" concerning his actions, yet restricts certain knowledge from humanity. This poetic passage reveals how effortlessly medieval allegory worked with medieval cosmology. Medieval scholars and writers aestheticized and theologized the physical and allegorical heavens with impunity as they had such little empirical knowledge of their actual composition or dimension. Medievalists perceived a very limited physical model of their "heavens" formed by concentric crystal spheres with the earth at the center and God's empyrean court at its zenith. Dantean tropes featuring allegorical travel between realms, for instance, were firmly anchored into the existing model of their limited and concentric universe.0

[13] Note the prominent role of Aristotle's great chain of being, or "fair chain of love" in this passage, adapted from Boethius.

[14] The *Knight's Tale* is an adaptation of Boccaccio's *Il Teseida delle nozze d'Emelia* (The *Story of Theseus Concerning the Nuptials of Emily*), written around 1339-41. Chaucer, however, deletes Boccaccio's descriptive passage of Arcite's soul's celestial flight and adds a narrative at the close of the tale.

Chaucer's treatment of the First Mover in his non-fiction *Treatise on the Astrolabe* demonstrates how this limited model was represented in science treatises as well as poetry and serves as an example of his ability to speak to both poetry and science without conflict. This didactic "instruction manual" is a translation of two medieval sources combined with Chaucer's original commentary, including additional specifics in regard to methodology in measuring the movements of the cosmos. It is considered the first purely technical written text published in the English language (Benson 661). The treatise is considered a scientific work that held immense versatility for Chaucer's contemporaries.[15] In the work, Chaucer confirms his astronomical abilities as he revises measurements that have shifted and conducts experiments and notes his results. The result is a work that is void of any poetic passages or philosophical speculation.[16] Chaucer's treatment of First Mover in the treatise is concise if scant. In the applicable passage, Chaucer states:

> This equinox [marker] is called the girdle [circle] of the first moving
> Or else of the first movable. And note that the first
> Mover is called the mover of the first moveable of the
> 8[th] sphere, Which moving is from east into west, and after
> again into east. Also it is called the girdle of the first m

[15] For example members of the clergy used it to determine the correct times for daily calls to prayer, travelers used it to determine distance and direction, and builders used the geographical/trigonometrical application for construction purposes. It allowed many non-Latin speaking laymen and lapsed Latin speaking clergy to complete their tasks using English in lieu of the difficult dialect. As a testament to its popularity It survives in more manuscript copies than any other Chaucerian work with the exception of his *Canterbury Tales* (Laird 412).

[16] The practice of including poetry in science treatises appears to have occurred frequently in both translation and in original composition of scientific works written prior to Chaucer. Sources such as Sacrobosco tended to weave passages of classical and patristic literature into their scientific treatises, often quoting Virgil, Ovid or Lucan in the main body of their work (Mahoney, par 1). Thomas Werkwoth, an Englishman who wrote a note in 1350 on the motion of the eighth sphere adds "and since by that path the world will reach its end, namely when that sphere shall have completed another revolution, according to the ancients" (qtd. in Thorndike 215). A majority of these poetic/scientific hybridic writings featured the concept of First Mover and sphere theory, and the theological/philosophical celestial empyrean located beyond the last celestial spheres.

> moving, for it departs the first movable, that is to
> say, the sphere, in two like part even distance from
> the poles of this world. (Chaucer *TA* 251-258)

This instruction comes as part of Chaucer's initial introduction to the basic mechanical markings on the instrument's face that Chaucer provides his reader. Chaucer's treatment of the concept varies greatly from his source, Sacrobosco, who claims that the "first movement" means the movement of the *primum mobile,* that is, the movement of the ninth sphere or last heaven. Sacrobosco, unlike Chaucer, adds an Aristotelian reading to the passage, stating that the first movement of the First Mover is called "rational motion" because of its role in the cosmos as the force that delivered the human soul to the Creator (qtd. in Thorndike 123). Sacrobosco's text is typical of the conflation between physics and theology so prevalent in medieval literature. Bereft of modern physic laws to accurately explain motion, medieval writers such as Chaucer were forced to include some concept of a First Mover in their descriptions of the spheres. Chaucer's decision to delete Sacrobosco's philosophical aside on the spiritual/theological explanations of the first mover supports the idea that Chaucer's treatise was a forerunner to the explicitly non-fiction scientific treatises that would appear in the next century. His deletion, however, was non-controversial. Medieval writers could add or delete philosophical or theological passages into scientific treatises with impunity. This is evidenced by the idea that few medieval writers faced serious persecution for their non-traditional views, even academic dissenters such as Nicole Oresme, counselor for King Charles V of France, who presented a range of evidence for and against the daily rotation of the Earth on its axis in his *Livre du Ciel et Du Monde* (Grant, *Foundations* 4).

Chaucer's dual treatment of a complex idea such as the First Mover is applicable to this study as it demonstrates how astronomical concepts could impact poetry and how they could be either aestheticized or incorporated into genres. The most significant difference in the reception of Chaucer's work as compared to the reception of Renaissance poetry or drama is that Chaucer's work, even his non-fiction texts, did not threaten the Aristotelian chain of being that Chaucer describes in his poignant passage of "The Knight's Tale." Chaucer, even while acknowledging that he was no "diviner," did not live in an era in which humanity's basic theological or philosophical concepts, usually symbiotic, were threatened by any astronomical or scientific discoveries. He experienced life within a monolithic church and in a world without the recovered texts of antiquity that would reinvent philosophy or the ever more precise instruments that would question the "sphere mundi's" status as the center of the universe. This is not to say that medieval writers were not vulnerable to charges of heresy, merely to point out that certain heretical ideas, such as heliocentrism, were not being prominently debated, and thus, were not eliciting speculation. Renaissance dramatists and poets would face new challenges as they attempted to aestheticize the world as it was being redrawn and redefined. The model of the cosmos in all of its forms, so crucial to epic drama or poetry was threatened, facing controversial theories about its composition and organization.

"Tell me, Are There Many Heavens Above the Moon"[17]: Astronomy in Renaissance Literature

Reviewing Chaucer's experiences with medieval literature and cosmology allows me to offer a fuller account of my argument regarding the three Renaissance writers I examine in this study. After the cosmic discoveries of the Renaissance era became known, the literary

[17] Marlowe, Christopher. *Doctor Faustus.* 1.6.37.

laissez-faire that Chaucer and his contemporaries enjoyed was no longer possible. The heavens became more reified and its parameters ever more closely measured and calculated. It was found to be "flawed," and its components were found to be free standing, no longer representing the medieval hierarchy that placed humanity at its center. This project examines how three of these Renaissance writers, Christopher Marlowe, William Shakespeare, and John Donne faced those challenges. There are several concepts that are explored by these writers collectively. Principally, these writers address the idea of engaging with the expansive new ideas and possibilities of the new terrestrial world or "new land" and the expanded cosmos; the idea of a new universe that is not physically centered around humanity; the idea that the earth is only one of a "plurality of worlds," and the related idea that humanity may not be singular to its God; the idea of an unreifiable heaven and a displaced hell and the ramifications to theology; the idea of a corrupted heaven and thus the loss of Aristotelian certainty about the nature of the universe; and the appropriation of all of these factors into an apocalyptical vision for a distressed culture. For the purposes of this study, individual writers' works are chronologically presented and their reactions examined and explicated.

In Chapter 1, "'What Will Be, Shall Be, Divinity Adieu!': Marlowe's Endorsement of the 'New" Cosmology," I explore the idea that Marlowe used the stage in *Doctor Faustus* to exploit the ideas implicit in this "new philosophy," manipulating his audience through spectacular displays and discussions of the latest controversial theories in natural philosophy as a means of enticing its members to return to the theater as a safe place to enjoy the aesthetic experience Marlowe allowed them to experience without consequence. He establishes that "conjuring" or superstitious summoning does not really work through a failed

phenomenology onstage, demystifying the occult and proving that it is merely illusionary thus illogically heretical. He then uses his arena to dispute another traditionally heretical issue that truly obsesses him – the nature of the universe. This juxtaposition allows him to associate curiosity about the nature of the universe with the impunity of the failed phenomenology and its resultant logic. He then connects this message to the unrepentant Faustus, who is offered redemption until the close of the play, irrespective of his insatiable demands for knowledge of the world.

Doctor Faustus is a play centered on performativity and Marlowe uses this idea to debate the heliocentric/geocentric controversy onstage. In the play, Marlowe demonstrates his esoteric knowledge of this debate, likely gained through his associates in Sir Walter Raleigh's "Circle of Night" scholars, as well as his proclivity towards controversy. He also expands the stage to include that controversy as his character takes an exploratory "voyage" into the cosmos in an attempt to resolve the dispute. Thus, Marlowe introduces a concept from contemporaneous astronomical debate onto the Elizabethan stage, and deliberately alters his original source in order to do so.

After challenging the physical nature of the universe, Marlowe challenges its theological nature, claiming that heaven and hell are "mere fables." This is a predictable position for the free-thinking Marlowe, but it seems to be alluding to the greater cosmological debate. The new heliocentric order, by demoting the Earth to just one of many solar satellites, also displaced or disputed the traditional locations of heaven and hell, just as the new Protestantism disputed the existence of Purgatory. These remarks are immediately followed by dialogue on the true cosmological order of the universe or the true "motions and dispositions" of the planets in the heavens. As Marlowe complicated and abstracted ideas for

the locations of heaven, hell, and even God, his play diminished the importance of a physical schema centered on a specific cosmology. In addition, the absence of intercessory figures, such as the Pope, ridiculed and incapacitated in the play, generally simplified acceptance of new ideas overall. Although many Early Modern scholars and writers feared and condemned the "new philosophy," Marlowe embraces it, re-envisioning and transferring it to the stage. In Marlowe's play, it becomes a testament to the exciting possibilities inherent in the new philosophy. Marlowe converts a displaced universe into an expanded universe and then demonstrates this expansion through performativity onstage.

In my third chapter titled, "'Doubt that the sun doth move[18]': Echoes of Anti-Aristotelianism in *Hamlet*" I examine William Shakespeare's *Hamlet*, with a concentrated focus on the significance of the supernova which opens the play. This chapter will focus on the many manifestations of loss and anxiety echoed in *Hamlet*, including the sense of displacement caused by the loss of an Aristotelian homocentric universe. This study argues that the metadramatic, ontological, and rhetorical influences originating from this controversy appear in *Hamlet* and shape the nature of the play. I maintain that the major emblem of this controversy in the play is represented in the supernova of 1572 as the catalyst of a discredited Aristotelian system. I also claim that the despair resulting from the loss of the philosophical/theological components found in the Aristotelian chain of being is echoed in the play through its themes of doubt, decay, nihilism, and temporal and spatial distortion. The play also reflects certain eschatological elements that the appearance of the supernova elicited in contemporaneous pamphlets. Hamlet's paralyzing doubts and psychoneurotic behavior should be examined against the ontological distress of this pivotal era when a series

[18] Shakespeare, William. *Hamlet* 2.2.

of critical discoveries about nature and cosmology were changing long held ideas about natural philosophy, theology and the physical state of both the world and the universe.

Hamlet lives in a world where "time is out of joint" (1.5.188), and "something is rotten in Denmark" (1.4.90). The play contains many allusions and references to actual astronomical terms and concepts. The analysis of specific astronomy terms, which are abundant in this play, augments my overall thesis – that the play features an Anti-Aristotelian trope meant to represent an entire universe in decay as a result of a cosmological crisis. After the supernova of 1572 offered visible proof of a "corrupted" or changing heaven, Elizabethans had to face the reality that the comforting idea of perfection in the heavens did not exist – either in God's realm or their own. Existing criticism of *Hamlet* ties this sense of loss to the Reformation. This study attempts to complicate this criticism by providing a dual causality for these themes of loss – the additional loss of the homocentric universe and its resultant void in authority.

In Chapter 4, titled "'And the New Philosophy Calls All in Doubt'[19]: John Donne's 'New' Heliocentric Universe" I focus on Donne's struggle with the idea of heliocentrism, including his struggle with the theological and philosophical ramifications that the new model of the universe represented after Galileo's *Sidereal Messenger* was published in 1610. I also argue that Donne is troubled by another astronomical concept that has been neglected by critics – the possible existence of a plurality of worlds suggested by Galileo's work. I propose that the idea of a plurality of worlds captured his imagination and became thematic in these three works.

[19] John Donne. *An Anatomy of the World: The First Anniversary*. line 1.

This chapter focuses specifically on Donne's treatment of the subject as represented in three of his pivotal works, his *An Anatomy of the World: The First Anniversary*, written in 1611, *Ignatius His Conclave*, also written in 1611, and *Of the Progress of the Soul, the Second Anniversary*, written in 1612. I argue that these works chronicle a struggle and form of psychological reconciliation for Donne, or a means of reconciling the then accepted theological requirements of an earth centered, and thus, humanity centered, universe with the ever more convincing mathematical arguments of a sun centered universe. I maintain that his unyielding skepticism, originating from his love of reason, ironically forced him to acknowledge that which threatened his other great love, his faith itself. I claim that Donne, after considering the inherent possibilities within these extraordinary measurements which are explored in *Ignatius His Conclave*, develops his own ideas about the goals of the new science. Donne appropriates the new science to expand his sense of the scope and mystery of the universe which then allows him to discount scientific efforts to measure and master the natural world as essentially hopeless when he is faced with the infinite wonder of it all. This in turn allows him to simultaneously embrace and reject science. He is able to accept the vast new worlds of stars and planets the new philosophy promoted, but reject the theologically challenging claims that questioned the existence of heaven or hell solely based on science's inability to reify or quantify those concepts. This ability to envision the vastness of God's universe allows Donne to reconcile it with traditional faith as an extension of God's universe rather than a limitation. In essence, Donne saves theology from science and science from theology by delineating the two realms.

Although these writers wrote with differing agendas and in differing genres, the commonality they share is their use of the new astronomy as an expansive trope or a catalyst

for a re-visioning of the world. Helen Conrad-O'Briain ties this concept to the development of the science fiction genre. She argues that it is both "question and fear driven," and originates when extraordinary power and the unknown entered human society through knowledge. She describes a process in which:

> …a human gains or seeks power through knowledge and/or technology and struggles or succumbs to the concomitant temptations and moral dilemmas for flawed humanity. In the second, humans individually or collectively face beings with powers, values, and conduct which threaten or may threaten the individual and society. (Conrad-O'Briain 31)

This idea is evident in Marlowe's *Doctor Faustus* and it is echoed in *Hamlet*, who is conflicted about the existence of an afterlife or its inhabitants (his father's ghost). Hamlet's studies in Wittenberg create doubt even prior to his arrival in Denmark. Donne is more obsessed with the threat of a plurality of worlds, which may contain beings constituting a new "other." Donne's scathing commentary concerning the author of one of the earliest and most well known science fiction works, Johannes Kepler's *Somnium*, demonstrates his own concerns about a new cosmos with its innumerable, infinite worlds.

Both Shakespeare and Donne's works reveal an underlying fear of the unknown that drive their texts. The contentious Marlowe turns that fear on his audience, as the lines between "conjuring" and magic become blurred with the reproducible evidence gleaned for empirical alchemy or the new refined measurements of astronomy. Two of the writers examined here, Marlowe and Donne, were university educated, and Shakespeare demonstrates a proficiency with an academic curriculum. Many universities taught the tenets of Copernicanism, albeit as a hypothetical system that coincidentally resulted in more

predictable, accurate planetary measurements. These writers also had access to Thomas Digges's 1576 English translation of the new theory. S.K. Heninger Jr. describes the explicitness of Digges's publication, noting that in addition to the text, Digges included a folding diagram to help the reader visualize Copernicus's hypothesis. He claims that this was remarkable not only because it placed the sun in the center, but also because it indicated a universe stretching to infinity (Heninger 125). These publications exported Copernicus's theories to a more mainstream English audience. This increases the likelihood that Shakespeare and Marlowe were exposed to the new cosmic model. Donne, born later, had direct access to Galileo's work, and he comments about it in the works examined here, particularly in his *Ignatius His Conclave.*

This study also addresses how the emerging scientific knowledge interacted with the culturally driven aesthetically focused Elizabethan drama and poetry of the age. Valerie Traub describes how the pre-disciplinary organization of knowledge of the late sixteenth and every seventeenth centuries, before separate fields of expertise had been firmly demarcated, used literary texts as agents of scientific discourse - whether they were "inflecting, qualifying, subverting, or challenging science or being inflected, qualified, subverted, or challenged by it." She makes the argument that even though literature and science produce different kinds of cultural and empirical knowledge, their common store house of representation strategies suggests that the "modes of knowing" they implemented were intimately related. She claims that this is evidenced in the "topological, thematic, and structural complexity" of literary texts, including their "densely interwoven figurative language; their self-reflexive, compound, antiphonal plots; and shifting points of view" that are "evidenced through the metaphoric, metonymic, and mimetic, to the structural,

epistemological, and nonrepresentational" (44). I expand on this argument by adding the idea that although science as it evolved appropriated existing literary structures and tropes, this process was subsequently reciprocated as Renaissance dramatists and poets adopted and transformed esoteric terminology and cosmic tropes from the new sciences to incorporate them into literature, making its language more fluid. I argue that the work of these three writers be seen as examples of this idea, as works that artistically reproduced the astronomical discoveries that were changing the tenets of philosophy and theology as their writers struggled to resituate their craft within this "new philosophy" and world order.

CHAPTER TWO: "WHAT DOCTRINE CALL YOU THIS?"[20]: MARLOWE'S METADRAMATIC *DOCTOR FAUSTUS*

Marlowe wrote at a time of great philosophical shifts that were frequently tied to new discoveries in the natural world. This study explores the idea that Marlowe manipulates his early modern audience through metadramatic appropriation of the controversial ideas implicit in the "new philosophy" of his era, particularly astronomy. In *Doctor Faustus,* he influences his audience through spectacular displays and discussions of the latest controversial theories in natural philosophy as a means of enticing them to return to the theater. Marlowe is pushing the envelope, but in a more complicated manner than is first apparent. He establishes that "conjuring" or superstitious summoning is merely illusionary and thus non-heretical, and then introduces another traditionally heretical idea that he can dispute that truly obsesses him – the nature of the universe. He attempts to prove that mere curiosity cannot condemn, any more than it alone condemns the unrepentant Faustus, who is punished not for his curiosity but for his willful rejection of God and his offer of salvation.

Doctor Faustus is a play that centers on performativity. Andrew Sofer argues that it was "precisely the potential for inadvertent magic on the part of the players – the belief that Faustus's spells might operate independent of actor and character – that thrilled and alarmed Elizabethan audiences…" (3). He claims that for Elizabethans, the power to conjure came from the utterance itself rather than the will of intention of the speaker. Magic spells were considered perlocutions, the performance of an act by saying something, rather than illocutions, the performance of an act in saying something (4). Faustus's words also bring forth a representative demon, Mephistopheles, who pushes performativity to its limit. In the

[20] *Doctor Faustus* 1.1.47.

play, Faustus's onstage methodology is so close to the actual methodology of the Renaissance necromancer that he performs the "correct" incantations that "should have" resulted in an actual incidence. His audience enjoys the vicarious thrill of watching a performance that would have otherwise condemned them. Daniel Gates claims that magic is ultimately a phenomenological practice - the art of changing consciousness at will and persuading others to accept one's version of reality. He argues that the theatre held the power to achieve that result, stating that Marlowe's iconoclastic vision demystifies the idea that words have intrinsic magical power and that from a phenomenological perspective; it is precisely this contagious belief that constitutes theatrical magic (62-63). I argue that Marlowe demystifies magic through a controlled phenomenology. In other words, Marlowe's audience is able to enjoy the spectacle of the play because of its conviction that Faustus's conjuring is a controlled exhibition and they are in no real danger – physically or theologically. I maintain that Marlowe's intent is not only to demystify and lessen anxiety about magic, but to demystify and lessen anxiety about other heretical ideas, such as the latest discoveries in the natural world by exposing his audience to them in this nonthreatening but tantalizing way.

I hold that Marlowe uses this controlled phenomenology to push the limits on another potentially blasphemous idea - the new cosmology. Gabrielle Sugar claims that Marlowe's *Doctor Faustus* contains references to the Copernican universe, an idea that frightened early modern audiences. Sugar claims that *Doctor Faustus*'s A-text is much more ambiguous about which model of the universe is accurate than his B-text. She argues that while Ptolemy's notion of an earth-centered, or geocentric universe still prevailed in Elizabethan England, Copernicus's sun centered or heliocentric universe was slowly beginning to

influence ideas on the conception of the cosmos. Sugar claims that the idea of Faustus searching for proof of this newly conceived world "makes him more transgressive than the devil himself." This is the result, according to Sugar, of Marlowe's ambiguity in the A-Text of *Doctor Faustus*. As evidence, she cites the aerial voyage his protagonist takes in the A-text, thought to have been written in 1510. In the A-text, the chorus describes an ambiguous cosmos – neither Ptolemaic nor Copernican, allowing for the possibility that either vision could be true (144). In the B-text, thought to have been written in 1602, the Chorus's description of the voyage is more explicit, describing a system that is clearly Ptolemaic (143).

Sugar also claims that the location of Faustus's university in the A-text, "Wertenberg," the site of Johannes Kepler's university, is more closely aligned with Copernicanism, as the place where he wrote his dissertation supporting the concept in 1593 (142). The editors of the B-text changed Faustus's university setting to Wittenberg, ironically also associated with Copernicanism but more closely associated with Luther. Sugar concludes by noting that Faustus escapes a more horrendous punishment and is therefore judged less harshly for his actions or his thirst for knowledge in the A-Text (145). She argues that the reason for this revised treatment of the material is a result of a form of censorship by later editors who meant to send a message about the danger of questioning the Ptolemaic universe and its association with a homocentric universe at the center of God's cosmos.

I would like to expand that claim in this chapter, arguing that Marlowe's decision to be ambivalent about Copernicanism in the A-text of the play is deliberate and consistent with his objective. I base this conclusion on several points, such as the idea that Marlowe chose to

be ambivalent about the physical construction of his cosmos, refusing to adopt the Copernican model forwarded in the first English translation of the *Fausbach* written in 1592; his cryptic and dismissive disputation with Mephistopheles on the mechanics of the universe; and his choice to avoid an absolute endorsement or refutation of the theories then being debated by his own scholar/associates who promoted the heliocentric model (Dollarup 104). I also maintain that the concept of a re-aligned world concept would represent displacement and loss to the Christianized Aristotelian Elizabethan society, and although Marlowe tantalizes his audience with Faustus's persistent demands to know about that new order, he refuses to unequivocally answer those demands, choosing to perpetuate the anxiety of the unanswered question of the nature of the universe in the late sixteenth century.

I claim that Marlow is using the Elizabethan stage to explore new concepts such as heliocentrism, celebrating the challenge to the Aristotelian/Ptolemaic model of the universe with its ordered heavens and Empyrean heaven. I argue that he uses the stage to directly dispute the controversy with Mephistopheles in front of a captive audience and that he is aware of the ramifications of the new philosophy, which would demote the earth to one of a plurality of worlds. Marlowe's work echoes the idea of a heaven that was no longer solely the mysterious realm of God. Marlowe's heavens were being subjected to geometrication and pressing demands about its physical nature. After the appearance of several celestial bodies in the region of heaven above the moon, such as the supernova of 1572, had disproven the idea of a perfect, immutable heaven, early modern society faced the threat of a macrocosm as well as a microcosm in decay and in flux. This idea destroyed the Aristotelian great chain of being. I assert that Marlowe presents his audience with some of the ramifications of the loss of that model, including a confused sense of hierarchy where there is

doubt about redemption, a confusion about the nature of heaven and/or hell, and the unsettling idea of a failed phenomenology that allowed onstage "conjuring" to be performed without repercussion.

"Resolve me of all ambiguities"[21] : Faustus's Onstage Disputation on the Nature of the Universe:

Recent studies of Marlowe's A-text have established that text was set in type from an original authorial manuscript composed of interleaved scenes written by Marlowe and a collaborating playwright, and that the B-Text represents a version of the play that had been extensively revised more than a decade after Marlowe's death (Bevington xxvii). This meant that Marlowe maintained more control over the content of the A-text than the posthumous B-text. If, as Sugar maintains, Marlowe refused to endorse either Ptolemaic or Copernican concepts of the universe in the A-text, his actions can be seen as a deliberate refusal to ally fears of his audience by conforming to the views of prevailing authority by endorsing the Ptolemaic view, and propagating doubt in his audience. In other words, Marlowe could rebel against an authority that saw the Copernican model as blasphemous through his mere non-endorsement of the Ptolemaic model. Faustus's insistent, insatiable, and obsessive desire to find the true nature of the universe from Mephistopheles surfaces at crucial points in the play and sends a signal to his audience about the importance of this issue in early modern culture. The idea that Marlowe constantly presses a question that he refuses to answer is evidence that he enjoyed the tension that surrounded the great mystery of the time. While Sugar argues that the editors of the B-text worked to make the play conform to the standard beliefs of the era, I argue that Marlowe was not as passive about the content of his original play, the A-text

[21] *Doctor Faustus* I.1.79.

version, as it would appear. Marlowe knew of the growing acceptance of Copernicanism in certain circles through his associates, thought to be Copernicans, various publications and lectures in England, and even the first English version of the original source of his play, which promoted the new idea.

Marlowe chose not to follow the cosmic lead of the first English translation of the German *Faustbuch*, which appeared around 1592. In this work, the writer, thought to be Patrick Forbes (1564-1635),[22] the later bishop of Aberdeen, is clear in his depiction of the Copernican model as the true model of the universe. His Faustus states during his exploratory aerial voyage that he "marveled with myself how it were possible that the Firmament should be known and so large written of men, or whether they write true or false, by their own opinions, or suppositions, or by due observations and true course of the heavens" (qtd. in Dollarup 104). When Mephistopheles takes Faustus on an eight day tour of the universe in Forbes's text, he notes that:

> We think that the Sun runs his course, and that the heavens stand still: no, it is the heavens that moue his course, and the Sun abides perpetually in his place, he is permanent, and fixed in his place, and although we see him beginning to ascend in the Orient or East, at the highest in the Meridian or South, setting in the Occident or West, yet is he at the lowest in September of North, and yet be moved not. It is the axle of the heavens that move the whole firmament, being a Chaos or confusion think, and for the proof, I will show thee this example, like as thou sees a bubble made of water and soap blown forth of a quill, is in

[22] Forbes's authorship is not without challenge. Dollarup bases this claim on several points, including the initials, "P.F.T."(translator) found on the translation, the idea that the writer was thought to be a clergyman, as the book is deeply religious, and that Forbes is the only one of the three persons known today with those initials who was at Oxford at the time when Giordano Bruno was lecturing there. Dollarup claims the passage reflects Bruno's ideas on the subject.

> form of a confused masse of Chaos, and being in this form, as moved at pleasure of the wind, which runs round about that Chaos, and moves him also round: ever so is the whole firmament of Chaos, whereon are placed the sun, and the rest of the Planets turned and carried at the pleasure of the Spirit of God, which is wind. (qtd. in Dollarup 105-6).

Forbes seems confident of his convictions and his interpretation of God's heavens in his translation, stating, "Yea, Christian Reader, to the glory of God, and for the profit of thy soul, I will open unto thee the divine opinion touching the ruling of the confused Chaos, far more than any rude German Author, being possessed with the devil was able to write" (105). Forbes continues to defend his claim while reassuring his audience that the model is spiritually compatible with God's will as it is geometrically compatible with the physical appearance of the heavens, stating:

> …through the wind and breath of man is turned round, and carried with every wind even so the firmament wherein the Sun and the rest of the Planets are fixed, moved, turned, and carried with the wind, breath, of Spirit of God, for the heavens and firmament are moveable as the Chaos, but the sun is fixed in the firmament (qtd. in Dollarup 105).

The idea of Copernicanism is clearly laid out in this translation as the "truth" that the "rude German Author" was afraid to demonstrate in an attempt to reassure Christian readers. Marlowe does not choose to endorse this model as explicitly on the stage. Yet his A-text does not dismiss it, supporting both Sugar's idea that it was apparently safer to explore new ideas about the heavens before the supernova of 1604 and Galileo's publication of 1610 and her argument that Marlowe prefers to be ambiguous about them. In any case, he refused to

either risk adopting and promoting Forbes's views, or disputing them, even when laid out so clearly by Forbes, Forbes's theological rationalizations withstanding (Sugar 145).

In Marlowe's *Doctor Faustus,* in addition to his exploratory cosmic voyage, Faustus offers his audience an onstage disputation with Mephistopheles in another attempt to determine the exact nature of the universe. Shortly after the opening of Scene 3,[23] Faustus insists that Mephistopheles join him in a disputation on "divine astrology" (2.3.33-34). Even though Faustus demands, and is given, a book that allegedly holds the answers to his questions on "all characters and planets of the heavens, that [he] might know their motions and dispositions"(2.1.167-169), he does not demonstrate any added certainty on the matter in the next scene of the play, asking Mephistopheles a series of questions such as if "there [are] many heavens above the moon?" and if "all celestial bodies [are] but one globe, as is the substance of this centric earth?"(2.3.35-37). After a complex discussion on the basic, accepted cosmology of his time, Faustus asks Mephistopheles the most complex question of the era – "Well, resolve me of this question: not conjunctions, oppositions, aspects, eclipses all at one time, but in some years we have more, in some less" (2.3.61-63). In other words, Faustus wants to know why, if the heavenly bodies are orbiting uniformly, as commonly thought, there are not eclipses every time they line up, or every month. Mephistopheles answers him with a Latin phrase, "Per inaequalem motum respectu totius,"(2.3.64), which means that they do not eclipse every month because of their unequal motion against their motions as a whole. This is basically a non answer, or one that merely explains that the

[23] All references from *Doctor Faustus* are taken from the Oxford Press edition, *Tamburlaine, Parts I and II, Doctor Faustus, A- and B-Texts, the Jew of Malta, Edward II.* Ed. David Bevington and Eric Rasmussen. Oxford: UP, 1995.

planetary motions are unequal because they are unequal.[24] Faustus's question was actually one that tested the limits of the Ptolemaic geocentric hypothesis and subsequently promoted the new heliocentric hypothesis, or at least a complication of the existing Ptolemaic system. Faustus's reply, "Well, I am answered," in contrast, seems to be a glaring understatement as there is no way he could possibly be "answered." It is possible that this retort could represent sarcasm, but this seems less likely in context with his sudden abandonment of the topic after such tenacious questioning. The remark, instead, seems to serve as a deflection for Marlowe's audience. Marlowe has taken his audience to the point of an imminent revelation, at least on stage, only for them to suffer disappointment at Faustus's glib remark which dismisses and redirects the subject.[25] Regardless, the disputation section certainly provides evidence that Marlowe was aware of the importance of the latest cosmological controversies of his time, and his willingness to use it for intrigue.

Yet in Marlowe's B-text, the passage becomes more complicated. One more question is added. Faustus asks Mephistopheles "But is there not *coelum igneum et crystallinum?*" Faustus is asking about two more possible spheres, the fiery and crystalline spheres, hypothesized in Renaissance modifications of Ptolemaic astronomy to account for the newly observed phenomenon of the precession of the equinoxes and an imaginary phenomenon called trepidation (Bevington 445). Basically, Faustus asks Mephistopheles if there is a tenth sphere after the nine that are accounted for by the seven planets, the firmament and the

[24] Edward Snow argues that this reply is "simply Mephistopheles' devilishly laconic recapitulation of the Ptolemaic commonplace," that instead of granting Faustus privileged awareness, Mephistopheles reasserts the "truth of what has always been." Frustrating Faustus's submerged longing for a pluralistic universe, Mephistopheles insists upon the closed world of classical and medieval order, but the words themselves, excerpted from their immediate context, are descriptive less of a classical world picture than of a field of Pyrrhonist or Montaignian "experience" (qtd. in *Two Renaissance Mythmakers* 80).

[25] Although the majority of Marlowe's audience members would be unlikely to understand the Latin presented in the passage, it is obvious that Faustus has abandoned the discussion. The audience is aware of the topic, however, as Faustus's leading questions are presented in English.

imperial heaven, with the Latin question, "Coelum igneum, et cristallium?" Mephistopheles replies "No, Faustus, they are but fables" (2.3.59-60).[26] In this passage, Faustus and Mephistopheles are actually debating the imaginary idea of trepidation or the idea that planets moved faster as they approached their equinoctial orbital crossings, although it is unlikely to translate to their audience.[27] This later deletion suggests that later editors chose to discredit any later additions to the Ptolemaic model that interfered with its Aristotelian purity, even as the additions supported a more accurate mathematical model of the earth's annual cycle.[28]

I argue that this addition, addressing the motion of the spheres, can also be seen as a rebuttal to another concept questioned in the passage, the question "hath every a dominion or intelligentia?" Faustus is asking if every planet is moved by an angel or intelligent "force" and he is answered in the affirmative "ay." This seems to be in direct contrast to the passages from first English *Faustbuch*, which stated that, "through the wind and breath of man is turned round, and carried with every wind even so the firmament wherein the Sun and the rest of the Planets are fixed, moved, turned, and carried with the wind, breath, of Spirit of God" (Forbes, in Dollarup 105). In other words, both editions claim that all of the planets are moved by angels or intelligent life sources, a solidly medieval Christianized idea. Yet in the B-text, the question about the trepidation of the spheres (2.3.55-56) which would have conflicted with the idea of angels individually moving the planets during their orbits was added only to be dismissed by Mephistopheles. This would seem to serve as additional

[26] This reference is from *Doctor Faustus* B Text. This particular question and reply is only found in *Faustus'*s B-text and represents a significant inconsistency.

[27] This phenomenon was actually due to the planets' elliptical orbits and can be seen as a manifestation of Kepler's second planetary law of planetary movement, which would be published in 1609 in his A*stronomia Nova.*

[28] F.R. Johnson claims that this section, not found in the *English Faust Book*, referred to the current controversies then being debated at Cambridge regarding inconsistencies among current astronomical textbooks. See "Marlowe's Astronomy and Renaissance Skepticism." *ELH* 13.4 (Dec 1946): 241-54.

evidence that changes were made to the B-text that were meant to discredit any model other than the accepted Aristotelian/Ptolemaic model.

When Faustus demands that Mephistopheles "Tell me who made the world" he is also quoting from the English Faust book instead of the German version. In the German version, Mephistopheles blends several different accounts of the creation story, including an account of the separation of earth and water and allusions to Hippocrates' theory that all matter is a composite of the primary four elements, central to Aristotelian thought (Knellwolf 57). The English Faust book, in contrast, has Mephistopheles refuse to answer, stating that "Faustus thou knows that all this is in vain for you to ask" (57). This is further evidence that Faustus preferred the English version of the text over the German version.

There is more to this seemingly random exchange than Faustus's attempt to frustrate Mephistopheles by implying God's hand in creation. All through the Middle Ages, the faithful had to accept God's creation of the world. With the introduction of Aristotle's works in the twelfth and thirteenth centuries, powerful arguments for the eternity of the world or a world that had never been "made" and had eternally existed, became available.[29] Shortly after these works were introduced the Bishop of Paris condemned the idea, once in 1270 and again in 1277[30] and the idea became known as heretical[31] (Grant 177). Faustus is initiating yet another theological exchange with Mephistopheles that is mired in controversy. The question is not merely "who" made the world but if it was "made" at all. Marlowe's adoption of the passage from the English text adds another layer to a philosophical debate.

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[29] This debate was defined by the famous phrase "ex nihilo," meaning "out of nothing."

[30] In fact, the idea was condemned at Paris in more than twenty-five versions (Grand 163).

[31] Thomas Aquinas took the middle position of the controversy. He argued that no rational proof was possible for either side and, further, suggested that the world might be viewed as both created and eternal. In a related point, Neil Allan claims that Faustus rejects the perceived aridity of Aristotelian philosophy which had dominated the 'Scholasticism' propounded by Aquinas (Allan, par. 23).

What did Marlowe gain by this metadramatic disputation? First it allowed the audience to explore heretical ideas such as the idea that the Ptolemaic/Aristotelian model was not confirmed, at least not in the A-text of the play. It also put forth the urgency of the question as it was beginning to emerge. The questioning of the nature of the universe was promoted merely through its appearance on the stage. Faustus's obsession to find the secrets of the *nature* of the cosmos, or its physical composition, drives Faustus to the extent that it does because the nature of the model carried enormous philosophical and theological stakes.

"Perform what desperate enterprise I will[32]": Marlowe's Subversive Ambivalence

Marlowe's Faustus thus turns to the metaphysics of magicians after rejecting the study of Divinity, Medicine, and Law, frustrated by their limitations. This allows Marlowe to lead his audience away from the safe realm of its ordered world. This also allows Marlowe to begin to craft his controlled phenomenology and lead his audience into the forbidden world of the necromancer, as Faustus announces that "Lines, circles, signs, letters, and characters" are those he "most desires." Following this pronouncement, Faustus begins his incantations, asking the devils to obey his command with his announcement that, "Within this circle is Jehovah's name, / Forward and backward anagrammatized, / The abbreviated names of holy saints, / Figures of every adjunct to the heavens, / And characters of signs and erring stars, / By which the spirits are enforced to rise" (1.3.9-14). He follows this with a Latin passage that specifically calls to Lucifer, Beelzebub, Demogorgon, and Mephistopheles, and perverts the sacraments by calling on the demons "By Jehovah, Gehenna, and the holy water I now sprinkle, and by the sign of the cross I now make, and by our prayers" (1.3.16-22). Of the demons summoned, Mephistopheles appears, prompting

[32] 1.1.82.

Faustus to claims that "there's virtue in my heavenly words…Such is the force of magic and my spells…That canst command great Mephistopheles" (1.3.27-30).

These "lines, circles, letters and characters" are also used in what Michael Popelard describes as the spectacular demonstrations that Renaissance "men of science," such as John Dee, used in their attempts to impress their audiences and display their scientific skills (18). He claims that Faustus's science takes the form of a series of spectacular shows (27).[33] The scientific concepts alluded to in *Doctor Faustus* include mathematical concepts, ideas from physics, and, according to Gabrielle Sugar, the Copernican model of the universe.

The early modern theater itself was considered a proponent of atheism by certain Puritans. One example was John Stubbes, a prominent pamphleteer of Marlowe's era who railed against plays such as *Doctor Faustus*, which he claimed represented such ambiguities as the abstraction or intellectualization of heaven and hell. Stubbes argued that the modern theater would "renew the remembrance of heathen idolatry," and admonished audiences that if they would "learn to condemn God and all his laws, to care neither for heaven nor hell…" they would "need to go no other school" (qtd. in Mebane 23). Marlowe's audience does appear to have been greatly affected by his spectacular productions, even to the point of attempted replication in the case of one audience member. Thomas Fineaux, an inspired aspirant sorcerer-student at Cambridge, according to Simon Aldrich, "learned Marlowe by heart" and went "out at midnight into a wood & fall down upon his knees & pray heartily that the devil would come; for he did not believe there was a devil…Marlowe made him an atheist" (qtd. in Riggs 236).

[33] Popelard also claims that "unlike Bacon's, Faustus's science does not aim at laying bare the true causes of things in order to improve the *human* condition," although I would point out Faustus's persistent demands to know the true causes of things, such as the true nature of the heavens, and his initial, albeit later abandoned plans to improve the state of the world (27).

In another sense, the "lines, circles, signs, letters and characters" used in the play resembled the symbols on the instruments and in the treatises that were truly changing the face of the world, such as those used by scientists and explorers as those of the School of Night. These were the instruments used to prove Harriot's mathematical theories or determine Raleigh's navigational destinations. The symbols used in Harriot's work are described by John Aubrey in his *Brief Lives* as "Devills" that resemble the "sigils" used in "grimoites" for summoning spirits (Mitchell 48).[34] Faustus also alludes to the riches of the new world that were made available by new advances in science via commerce, with his expressed desire to access "a world of profit and delight, / Of power, of honor, or omnipotence" (1.1.53-53), gaining Indian gold, "orient pearl," and "the pleasant fruits, and princely delicates" of the "new found world" (1.1.82-84). Faustus wants access to books that reveal magical symbols, "all spells and incantations," and the latest discoveries of the new exploration of the earth, "all plants, herbs, and tress that grow upon the earth"[35] as well as "all characters and planets of the heavens" (1.5. 169-178).

The suspicion surrounding scientists' use of unusual signs and letters in their calculations illustrates how the practice of actual mathematic and proto-physics and the practice of the occult could become conflated or confused in the minds of the general populace of the early modern era. In Faustus's world these numbers, circles and codes become symbols that unlock the secrets of the world. Their dual role in science and "sorcery" connect these symbols in the minds of Marlowe's audience. Building a "bridge

[34] Harriot's work was the first to contain the signs for inequality > <, the symbols that form the basis of modern algebra. There is evidence that he conceived of the idea of negative numbers and had worked out a binary system (McLean 153).

[35] This demand reflects the new information documented in Harriot's *A Briefe and True Report of the New Found Land of Virginia*, written during Raleigh's voyage to Roanoke. In this work, Harriot recorded and described the plants, animals and people of the new world.

through the moving air," passing "the ocean with a band of men," or joining "the hills that bind the African shore," "making "that [country] continent to Spain" involves the use of scientific instruments or sorcery. Marlowe is giving his audience an ambitious vision of what might be accomplished in the age of the Renaissance, in one fashion or another (1.3.104-107).

These codified symbols implemented in the Renaissance had been used to circumnavigate the earth and to refine mathematical and architectural calculations needed in all aspects of Renaissance expansion. Of these "lines, circles, signs, letters and characters," the ones Faustus "most desires" were the symbols that would let him know specifically of "All things that move between the quiet poles" (1.1.58). Faustus claims that "He that is grounded in astrology" is one who has all power (1.1.140). This desire to know the nature of the universe, and it is clear that he means the exact physical makeup of the stars and planets, becomes his real obsession in the play. He demands a book that will reveal the nature of the universe, asks Mephistopheles directly, and embarks on a celestial journey to observe it directly. Sugar argues that Marlowe is acknowledging the heresy of the Copernican model by connecting this emerging Copernican consciousness with the devil, since this particular knowledge can only be gained (so Faustus believes) through Mephistopheles. She claims that Faustus becomes an intellectual explorer, searching for proof of this newly conceived world, his connection to Copernicanism makes him more transgressive than the devil himself (141-42). If Faustus is presenting this new model in this medium, however, he is allowing his audience a voyeuristic look at it through the safe lens of the theatre. If his audience had witnessed a verbatim conjuring onstage that resulted merely in an actor playing an apathetic

demon, its members were encouraged to explore other heretical ideas onstage and in their society.

Emily Bartels argues that Renaissance drama claimed a liminal space at once "under and outside" the control of civic authority that dramatists used as a space of "licensed licentiousness," or authorized subversion (65). She claims that Marlowe's enactment of black magic rituals onstage, which would have been condemned as felonies outside the theater, serve as his representation not of "unlawful things," but rather of the lawful, of the strategies exploited by figures of power, as they – like London's own authorities – encourage the creation and subsequent containment of "unlawful things" in order to establish dominance (66). Bartels explains how treatises circulating in Elizabethan society such as Pico della Mirandola's influential *De Hominis Dignitate Oratio* or Jean Bodin's *De la Demonomanie des Sorciers* clearly condemn black magic as "a thing to be abhorred" and yet within Marlowe's Faustus conjures onstage without consequence, translating the unsettling nature of radical inquiry into a compelling but also disturbing aesthetic pleasure.

"O, What a World of of Profit and Delight"[36] Dual Representations of Renaissance Discoveries

Early modern scholars such as John Dee or Johannes Kepler sometimes called on the fantastical nature of the occult to fill in the gaps that natural philosophy or science could not provide. This tendency illustrates how the imagination visualized these new worlds when actual proof was unavailable. Yet these endeavors illustrate a rift that was beginning to form between aestheticized versions of the cosmos and schematicized versions, such as those that replaced the philosophically driven unified medieval model. Divided approaches to the new knowledge about the earth and the skies reflect a belief that the knowledge could not be

[36] 1.1.55.

processed adequately in either realm alone, artistic or scientific, which in turn, reflects the idea that these scholars were struggling with the genre taxonomy of the nature of this new data. In any case, they felt compelled to record and use it in a detached, methodological way in some instances yet express the wonders and possibilities contained within these new systems in other instances. This practice worked in both directions. Scientists such as Kepler recorded the complicated elliptical orbits of the planets and their corresponding laws of motion while drafting what is considered to be the first work of science fiction, his *Somnium* (*The Dream*). Both Kepler's *Somnium* and Marlowe's *Doctor Faustus* were fictional works centered on the use of occult practices to obtain scientific certainty through direct observation and both depended on the intrigue of the occult to offer their audiences a chance to speculate on the nature of, and the possibilities contained in, that new world.

Marlowe's associates also produced works that used blended genre to represent the new world to blended audiences. Harriot and Raleigh produced works that were as provocative and speculative as they were informative. Scott Oldenburg describes how Raleigh claimed that he strived to differentiate fact from fiction in his travel narratives, but was actually deliberately ambivalent in his work, creating enough doubt to lead his readers to question the actual existence of some of the "rumors" he repeats (39). As evidence, Oldenburg cites Raleigh's custom of introducing extremely unlikely exotic concepts and then later claiming that his "intelligence was far from truth…afterwards understanding to be true…Many and most of these I found to be true" (39). In his *Discovery of Guiana,* Raleigh introduces the idea of the headless "Ewaipanoma"[37] in the middle of his narrative on his search for the El Dorado, or City of Gold" (40). The idea of the headless men was not an

[37] The concept of the headless men is also mentioned in Shakespeare's *Othello* and *The Tempest.*

original concept, as descriptions can be found in Herodotus, Pliny and *Mandeville's Travels*, and Oldenburg claims that Raleigh was attempting to introduce this concept in terms of European traditions of monstrosity, or placing an exotic idea into a context that Elizabeth readers could apply "otherness" to in a way they could understand (45). In other words, Raleigh was enticing his reader to vicariously explore the idea of such an exotic concept while placing into a context that they could relate to – the "monster" of Pliny and Mandeville – while simultaneously claiming to be an impartial narrator.

I argue that the exotic and sensational ideas implanted in Raleigh's travelogues had another purpose – they attracted and enticed his greater audience, his readers, who might have lost interest in mere descriptive of landscape topography, botany, or natives too similar to the inhabitants of locales found in other travelogues. Raleigh thus sensationalizes his otherwise purely non-fiction travel records to reach a more diverse audience. Raleigh's prime motive for this action was actually similar to Marlowe's as they both wanted the funding that came as a result of a sustained piqued interest in their pursuits, an interest sparked by sensationalism. Raleigh could distance himself from this wild conjecture if necessary with a few disclaimers and qualifiers explaining that he had merely "heard" about them and felt an obligation to report them. Marlowe could distance himself from his sensationalism by hiding behind his play. He could perform blasphemy and press for unbridled knowledge about the universe through his Faustus character onstage. Marlowe, like Raleigh, could remain one step removed from actual, personal accountability of his "claims."

Another member of Marlowe's "Circle of Night" members, Thomas Harriot, accompanied Sir Walter Raleigh as a historian on his first expedition to establish a permanent

English settlement in the new world (Solomon 527). Harriot was accompanied by the painter John White, who provided watercolors of the new plants and people of the new world, specifically the North Carolina Algonquin Native Americans. This was a result of a practice taken from the Spanish idea that an expedition team should include a "skilful painter" with its mathematically or scientifically inclined scholars and explorers.[38] The result was a propaganda piece designed to encourage continued popular support for and economic investment in the idea of an English colony in the new world, Raleigh's goal (528).

This practice is an example of the multi-dimensional assessment of the new world then happening, but the case of Harriot's revised description of one of White's subjects, a Native shaman or spiritual intermediary thought to serve as a messenger from God is particularly interesting. This shaman was initially labeled as a "Flyer," reflecting his role as a messenger to God, but in Harriot's published version the man is labeled as "The Conjurer." Harriot also adds that the "Conjuror" converses with devils and uses demons to gain advantage over his enemies (538). Harriot, like Raleigh, is attempting to classify the man under a label that would not only be more familiar to Elizabethan readers, but would also be more sensational. The character moreover bears a strong resemblance to Marlowe's Mephistopheles.

Like the explorers of his era, Marlowe's Faustus is interested in the "world of profit and delight" of the "new-found world" (1.1.52). He describes "Indian gold," "orient pearl," and "the pleasant fruits, and princely delicates" of this new world (1.1.82-84) and longs for the glory that successful explorers have gained from their proven theories about the world as he speaks of the opportunity "of power, of honor, or omnipotence" (1.1.53) (Bartels 72). I

[38] This practice is another example of performativity used to expand an audience's understanding of new knowledge. The artist's sketches offered a visual representation to more fully convey the nature of the discoveries of the new world to a wider audience.

argue that *Doctor Faustus* is Marlowe's attempt to present new ideas, or at least the *entertaining* of new ideas about the cosmos as well as the new world as represented in the play.

There are other works focused on the idea of exploring the cosmos through fiction written by scholars or scientists who had previously written non-fiction works. Cay Dollarup describes three examples in his "Earliest Space Voyages in the Renaissance, Heliocentric Solar System." He claims that there were three early versions of "space voyages" written before 1630 – Patrick Forbes's *Faustbuch,* in 1587, Francis Godwin's *The Man in the Moone, or A Discourse of a Voyage Thither by Domingo Gonsales, the Speedy Messenger* in 1603, and Kepler's *Somnium Sive Astronnomia Lunaris,* in 1593. Each of these works describes a protagonist who describes a heliocentric universe based on direct observations during a voyage to the moon (107).

Of the works analyzed by Dollarup, the most intriguing is Kepler's *Somnium.* Kepler was first known for his theoretical work, *Astronomia Nova* in 1609, in which he systematized the Copernican system for early modern scholars. An active Copernican and important astronomer, Kepler used his mentor, Brahe's, records to geometrize the heavens as no one before. Kepler eventually established the laws of planetary motion and discovered that the planets orbit in ellipses rather than perfect circles. Yet as early as 1593, he began writing a fictitious account of a man who travels to the moon and discovers a strange civilization there (107). Kepler seems determined to use the work as a vehicle to promote his heliocentric views and he is clear about his audience, defining it as made up of students at the universities, who were part of an institution he describes as so mired in old ideas that "death must seem better to her than life" (qtd. in Dollarup 108). This remark demonstrates Kepler's

view that the scholasticism surrounding scientific treatises was ineffective in promoting new ideas. He offers his students a way to begin to visualize the world through imaginative science fiction. Kepler is demonstrating the idea that one must begin to imagine the world in a certain manner before one can apply scientific measurements, or reify those imaginings.

Marlowe's play also encourages his audience to imagine a new world – a demystified world with a predictable and verifiable nature that allows for further reification, such as a bridge that connects continents. It is for this purpose that Faustus embarks on a journey to see the universe firsthand, and Marlowe uses the play to discuss this controversy with his audience. Faustus's insistence on determining this cosmic clarity is a repeated theme in the play, reiterating how important this controversy was to early modern society.

Marlowe, like Kepler, strived to expose new audiences to the new ideology then being debated among scholars. Marlowe, also like Kepler, knew his audience, as theater-goers, was not the same audience that would have been debating these ideas in the halls of the universities. He brought ideas from the cosmic controversy onto the stage, even as he refused to answer them. His obsession about them alone implied that they held the key to the most important point in the universe. Mephistopheles, in turn, refuses to answer them, or any questions concerning the earth's creation, stating "Move me not, for I will not tell thee" (2.3.68). Marlowe suggests the importance behind the truth of the nature of the universe to his audience even as he grows impatient with the trite and theologically driven answers he receives in his quest to know that truth. He then refuses to give his audience that certainty, transferring and accentuating that frustration to its members.

"Come, I Think Hell's a Fable.[39]" Marlowe's Displaced and Abstracted Heaven and Hell

Emily Bartels claims that of the institutionalized ideas assailed onstage by Marlowe, his most intriguing and damning concern the very "business" of the Church. She particularly cites his suggestion that its spirits are convenient inventions and its rituals self-authorizing fictions (68). One of these institutionalized ideas is the idea of hell. He presents his audience with an onstage replication, of sorts, of the institution, only to dispute its actual existence. Once again, Marlowe presents a blasphemous concept, the non-existence of hell, to audience members safely confined to the arena of the theater. In Act 2 of the play, Marlowe explores the idea that the locale or even the notion of heaven and hell were abstract ideas up for debate. In Act 2, Scene 1, Faustus proclaims, "Come, I think hell's a fable" (2.2.127). This is a predictable position for the atheistically inclined Marlowe, but it seems to allude to a greater cosmological debate. The ideas complicated the relationship humanity had with "the heavens," as the heavens themselves were then mired in controversy and no longer a place that man could "look up" in meditation towards the celestial home of God, thought to lie several layers up, directly surrounding the Earth. The new heliocentric order, by demoting the Earth to just one of many solar satellites, also displaced or disputed the traditional locations of heaven and hell, as the new Protestantism disputed the existence of Purgatory.[40]

In many ways, the new science introduced troubling new possible understandings of the universe that mirrored Protestantism's challenge to traditional views of religion. Martin Luther challenged Catholic beliefs of how salvation was achieved and disputed the existence

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[39] 2.1.127.

[40] William Tyndale claimed that Purgatory was "a poet's fable" in his *An Answer to Sir Thomas More's Dialogue.*

of Purgatory, thus eradicating the need for intercessionary action, a concept which had sustained many medieval institutions in a spiritual, social and monetary capacity. The idea of an inherent, perpetually available salvation, such as that explored in *Doctor Faustus*, was supplanted by the more intractable idea of the "elected," or pre-ordained subjects guaranteed salvation. This conflict between the two views of Christianity might even be reflected in the play as it is unclear whether Faustus is "allowed" to repent, even up to his imminent death. It is significant that the 1604 *Doctor Faustus* text states that it is, "Never too late, if Faustus can repent," while the 1616 text states "but Faustus will never repent" (Bevington xi). The play also provides a setting that is associated with Luther, as Wittenberg was known as the origin of the new conflict and thus became associated with its radical ideas.[41]

Marlowe's Faustus, at least at the outset of the play, demonstrates contempt for either concept, claiming that "Divinity is basest of the three, / Unpleasant, harsh, contemptible, and vile" (1.1.111-112). He denies that contrition, prayer and repentance can bring him "unto heaven." Faustus adopts the "evil angel's" claims these are "Rather illusions, fruits of lunacy, / That makes men foolish that do trust them most" (2.1.18-20). In Act 2, Mephistopheles claims that heaven "'tis not so fair as thou / Or any man that breathes on earth," an atheistic interpretation of humanism (2.3.6-7).

Wymer Rowland makes the argument that the idea of "looking up to heaven" as a trope of seeking hope and assurance became complicated by the new science, claiming that ""To look up would be to seek the old spiritual assurance and simultaneously, to see the evidence of the new science which was breaking up the medieval synthesis" (506). He claims that in the face of this ambiguity, the only response is to turn to the self, a response

[41] This is also reflected in Shakespeare's choice to situate his most intellectual creation, Hamlet, with the city.

which produces the emptiness and desolation of "Webster's world" (506).[42] In turn, Rowland applies this ambiguity to Marlowe's Faustus. He claims that much of the time, Marlowe uses the idea in the traditional sense- as a way to indicate an awareness of God and hope of salvation, but he claims that the passage in which Faustus demands to know "the secrets of astronomy" transforms the traditional use of "looking up" from seeking "the Christian God and his mercy" to a new focus – towards the straining after curious knowledge (507). He claims that the choice of astronomy as a major channel for Faustus carries with it certain traditional hints of danger and presumption, especially if this knowledge is divorced from ethics. As it is tied to magic in the play, it represents danger. As such, Rowland claims that "looking up" begins to signify defeat and despair for Faustus towards the end of the play. If the heavens have been realigned and earth is no longer the physical center of the cosmic hierarchy, Christians can no longer "look into the heavens" for help in the same way from a deity that is situated at the top of that hierarchy in the same way. In addition, the breakdown of the idea of a delineated, perfect cosmos beyond the moon meant that the heavens could no longer be seen with certainty as a comforting place of solace and eternal rest.

The idea that Faustus cannot "look up" and find God in the traditional manner because he has sought answers from geometrical astronomy (his obsession with the compilation of the universe) and occult astrology, both to satisfy his curiosity about the cosmos and to conjure demons, is consistent with the idea that new ideas about astronomy were considered a threat to Marlowe's society, and thus, a reason he would want to use it to add tension and drama to his play. The premise that it is somehow "misused" in the play, and Faustus is punished because of this misuse, might also help explain its resolution, separating

[42] Rowland sites a passage from Webster's *The White Devil*, "While we look up to Heaven we confound / Knowledge with knowledge" as evidence (5.6.256-60).

the medieval uses of astronomy and astrology (Dee and Mirandola) from the more subversive uses of astronomy.

David Webb argues that all of Marlowe's major plays "interrogate the heavens" about the nature of God, "if any God," but *Doctor Faustus* is most explicitly focused on theology. He also claims that Marlowe's plays raise questions about God while provocatively refusing to offer simple, certain answers (15). This is consistent with his refusal to answer questions about the cosmos, including the physical location, if not the very existence, of hell or heaven.

The idea of hell was frequently challenged by skeptical and rationalistic trends at this time. Although few Elizabethans would deny a literal existence of the idea of hell, the Christian concept had always been focused on the "primitive punishment" of hell, which was seen as more important than mere physical torment, and in the sixteenth and seventeenth centuries this was increasingly emphasized over the idea of the medieval, localized hell, about which even Augustine had been dubious (Sanders 198) and Marlowe's *Faustus* opens with Faustus rejecting, among other things, two of the most famous concepts of western academic consciousness - Aristotle and the Bible (Bowers 114).

In *Doctor Faustus,* Marlowe seems to be simultaneously advancing the idea of a metaphoric hell while condemning the idea of a medieval materialistic hell, particularly as a myriad of other medieval ideas, both cosmically and terrestrially, were being refuted. New developments and ideas in cartography, for example, encouraged the idea of an expanded imagined topography, geographically and intellectually. The ability to map the physical landscape with ever more clarity and precision encouraged a parallel in the world of imagination on the same spatial level (Smith 42). Marlowe's Faustus demands answers that are just as clearly defined, and he wants them to be witnessed by a wider, more secular

audience, and disputed onstage. Through his conflicted, dialectical debate on the existence of hell – whether it is a state of mind or a physical space – Marlowe is encouraging the same imaginative visualization that he encouraged for the existence of a new cosmic model. He is encouraging his audience to visualize a new topography in the realm of the new world that may or may not include a reified hell,[43] and by necessity, a reified heaven.

Calvin, aware of the threat of this new rationality, devoted a section of the *Institutes* to the refutation of "those men…who babble of devils as nothing else than evil emotions and perturbations which come upon us from our flesh," out of fear that the allegorization of the spiritual world would end in a denial of its reality (Poole 202). Yet this allegorization of the spiritual world is exactly what Marlowe, through Faustus, who babbled "of devils as nothing else than evil emotions and perturbations" was attempting in his play. When Mephistopheles claims that "Why, this is hell, nor am I out of it. / Think'st thou that I, who saw the face of God / And tasted the eternal joys of heaven, / Am not tormented with ten thousand hells / In being deprived of everlasting bliss?" he is stating that deprivation from God constitutes a condemnation to "hell" in itself (1.3.78-81).[44] Marlowe is presenting this possibility to his audience, in direct rebellion to Calvin, encouraging them to entertain the possibility of a metaphorical hell in lieu of a physical hell. If skepticism about the existence of hell is

[43] Certain scholars were also grabbling with the notion of a more specified hell, in the tradition of a world obsessed with quantification. Sebastian Munster wrote in 1554 that hell could not possibly be above three thousand miles "in compass," claiming that one of the torments of Hell would be the throng, struggling in the small space (qtd. in Manley). Franciscus Ribera allowed hell a diameter of only 200 Italian miles, and Lessius reduced it to one Dutch mile "all filled with fire and brimstone; because…that space, cubically multiplied, will make a sphere able to hold eight hundred thousand miles of damned bodies (Manley 154).

[44] This is the method that Kepler was perfecting. Kepler, and his predecessor, Brahe, had already noted that the heavens were not perfect and uncorrupted through their mathematical calculations of the supernova of 1572 and the "Great Comet" of 1577. This new information was retrieved not from scholasticism or Christianized Aristotelianism, but from mathematical calculations that were reproducible and philosophically neutral.

scandalous, it is a scandal that Marlowe wished to extend to his audience through his subversive play.

Once again, however, Marlowe refuses to grant his audience any certainty on the possibility of heaven or hell. For example, Mephistopheles's description of hell evolves throughout the play. He identifies it first as a specific place, paradoxically proclaims that it is limitless, asserts then that it is more of a state of mind, and then situates it linguistically with the essential elements and alchemical purification. It becomes a concept that is an interconnected set of conditions, in which space and intellect are mutually constitutive and dependent, forming layers of belief (Poole 198). Even Mephistopheles's admonishment to Faustus that hell did exist, and his suggestion to Faustus that his servitude to Satan as a condemned soul should serve as proof of its existence, seems contraindicative as he is actually physically standing in Faustus's study in Germany. This invites Faustus to reply that, "an [if] this be hell, I'll willingly be damned here. What? Walking disputing, etc.?" (2.1.137-140). Even Faustus's legal agreement alludes to the idea of an undisclosed or malleable hell, as Faustus agrees that at the end of his twenty four year "tenure," he will allow himself to be escorted to Mephistopheles's hell, or "into their habitation wheresoever"(2.1.108). These revised representations of hell, whether a malleable location that allowed mobility between realms or an abstracted intellectual creation, challenged medieval ideas of a permanent realm that existed as a tangible, unequivocal site at which sinners would be tormented mentally, spiritually and physically.

Alvin Kernan argues that Marlowe's Faustus pictures an anguished perception of time as unalterable and space as abstract. He claims that Faustus's final soliloquy, particularly the phrase in which he laments that "The stares move still, time runs, the clock will strike,"

demonstrates his impotence against a nature – earth, stars, air and ocean – that is estranged from theological influence and will not respond to his pleas to shield or destroy him as he is met by silence. Kernan claims that Marlowe is teaching his audience that space is neutral and unresponsive (45). This silent impotence adds to Faustus's despair as he begins to entertain the possibility that man is homeless, that all places are alike and linked to man's inner state, to the uncircumscribed hell he carries within him (Greenblatt 45).[45]

"Terminat Hora Diem; Terminat Author Opus": Conclusion

Doctor Faustus is a play that centers on performativity. Marlowe, through Faustus, questions the nature of his disputed universe, a heretical idea, through another heretical idea – the conjuration of a demon who supposedly holds the answers to his questions. Yet Marlowe withholds those answers, refusing to grant his audience any more access to them than Mephistopheles grants Faustus. Through spectacular displays that included fireworks, Faustus summons a demon with whom he can dispute the ideas that most obsessed him, such as the true nature of the universe and the possibility of a heaven or hell within that structure, demonstrating that disputation about the nature of the cosmos should be a topic to be celebrated instead of feared, regardless of the results of that disputation.

Faustus becomes specifically renowned as an expert in the "questions of astrology," introducing his audience to such complex questions as why the moon and sun do not eclipse every month as they should in the Ptolemaic system, and through the implication, exposing its members to the heretical ideas of whether or not the model was accurate. Gabrielle Sugar claims that later editors removed any doubt about which cosmological model should be

[45] Kristen Poole argues that the medieval idea of an engaged and material devil provided a rational explanation for seemingly irrational events, such as medical conditions and weather systems (192). The loss of this tangible icon would imply randomness to the happenings of the universe, divorcing them from the comforting moral guidelines of Christianized Aristotelianism.

presented in the play through specific additions to Marlowe's B-text. She claims these changes were made because these editors were feeling pressure from authorities who wanted any Copernican allusions removed. I argue that any ambivalence in Marlowe's A-text concerning the nature of the universe was deliberately presented and exploited by Marlowe for various reasons.

First, I argue that Marlowe wanted to use the stage as a conduit for the dissemination of radical ideas, such as the idea of a heliocentric universe with a dislocated or even merely metaphorical hell. Marlowe allowed his audience members to witness the conjuring of a demon who then disputes the nature of the universe with Faustus. Thus the conjuration and the resultant discussion are linked in the audience's minds, both heretical concepts, yet neither brings the audience any harm. Marlowe's audience is allowed to enjoy a vicarious thrill while Marlowe entertains them with a spectacular show and a lively discussion of blasphemous ideas. Marlowe's deliberate refusal to grant any specific answers through Mephistopheles adds to this intrigue, working like a taunt or challenge to his audience, allowing Faustus and his audience to exhibit the same insatiable appetite for knowledge that condemned prelapsian man.

Secondly, I argue that while Marlowe's motives in this methodology were likely both mercenary and political, he was also participating in a new trend – the idea of the blended genre, or fictionalized non-fiction, a sensationalized version of a normally nonfictional science treatise or travelogue. I claim that he was following the models of his colleague Raleigh, who enhanced his non-fiction travelogues with outrageous claims, and his contemporary Kepler, who outlined his true findings on the nature of the moon within an outlandish science fiction tale replete with demons. I argue that Marlowe used the genre of

drama to introduce unsettling ideas to his early modern audience through an exciting medium, interspersing specific questions that should nullify the existing cosmic model, for example, Faustus's implication that the model is not logical, even mechanically.

Thirdly, I argue that Marlowe wanted his audience to entertain a philosophical idea, the idea of the complication or abstraction of hell and/or heaven. With the heavens charted and geometricized, and the possibility that the earth was not the center of the universe, but merely one of a plurality of worlds, the concepts of heaven and hell would also be threatened. While some worked to quantify them, particularly hell, others sought to make them an abstract concept, or a "state of mind." Marlowe explores these ideas in the play with his constant self-questioning, along with his unrelenting questioning of Mephistopheles, on the location and/or existence of hell (and heaven). Marlowe knew these suggestions were blasphemous and would be disturbing to his audience. He nonetheless incorporates them into the litany of his hubristic hero, allowing his audience to explore them in a non-threatening manner.

Science, or even protoscience, applicable in this era, by nature is highly progressive and therefore potentially subversive of the status quo. It destabilizes norms by constantly questioning and changing accepted knowledge. By providing his audience with the archetypal scientist on stage and having his audience delight in this subversion, Marlowe established a link between theatricality, science and subversion (Shepperd-Barr 19). The early modern theater allowed its audience members to vicariously explore concepts that would have normally been inaccessible to entertain, including violent altercations, military coups, and sexual and political intrigue, without lingering effect. I propose that Marlowe allowed his audience to explore the ideas of the heretical in its various forms, including the

physical form of conjuration, the mental form of entertaining the new philosophy, and the spiritual form of questioning the existence of hell and/or heaven. Marlowe provides the platform that promotes his own ideas without visibly indicating his own ideas, and benefits both himself and his audience through his controlled subversion.

CHAPTER THREE; "DOUBT THAT THE SUN DOTH MOVE"[46]: THE ONTOLOGICAL/COSMOLOGICAL CRISIS IN *HAMLET*"

"…To be than not to be, to act than not to act." These words were first penned, not by Shakespeare, but by Giordano Bruno, the famous sixteenth century astronomer/theologian executed for his heretical cosmological views in February of 1600, approximately the time that *Hamlet* was written (qtd. in Massa 238).[47] This chapter views *Hamlet* as a product of this time, examining how the ontological effects of these astronomically triggered philosophical/teleological crises impacted Elizabethan drama.

If Marlowe's *Doctor Faustus* celebrates the "New Philosophy" as a spectacle to be shared onstage, Shakespeare's *Hamlet* grieves the former certainty it destroyed. In this study I argue that the metadramatic, ontological, and rhetorical influences originating from the Copernican controversy appear in *Hamlet* and shape the nature of the play. I argue that debates on the nature of the universe, specifically those addressing whether the universe consisted of the Ptolomaic/Aristotelian model "bounded in a nutshell," or the Copernican model of "infinite space" are explored in Shakespeare's complex play that depicts a world "out of joint," where "something is rotten in Denmark" (2.2.254-255). I argue that the tropes of doubt, decay, nihilism, and temporal and spatial distortion in the play reflect the loss of the philosophical/theological certainty of the Middle Ages and I maintain that the major emblem of this controversy in the play is represented in the supernova of 1572 as the catalyst of a discredited Aristotelian system. This claim is based on the idea that the star described as "westward from the pole" in the opening scene of the play refers to this supernova and its "discoverer", Tycho Brahe. I base this idea on a description of its location, the timing of its

[46] William Shakespeare. *Hamlet* 2.2.

[47] I quote Bruno here to situation Hamlet's soliloquy against the cosmological issues Bruno explored, including his ideas about heliocentrism, atomism and how humanists should address them.

appearance in the play, the introduction of Guildenstern and Rosencrantz, who appear on Brahe's family crest, and the setting of the play, which parallels Brahe's island observatory in Denmark.

This chapter explores the idea that this astronomical phenomenon of Shakespeare's era, which appeared in the constellation of Cassiopeia in 1572, influenced him during the inception of his play. The supernova had an impact on Early Modern society in many ways. Culturally, it caused excitement as it was such an anomaly. It was exceptionally bright, visible even in daylight, spontaneously appeared where nothing had been detected before, and slowly dissipated over time. Theologically/Philosophically, it caused excitement as it was interpreted as a metaphysical signifier of a portentous event and became associated with apocalyptically prophecies. Known as "Tycho Brahe's Star," this star was widely documented in early modern tracts, where it was identified as an apocalyptical symbol indicating disaster for Northern Europe unless the call for governmental and societal reform was heeded. Scientifically, the event was influential to the history of astronomy as it proved mathematically that the Aristotelian model that delineated the mutable, corrupted Earth from the unchanging, perfect heavens was a false model.

By the time Shakespeare wrote *Hamlet*, much on Copernicus's "new philosophy" had been published and disseminated among Elizabethans, including six editions of Diggs's English translation included in a popular almanac (Heninger 125). The play also reflects certain eschatological elements that the appearance of the supernova elicited in the aforementioned contemporaneous pamphlets. Hamlet's paralyzing doubts and psychoneurotic behavior should be examined against the ontological distress of this pivotal era when a series of critical discoveries about nature and cosmology were changing long held ideas about

natural philosophy, theology and the physical state of both the world and the universe. I argue that criticism regarding the play should not be limited to the psychological register, as so many have traditionally held, but also be applied to the epistemological/ontological register.

"Yond Same Star That's Westward from the Pole"[48]: Tycho Brahe's Supernova of 1572

Donald and Marilyn Olson, and Russell L. Doescher argue that the very significant supernova of 1572 was the inspiration for the star described as "westward from the pole" in the opening scene of the play (1.1.36). [49] The star's nomenclature, "Tycho Brahe's star," was taken from his dedicated treatise on the phenomenon, *De Nova Stella* (*The New Star*), published in 1573 (Brahe, *Learned Ticho Brahe* par.1). There are other connections to Brahe and the play, many explored by the Olsons and Doescher. One of the more striking connections is the appearance of Brahe's familial names, "Rosenkrans" and "Guldensteren," on a famous portrait of Brahe completed in 1590 (Olson, Olson and Doescher 72). (See Image I).[50] Owen Gingerich first introduces this connection, describing how the names appear in the famous portrait, which depicts Brahe surrounded by the coats-of-arms of his ancestors. Gingerich states that the picture was published in the 1596 and 1601 editions of Brahe's astronomical letters, adding that "copies of this engraving were available in astronomical circles in London in the 1590s, for in a letter to English scholar Thomas Savile on December 1, 1590, Brahe writes that has 'included four copies of my portrait, recently

[48] 1.1.36.

[49] A supernova is a star which, approaching the end of its life cycle, explodes in a nuclear reaction. The magnitude of this explosion depends upon the size of the star. Thus, a star that has gone supernova will suddenly appear very bright in the heavens until the gas that it has jettisoned dissipates, and will then appear to vanish, leaving either a faint nebula or black hole, depending on the size of the original star.

[50] The portrait was engraved in copper in Amsterdam in 1586, and was used extensively by Tycho Brahe to promote his work. In 1590, Tycho sent four copies of the portrait, accompanied by two copies of his 1588 book to Thomas Savile, a prominent member of Merton College, who was also the brother of the warden of the college (Usher 124).

engraved in copper at Amsterdam'" (qtd. in Olson, Olson and Doescher, 71).[51] The Olsons and Doescher also argue that the setting of the play is November, the same month of the supernova's appearance in November of 1572, a time of year which closest describes the star's location as "westward from the pole." They base this conclusion on seasonal references in the play.

I concur with the Olsons' and Doescher's argument, a primarily historical claim that focuses on conclusively identifying the star itself as the specific marker of the first act of the play but I wish to expand on this idea, exploring the impact of the meaning of the supernova on early modern culture and the significance implied by its inclusion into *Hamlet.* In other words, I will focus on the ontological legacy of this metadramatic celestial icon and the apocalyptic or eschatological feelings that it elicited in Renaissance England, and how those feelings become echoed in the tragedy of *Hamlet.* The Olsons and Doescher claim that the supernova is the star mentioned in the play yet I will explore the significance of their assertion and what it meant to the meaning of the play.

Hamlet is focused on themes of displacement and loss, temporal and spatial distortions, societal and cultural crises and philosophical debates, and shifting approaches in intellectual methodologies. The demise of the Aristotelian cosmological system was integral in this shift, and that demise began with the appearance of a "new" star in the heavens. When the uncommonly bright supernova of 1572 appeared in the heavens within the constellation of Cassiopeia, Tycho Brahe documented the event and verified mathematically that it was located beyond the sphere of the moon. To him this meant that the heavens

[51] Brahe was also associated with a "Guildenstern" and "Rosencrantz" who served as Danish courtiers. In June of 1588, Brahe was visited by two of the late Danish King Frederick's counselors, now regents for his ten year old successor Christian IV, regents Peter Gyldenstierne and Jorgen Rosencrantz. The delegates came to Brahe's island to represent the regency's interests and evaluate the value of Brahe's work. They eventually agreed to continue to support Brahe's research (Christianson 129).

themselves were not immune to change and corruption. This discovery seriously challenged Aristotelian physics and its Christianized philosophy. The cosmological displacement proposed by Copernicus, later compounded by Brahe's confirmation of a mutable heaven, triggered a theological crisis, displacing not only the physical Earth, but also the accepted conceptual locations of heaven and hell. It also complicated the physical space of authority because of the loss of a specific realm for humanity's ultimate authority, its God, as the corrupted or decaying natural world was extended to the heavens themselves. I argue that Brahe's conclusions are crucially important to the play as I focus on the contextual importance of the star and how its appearance affects the play.

Brahe's observatory/kingdom was located in a Danish fortress, and Brahe served under the patronage of the Danish King Frederik II until he died in 1588, leaving his young son, King Christian IV as his successor – a successor who promptly dismissed Brahe, who died in November 1601, the approximate time that the play was written (Seeds 51).[52] The location of the star, specifically described at midnight from Denmark's latitude – serves as the first indicator that the star mentioned in Act 1, scene 1 refers to the supernova of 1572. According to star charts, this location as described reveals the star's position at midnight in its host position in the constellation of Cassiopeia, which would be seen as physically "westward from the pole," or pole star, the North Star or Polaris.[53] In fact, at midnight the supernova would have been the star *directly westward* of Polaris (*The Sky Astronomy Software Program*) (see Figure II). Although the supernova had disappeared by the end of

[52] Dan Bilefsky argues that Brahe was killed by his cousin Eric Brahe on the orders of the Danish king, Christian IV, enraged over rumors that Brahe, a father of eight, was having an affair with the king's mother. Proponents of this idea claim that Brahe's cousin slipped mercury into Brahe's glass, causing him to die in delirious pain. Seeking to solve this 400-year-old mystery, a team of Czech and Danish scientists exhumed the body of the 16th-century Danish astronomer in November of 2010 (Bilefsky, par. 9).

[53] The star adjacent to the supernova in Cassiopeia is perpetually, then and now, the first bright star seen "westward from the pole," or Polaris, at midnight.

1573, its location within Cassiopeia was well known, and it was often identified by this constellation in many of the early modern publications which described it in apocalyptic terms, preserving its unique legacy for decades.

The star is first described in Act 1, scene 1, as making "*his* course t' illume that part of the heaven where it *now* burns" (1.1.37-38) [emphasis mine]. The description implies a temporality or transitory nature in contrast to the consistent nature of the other sentinels of the heavens. The phrase, "his course" is generally reserved for more prominent celestial bodies such as the sun or one of the planets, not a singular star, particularly as stars were thought to move together in concert (as embedded into one sphere). The phrase would also describe a star that was not noticeable before, such as the supernova explosion, which "now" burned where nothing had "burned" before.

Shakespeare's decision to mark a specific time of the night through a star instead of its constellation was unusual. Shakespeare generally refers to celestial bodies by constellation rather than by individual stars within these constellations, even well known stars. In *Othello,* for example, he describes how "The wind shak'd surge, with high and monstrous man, seems to cast water on the burning bear, [Ursa Minor] and quench the guards of the ever fixed pole," (2.1.13-15) and in *Henry IV, Part I,* a carrier determines the time by the placement of "Charles' Wain" [Ursa Major], "An it be not four by the day, / I'll be hanged: Charles' Wain is over the new chimney, and yet our horse not be packed!" (2.1.1-3). Anne Sutherland claims that Shakespeare used zodiacal constellations to determine place in *The Winter's Tale* (Sutherland 46). I argue that his decision to focus on a singular star as a marker is a direct reflection of the importance of the star as a harbinger of change.

The idea that a "new star" could suddenly appear and then subsequently disappear was an impossible phenomenon under the Aristotelian model. The sudden appearance of Brahe's supernova thus offered a particularly strong challenge to the Aristotelian cosmic system. Brahe, Digges and John Dee published treatises on the new star and its significance, and all three noted that they had determined mathematically, through the trigonometric methodology of parallax, that it could not be physically located in the sublunar realm, or below the moon (Johnson 156).[54]

Early modern scholars had initially claimed that the new star of 1572 was located beneath the moon, safely confined to the "corruptible" Earth, but once Brahe's (and Dee's) parallax calculations proved otherwise, the star's appearance became the first sensual or physical challenge to the Aristotelian system.[55] For Shakespeare, the cosmic anxiety triggered by a disintegrating star that he observed becomes a model for the disintegrating state that he describes in *Hamlet*, a play which opens with a description of that specific star with its Cassiopeian coordinates.

'Then is doomsday near': The Apocalyptic Nature of the 'New Star'" [56]

The supernova of 1572, as an early modern phenomenon and source of new knowledge, simultaneously became a reifiable object that held immense significance to the scientific community and a harbinger of doom to the theologians and various prominent

[54] All three treatises were published in 1573. Dee's treatise was titled *Parallaticae Commentationis Praxeosque Nucleus quidam*, Brahe's treatise was titled *Learned Ticho Brahe his Propheticall Conclusion of the New and much admired Starre of the North, 1572*, and Digges's treatise was titled *Alae seu Scalae Mathematicae* (Johnson 156).

[55] Camden's treatise, *Annales rerum Anglicarum, et Hibernicarum, regnante Elizabetha, ad annum salutis M.D.LXXXIX*, published in 1615, states that "Thomas Digges, and John Dee, Gentlemen, and Mathematicians amongst us, have learnedly proved by paralactic doctrine, that it was in the celestial, not in the elementary region…" (qtd. in Johnson 156). Andrew Pettigree claims that once the nova of 1572 was recognized by Wilhelm of Hesse and Casper Peucer to be located above the moon, they attempted to classify this phenomenon as an example of God's intervention in the natural operation of the world – which would allow them to explain a phenomenon which was impossible under Aristotelian physics (531).

[56] *Hamlet* 2.2.246.

members of Elizabethan culture. The star's appearance represented a new state of knowledge – knowledge that, although explicable, could yet be held as mystical or ethereal, adding a layer of ambiguity about how, exactly, such knowledge should be received. This ambiguity is echoed by Hamlet, who begins to believe the evidence that points to the truth about his father's murder but does not really know how to process or classify the information, much less how to respond to it.

The supernova itself, as previously stated, was reported to be so intensely bright that it was visible in daylight (Moore 95). This unusual sight elicited speculation about its origin and its meaning, including declarations that it was a supernatural phenomenon. Holinshed, a significant source for Shakespeare's history plays, describes the appearance of this star in his *Chronicles,* illustrating the effect that the star had on his culture:

> The eighteenth of November in the morning was seen a star northward very bright and clear, in the constellation of Cassiopeia, at the back of her chair.... This star in bigness at the first appearing seemed bigger than Jupiter and not much less than Venus when she seemed greatest. Also the said star never changing his place, was carried about with the daily motion of heaven, as all fixed stars commonly are ... it was found to have been in place celestial far above the moon, otherwise than ever any comet hath been seen, or naturally can appear. Therefore it is supposed that the signification thereof is directed purposely and specifically to some matter, not naturally, but celestial, or rather supercelestial, so strange, as from the beginning of the world never was the like. (qtd. in Olson 70)

Pamphleteers claimed that it foreshadowed some portentous event or disaster or that it served as a warning sign of some divine retribution for a corrupted society in need of reform. The star's appearance was thought to be especially pertinent to northern European nations, particularly Scandinavia, the nation thought to be located directly under its astronomical coordinates. The star noted in the opening scene of *Hamlet* fulfills that specific role in the play, foreshadowing the appearance of something ominous and supernatural that would lead to tragedy and disaster, becoming the catalyst for civic reform.

The most influential work concerning the star was Brahe's treatise; *Learned Tycho Brahe his Prophetical Conclusion of the New and Much Admired Star of the North, 1572.* The treatise included Brahe's calculations and descriptions regarding the star and an addendum that expressed his opinion of its astrological significance. Brahe notes that it "shined most miraculously…against the Laws of Nature." He reiterated his views that its location as determined trigonometrically by parallax disproved Aristotle's theories, adding that Aristotle had based his cosmic model "upon conjecture rather than on the doctrine of the Mathematics and Optics." Brahe predicted that this star would also produce "strange, great and wonderful effects" but that "there shall happen a great Catastrophe and universal change throughout all the chief Nations of the Earth, especially those situated Northward from the Equinoctial," (northern hemisphere), specifically targeting those in Scandinavia (par 20). Brahe's apocalyptical treatise also includes interpretative support from the Bible, specifically the book of *Ezekiel*, Chapters 38 and 39, which Brahe quotes, claiming that the early modern

region of Scandinavia represented the doomed ancient kingdoms cited in the original biblical passage (par. 21). [57]

He includes a passage from Cornelius Gemma's *Supernatural Apparition,* written in 1572, that predicted a star will arise suddenly in Europe "at the great house of the North," and then slowly dissipate. After this star vanishes, according to Gemma, there would be:

> Bloody comets, and flashings of fire seen in the Heavens, so that there shall be no safety anywhere. The firmament of the Heaven shall be dissolved, the Planets shall forget their courses, and the Spheres shall bustle one another, the fixed Stars shall outshine the Planets[58]. The Heavens shall be leveled with the seas, and after these things come to passé, there shall be continual Night, destruction, ruin, condemnation and eternal darkness. (par. 21)

Brahe adds commentary from other "Sibyls," who predict disasters on earth after the appearance of a bright new star fixed in the heavens. The predictions include warnings about comets and meteors that will appear shortly after the star's brief appearance.[59] [60] Brahe's predictions became so well known that John Harvey wrote an essay in 1588 denouncing and satirizing the dire predictions for that year based on those predictions:

> …for albeit I should favorably allow of their counsel, which have advised a continual observation of every *Critical* year from the strange new star which appeared in *Cassiopeia, Anno* 1572 as though in every such year there were

[57] W.H. Bizley writes that Denmark "must have been a state, a 'ground' of some quality to field such excitement, to field such persons, or, dipping from bias, to create tragedy in fact, and not merely to rust or stagnate" (36).

[58] The supernova recorded luminosity brighter than the planets (Moore 95).

[59] Brahe was considered a skilled astrologer, particularly after he accurately predicted the death of Suleman the Magnificent in a poem about a lunar eclipse (Padamsee 411).

[60] Hasan Padamsee notes that the only documentation of a supernova prior to the supernova of 1582 was recorded in 1181 A.D. in Asia. As there had been no reported appearance of a supernova in England until 1572, it would have been unsettling to have yet another "new" star appear in 1604 There would not be another supernova reported after 1604 until 1885 (444).

> still some notable unaccustomed Accidents to be expected; yet forasmuch as cannot be reputed any such *Critical* year from that star; as there is therefore no singular, or special note to be taken thereof. (121)

This passage indicates that Brahe's prophecies initiated a sort of ongoing vigil, or intermittent re-evaluation of the strange new star's implications for humanity. The origin of this tradition can be found in Brahe's original 1572 treatise wherein he proposed that the ramifications of the star's appearance would unfold over several decades, adding that "noble heroes" born during the star's appearance would achieve great things once they came "to full ripeness of age," around 1632, a theme that would be exploited by Alexander Gill in his 1631 publication (*Learned Tycho Brahe* 17).[61] In the text, Gill claims that the victories of the King of Sweden serve as the fulfillment of Brahe's earlier predictions for Scandinavian heroes born around the time of the star's appearance.

This evidence indicates a heightened awareness of the possible metaphysical and/or physical omens predicted by the supernova for certain regions named in Early Modern tracts. The star inspired other speculative tracts or pamphlets by astronomers and astrologers who flooded the market with their works. Some of these writers predicted dire outcomes, and others hailed a glorious new era. Many believed, like Brahe, that the new star signified the approaching Second Coming of Christ, while others felt it signified the end of the world (Padamsee 413). This view originated from the idea that the supernova of 1572 resembled the "new" star at Christ's nativity, and should thus be seen as an indicator of his return.

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[61] Gill's publication includes a preface written by the future King James I drafted in 1593 at the request of Brahe for his publication *Astronomica Progymnasmata* (*Exercises Toward a Restored Astronomy*). This tract, although written fifteen years after Shakespeare's death, offers evidence that prophecies about the new star and its influence in Scandinavia circulated for decades, and that King James, who visited Brahe on March 20, 1590, to discuss Copernicanism, was familiar with Brahe's text, which included his clear denouncement of the Aristotelian cosmological system and his dire predictions for Scandinavia as the land located under the star's meridian (Christianson 140).

One of these tracts, *A Discourse upon the Earthquake that Happened through this Realm of England, and Other Places of Christendom, the First of April, 1580 Between the Hours of Five and Six in the Evening,* was written by Arthur Golding. In the tract, he lists the supernova's sudden appearance as one of the signs that would "assuredly witness unto us, that such tokens are infallible fore warnings of Gods sore displeasure for sin, & of his just plagues for the same, where amendment of life ensued not" (Golding par. 16). This passage states that:

> What shall we say to …the unseasonablenesse of the seasons of some years, altering (after a sort) Summer into Winter, and Winter into summer? Or to the *wonderful new Star*, so long time fixed in the heaven? Or to the strange a appearing of Comets, the often clipses of Sun and Moon, the great and strange fashioned lights seen in the firmament in the night times...and many other such wonderful things, one following in another's neck? Golding par.15) [emphasis mine]

In this passage, Golding demonstrates how disturbing simultaneous sightings of unusual astronomical events had been for the Elizabethan people. Golding's publication may be particularly applicable to Shakespeare as Golding was well known for his 1567 English translation of one of Shakespeare's favorite sources, Ovid's *Metamorphosis.*[62]

There were other tracts published that illustrate the effect that the new star elicited. George Abbot, an English "divine" and Archbishop of Canterbury[63] published in a tract in 1600 stating that, "It is no marvel to see the Sun, and the stares in their daily order, because

[62] Golden's translation was titled *The. xv. books of P. Ouidius Naso, entitled Metamorphosis, translated out of Latin into English meter, by Arthur Golding Gentleman, a work very pleasant and delectable.* The book was "Imprinted at London : By William Seres, [in 1567].

[63] Darwall-Smith, Robin. *A History of University College*, Oxford. Oxford UP, 2008. 120–126.

daily we may do it, but to see a new star appearing, as not long since there was one in the sign Cassiopeia, is a matter to move amazedness…" (Abbot, par. 2). Abbot's passage also illustrates another point about the star's strange appearance. The star's appearance is paradoxically seen as "amazed" by some pamphleteers but portentous by others. This tradition seems to have originated in Brahe's own treatment of the supernova. In his 1572 treatise, he explained his own mixed feelings about the star's metaphysical message, stating that:

> Yet in what order things shall come to pass, it is hard to guess, either by the signification of this Star, or by the Sibylline Oracles, or by Divine Prophesies. But yet is likely, that those happy times shall not proceed, but follow after a more troublesome time; even as this Star at the first, did shine with a bright and clear luster and with a Jovial light, but afterward did assume a Martial sparkling color, as may bee gathered out of the words of the same *Sybilla.* (Brahe, *Learned Tycho Brahe* 19).[64]

Brahe's interpretation is based on the physical characteristics of the star and its changing appearance. The star would have first appeared as a bright and brilliant white starburst, but then faded into a more reddish hue as it dissipated into a nebula, the aftermath of a supernova explosion. Brahe's comments add a complexity to the star's appearance. Not only did the star appear suddenly from empty space, it changed its appearance from a "cleare luster" or "Ioviall light" to a "Martial sparkling color."[65] These changes not only accentuated the idea of a mutable heaven, it introduced the idea of a mutable *star*. This would be perplexing to a

[64] Note the similarity between Brahe's description of the star and Hamlet's description of his father, who is described as having, "Hyperion's curls, the front of Jove himself, an eye like Mars, to threaten and command, A station like the herald Mercury" (3.4.57-60).

[65] The present day nebula left by the supernova is indeed a "Martiall sparkling colour," or a mixture of brilliant colors.

culture that had never experienced either phenomenon. It also reiterated the idea that the cosmos could not be constructed on the Aristotelian model, as Brahe noted so succinctly in his 1572 treatise.

In his edition of Arthur Golding's tract, printed in 1580, Simon Goulart asks "have we not seen for the space of 3 years throughout all *Europe,* the terrible effects upon the earth of this presage in Heaven?" He then implores his readers to:

> Not forget the new star, as great as the day star, the which appeared among the fixed Stars, near unto *Cassiopeia* the 9. of November 1572. having the form of a Lozenge. CORNELIUS GEMMA and other learned Astronomers, which have written Books thereof, say that it continued still in one place for the space of three weeks, and they hold that it resembled the star the which appeared to the Wise men coming to adore JESUS CHRIST in *Bethlehem,* presently after his birth. (Goulart 134)

Jean de Hainault[66] reiterates this idea that the star represented a new "Star of Bethlehem," in his tract of 1602, as well as acknowledging its prominence in scholarly circles, stating that:

> Amongst so many troubles & commencements of greater sorrows, a new Star appeared in heaven as great as the day Star, nigh the Star *Cassiopeia,* of the figure of a Lozenge. This began the ninth day of November at night. It stirred not from the place the space of three weeks. It was thought to be like the Star which appeared to the wise men which came from the East, to worship Jesus

[66] The editor's preface for this work is signed "Ion n Crispin," a French Huguenot who lived from c. 1520 to 1572. He was born at Arras, studied law and practiced in Paris before retiring for religious reasons to Strasbourg (in 1545) and then to Geneva (in 1548). There he established a printing press and published his most famous work *Livre des Martyrs* (1554), and *Actes des Martyrs* (1564) ("Jean Crespin," par. 1).

> Christ in *Bethlehem,* straight after his birth. This Star appeared in seven, the space of nine months or thereabouts. Hereof were many discourses made by diverse learned men. (610)

Hainault also associates the new star directly with the need for national reform, a theme in *Hamlet,* stating:

> When we see in History that some kingdoms have been established and brought into good estate, which before w[ere] dissipated & divided: or else that some man hath been delivered from some great calamity, and hath recovered some prosperity: behold here is a glass to let them know which read such things, what good and happy issue they may attend at Gods hands, after long and troublesome calamities, if they trust in him. Again, if we encounter such an example, that a Common-wealth, which otherwise was of no great force to resist many enterprises attempted against it; yet it stands fast, only making it self strong upon the succors it looked for at Gods hands: behold here a Painter to represent unto us lively, with what wisdom God works, breaking the counsels of the proud which abuse their power, to confound and oppress such in the midst of which he hath established his seat to be honored. (610)

Collectively, these tracts reveal the extent to which this star was remembered in popular culture and how it was seen as a sign of an approaching disaster and a warning for state reform. Through these tracts, the star's impact was revisited throughout the last decades of the sixteenth century, up until the time when Shakespeare wrote his plays. The star became associated with the climatic and unnatural events that had occurred between its

sighting and the turn of the century. It was also appropriated as a signal that God demanded moral reform to heal the state. *Hamlet* is a play based on the idea that the state is in disarray where there is "mirth in funeral," and "dirge in marriage"(1.2.8–12). Shakespeare's play echoes this idea. His microcosmic Denmark is a world that is corruptible and in a state of decay and flux. His star "westward from the pole" becomes the harbinger of this impending disaster. The star's apocryphal signature also sets the tragic tone for the play as it opens with a reference to it, followed by Horatio's speech recalling the strange astronomical signs that purportedly happened the night that Caesar was murdered.

"Words, words, mere words"[67]: Astronomical Terminology in *Hamlet*

In *Hamlet*, Shakespeare begins to implement very specific terminology normally reserved for the study of astronomy – terms that signify space and time.[68] In an opening passage in Act 1, Claudius lectures Hamlet about his insistence on openly mourning his father's death. Claudius then informs Hamlet of the royal couple's wish that he not return to Wittenberg,[69] stating:

> Of impious stubbornness; 'tis unmanly grief;
>
> It shows a will *most incorrect to heaven***,…**
>
> Why should we in our peevish *opposition*
>
> Take it to heart? Fie! 'tis a fault to heaven,…

[67] *Hamlet* 2.2.184.

[68] Jonathan Gil Harris argues that Shakespeare engages an antique tradition of materialist philosophy that "entails both the materiality of figures and, just as importantly the figurality of matter." He bases this claim on Shakespeare's use of the esoteric term "atomy" on four occasions (47-48).

[69] Wittenberg is associated with the birth of Copernicanism. In 1543 the mathematician Georg Joachim Rheticus, from the University of Wittenberg, convinced Copernicus to publish *On the Revolutions*. Rheticus oversaw most of the printing of the book, which was published in May of 1543 (Johnson 97). The term Wittenberg when juxtaposed to the term retrograde takes on additional significance, as the supernova of 1572 was first recorded at Wittenberg (Moore 95).

From the first course till he that died to-day,

Do I impart toward you. For your intent

In going back to school in Wittenberg,

It is most *retrograde* to our desire. (1.2.165-184) [emphasis mine]

In this passage, Shakespeare appropriates several terms from astronomy, including the words "opposition," "from the first course," and "retrograde," demonstrating how words from the science of astronomy could be applied to the aesthetics of the stage. One of the more significant terms in the play is the word "retrograde." In this instance, Shakespeare is using the term to describe an adamant desire for Hamlet to stay in Denmark, or the extreme opposite of Hamlet's wishes. Prior to the early modern era, the term "retrograde" was almost exclusively identified as an astronomy concept associated with cyclical time – epicycles specifically.

According to the Oxford English Dictionary, the term is used as a purely astronomical term in ten instances before Shakespeare's *Hamlet*. In four other instances, including its use in Ben Jonson's *Cynthia's Revels*, it is used to describe a specific backwards motion. An alternative keyword search, however, revealed that the term was employed forty seven times in the period between 1550 and 1610 – twenty times in a purely astronomical context, thirteen times in a purely poetic context, and fourteen times in a dual context.[70] This suggests that the term was still predominantly used in an astronomical capacity, although that began to change around 1590. Shakespeare is participating in that trend here, by appropriating a traditionally astronomic term and applying it in a manifestly and obviously non astronomical way.

[70] Data obtained through the Early English Books Online database of primary source materials.

Shakespeare only employed the term twice – once in *Hamlet*, and once in *All's Well That Ends Well,* thought to have been written in 1602 or 1603. In *All's Well That Ends Well,* Shakespeare demonstrates that he understands the word's original astronomical meaning, indicating his knowledge of the astronomical phenomenon in its proper context, yet he applies it to human behavior in a poetic turn. In the play, Helena contradicts Parolles's claim that his bravery stems from his birth under Mars's influence. She claims instead that he was born "When he [Mars] was retrograde…" as he went "backward" when he fought (1.1.196-200).

The term retrograde also held a unique significance in the Early Modern cosmological debate. The term is used to describe the visual phenomenon of a planet's sudden reversal of course from east to west to west to east. This occurs because the Earth completes its orbit in a shorter period of time than the planets outside its orbit, and periodically overtakes them. When this occurs, the planet Earth is passing will first appear to stop its eastward drift, and then drift back toward the west. When the Earth swings past the planet in its orbit, it appears to resume its normal motion west to east. The period of time a planet drifted "backwards" was thus called its retrograde period.

Retrograde cycles were significant to the heliocentric/geocentric debates as their mere presence challenged a perfect Aristotelian geocentric system. In a simple, straightforward geocentric system, why would the planets suddenly reverse course? In answer to this challenge, Ptolemy introduced the idea of epicycles, or small orbital circles inside the planets' larger orbits. Over time, however, cosmic mathematical measurements became ever more accurate, and additional epicycles were added to planetary orbits in order to keep the system tenable. The Copernican heliocentric system, however, would eliminate the need for

epicycles altogether – one of the reasons for its popularity among the proto-empirics who tended to favor elegance over complication.

There are additional examples of Shakespeare's use of a more mechanized or specifically astronomical metaphor in lieu of more traditionally abstracted astronomical metaphor. Shakespeare's ghost claims that his experience in Purgatory would "Make [Hamlet's] two eyes like stars start from their spheres" (1.1.115-116). A star or planet was traditionally thought to be embedded in its crystalline sphere. To describe a star or planet as falling from its sphere was to describe an impossible scenario. Yet the supernova of 1572 embodied just this impossible scenario. The star which suddenly appeared in 1572 was thought to be a star that had fallen from its sphere, or become displaced in the heavens by some accounts. This idea is illustrated in a tract written in 1588 by John Harvey who describes the strange phenomenon of the supernova of 1572 and the dire predictions following its appearance. He asks if "… is it peradventure to be supposed, that the *Vertical, Perpendicular,* or *Topical* stars have now conspired together to desolate, or oppress the several regions which they aspect?"[71] (121). This passage seems to presage Hamlet's accusation that Laertes's speech "Conjures the wandering stars and makes them stand like wonder-wounded hearers," implying that the stars could be physically manipulated out of their sphere (5.1.233-234).

There are sphere analogies in many other Shakespearian plays. *All's Well that Ends Well* includes Helena's lament "That I should love a bright particular star /And think to wed it, he is so above me. / In his bright radiance and collateral light /Must I be comforted, not in

[71] This passage contains yet another reference to the idea that the appearance of certain star patterns could portent disaster upon the geographical regions that appeared directly below them , as Brahe's tract predicted.

his sphere," (1.186-89) [72] and *A Winter's Tale* contains Hermione's remarks that "Though you would seek to unsphere the stars with oaths, / Should yet say 'Sir, no going" (1.2.58-60). Both are written after *Hamlet* (Evans 85-87). In Henry *V*, one of the French officers questions the Constable about his armour, asking if he "saw…stars of suns upon it?" When the Dauphin replies that "Some of them will fall tomorrow, I hope," the Constable remarks "And yet my sky shall not want" (3.7.62-5-65). This is yet another example of Shakespeare's decision to implement astral terminology into the language of his common culture. The unifying theme in these multiple sphere analogies is the idea of an impossible scenario – a displaced star that has fallen into another realm. The supernova of 1572 was such a star. It was thought impossible that a star could suddenly appear in the heavens and then "fall" out of its sphere once again when it disappeared. Such a scenario would represent chaos in the heavens that extended to the earth.

"Time Out of Joint": The Displacement of Aristotelian Order and Its Consequences to Renaissance Culture:

The supernova as indicator of a time out of joint is particularly compatible with the play's overall theme of a new world with a corrupted heaven. The result is a world that is upside down, where there is "mirth in funeral," "dirge in marriage," and "equal delight and dole" (1.2.12-13). Hamlet confirms his perception of time "out of joint," and his role concerning the situation, lamenting, "O cursed spite, that ever I was born to set it right"(1.5.188-189), and he recognizes the unnatural act that haunts him – the fratricide and usurpation of his father that led to his own displacement from the natural order as the lawful

[72] This passage also seems to imply that a "bright, particular star" would belong to its own sphere, not in the collective sphere of the fixed stars, an unusual theory in itself.

heir to Denmark's throne. Howard Marchitello argues that "Hamlet's dilemma has equally to do with temporality," describing Hamlet's notion of identity as one that:

> is itself understood in relation to temporality; in desiring to be his father *and* his own ghost, Hamlet desires to be both that which *precedes* and that which *follows* himself. To be *and* not to be: Hamlet's desire to negotiate a particular temporalization that … Derrida calls "anachrony" or "untimeliness… (1).

This desire seems to represent an attempt to repair the hierarchic breach by taking both his father's and his own place in it. This tendency seems to culminate in Hamlet's slow conflation of his own desire for revenge with the ghost's until the ghost is phased out of the play altogether. Eventually, Hamlet will not even recall his own earlier conversation with him, claiming he has never talked with anyone from "The undiscovered country from whose bourn / no traveler returns" (3.1.97-98). This theory also explains his urgent entreaty to Horatio to preserve his legacy after his death. This temporally and naturally inverted world inspires paradoxical passages such as those found in Hamlet's cryptic remarks to Ophelia that she should, "Doubt that the stars are fire, / Doubt that the sun doth move, / Doubt truth to be a liar, / But never doubt I love," should be examined through this defining lens"(2.3.118). In an Aristotelian system, the sun *does* move, but in a Copernican system, it does *not*. In this world out of joint, is he using sarcasm or professing his true feelings? In an upside down world where there is "mirth in funeral," Hamlet's remarks may reflect sarcasm. Within the context of the Ptolemaic/Copernican argument, the passage takes on a new significance. If the play is viewed as an Anti-Aristotelian work, then the phrase suggests that Hamlet is using cosmology to mock Ophelia's feelings of love, which is consistent with his treatment of her throughout the play. The remarks represent the primary doubts of the era- the nature of the

star, the nature of the universe, and the definition of "truth" in rapidly changing times. In this admonishment to Ophelia, Hamlet is fashioning an analogy that appropriates the uncertainty about the nature of the cosmos into his relationship with her. He confuses her with the irony of these remarks. At the time *Hamlet* was written, there was no definitive proof that the sun moved, or did not, and no proof that the stars were "fire," just as there is no visible "proof" that Hamlet loved Ophelia. There is no engagement or apparently even a noticeable "understanding" between them, as Polonius and Laertes have both noted. The passage becomes another manifestation of doubt in this play that poses more questions than answers.

Sections in the play such as the aforementioned passage strengthen the theme that the natural order of the cosmos, both in microcosmic Denmark and the macrocosmic universe has been usurped and only its legacy remains. This theme is echoed by Horatio,[73] the timekeeper/scholar, who is the only character who will survive. His closing speech reveals his role:

> And let me speak to [th'] yet unknowing world
> How these things came about. So shall you hear
> Of carnal, bloody, and unnatural acts,
> Of accidental judgments, causual slaughters,
> Of deaths put on by cunning and [forc'd] cause,
> And in this upshot, purposes mistook
> Fall'n on th' inventors heads: all this can I
> Truly deliver. (5.2.379-386)

[73] The personification of the Latin noun "hora" is described as meaning "the Hours, the goddesses who presided over the changes of the seasons and kept watch at the gates of heaven" (Simpson 278).

Horatio's contemporaries, those in the "yet unknowing world," were facing two great threats, the threat of a splintered church, which had resulted in "bloody and unnatural acts," "accidental judgments, casual slaughters" and "deaths put on by cunning and forced cause," (5.2.381-383) accompanied by the threat of an undefined and uncertain cosmological model that contained "stars with trains of fire" in the heavenly regions, disputing Aristotle's theories, which did not allow for "disasters in the sun" that threatened the doctrines of *either* church (1.1.117-118). With God's heavens themselves corrupted and cosmological/hierarchal certainty destroyed, the idea of temporal as well as spatial certainty was destroyed, with nothing tenable left to supplant it. Polonius's phrase "If circumstances lead me, I will find / Where truth is hid, though it were hid indeed within the centre" may have a multilayered meaning (2.2.167-169). Shakespeare clearly perceives the idea of the ordered heavens, composed of its ordered spheres, as indicative of a universe that observed a regimented and unyielding hierarchy – a hierarchy threatened by this rogue star that nullified the natural order and inspired the apocalyptic tracts printed in the last decades of the sixteenth century. *Hamlet* becomes Shakespeare's funeral dirge for that lost certainty and the lost world it represents.

"Things Rank and Gross in Nature": A Corrupted and Decaying Natural World Extended to the Heavens

Hamlet contains themes of displacement and loss temporal and spatial distortions, societal and cultural crises, philosophical debates, and shifting approaches in intellectual methodologies. An additional related theme is the idea of an unnatural corruption or decay in the natural world. W.H. Bizley claims in his metaphysical reading of *Hamlet* that Hamlet's "pale cast of thought" seems to generate from more general forces than Hamlet alone. He

claims that the stars are so transparent that they mobilized the metaphor itself (31). Although Bizley's text focuses on the aesthetics of that metaphor rather than its significance, he nonetheless describes how the prince reads "his melancholy into the sky." He also connects that melancholy to both the heavens and man – stating that the play "invests not only the cosmos but the individual case, the nature of the stars but also the nature of man" (32). Bizley expands that idea, claiming that "the stars above Denmark, like the glassy color of the whole play, offer themselves as a subtle and incisive metaphor for a version of being that invests man as well as the cosmos, the eye as well as the star" (33).

Repeating Bizley's idea that the heavens themselves reflect Hamlet's melancholy through the use of such metaphors as a "moist star" "sick to doomsday with eclipse," the exploding star, or supernova, would provide an even more appropriate metaphoric icon, particularly as a singular event that elicited such apocalyptical commentary as the agent that proved that the heavens were not composed of the "perfect element," quintessence, but were as corrupt and mutable as the Earth. The idea of associating God and/or Christ with any cyclical macrocosmic phenomenon was generally considered heretical, particularly during the late Middle Ages. Medieval Christianity particularly espoused the idea of Christ's singular sacrifice for humanity. In the face of a plurality of worlds with the possibility of where Earth was demoted to the status of only one world of several orbiting the centralized sun, or in a world where the heavens were also part of a grand cycle, what would happen to this singular sacrifice? If those worlds were inhabited,[74] would the natives of these possible

[74] The idea that these "new" worlds were inhabited seemed to be the predominate thought of the era based on the many works that featured space travel and subsequent encounters with alien beings found there. This idea was likely fostered, if not inspired by, early modern explorers'encounters with native inhabitants of the new world.

other worlds need his redemption also? Giordano Bruno, who lectured at Oxford in 1583, explains the consequences of a heliocentric, infinite universe:

> You would say that there is no need to posit a spiritual body beyond the eighth or ninth sphere; but that just as this same air surrounded and contained earth, moon and sun, so also it is extended infinitely to contain other infinitely numerous stars and great animals; and this air becomes thus the common and universal space, the infinitely spacious bosom which holds and embraces the whole universe, no less than that part which is perceptible to us owing to the innumerable lamps thereof (qtd. in Campbell 113).

Campbell also claims that Bruno's philosophy went beyond the tenets of either geocentrism or heliocentrism, in that he proposed the lack of any universal centricity.

She states that:

> Bruno's universe has many centers ("a thousand stars"). Thus the earth no more than any other world is at the centre; and no points constitute definite determined poles of space for our earth just as she herself is not a definite and determined pole to any other point of the ether, or of the world space; and the same is true of all other bodies. From various points of view these may be all be regarded as centres, or as points on the circumference, as poles, or zeniths and so forth. (Campbell, 118)

Hamlet is based on the idea of this dislocated and decaying state that no longer conformed to traditional cyclical themes. Hamlet curses this state in Act 1 scene 2, "Fie on 't, ah fie!" as he claims it "'tis an unweeded garden that grows to seed, things rank and gross in nature" (1.2.135-136). Even Claudius, the personification of corruption, is

uneasy within the "corrupted currents of this world" (3.2. 56-57). Hamlet's father's ghost also claims that his murder was a particularly unnatural act, claiming that "Murder most foul, as in the best it is, / But his most foul, strange, and unnatural" (1.5.27-28).

There is a systemic pattern of decay in the play, and it is represented in a hierarchal microcosmic/macrocosmic structure. These levels of corruption extend from the microcosm of Denmark to the stars themselves. Denmark, itself, is "rotten;" (1.4.89). The Earth is a "sterile promontory;" the air around the Earth is filled with "foul and pestilent congregation of vapors ;" (2.2..298) the heavens contain "celestial garbage;"[75] the stars have a "vicious mole [blemish] of nature in them" (1.3.32). Remarks about decay in the heavens reflect an unusual and nonconformist viewpoint for Shakespeare to portray. In this play, the entire cosmos is corrupt, and all of humanity is suffering as a result.

There is also a recurring trope of death, decay and decomposition of man or matter to a lower form. Queen Gertrude, somewhat callously describes the inevitability of her late husband's death in Act 1, scene 3, wherein she claims that "Thou know'st 'tis common, all that lives must die; / Passing through nature to eternity" (1.2.72-73). The idea of universal mortality is inevitable and inescapable, yet Hamlet denigrates the concept, concentrating on the actual, physical decay of the body instead of the transmigration of its soul. Much is made of Polonius's body's decay, which Hamlet claims Claudius will "nose as you go up the stairs into the lobby" (4.4.36). But the passage is primarily focused on the idea of a cycle of decay and an inverted monistic or Epicurean ideology. When Hamlet is asked the location of Polonius, he replies that he is "at supper" in a passage in which Hamlet mocks the idea of royal anointment and physical superiority:

[75] It is symbolic that the host constellation of Tycho's supernova was Cassiopeia, the constellation that represents a corrupted and fallen queen – the only queen in the heavens.

> Claudius. Now, Hamlet, where's Polonius?
>
> Hamlet. At supper.
>
> Claudius. At supper! Where?
>
> Hamlet. Not where he eats, but where he is eaten. A certain convocation of [politic] worms are e'en at him. Your worm is your only emperor for diet. We fat all creatures else to fat us, and we fat ourselves for maggots. Your fat king and your lean beggar is but variable service, two dishes, but to one table; that's the end.
>
> Claudius. Alas, alas!
>
> Hamlet. A man may fish with the worm that hath eat of a king, and eat of the fish that hath fed of that worm.]
>
> Claudius. What dost thou mean by this?
>
> Hamlet. Nothing but to show you how a king may go a progress through the guts of a beggar. (4.3.19-32)

This exchange, which is also demonstrative of the corruption of the body politic, stresses the idea of a spiritual crisis, in which the animistic nature of humanity is emphasized over the spiritual. The corporeal, as Hamlet attests here, is *known* to decay. The soul's transformation, however, remains a mystery – a mystery compounded by a displaced cosmos.

Conclusion

Shakespeare's most enigmatic play reflects the cosmological/philosophical crises instigated by recent cosmological discoveries reported from Europe. The play contains tropes of disruption and reversals of nature, temporal and spatial anomalies and political and natural hierarchies usurped. These tropes mirror the effect that the supernova of 1572 had on

early modern scholarship and culture. The star elicited portentous tracts warning of dire consequences from clergymen and scholars, speculation about its meaning in general culture, and mathematical and physics advances for astronomers. It was also connected to Tycho Brahe, with his many Danish parallels to Elsinore and the play.

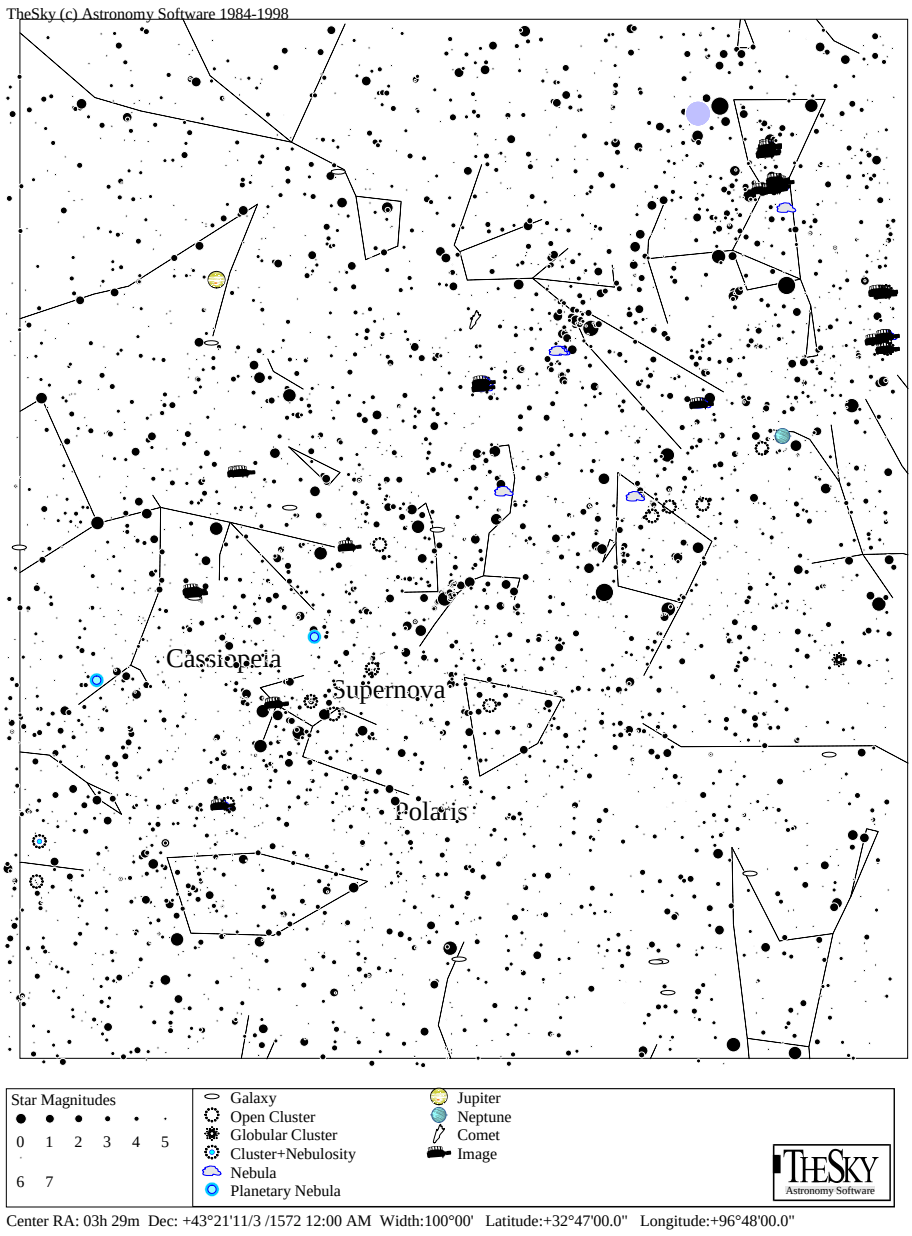
The supernova's appearance also challenged medieval ideals about the cosmos. Harmonic thinking, or the idea that the universe worked together in an ordered, hierarchal form cosmically, dominated the early seventeenth century, yet it was simultaneously challenged by theological and cosmological shifts. I argue that *Hamlet* reflects this trend. The play centers on a set of ideas which cluster around the notion of a disrupted and corrupted cosmos, no longer an interlocking and interdependent scheme of creation existing in a natural hierarchy. Elizabethan culture was permeated by analogies inspired by this perfectly balanced, orderly, system involving astronomy, physics, physiology and psychology (Daly 3). When the microcosm/macrocosm model was destroyed, its fragments were gradually turned into metaphors or similes which were devoid of the validating foundation which gave them their substance as well as their attraction (34). Hamlet claims that the "purpose of playing is to hold up a mirror to nature" (3.2.17-19). One interpretation of the play is an astronomically driven, anti-Aristotelian reading, supported by the multitude of contemporaneous events in the heavens. Even Hamlet's death, like the appearance of the brilliant supernova that heralded the end of the Aristotelian system, is described in terms of a brilliant star. He states that he will "be your foil, Laertes; in mine ignorance your skill shall like a star in th' darkest night stick fiery off indeed." It is appropriate that the death of the brilliant Hamlet is associated with the death of the brilliant star that changed the idea of the cosmos.

Figure I

The names "Rosenkrans" and "Guldensteren" appear on the left arch and column in a famous portrait of Tycho Brahe (1546-1601). The Dutch artist Jacob de Gheyn engraved the likeness in 1590, and similar designs appeared as frontispieces to the 1596 and 1601 editions of Tycho's collected astronomical letters.

Cited from "The Stars of *Hamlet*," Olson, Donald W., Marilynn S. Olson and Russell L. Doescher. *Sky& Telescope* 96.5 (November 1998): 68- 73.

Figure II



Supernova of 1572 in Cassiopeia Placement

Coordinates: November 6, 1572 at midnight, Copenhagen, Denmark.

View: Directly overhead- Facing North

CHAPTER FOUR; "AND THE NEW PHILOSOPHY CALLS ALL IN DOUBT"[76]: JOHN DONNE'S CONCILIATION OF THE 'NEW' HELIOCENTRIC UNIVERSE

Many critics have analyzed and speculated on Donne's views about the new philosophy. Answers have been elusive as Donne's work contains inconsistencies, over the decades of his career and often within the same text. This is particularly true of critical discourse centered on Donne's views about the new astronomical concepts of his era. I argue that Donne's elusive views are the focus of three of his later works, *An Anatomy of the World: The First Anniversary*, written in 1611, *Ignatius His Conclave*, also written in 1611, and *Of the Progress of the Soul, the Second Anniversary* written in 1612. I maintain that he undergoes a process in which he mourns the loss of Aristotelian, and medieval, certainty in *An Anatomy*; he rails against the forces that have destroyed this certainty in *Ignatius*; and he finds a means to reconcile his own love of reason with his faith in *The Progress*; which brings him a form of peace and allows him to not only accept the threats of a new cosmic model, but transform its limitlessness into a vehicle for his own aesthetic work through cosmically inspired tropes.

Donne was a scholar as well as a poet, and the ideas proposed by Copernicus, Brahe, and Kepler intrigued him throughout his career. Donne had frequently used astronomical conceits in his work, but towards the last decades of his career, these conceits become more explicit and more closely connected to specific ideas and in some instances, specific astronomers. Donne became so explicit at one point that Johannes Kepler, in the notes to his Somnium, claimed that he supposed "that a copy of this little work fell into the hands of the author of the bold satire entitled *Ignatius His Conclave*, for he stings me by name at the very outset" (qtd. in Rosen 212).

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[76] Donne, John. *An Anatomy of the World: The First Anniversary* line 205.

This chapter focuses on Donne's struggle with the idea of heliocentrism, including his struggle with the theological and philosophical ramifications that the new model of the universe represented after Galileo's *Sidereal Messenger* was published in 1610. Faced with empirical evidence of the heliocentrism of the universe, Donne could not tantalize or mystify his audience with exploratory conjecture, as Marlowe does, and his great piety and faith would not allow him to grieve the loss of certainty about the world and humanity's place of prominence in that world in a completely nihilistic fashion, as Shakespeare's *Hamlet* does, at least without an attempt to redeem that lapsed world, as he does in *Of the Progress of the Soul, the Second Anniversary*. In addition, Donne's approach, as a poet rather than a dramatist, was inherently introspective. His audience would have internalized the message, as poetry invites that reception. Donne could not rely on stage performativity to explore a more collective reaction as Marlowe and Shakespeare does. He was forced to explore and reconcile these cosmological challenges to the universe in a more solitary manner, and his highly intellectualized approach is a testament to his methodology.

Charles Coffin describes this intellectual conflict in his influential work, *John Donne and the New Philosophy*, claiming that Donne hesitated to abandon the Aristotelian cosmological system yet struggled to reconcile it with the validity of the new ideas, writing at one point, "methinks the new astronomy is thus applicable well that we, which are a little earth, should rather more towards God, than that He … should move towards us" (90). Coffin argues that the new system provided a vehicle for Donne's imagination, as he saw the new astronomy as a "pastiche of scientific figures, all bent toward the expression of two ideas for which the new astronomy is 'thus applicable well'" (90). Coffin also saw the new astronomy as impacting Donne's theological beliefs as it enhanced the trend in his religious

experience away from Catholicism towards Protestantism, and the "evolution of the Renaissance man's idea of his own personal responsibility to God" (91). I argue that Donne's struggle is complicated by another astronomical concept that has been neglected by critics – the threat of the existence of a plurality of worlds, another possibility suggested by Galileo's work. I propose that the idea of a plurality of worlds has captured his imagination and becomes thematic in these three works

This chapter focuses specifically on Donne's treatment of the subject as represented in three of his pivotal works, his *An Anatomy of the World: The First Anniversary*, written in 1611, *Ignatius His Conclave,* also written in 1611, and *Of the Progress of the Soul, the Second Anniversary* written in 1612. I argue that these works chronicle a struggle and form of psychological reconciliation for Donne, or a means of reconciling the then accepted theological requirements of an earth centered, and thus, humanity centered, universe with the ever more convincing mathematical arguments of a sun centered universe. I maintain that his unyielding skepticism, originating from his love of reason, ironically forced him to acknowledge that which threatened his other great love, his faith itself, claiming that Donne, after considering the inherent possibilities within these extraordinary measurements which are explored in *Ignatius His Conclave,* develops his own ideas about the goals of the new science. Donne appropriates the new science to expand his sense of the scope and mystery of the universe which then allows him to discount scientific efforts to measure and master the natural world as essentially hopeless when he is faced with the infinite wonder of it all. This allows him to simultaneously embrace and reject science. He is able to accept the vast new worlds of stars and planets the new philosophy promoted, but reject the theologically challenging claims that questioned the existence of heaven or hell solely based on science's

inability to reify or quantify those concepts. This ability to envision the vastness of God's universe allows Donne to reconcile it with traditional faith as an extension of God's universe rather than a limitation. In a sermon at "Paul's Cross," in 1722, Donne argued that the new astronomy "reduced and brought [man] back to God," and that the "reduction of the earth has brought a need to rely upon his own owners and to experience he new dignity of personal effort." He adds that "We which are a little earth," must bestir our faith" (91-92). Thus, from Donne's perspective, aspects of scientific practice, particularly the specific efforts to measure and quantify natural phenomena, come to resemble metaphorical or "tropes," such as those used in his poetry. This trend can be seen in his secular poems and sermons where he employs these new expansive tropes based on strange new ideas and scientific techniques, to enrich his work. [77]

The growing body of evidence that generated this crisis of faith began with the astronomical discoveries of the late 16th century, culminating in Galileo's work that confirmed mathematically that the universe was heliocentric and thus nullifying the idea that the universe had been created around humanity, or the hierarchy that had defined the Aristotelian great chain of being. With the advent of Christianity, Classical Aristotelianism at one point had to be aligned with Christian theology, and Thomas Aquinas, the dominant thinker of the Middle Ages, is generally credited with the medieval reconciliation of classical "science" and philosophy and the "revealed truths" of Christianity. Aquinas reconceived Aristotle's ideas within a new context and reinforced Aristotelian thought and cosmology among medieval and early modern cultures (Grant, "The Foundations" 69). The Aristotelian

[77] John Pendergast describes Donne's idea that the notion of "literal" was more complex than the mere unambiguous equation of sign to signifier, and it allowed Donne to understand scripture s simultaneously literal and symbolic. He adds that Donne did not feel that merely equating things with other things was enough and that he thought that literal language was too limited in its ability to represent spiritual things (122).

"great chain of being" not only allowed for a corrupted post-lapsian Earth, it also allowed perfect, immutable heavens suitable to accommodate an "Empyrean Heaven" as the central, permanent location for God and his celestial court.

Donne's theological views were complicated by his biographical history. Donne was raised a Catholic living under a Protestant queen. Likely tutored at home by Catholic priests, he matriculated at Oxford at age twelve, although the records state that he was eleven, in order to avoid the requirements of the Act of Supremacy and the Thirty-Nine Articles, imposed on all students by age sixteen (Post 2). Donne's complicated religious background as a converted Anglican had forced him to reconcile other incompatible ideologies. John Carey claims, "Though Donne eventually came to accept Anglicanism, he could never believe that he had found in the Church of England the one true church outside which salvation was impossible. Instead he persuaded himself that the saved would come from all churches: "from the Eastern Church, and from the Western Church too, from the Greek Church, and from the Latine too" (Carey 29). Donne struggled to find a "via media" to reconcile the two religions and his feelings about both in this passage quoted by Arthur Marotti, "In the poetry and prose of his secular years, Donne registered the impact of his Catholic upbringing and of his reactions against it, especially in the polemical works he professionally undertook in the early Jacobean period, *Pseudo Martyr* and *Ignatius his Conclave*" (358). Donne argued against the need for strong engagement in religious polemical battles on a broad scale, "there is an over-fulnesse of knowledge, which forces a vomit; a vomit of opprobrious and contumelious speeches, a belching and spitting of the name of Heretique and Schismatique, and a losse of charity for matters not of faith, and from this vomiting comes emptiness, the more disputing, the less believing" (qtd. in Marotti 360).

Thus Donne associates dissention causing revelation with fractioning of the church and its society. Marotti also argues that Donne's "via media" satisfied Donne's deepest intellectual and emotional needs to find continuity between the religion of his youth and the church he served in his maturity (361). He further claims that Donne, in his sermons, began to back away from a relentlessly rational approach to religion that characterized his earlier life. This aversion to "relentless rationalism" seems to have been adopted after the cosmic crisis he describes in his satiric *Ignatius His Conclave*. Refusing to fully acknowledge or fully dispute this cosmic crisis, Donne chooses to appropriate it aesthetically.

Jonathan F.S. Post claims that Donne's shifting beliefs occupied his mind well into James's reign. He argues that while the absence of personal testimony from Donne during his transformative years makes speculation difficult, most scholars agree that one of the keys to understanding Donne's habits of thought can be found in "Satyre III," his strenuous and brilliantly skeptical inquiry into "true religion," thought to have been written in the mid to late 1590s. Post maintains that this work reveals Donne's ongoing struggle with the specifics of his ideology (68). It is Donne's "via media" approach to religion, however, that allows him to eventually disassociate spiritual and mental faith from physical place, including physical space thought to be symbiotic to faith during the Middle Ages. Men "believe," "live just as they did before," and do not "conclude that there is no hell," or "deny the punishment of sin,"[78] even though these concepts have been abstracted and complicated by place.

"Tis All In Peeces, All Coherence Gone"[79]: Themes of Anti-Aristotelianism and Decay in John Donne's Poetry

[78] Excerpts taken from Donne's *Ignatius His Conclave*.
[79] Ibid. Line 213.

Donne's *An Anatomy of the World: The First Anniversary*[80] is a memorial tribute to Elizabeth Drury, the young daughter of Sir Robert Drury, who came to be Donne's chief patron in 1610, but Drury's epitaph serves only a backdrop for Donne's greater allegory, his concept of the post-lapsian world, a world torn by religious strife and subsequent reformation, a world that Donne is convinced is either dying or already dead. In *The First Anniversary,* Donne is mourning the loss of the old world, and part of this dirge is dedicated to the loss of the Aristotelian/Ptolemaic cosmic system. In this requiem, Donne is very specific about the consequences of that loss. As a response to the threat of annihilation described in the *First Anniversary*, Donne's *On the Progress of the Soul, The Second Anniversary* focuses on a renewed life for the earth, a rebirth formed from the loss of the old world. The poem has a more optimistic tone as it charts the "progress of the soul" that represents both Drury's ascension to her final place in heaven and an allegory of renewal and optimism for the lost world. Donne offers humanity hope in this poem through its polemically altered theme.

The first clue that Donne is addressing the loss of the Christianized Aristotelian hierarchal system is found in the *Anatomy*'s well-known passage about the new philosophy's role in his society:

> And the new Philosophy calls all in doubt,
>
> The Element of fire is quite put out,
>
> The Sun is lost, and the earth, and no man's wit
>
> Can well direct him where to look for it.
>
> And freely men confess that this world's spent,

[80] All references to *An Anatomy of the World: The First Anniversary* and *On the Progress of the Soul, The Second Anniversary* are taken from Frank Manley's *John Donne: The Anniversaries.* Baltimore: Johns Hopkins UP, 1963.

When I the Planets, and the Firmament,

They seek so many new; they see that this

Is crumbled out again to his Atomies

'Tis all in pieces, all coherence gone. (lines 205-213)

Donne's reference to the element of fire as being "quite put out," directly addresses the idea of the nullified Aristotelian system after the "Sun is lost." Donne also acknowledges the chaos this idea has caused in a society where "freely men confess that this world's spent." The world that Donne grieves "'Tis all in pieces, all coherence gone," and the origins of that crumbling cosmic world with its crumbling cosmic hierarchy began with the first mathematical proof that the heavens were as corrupted as the earth, a concept forwarded first by Tycho Brahe and his descriptions of a supernova proven to be above the moon in the supposedly incorruptible heavens and later by Johannes Kepler, whose own work on "his" supernova of 1604 reiterated Brahe's message. Both astronomers proved mathematically that the new stars that appeared in the heavens only to dissipate later were located above the lunar sphere through the trigonometrical concept of parallax, a methodology that separated speculative theory from reifiable evidence. I argue that this methodology is the reason that Donne is so intrigued. It separates the idea of a philosophically based debate based on possibility into a debate fortified by reproducible evidence.

Donne's disavowal of the displaced and corrupted world drives his more ethereal based *The Second Anniversary of the Progress of the Soul*, as evidenced in this passage:

What fragmentary rubbish this world is.

Thou knows, and that it is not worth a thought,

He knows it too much that thinks it nought.

Think then, My soul, that death is but a Groom,
Which brings a Taper to the outward room,
Whence though spies first a glimmering light,
And after brings it nearer to thy sight. (lines 82-88)

Donne begins to see the world's "death" as mirroring the death of a solitary figure symbolized by Drury. If the world, in its many representations here, must die, it will be reborn in another realm, the realm of the "glimmering light" in God's own realm, which can only be accessed through faith. This is why Donne compares the new philosopher's challenges to another Tower of Babel in the Progress:

They who did labor Babel's tower to erect,
Might have considered, that for that effect
All this whole solid Earth could not allow
Nor furnish forth Materials enough;
And that his Center, to raise such a place
Was fare too little, to have been the Base;
No more affords this world's foundation
To erect true joy were all the means in one.
But as Heaven made then several gods,
Of all God's Benefits and all his Rods. (415-424)

Donne is stating that his society's version of the "tower of Babel's" attempt to reach God's realm through mathematics and geometry as represented in the new philosophy can be no more successful than the original biblical allegory. In the biblical allegory, even though the unrealistic undertaking is driven by ignorance and a lack of understanding, it nonetheless

resulted in an expanded knowledge, or a form of linguistic multi-pluralism. The idea illustrates the possibility of an expanded world that results from an attempt, even a failed attempt, to expand the knowledge of the known world and in many ways, this is what Donne is attempting.

In this passage Donne acknowledges that he understands that heaven is immensely larger than the biblical engineers could have imagined. Donne understands that the heavens are so vast and the Earth is such an insignificant part of them that it is incongruous and absurd for anyone to think that it contains sufficient matter to build a bridge to heaven. By comparing the absurd idea of the attempt to reach the heavens through a quantified approach, Donne is making a statement about the absurdity of thinking that God or his cosmos could be quantified or limited; that he could only be found in the realm of the spiritual world, which humanity can never access. Donne also acknowledges in this layered reading that it is irrelevant that the Earth is not the universe's "center," which was "far too little to have been the base." His revised perception of God's universe, with its new worlds, is so expanded its physical construction is inapplicable. Donne, like Bruno, begins to envision a universe that is infinite, with no perceivable center. This idea becomes Donne's release and the Progress celebrates this freedom.

This trope is applied as an extended conceit in the work, focusing on the soul's journey, here personified as Drury's, through the cosmos on a trajectory to God's realm in heaven. The soul will journey from "this mortal sphere to lovely bliss," and will live to see the world's last day, "like as those stars which thou overlook far" (4-7). No soul, according to Donne, can "follow [her] halfway" while it is in its mortal body or "see thy flight." The path to heaven is only visible after death.

I argue that some origin of the philosophical and thematic changes between these two poems can be found in Donne's interim work, his *Ignatius His Conclave*. I speak here of the cosmological crisis that is specifically addressed in the work. In *Ignatius*, Donne's protagonist witnesses a special debate in hell held to elect a new leader in a unique chamber of hell dedicated to those who affected humanity and challenged some concept of God through a pivotal innovation in theology or philosophy. The text is primarily a scathing satire of the Jesuit order, yet the work also addresses the role that the new astronomy or "new philosophy" has played in the world crisis Donne depicts in *The Anniversary* poems. In *Ignatius*, Donne mentions Brahe, Kepler, and Copernicus by name, and structures a debate between Copernicus and Ignatius on the impact that the new order had on humanity. I argue that Donne uses the text to work through his own misgivings about the consequences of the new philosophy, revealing the struggle between his own sense based rationality and the faith needed to face a world order that no longer has humanity, or hell, at its center, or heaven directly above its planetary sphere. I maintain that Donne's three works, the two *Anniversary* poems and *Ignatius His Conclave* should be examined as reflective of one another and that collectively they deliver an overarching message.

Many critics have noted the relationship between these works but fail to understand the importance of the astronomy driven thread that connects them. Stephen Toulmin argues, with validity, that the ideas of Copernicus and Kepler as they resonate with Donne, are not "merely exciting new ways of thinking about the motion of planets or the structure of ice," but threaten the entire accepted "Cosmopolis," Toulmin's concept of the ordered world in his influential book of the same name (67). Yet Toulmin downplays the importance of Copernicus's and particularly Kepler's claims, stating that Donne's target in the *Anatomy* is

"not even the doubts about traditional astronomy and physics that Copernicus's successors are spreading," while acknowledging that Donne's skepticism "does corrode the earlier confidence in Providence and human reason" (67). I agree with Toulmin's overall idea about Donne, that his concern is not merely that these cosmic challenges are gaining strength at the turn of the seventeenth century, but that they are gaining strength simultaneously with the challenges to Catholicism and its abstracted means of determining the nature of the universe, conflicts regarding nationalism, global economic breakdown, medical epidemics and even extreme weather conditions (67). I argue, however, that the ideas of decay and displacement that Donne describes in the *Anatomy* had their origins in the first mathematical proofs that the heavens were corruptible and mutable as well as the earth, destroying the cosmic harmony and hierarchy of the Middle Ages. This is evident by Donne's specific references in the poem to a system with "all Coherence gone," (line 213) or a world where "The cement which did faithfully compact and glue all virtues, now resolved and slackened" (lines 49-50).

"A Libertie of Beleeving What They Would"[81]: *Ignatius His Conclave* as Donne's Answer to the *Anatomy*

Brahe and Kepler's influence on Donne becomes evident in his *Ignatius*, where they are mentioned explicitly. Marjorie Nicolson maintains that Donne's inclusion of certain passages concerning the new astronomy indicate a recent reading of Galileo and Kepler (268). Donne's reference to Kepler comes at the beginning of the work where he mocks Kepler as Brahe's protégée, stating that "Kepler, who (as himself testifies of himself) ever since Tycho Brache's death hath received it into his care, that no new thing should be done in

[81] *Ignatius His Conclave*. Line 8. All reference to *Ignatius His Conclave* are taken from John Donne's *Ignatius His Conclave* printed in 1633. Located at the Henry E. Huntington Library. Accessed through Early English Books Online database.

heaven without his knowledge" (qtd. in Nicolson, 269). Kepler would answer this charge in notes attached to his *Somnium*, which will be discussed later.

If Brahe and Kepler proposed that the heavens were as mutable and corruptible as the Earth through the use of mathematics, Galileo offered stronger proof in his 1610 publication *Sidereus Nuncius* or *The Starry Messenger* which offered visual certainty of the Galilean moons; the roughness of the Moon's surface and the existence of a large number of stars invisible to the naked eye, particularly those responsible for the appearance of the Milky Way. It is this book that Donne refers to in *Ignatius* where he states that:

> My little wandering sportful soul, ghost, and companion of my body had liberty to wander through all places, and the survey and reckon all the rooms, and all the volumes of the heavens, and to comprehend the situation, the dimensions, the nature, the people, and the policy, both of the swimming islands, the planets, and of all those which are fixed in the firmament. Of which, I think it an honester part as yet to be silent then to do Galileo wrong by speaking of it, who of late hath summoned the other worlds, the stars to come nearer to him and give him and account of themselves. (2)

Collectively, Brahe's treatise *De Nova Stella*, published in 1573, described the new star (supernova) that appeared in the constellation of Cassiopeia in 1572; Kepler's treatise, *De Stella Nova in Pede Serpentarii* (On the New Star in Ophiuchus's Foot), published in 1606, described the supernova that appeared in the constellation of Ophiuchus in 1604 as well as a much fainter new star that appeared in the constellation of Cygnus, the swan in 1601; and Galileo's *Starry Messenger* described the existence of a myriad of unknown stars as well as the startling idea of a planet with its own "worlds" in orbit. All of these discoveries

challenged the Aristotelian order and all of their discoverers are satirically explored in Donne's *Ignatius His Conclave*.

Donne's thoughts about these new discoveries are represented differently in the three works discussed in this study. In the *Anatomy*, Donne mourns the loss of medieval certainty and conflates the death of Drury with the death of that certainty. Although Donne's theme certainly laments the world's post-lapsian state, the world's demise seems to have been accelerated and addressed with a new urgency that is not compatible with a world that has been post-lapsian for millennia, much less redeemed for sixteen hundred years. This idea of a second, newer threat is echoed in the opening passage of the poem:

> This great consumption to a fever turned.
>
> And so the world had fits; it joyed, it mourned…
>
> …That wound was deep, but 'tis more misery
>
> That thou hast lost thy sense and memory
>
> T'was heavy *then* to hear thy voice moan,
>
> But *this* is worse, that thou art speechless grown. (lines 19-30) [emphasis mine].

I argue that this new urgency derives from the new philosophy that Donne denounces in the poem. The new philosophy threatens theology in an explicitly, unarguable manner. It nullifies humanity's place at its center and allows for infinite new worlds that would diminish our own. Donne laments the loss of Aristotelian hierarchy in the following passage:

> The Cement which did faithfully compact
>
> And glue all virtues, now resolved, and slacked,
>
> Though I was some blasphemy to say she was dead;

Or that our weakness was discovered. (lines 49-52)

This passage illustrates how Donne felt about the dissolution of cohesion that the Aristotelian great chain had represented for humanity. Donne's anxiety, however, expands beyond the physical breakdown of the Ptolemaic cosmic system. Donne's despair in his *Anatomy* is compounded by the idea of a plurality of worlds that render our earth even more insignificant and adds confusion to the idea of Christ's "singular" sacrifice. This is an idea he laments in the *Anatomy* and will parody in *Ignatius His Conclave.*

Donne's anxiety about the possible new worlds and subsequent confusion regarding Christ's singular sacrifice is echoed in this passage from the *Anatomy*:

Which, from the carcass of the old world, free
Creates a new world; and new creatures be
Produced; The matter and the stuff of this,
Her virtue, and the forms our practice is,
And thought to be thus Elemented, arm
These creatures, from home-born intrinsic harm
(For all assumed into this Dignity,
So many weedless Paradises here
Which of themselves produce no venomous sin,
Except some foreign serpent bring it in).
Yet because outward storms the strongest break,
And strength itself by confidence grows weak,
This new world may be safer, being told,
The dangers and diseases of the old. (lines 75-88)

Although Donne's meaning here is multilayered, alluding to a redeemed earth as well as those who retain spiritual purity despite temptation, this passage reflects the idea of the existence of a pre-lapsian or "weedless Paradise" that has yet to fall to "some foreign serpent," avoiding the "venomous sin" that has devoured ours. This is evidence that Donne is beginning to envision an expanded universe, a universe filled with alternate worlds that may have avoided the corruption of ours. This vision allows Donne to see God's universe as filled with possibilities beyond those that empirical science could document or measure. Donne seems to be claiming those worlds for the aesthetic realm of poetry and an abstracted realm of theology. He also seems to be searching in the heavens for a pre-lapsian world, duplicating early modern explorers' quests for a pre-lapsian culture among the natives of the new world. This search itself would seem to diminish the role of the earth as God's sole creation and its people as his sole concern. Yet it conversely expands the idea of God, who can then be seen as the creator of multiple worlds, including those who may be home to new "colonies" of humanity. It is apparently this expanded idea of God that Donne envisions, and he then promotes that new concept in his poetry and his sermons.

After Donne begins to envision this expanded universe aesthetically, he voices his concern about astronomers' attempts to measure it through the new mathematics, claiming that:

> We think that the heavens enjoy their spherical,
> Their round proportion embracing all.
> But yet their various and perplexed course,
> Observed in diverse ages doth enforce
> Men to find out so many eccentric parts

Such diverse downright lines, such over thwarts,

As disproportion that pure form. It tears

The Firmament in eight and forty sheets,[82]

And in these constellations then arise

New stars, and old do vanish from our eyes;

As though heaven suffered earthquakes,

When new towers rise, and old demolished are. (lines 251-262)

This censure of the geometrizing of the heavens and the appearance of mysterious new stars is not limited to these concepts in isolation. Donne also criticizes Copernicus's new system in a later passage:

They have impaled within a zodiac

The free-born sun, and keep twelve signs awake

To watch his steps; the Goat and the Crabbe control

And fright him back, who else to either pole

(Did not these tropics fetter him) might run;[83]

For his course is not round, nor can the sun,

Perfect a Circle, or maintain his way. (lines 263-269)

This passage illustrates Donne's contempt for those astronomers who would try to limit the

[82] This reference could allude to the German astronomer Johann Bayer's star atlas *Uranometria*, published in 1603. This atlas was the first systematic star chart published that listed and categorized most of the brighter stars discovered around that era. The first 48 pages of the text described the 48 Ptolemaic constellations and the 49th page introduces 12 new constellations in the deep southern sky which were unknown to Ptolemy. See N.M. Swerdlow's "A Star Catalogue Used by Johannes Bayer," *Journal of the History of Astronomy* 17.50 (August 1986):189-97.

[83] This is a reference to the constellations in which the sun appears during the two annual solstices. The sun is in Capricorn at its lowest point in its annual orbit, the point of the winter solstice, and in Cancer at the highest point of its annual orbit, the summer solstice. The setting for Donne's "A Nocturnal upon S. Lucy's Day, Being the Shortest Day" is the winter solstice. The solstices mark the longest and shortest day of the year, respectively.

concepts revealed in the new astronomy to the purely geometrical or mathematical. He envisions the "new" universe as one not limited to our solar system, in which the sun is truly "impaled within a zodiac." He does not wish to see "The Firmament in eight and forty sheets" and he condemns the practice that would destroy the aesthetics of the heavens, as "Men [work]to find out so many eccentric parts / Such diverse downright lines, such over thwarts, As disproportion that pure form." Donne cannot resist using personification even within this diatribe against the limitations of the heavens, describing a sun that was once "free born" but is now captured, and a Crab and a Goat (Cancer and Capricorn) that prevent "him" from overstepping his orbital limits. Instead of "impaling" the heliocentric sun in the center of the universe, he transforms the new system into a poem that demonstrates how these scientific concepts can be altered into art forms.

In the last two lines quoted, "For his course is not round, nor can the sun, Perfect a Circle, or maintain his way," Donne may be referring to another recent publication – Kepler's *Astronomia Nova* (*A New Astronomy*) published in 1609, in which he describes his first two laws of planetary motion. These laws stated that the planets did not move in "perfect" circles, but in ellipses, with the sun at one focus (Seeds 53). Donne demonstrates that he understands the astronomical schema that results in the change of the seasons, which is caused by the tilt of the earth. Again, Donne is playing with this idea, turning a mathematical principle into capricious verse.

Donne seems to be particularly focused on Kepler's ideas, including his avocation for the Copernican system. This interest is not only evident in the *Anatomy*, but also in Donne's *Ignatius His Conclave*, which includes a passage that seems to parody Kepler's

Somnium.[84] The *Somnium*, published around 1611, describes a voyage to the moon, which represents another world in the work. It is important as it is often considered the first work of science fiction, or a work that describes how practicing astronomy would work when applied from the perspective of another world. The manuscript was part allegorical and part autobiographical. Kepler eventually composed 223 footnotes to the story explaining the allegorical aspects of the work as well as the scientific content (Lear 62).[85] In Note 8 of the Appendix, Kepler writes that, "I suppose that a copy of this little work fell into the hands of the author of the bold satire entitled *Ignatius His Conclave*, for he stings me by name at the very outset" (qtd. in Rosen 212). Donne's sarcasm regarding Kepler's remarks that "no new thing should be done in heaven without his knowledge" was taken from Kepler's quote in his *De Stella* that he was "principally occupied in calculating since Brahe had plenty of observers, and of diligence in observing. Now that Tycho is dead, a worry took hold of me that perhaps something new existed in the heavens without my being aware of it. Therefore I inspected the stars more frequently" (qtd. in Rosen 213). This passage offers evidence that Donne had read the preface to Kepler's *De Stella Nova*,[86] as well as his other works, such as his *Astronomia Nova*.

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[84] In Donne's work, a dream vision, his narrator is transported through the use of special lenses to an exclusive conclave in Hell. Chris Hassell claims that the poem has been read too simplistically as a mere satire on the Jesuit order of the Catholic clergy. He argues that Donne places Copernicus and the other prominent astronomers into the conclave not as superfluous evidence to his diatribe against the Jesuits, but as a target of a dual parody. He claims that Donne was attempting to satire the idea of hubris in general, or dogmatism stemming from that hubris (329).

[85] These notes were also likely a result of Kepler's attempt to disclaim the witchcraft implicit in the text which had resulted in his mother's imprisonment and trial.

[86] Donne's *Anatomy* contains a passage that may refer to Kepler's two supernovas as described in *De Stella Nova.* I base this on the idea that his first observation was found in the constellation Cygnus the swan and his second was found in the constellation Ophiuchus, in the "Serpent Bearer's" foot. The passage states that, "It would be (if not followed) wondered at / And all the world would be one dying Swan, / To sing her general praise, and vanish then, / But as some Serpents poison hurteth not / Except it be from the live Serpent shot."

Marjorie Nicolson has explored several possible means of transmission of the texts between the two men, and I need not extend that argument here.[87] I do not dispute the historical circumstances of the transfer but explore the effects that Kepler's astronomical theories had on Donne and his work. In Donne's *Ignatius*, he satirizes both Galileo and Kepler in his proposal that the Jesuits be commissioned to establish the first colony on the moon. First Donne suggests that Satan will write to the Bishop of Rome, who shall then:

> …call Galileo the Florentine to him, who by this time hath thoroughly instructed himself of all the hills, woods, and cities in the new world, the moon. And since he effected so much with his first Glasses, that he saw the moon in so near a distance, that he gave himself satisfaction of all, and the least parts in her, when now being grown to more perfection in this art, he shall have made new Glasses and they received a hallowing from the Pope, he may draw the moon like a boat floating upon the water, as near the earth as he will, and thither (because they ever claim that those employments of discovery belong to them) shall all the Jesuits be transferred. (117)

Afterwards, Donne claims that the Jesuits will:

> Easily unite and reconcile the Lunatic Church[88] to the Roman Church without doubt, after the Jesuits have been there a little while, there will soon grow naturally a Hell in that world also: over which, you Ignatius, shall have dominion, and establish your kingdom and dwelling there. And with the same

[87] Nicolson argues that the opening passage of Donne's *Ignatius* suggest that he was intending to publish a very different work than the work he actually published. She claims that this passage indicates that he was considering writing a cosmic voyage himself, duplicating Kepler's work, and because of the time constrains he confined himself to a state of "ecstasy," or a trance instead (273). George Williamson, however, claims that it is merely a "mock vision" (qtd. in Raspa 478).

[88] Donne is likely using this term as a pun. He employs the term "Lunatic Church" to mean both a church geographically located on the moon (Lunar surface) and as a church body composed of "lunatics."

> ease as you pass from the earth to the moon, you may pass from the moon to the other stars, which are also thought to be worlds, and so you may beget and propagate many hells, and enlarge your empire, and come hearer unto that high seat which I left… (117-118)[89]

It is clear in this passage that Donne is not only intrigued by the idea that the moon is described as a possible new world, or at least flawed with "hills" and "woods" like the Earth, as described by Galileo, but that he is fascinated by the idea of the new stars that are "thought to be worlds" as well. The tragic trope of the new stars/worlds that threatened Donne's own cosmic concept in Donne's *Anatomy* is treated with levity and causticity in his *Ignatius*, as Donne satires the Jesuit's practice of earthly colonization by extending it to the new world of unlimited space, and Ignatius, here, as an agent to Satan, is expected to duplicate his position on these new worlds.

"Do They Conclude…That There Is No Hell?[90]": The Abstraction of Heaven and Hell

Donne's *Ignatius* is a work that also focuses on another changing concept of space, the spatial re-imaging of hell and its role in the discredited Aristotelian hierarchic system. Donne argues in the *Anatomy* that not only is the "world's whole frame / Quite out of joint," reflecting Shakespeare's *Hamlet*'s theme, but that this frame is "almost created lame" (lines 191-192). In the same passage Donne gives a carefully detailed account of how the Christianized Aristotelian hierarchy became corrupted from its origin in the highest order of beings under God himself to its lowest forms:

> For, before God had made up all the rest,
>
> Corruption entered, and depraved the best;

[89] Note the resemblance of this passage to Satan's speech to "Sin" and "Death" in Milton's *Paradise Lost*, Book X .

[90] Ibid. *Ignatius His Conclave*. Line 19

It seized the Angels, and then first of all
The world did in her Cradle take a fall,
And turned her brains, and took a general maim
Wronging each joint of the universal frame.
The noblest part, man felt it first; and then
Both beasts and plants, cursed in the curse of man. (lines 193-200)

This model illustrates how the hierarchal chain worked – corruption began in heaven and then spread from the rebellious angels down to the lowest creatures on earth. Immediately after this passage, five lines later, Donne begins his pronouncement that the "new Philosophy calls all in doubt," connecting this corruption and decay with the new philosophy (line 205). Part of this new philosophy was the reification of natural science so that it could be measured, accessed, and contained or directed, which is counter indicative to the mystic or abstract world of heaven and hell in the Medieval Era.

Donne struggles with this idea in the *Anatomy*, where he describes man's obsession with the geometrication of the heavens as the answer to unraveling their mysteries and harnessing them for navigational purposes, as evidenced in this passage:

For of Meridians and Parallels
Man hath weaved out a net, and this net thrown
Upon the Heavens, and now they are his own.
Loath to go up the hill, or labor thus
To go to heaven, we make heaven come to us.
We spur, we rein the stars, and in their race
They're diversely content to obey our pace. (lines 277-284)

In this passage Donne is referring to the imaginary lines measuring declination and right ascension on a celestial globe duplicating the earthly imaginary lines that measured longitude and latitude. It is this celestial globe model that most accurately measured the "trepidation"[91] or procession of the equinoxes that Donne refers to a few lines earlier in the poem, "So, of the stars which boast that they do run / In Circle still, none ends where he begun" (lines 275-276).

This new philosophy that had "lost" the sun and earth also complicated the ideas of heaven and hell. In the *Anatomy*, Donne joins in popular speculation about a reified or physically defined hell. He states that:

> If under all, a vault infernal be,
> (Which sure is spacious, except that we
> Invent another torment, that there must
> Millions into a strait hot room be thrust,
> Then solidness, and roundness have no place…
> …The world's proportion disfigured is,
> That those two legs whereon it doth rely,
> Reward and punishment are bent awry. (lines 295-304)

This passage describes the challenge that Early Modernists faced when thinking of a physical hell that could not be located, charted, and measured in a world obsessed with quantification. An example of this practice is found in Sebastian Munster's notes of 1554, in which he argues that hell could not possibly be above three thousand miles "in compass," claiming that

[91] Donne will use the idea of trepidation as a trope in his "A Valediction Forbidding Mourning," written around 1611. Donne compares mature, spiritual love, which he claims is analogous to the slow, barely perceptible shift of the earth through the zodiac to the more temporary, physical love, which he claims is analogous to the immediate, powerful motions of the earth found in an earthquake. (lines 59-63)

one of the torments of Hell would be the throng, struggling in the small space (qtd. in Manley 153). Franciscus Ribera allowed hell a diameter of only 200 Italian miles, and Lessius reduced it to one Dutch mile "all filled with fire and brimstone; because…that space, cubically multiplied, will make a sphere able to hold eight hundred thousand miles of damned bodies (Manley 154). The idea of a hell that is too small for the generations of people who have lived on the earth over millennia seems to reflect a logic based on physical space and logic about those spaces. Donne's comments that "Millions into a strait hot room be thrust" becomes another reason for the lament of the certainty of the Middle Ages, where these ideas were not relevant and qualification, not quantification, was valued.

In *Ignatius His Conclave*, Donne's narrator's "little wandering sportful soul," or "Ghost," becomes separated from his body through an "ecstasy," so that his spirit "had liberty to wander through all places, and to survey and reckon all the rooms and the volumes of the heavens, and to comprehend the situation, the dimensions, the nature, the people, and the policy both of the swimming islands, the planets, and of al those which are fixed in the firmament"(3). Instead of relaying this information to his reader, the narrator immediately and sarcastically acquiesces to Galileo and Kepler's expertise on the subject, arguing that he could not relay that which Galileo had determined with this "summoning" of the other worlds and stars, or that of Kepler, who would not allow any new celestial discoveries without his own approval (4).

In the next few passages, however, Donne's narrator describes how "in the twinkling of an eye" he "saw all the rooms in Hell open to my sight" through the use of certain "spectacles" used by Gregory the Great and Bede. He then relates that he "saw all the

bowels of the Earth and all the inhabitants of all nations and of all ages" (5). He does claim that:

> As for the Suburbs of Hell (I mean Limbo and Purgatory), I must confess I passed them over so negligently that I saw them not and I was hungrily carried to find new places, never discovered before. For Purgatory did not seem worth to me of much diligence, because it may seem already to have been beloved by some persons, in some corners of the Roman Church, for about 50 years…Proceeding therefore to more inward places, I saw a secret place where there were not many, beside Lucifer himself. (6-7)

This passage reveals Donne's views about the existence or nonexistence of the Catholic institutions of Limbo and Purgatory to some extent. Through his brief remarks he appears to be acknowledging their existence while simultaneously proclaiming their irrelevance. His refusal to address these concepts here is consistent with his overall theological "via media" philosophy as he attempts to reconcile his early Catholicism with his adopted Anglicism. This philosophy also allows Donne to explore new visualizations of hell, even metaphorical visions that do not correspond to either church. The meeting will be held in a "secret place" where "not many" will join Lucifer himself, or qualify for this infamous promotion.

Thus when Copernicus comes to claim his place next to Lucifer as the most destructive innovator for humanity, and "truth," the reader is uncertain about the speaker's true feelings about the astronomer. Copernicus is the first candidate to defend his case before Lucifer, demonstrating the importance Donne placed on his ideas in relation to its threat to humanity. Copernicus claims that he is a "Soule to the Earth, and give it motion," meaning

that his theory animated the earth, giving it a "soul" to move it just as the other planets had "souls" to move them through their courses. This idea illustrates how the earth would become, under Galileo's theory, just one of many planets or "worlds" orbiting a larger body, a demotion from its medieval center. Donne's ambivalence about Copernicus is immediately evident, as he states that "By this I knew it was Copernicus: For though I had never heard ill of his life, and therefore might wonder to find him there" (13). In other words, this hell, at least this poetically contrived hell, is not conditioned to religious or even moral behavior and Donne is puzzled how this transpired.

Copernicus enters his plea with a personal entreaty to Lucifer,[92] stating that:

> I am he, which pitying thee who went thrust into the Center of the World, raised both thee, and thy prison, the Earth, up into the Heavens, so as by my means God doth not enjoy his revenge upon thee. The Sun, which was an officious spy, and a betrayer of faults, and so thine enemy, I have appointed to go into the lowest part of the world. Shall these gates be open to such as have innovated in small matters? And shall they be shut against me, who have turned the whole frame of the world, and am almost a new Creator? (14)

Copernicus's speech describes how his new model complicated the medieval model of heaven and hell. Copernicus's model "raised" both Satan and his prison, hell, located at the center of the Earth, "up into the Heavens," so that God no longer "enjoyed" his revenge on

[92] Before this entreaty, Copernicus associates Lucifer with the star "Lucifer," of which he is "so well acquainted." Ignatius's retort that the star "is but Venus whose face how much we scorn, appears by this, that for the most part we use her adversely and preposterously,"(18) may address another of Galileo's discoveries. In 1610, Galileo verified by telescope that Venus exhibited a full set of phases ("faces") similar to that of the Moon. The heliocentric model of the solar system expounded by Copernicus predicted that all phases would be visible from Earth as the orbit of Venus around the Sun would cause its illuminated hemisphere to face the Earth when it was on the opposite side of the Sun and to face away from the Earth when it was on the Earth-side of the Sun. After Galileo's telescopic observations of the crescent, gibbous and full phases of Venus, therefore, this Ptolemaic model became untenable (Seeds 57).

Satan. This statement explicitly relates how this new model threatened theological ideas related to heaven and hell and their physical place and/or role in the schematics of the universe. Donne's narrator's answer to this charge reveals his first attempts at the reconciliation of the two competing cosmic models of the universe, which must allow for the threat of a "plurality of worlds."

"What Care Hee: Whether The Earth Travell?"[93]: Donne's Conciliation of the New Philosophy and Theology

In the section of *Ignatius* immediately following Copernicus's argument to secure his leadership role in hell as the worthiest innovator in history, Donne's narrator's counterargument is based not on the repudiation of Copernicus's charges, but on minimizing their impact through a rationalization process that allows Donne to reconcile his own skepticism with a reason based alternative. He makes a decision to entertain the possibility that the universe is physically heliocentric, as rationality demands, but he ameliorates this "truth" with the idea that its physical structure is not relevant to its more permanent role in theology – its eternal state will be fashioned and determined by God. He seems to be assigning the Earth, and the universe, a soul comparable to the soul of man, which is independent of its mortal body. This approach allows him to revisit his idea of the world as a dying and decaying body in the *Anatomy* and have its soul transported to God's heaven, wherever that might be, in his *Of the Progress of the Soul*, the *Second Anniversary*.

In the passage, Donne's Ignatius first challenges Copernicus's argument by proclaiming his discovery irrelevance. He states that:

> But for you, what new thing have you invented, by which our Lucifer gets anything? What cares he whether the earth travel or stand still? Hath your

[93] *Ignatius.* Line 15.

> raising up of the earth into heaven brought men to that confidence that they build new towers or threatened God again? Or do they out of this motions of the earth conclude that there is no hell or deny the punishment of sin? Do not men believe? Do they not live just as they did before? (19).

Donne's message in this passage is complicated. His Ignatius is claiming that the new philosophy has not affected humanity's inherent faith as it relates to God. The rise of the new philosophy has not resulted in a philosophical or theological rebellion of Babel or does not deny the existence of hell. What is intriguing is how Donne has divorced spiritual faith and intellectual reasoning from physical place. Men "believe," "live just as they did before," and do not "conclude that there is no hell," or "deny the punishment of sin," even though these concepts have been abstracted and complicated by place. Hell becomes a concept that resonates in the mind, and thus, in the sphere of faith.

Donne's Ignatius next argues that Copernicus be disqualified because "those opinions of yours may very well be true" (20). He claims that Christopher Clavius be awarded the seat in lieu of Copernicus as Clavius struggled to defend the Ptolemaic system against the new model. Ignatius claims that Clavius had a difficult mission as he had to "oppose himself opportunity against you, and the truth, which at that time was creeping into every man's minds" (20). Ignatius admits here that the doctrines of the new philosophy were gaining acceptance but that Copernicus was not worthy to rule as his ideas were not strongly opposed yet from the church. He ends his argument with the idea that Copernicus would be worthy of the seat if "hereafter the fathers of our order can draw a Cathedral Decree from the Pope, by which it may be defined as a matter of faith: That the Earth doth not move and an Anathema

inflicted upon all which hold the contrary," a sadly ironic statement, as the church had previously executed Bruno for this idea and would eventually arrest and indict Galileo (22).

I argue that this passage reflects Donne's resignation to the "truth, which at that time was creeping into every man's mind." This is strengthened by Donne's satire of its repudiation by the church. Desiree Hellegers discusses this idea, claiming that the "radicalism of sixteenth century scientists like Kepler lay in having outstripped the Church in assimilating their observations to Catholic theology (11). Hellegers cites a letter from Donne to Goodyer in 1609 in which he acknowledges that the Copernican universe could be recuperated for orthodox theology, but only as a metaphor for man's subordination to God. Donne suggests that the Copernican universe is "thus applicable well" (11). When Donne is presented with Kepler and Galileo's evidence, he is forced to find a way to reconcile not only his personal ideology with the new philosophy but the ranks of the church theocracy as well. Hassel claims that Donne adopts a three step process in this reconciliation, a process of confronting, evaluating, and dismissing consciousness. She adds that the recognition of reason's possible absurdity and arrogance in *Ignatius* leads to a realization of its ultimate end – confusion, decay, and death, as described in the *Anatomy*.

I maintain that the process by which Donne arrives at the unity that "transcends reason and consciousness" is a more complex process than Hassel presents on many levels. Even though Donne subdues his skepticism with a faith based ideology, he was too invested in the drastic innovation surrounding him to dismiss it, as it was derived from reason, as absurd or arrogant. In *Ignatius*, for example, he often ridicules the authors of this innovation, but, as in the case of Copernicus, he acknowledges that the innovation, or in this case, the

concept, "may very well be true." Instead, he seems to be denouncing the corruption involved in the human applications based on motivations in misusing these innovations.

Angus Fletcher claims that although Donne laments the loss of Aristotelian order threatened by the new philosophy, he embraces the new ideas in William Gilbert's *De Magnete*, published in 1600.[94] Fletcher explains that Donne was encouraged by the idea of a unifying force that acted on the earth. Fletcher describes how Donne uses Gilbert's theory in the Anatomy as a positive force, stating that:

> She that should all parts to reunion how,
> She that had a Magnetic force alone,
> To draw, and fasten sundered parts in one;
> She whom wise nature had invented then
> When she observed that every sort of men
> Did in their voyage in this worlds Sea stray,
> And needed a new compass for their way. (lines 219-26)

Fletcher argues that in this passage that Donne's use of Drury as a magnetic world soul that moves a mariner's needle reveals that he shared Gilbert's willingness to see the immaterial at work in the achievements of the new science, or a means of illustrating the Augustinian notion of grace, shifting attention back from intention onto conscious awareness using the new philosophy to justify old faith (3). Donne also demonstrates his willingness to consider the validity of the new advances in medical science, which he explicitly states has replaced the humoural theory in this passage from *The Progress*:

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[94] Alexander Koyre describes how Kepler drew on William Gilbert's theory of the magnetic soul of the Earth as described in *De Magnete* (1600) and on his own work on optics. Kepler believed that the motive power (or motive *species*) radiated by the Sun weakens with distance, causing faster or slower motion as planets move closer or farther from it. Koyre described Kepler's assumption that this concept entailed a mathematical relationship that would restore astronomical order (201).

> Have not all souls thought
> For many ages, that our body is wrought
> Of Air, and Fire and other Elements?
> And now they think of new ingredients.
> And one soul thinks one, and another
> Way another thinks, and there's an even lay.
> Know thou how blood, which to the heart doth flow,
> Doth from one ventricle to the other go? (263-271)

Donne does not seem to dismiss reason as the antithesis of faith, he limits its influence to the material world. Howard Marchitello describes this process, arguing that Donne is sensitive to both "old" and "new" philosophy in the period, working through the tensions between these two systems at the moment that witnesses the gradual and finally permanent eclipse of the former by the latter in his work, finding a way to straddle these two worlds (350).

The most challenging and difficult concept to accept or reconcile is the idea of a new cosmos, however, as its consequences to society were so severe. I argue that Donne's challenge is greater than just the displaced earth. His ideology is threatened by a hugely expanded universe, mathematically larger than previously presumed, with many more worlds than presumed, some of which are orbiting a planet in our own solar system. This challenge makes his disavowal of rational skepticism even more profound as he adopts a truly faith based philosophy that is independent of the new philosophy, rendering it irrelevant for him.

Donne returns to his former criticism of the Aristotelian model of the universe, reminding his reader that the earth's corruption is still significant in these lines "So struggles this dead world / For there is motion in corruption" (21-22). But now this message is

tempered by the idea of an expanded universe, where "As some days are, at the creation named / Before the [existence of] Sun, the which framed days, was framed" (23-24). In other words, Donne begins to think that the sun's placement, now or at creation, is insignificant in comparison with an expanded cosmos. "Days" apparently existed, according to Genesis, before the fourth day when God made "the greater light to rule the day" and Donne envisions a cosmos that is beyond the limits of its "greater light" (*Gen* 1.16).[95] It is irrelevant where the earth's placement lies in a cosmos beyond the reaches of time or space.

Donne's resignation about the uncertainties that the new philosophy presents is reintegrated shortly afterwards:

> Forget this rotten world: And unto thee,
> Let thine own times as an old story be.
> Be not concerned: study not way, nor when:
> Do not so much, as not believe a man
> For though to err be worst, to try truth first,
> Is far more business, then this world is worth. (49-54)

Donne's answer to the controversy is clear in the refrain, "Look Upwards," that he introduces in Line 65. Donne will demonstrate how detached Drury's soul becomes from worldly quantifications in a later passage, as he states that:

> And as, though all do know, that quantities
> Are made of lines, and lines from points arise,
> None can these lines or quantities enjoin
> And say this is a line, or this a point. (130-133)

[95] *The King James Bible*. Nashville: Thomas Nelson Publishers, 1984.

Here Donne speaks of the irrelevance of geometry to the immortal soul. In the next few lines, he will denounce the role of the humours on Drury, who, "though the Elements and Humors were / in her, one could not say, this governs there / whose even constitution might have worn / any disease to vent on the sun" (134-137). Donne then claims that the human soul is the link in a revisioned Aristotelian hierarchy:

> She who was such a chain, as Fate employs
> To bring mankind, all Fortunes it enjoys,
> So fast, so evenly wrought, as one would think,
> No accident, could threaten any link (142-145).

This new chain cannot be dissolved by any "accident," a term used to designate any contingent (i.e. nonessential) relation between an attribute and its subject.[96]

Finally, Drury's soul escapes the bounds of the earth, arriving at the place where direct observation of the structure of the universe should be possible, but Donne refuses, just as he did in Ignatius, to allow this information to be conveyed. Instead, her soul is so removed from these concerns during her flight that:

> She stays not in the Air,
> To look what Meteors there themselves prepare;
> She carries no desire to know, nor sense,
> Whether the Air middle Region be intense,
> For the Element of fire, she doth not know,
> Whether she past by such a place or no;
> She baits not at the Moon, nor cares to try,
> Whether in that new world, men live, and die.

[96] "Accidents." *New Catholic Encyclopedia.* <www.newadvent.org/cathen> 12 Sept 2011.

Venus records her not, to enquire, now sheen
Can, (being one Star) Hesper, and Vesper bee,
He that charmed Argus eyes, sweet Mercury,
Works not on her, who now is grown all Eye;
Who, if she meet the body of the Sun,
Goes through, not staying till his course be run;
Who finds in Mars his Camp, no corps of Guard;
Nor is by Jove, nor by his father bard;
But ere she can consider how she went,
At once is at, and through the Firmament. [97]
And as these stars were but so many beads
Strung on one string, speed undistinguished leads (189-207).

Drury's soul's repudiation of this world and its cosmic question is very clear in this passage. Donne is once again stating that our souls should not be concerned with these ideas or controversies, but should put our faith in a God that is beyond this cosmos.

Later in the poem, Donne describes how humanity is restored through a purely Christianized hierarchy just as it was condemned through the Christianized Aristotelian hierarchy in *An Anatomy*. Through lines 338-362, the soul will pass by, in turn, the Virgin Mary, the Patriarchs, the Prophets, the Apostles, the Martyrs, and the Virgins. As evil and condemnation spread from the angels down to the earth itself in *An Anatomy*, salvation and grace spreads from the earth "up," as Donne's refrain reiterates. This conceit demonstrates

[97] It should be noted that Donne chooses Tycho Brahe's hybrid system for the model of soul's journey. Anthony Low argues that although this may mean that Donne has not accepted the Copernican system unequivocally, it des serve as evidence that fundamental axioms were being questioned and fundamental viewpoints shifted (14). Adopting Brahe's model offer Donne a means of rejecting the Ptolemaic system without totally accepting Copernicanism.

Donne's desire to bring closure to the issues debated in *An Anatomy* and the *Progress* and satirized in *Ignatius*.

Anita Gilman Sherman has concentrated her arguments on Donne's skepticism as a driving force in his two *Anniversary* poems. She claims that Donne's "uneasy convergence of therapeutic mourning and corrosive skepticism goes a long way in accounting for the dissonant harmonies and macabre euphoria that characterized these poems" (49). Sherman claims that Donne strives to defeat skepticism by constructing two Elizabeth Drurys, one a "memorial to the deplorable absence of memory," and another which "supersedes it, as a monument to forgetting" (50). I maintain that it is not "forgetting" that Donne is calling for, but willful ignorance. I argue that Donne has not created two Drury/worlds which are motivated by two different actions – remembering and forgetting, but one Drury/world which has found peace through a reconciliation of those competing ideas. This passage from *The Progress* confirms Donne's desire for peace and his vision that it was obtainable:

> For she made wars, and triumphed , reason still
> Did not overthrow but rectified her will.
> And She made peace, For no peace is like this
> That beauty and chastity together kiss,
> She did high justice, for she crucified
> Every first motion of rebellious pride. (370-375)

Thus, reason can be a useful, even virtuous attribute, if it is channeled correctly, as when it works synonymously with the will and not to foment rebellion. Donne can still explore the idea of an expanded universe with its infinite possibilities, as long as he does not use reason

to allow himself to become alienated from God, or align his will with it in order to work against God's plan.

"Finis": Conclusion

I have argued that the new discoveries in astronomy are pointedly more important to the works than critics have maintained. The works are embedded with astronomical concepts and referrals to specific astronomers whose discoveries most directly threatened the old Ptolemaic order. Donne's references to the astronomers are mostly satiric, but he does not dispute their findings directly. Instead, he mocks their "audacity" in their willingness to upset the established order of the universe. However, by the time Donne writes *Ignatius* and *Of The Progress*, he is faced with ever more valid proof that these astronomers were correct in their heliocentric theories. One concept was particularly intriguing to Donne - the idea that the earth was not only demoted to a position on the periphery of the universe, but that all of the other planets, and even the ever increasing number of visible stars, could be the hosts of other worlds.

This "plurality of worlds" affects Donne more than critics have acknowledged, or noticed. Donne mentions this phenomenon in his two *Anniversary* poems and in *Ignatius*, where he proposes that one of those "worlds" – specifically the moon, be colonized by the Jesuits. Donne becomes directly entangled with Kepler over this work, whose *Somnium* tries to describe, in a fictional account, the now tangible, and visible, properties of the moon. Donne also mentions Galileo and quotes from his *Sidereal Messenger*, which was published in 1610. The simultaneous threats of these astronomers – the idea of heliocentrism; the idea that the moon was covered with craters and mountains; the idea that the sun was marred with sunspots; and the idea that the planet Jupiter had its own satellites resulted in an initial

spiritual crisis for Donne, which becomes manifested in his *Anatomy*. I maintain that Donne overcomes this spiritual crisis through his satiric *Ignatius*, which allows him to explore the concepts more closely, particularly their effects on humanity. I also argue that Donne reconciles his internal conflicts about reason and faith as demonstrated in his *Of the Progress*.

The new philosophies also threatened theological concepts based on the physical nature of the cosmos. When the Ptolemaic/Christianized model was disproven, the idea of a physical heaven located just beyond the sphere of the stars, along with its polemic, a hell located at the center of the earth, which served as the center of the universe, was complicated. In an era where humanity became obsessed with measurement and qualification, which led to new discoveries in distant lands, in astronomy, in medicine, in war and in manufacturing, the idea of both heaven and hell had to be abstracted to survive.

Although humanity had faced other threats to accepted ideology, and had previously conflated such concepts as superstition and astrology with natural philosophy, the astronomers of the late sixteenth and early seventeenth century offered conclusive and ever more convincing data to validate their theories. Brahe and Kepler used a trigonometrical technique to prove that the "new" stars which appeared in the sky were beyond the moon, an impossibility in the Aristotelian model, in which the heavens were supposedly immutable. Thus, the heavens, like the earth, are corrupted. Galileo's proof was more damning. He used his telescopic lenses to prove that the moon and sun were both corrupted, that Venus displayed phases – a trait only possible in a heliocentric model, and that Jupiter had four "moons" orbiting the planet.

These concepts are all mentioned and somewhat debated in these works. It is often concluded that Donne's skepticism is answered or even enhanced in these works, particularly his *Ignatius*. I maintain that Donne does not dismiss these ideas directly. As one who respects reason and understands the intricacies behind the astronomers' proofs, he cannot deny his sense of reason to embrace an illogical conclusion. Instead, Donne enlarges his own ideology to embrace a drastically enlarged cosmos. If humanity can no longer be the center of the universe, Donne will create a universe that is too large to be contained in the center. Donne will also mentally and spiritually redraft these challenges to his faith in such a way that he can render them irrelevant. Thus, their validity is not necessary, or even preferred. Through these three works, Donne allows his reader to see this evolution in progress. *Of the Progress of the Soul* becomes the answer to Donne's personal "progress of the soul," and he emerges with an ideology that allows him to acknowledge the value and validity of the new developments in his era while maintaining his faith intact. His skepticism is not silenced, it is merely appeased.

"The Cunning Pencill, and the Comely Face" [98]: An Epilogue

Donne not only implemented concepts from astronomy and science in the three works examined in this study, but throughout his career. He is demonstratively invested in turning science to poetic adornment and many of his earlier and subsequent works reflect this tendency. Donne's complex poetry often employed some form of metaphysical conceit, and terminology gleaned from the study of astronomy was often utilized in poetic word play for aesthetic effect. Many of his earlier poems have specific references to astronomical phenomenon or astronomical instruments. In these poems Donne often makes use of astronomical or mechanical ideas as a trope to describe feelings or concepts. In this way,

[98] *The Anatomy*, line 18.

Donne pioneers the idea of using an extended conceit to represent, and often satirize, the idea of a reified or measurable cosmos. Donne's invention will later allow Milton to construct a metaphorical heaven created with a compass and drafting tools in his *Paradise Lost*.

Donne begins to use this cosmological imagery early in his career. He uses solar imagery in "The Sun Rising," making allusions to a solar eclipse and placing his (shared) bed in the role of the sun which is circled by "these walls thy sphere"(line 30). In "A Fever," Donne notes that "These burning fits but meteors be / Whose matter in thee is soon spent; / They beauty, and all parts, which are thee / Are unchangeable firmament," (lines 21-24), a poem that describes the contrast between the mutable sublunar heavens, which hosted transient objects such as meteors and the unchangeable firmament, which consisted of the planetary spheres (including the sun) and the fixed stars. Donne once again places the object of his affections as the center of a universe of concentric spheres in his "Love's Growth," where she is described as one "…like so many spheres but one heaven make, / For they are all concentric unto thee;" (lines 23-24).

Donne associates a deep grief suffered by the death of a lover to the shortest and therefore darkest day of the year – St. Lucy's Day, which embodies the winter solstice in his "A Nocturnal Upon St. Lucy's Day, Being the Shortest Day," a poem focused on the alchemy of love. Donne describes the actions of the sun in cosmological terms in this poem, where the sun "At this time to the Goat is run,"(line 39) replicating the sun's apparent migration to its southernmost orbit in the Tropic of Capricorn.[99] Donne describes two lovers whose love peaks at the meridian of the sun at noon in another poem focused on solar symbolism, "A Lecture Upon the Shadow." In this poem, he describes a western declination of the sun, comparing it to the "declining" nature of love.

[99] Note the similarity to Donne's passage in the *Anatomy*, lines 277-284.

Donne addresses the phenomenon of cosmic epicycles in his Devotions, claiming that:

> As in the heavens there are but a few circles that go about the whole world, but many epicycles, and other lesser circles, but yet circles; so of those men which are raised and put in to circles, few of them move from place to place and pass through many and beneficial places, but fall into little circles, and within a step or two, are at their end, and not so well as they were in the center, from which they were raised. (qtd. in Shami 60)

Continuing this cyclical trope, Donne invokes the idea of the mythical phoenix to represent the infinite cycle that results from the reconstructed atoms of its atoms. This reference also represents the idea of the greatest cycle – the "great year," thought to coincide with the lifespan of the phoenix. This Platonic design had become linked with the major biblical events such as the great flood and Christ's appearance. Donne speaks of form and infinity as a "terrestrial galaxy / As the small stars do in the sky," in his "The Primrose" (lines 6-7).

His "Valediction Forbidding Mourning" makes the statement that people fear the "Earth moving," but that "trepidation" is innocent. The astronomical meaning of trepidation alludes to the cyclical nature of the Earth's galactic orbit. The theory of trepidation, now obsolete, was based on the idea that the sun's rate of speed varied during its annual orbit. Donne is arguing that great changes in the heavens, signified here by trepidation, which should be more significant to humanity, are generally imperceptible to its members while less significant or terrestrial motion such as earthquakes, are met with apprehension. Donne admonishes his lover to remain stoic and keep any changes in the state of their relationship at

an imperceptible level, mirroring the trepidation of the spheres. Medievalists had insisted on the non-cyclical nature of Christ's actions, thus, when Donne or Milton mentions this trepidation, they are actually referring to a deeper philosophical crisis. When Donne declares that the "earth moving" is controversial, but "trepidation" is not, he is satirizing the inconsistency of church doctrine as it applies to the cosmos and the new philosophy thereof, as he does in his *Ignatius*. The poem also focuses on perception. The "Dull sublunary lovers' love - / Whose soul is sense" mentioned earlier represents lovers who are flawed as a result of their "sublunar" state, and can only see what is obvious to them through their senses. Donne is comparing a mature, spiritually based love to the Aristotelian model of the rational soul who is beyond the physical and changeable sublunar realm.

Donne alludes to motion and intelligence using an astronomical trope in his "Goodfriday, 1613, Riding Westward," which features concepts of time and space. Donne suggests that we should:

> Let man's soul be a sphere, and then, in this,
> Th' intelligence that moves, devotion is ;
> And as the other spheres, by being grown
> Subject to foreign motion, lose their own,
> And being by others hurried every day,
> Scarce in a year their natural form obey ;
> Pleasure or business, so, our souls admit
> For their first mover, and are whirl'd by it.
> Hence is't, that I am carried towards the west,
> This day, when my soul's form bends to the East. (lines 1-10)

Donne is comparing humanity's occasional transgression to the occasional epicycle that forces a heavenly body from its natural course east to west to a temporary unnatural course that makes it appear to travel from west to east, the phenomenon that is described by a planet in "retrograde" (Wilcox 157).

Donne continues with a vivid reified view of the effect of Christ's sacrifice on his imagination:

> It made His own lieutenant, Nature, shrink,
> It made His footstool crack, and the sun wink.
> Could I behold those hands, which span the poles
> And tune all spheres at once, pierced with those holes ?
> Could I behold that endless height, which is
> Zenith to us and our antipodes. (19-24)

Donne insists on conceptualizing abstract concepts through the eyes of a humanist and that quality becomes one of his endearing attributes. The idea that he also incorporated the methodology of the architects of the new philosophy, specifically its astronomers, demonstrates the degree to which Donne felt their methodologies useful and valid. His "Valediction for His Book" includes a surprising description of the use of eclipses to determine longitude. With nautical word play, Donne approaches the problem of determining the degree of love when a lover is called away. He suggests that he will:

> Thus vent thy thoughts; abroad I'll study thee,
> As he removes far off, that great heights takes;
> How great love is, presence best trial makes,
> But absence tries how long this love will be;
> To take a latitude

Sun, or star, are fitliest viewed

At their brightest, but to conclude

Of longitudes, what other way have we,

But to mark when and where the dark eclipses be? (55-63)

This passage appears to refer to the idea that while navigational latitude was calculated through the stars, there was no known method for determining navigational longitude across what is now known as differing "time zones." This problem, the cause of countless shipwrecks, was not solved until the late eighteenth century. During the late seventeenth century, many scientists came to believe that observing the eclipses of Jupiter's moons, discovered by Galileo in 1610, and using those eclipses as time markers across time zones, could provide a constant with which to calculate time, and therefore determine longitude (Halley 187). Donne's very early reference to this possibility is significant and serves as one example of a metaphor that contains an underlying "truth."

In Donne's "A Valediction of Weeping" he begins to blend the ideas of romantic love with the reification of the world, which:

On a round ball

A workman, that hath copies by, can lay

An Europe, Africa, and Asia,

And quickly make that, which was nothing, all. (lines1-4)

In his "Valediction Forbidding Mourning," Donne compares two lovers to a compass, "If they be two, they are two so / As stiff twin compasses are two; / They soul, the fix'd foot, makes now show / To move, but doth, if the other do" (lines 25-28).

Donne, in this collection of poems applied the idea of metaphysical trope to the purely physical matter of the old philosophy, a testament of his knowledge of the "old" science and his willingness to replace that reified knowledge with aesthetic tropes. Yet Donne's use of the images multiplies ever more rapidly after the influence of the new philosophy begins to be felt around 1610 (Coffin 56). His poetry becomes the vehicle for a hyperbolic metaphysical trajectory used to emphasize the idea of a world that is rapidly expanded by the new philosophy that displaced the earth and enlarged its heavens exponentially. Donne begins to apply his poetic allusions to more public controversies and philosophical debates by the time he writes his *Ignatius His Conclave*, *The Anatomy* and *The Progress*, which refer to much more specified concepts. James R. Keller claims that Donne implemented tropes from alchemy in his final sermon, claiming that he used a metaphysical trope to "reveal the occulted similarities between mystic experiments of the alchemists and the magical transformation of humanity in the process of Christian salvation" (486). Thus, His affinity for using scientific analogies and metaphors never diminished. Donne's imagination is captured by these new discoveries, and he begins to expand his use of astronomically driven, aesthetically formulated tropes that will allow him to capture the enormity of the heavens described in the "new philosophy."

"A TIDE IN THE AFFAIRS OF MEN"[100]: EPILOGUE

In *Julius Caesar,* Shakespeare's Brutus speaks of a "tide in the affairs of men," proclaiming that "On such a full sea are we now afloat" (4.3.369-374). The early decades of the 17th century constituted such a "tide" in the form of a cosmological challenge to the medieval geocentric model. Stephen Toulmin describes the extensiveness of this challenge, arguing that "the more vigorously Galileo advocated the new Copernican System – the Earth being just one more planet moving around the Sun – the more pressing was the need for a full renovation of natural philosophy." Toulmin, describing John Donne's reaction to this threat, notes that his alarm was perceptive and not inappropriate given the magnitude of this shift. He contrasts Montaigne's casual skepticism in the late 15th century, when "nothing particular" was at stake, to the empirically driven claims made after 1618 by "serious minded intellectuals" who argued that "Granted, *nothing in particular* is at stake in our cosmology; what is at stake is *everything in general*" (83).

The transformation of natural science from a practice connected with scholasticism and religious theology to a practice associated with empirical methodology and quantification in all realms is well documented. The transformation of literary studies that followed the same paradigm shift, particularly in the realm of astronomy, has not been as fully explored. Toulmin describes how the simultaneous collapse of cosmology and epistemology inspired the New Philosophers to propose a solution to this crisis that was equally sweeping – if *everything in general* was under threat at one and the same time, *everything in general* must be restored and underpinned in a brand new way. He claims that this resulted in the view that natural philosophy itself should be rebuilt on geometrical

[100] William Shakespeare. *Julius Caesar 4.2.369.*

foundations if the epistemological foundations of a new cosmology were to be guaranteed (83).

This geometrical restructuring generally transformed Western Europe and specifically transformed England. The new approach becomes apparent shortly after Thomas Digges's publications of an English translation of Copernicus's *De Revolutionibus Orbium Coelestium* began to proliferate across England. John Milton's *Paradise Lost,* published in 1667, exemplifies how prevalent this practice had become by the late 17th century. Milton's epic poem demonstrates how literary tropes began to reflect the obsession with reification and quantification so predominate in late Renaissance culture. Milton not only appropriates Digges's expanded physical model of the universe into the poem, reflecting the influence of the new cosmic model on English society, he also appropriates the language of quantification in his rendition of God's creation of the earth. Milton describes a reified creation in Book Seven, stating:

> Then staid the fervid wheels, and in his hand
> He took the golden Compasses, prepared
> In Gods Eternal store, to circumscribe
> This Universe, and all created things:
> One foot he centered, and the other turned
> Round through the vast profundity obscure,
> And said, thus far extend, thus far thy bounds,
> This be thy just Circumference, O World.
> Thus God the Heav'n created, thus the Earth,
> Matter unformed and void: Darkness profound

> Covered the' Abyss: but on the watery calm…
> Adverse to life: then founded, then conglobed
> Like things to like, the rest to several place
> Disported, and between spun out the Air,
> And Earth self balanced on her Center hung. (lines 224-242)

In this passage, Milton describes an Earth that is constructed with golden compasses by a God who physically manipulates matter and ultimately suspends the Earth "on her Center" in the heavens. In this way, Milton's universe conformed to the idea of a geometric universe such as the Cartesian model promoted in Descartes' *Principles.* Descartes's universe, in contrast to Aristotle's, was designed from its inception to be a mathematical universe, mapped directly onto space as defined by Euclidean geometry (Dear 96). Milton, following Donne, has transformed the fragments of the more mystical and abstract Aristotelian universe into metaphors or similes that were grounded within the new philosophy, finding Cartesian validation for poetic and dramatic tropes in this new era.

Milton's *Paradise Lost* depicts a universe much more dependent on the actual manipulation of matter through visceral or physical means than through the abstract conjuring of a medieval or early Renaissance alchemist. Milton's garden is no place for a Prospero or a Faustus. Milton's characters Sin and Death build a bridge, not conjured "through the air" as Faustus proposes, but brick by brick, laying the figurative bridge that will connect Satan's rebels with humanity's new world.

In many ways, Donne's poetic conciliation of science and theology lays the foundation for this literary adaptation of scientific tropes. Donne's ability to visualize the limitless possibilities of an unbound universe and the futility of attempting to quantify it

leads to Milton's fictionalized application of geometric principles in his epic poem. In his "Valediction Forbidding Mourning," Donne compares two lovers to a compass, "If they be two, they are two so / As stiff twin compasses are two; / Thy soul, the fix'd foot, makes now show / To move, but doth, if the other do" (lines 25-28), describing the bond between separated lovers to the workings of a compass. Instead of applying scientific principles directly into his work in their actual roles, Donne satires the idea of quantifying abstract or immeasurable concepts such as love or God's universe by transporting them into his metaphysical poetry. Donne applies the idea of metaphysical trope to the purely physical matter of the old philosophy, a testament of his knowledge of the "old" science and his willingness to replace that reified knowledge with aesthetic tropes.

This precedent allowed later writers such as Milton to apply Cartesian ideas in an obviously fictionalized manner. Milton does not attempt to give actual cosmic geometrical coordinates in *Paradise Lost*, for instance, even as he describes an expansive model that resembles the new Copernican system. Although Milton does not directly endorse the model, presenting his readers with a geo-centric universe in the epic poem through his poetic allusions, he contradicts himself with examples that defy the physics of geocentrism and support a helio-centric universe that simultaneously eliminated the viability of Aristotelian cosmology. Specifically, the astronomical configurations represented in *Paradise Lost* include the phases of Venus; the changing of the seasons as a result of the Earth's slanted angle; and the "Trepidation" of the Earth; none of which could have existed in a geo-centric universe. Milton also mentions eccentric or elliptical orbits, comets, astronomical parallax, Jupiter's moons; the moon's complicated topology and sunspots, all of which challenged the foundations of Aristotelian cosmology, which held that the heavens were perfect and

immutable and that all things "sub-lunar" were imperfect and mutable. Yet these references are mentioned only in passing, they are not meant to define Milton's project. Milton's cosmos is merely a backdrop for his theological saga and his work can be seen as an example of the separation between scientific writing and poetry. Milton's work does not have to answer to science's demands for accuracy. He can create his own cosmos because he is acutely aware that it is fictional. His Cartesian passages become artistic and allegorical.

Milton's evolved approach is more clearly apparent when it is compared to earlier works such as Marlowe's *Faustus* or Shakespeare's *Hamlet.* For example, Milton's Adam is much less insistent when inquiring about the exact construct of the universe than Marlowe's Faustus. Faustus demands to be told the nature of the universe in very specific terms. He demands to know "all characters and planets of the heavens" (2.2.167-169), so that he "might know their motions and dispositions." He asked Mephistopheles if "there [are] many heavens above the moon"(2.3.25), and orders him to "…resolve me of this question: if "all celestial bodies [are] but one globe, why have we not conjunctions, oppositions, aspects, eclipses all at one time, but in some years we have more, in some less?" (2.3.61). Faustus demands explicit information and the play is driven by these demands and Faustus's willingness to pay for this information with his soul. Milton's Adam, on the other hand, is content to withdraw his questions about the exact nature of the universe when told by Raphael that he should not question the matter too closely in Book Eight. Adam's acquiescent attitude demonstrates the poem's allegorical construction. Milton is not exploring the controversies elicited by the new philosophy. His work is not meant to incite or entice his audience regarding science as those mysteries had been resolved. His poem is a purely artistic endeavor and Donne's pioneering work allows Milton this freedom.

In another comparison, Shakespeare's *Hamlet* demonstrates a melancholically tainted desire to know the nature of the universe. Hamlet is not so obsessed with *how* the universe is organized as much as *why* things in that universe are the way they appear. He muses about a possible afterlife, he sees the world as simultaneously rank and magnificent, and he does not know whether this "goodly frame, the earth," is "a sterile promontory" or a "most excellent canopy," claiming that "the air—look you, this brave overhanging firmament, this majestical roof fretted with golden fire" appears to be nothing more to him "than a foul and pestilent congregation of vapors" (2.2.5). Hamlet demands answers from science about a world that he sees in crisis. He is trying to sort out the philosophical displacement that scientific advances were creating but he finds no answers because the breakthroughs that empowered Donne to craft a new unique personal philosophy were not yet realized. Shakespeare's *Hamlet* cannot aspire to separate scientific fact from theatrical metaphor because the facts were still too elusive to allow a full separation of fact and fiction.

Toulmin argues that the general crisis of the early seventeenth century was not merely economic and social, but also intellectual and spiritual, or a total breakdown in the public confidence of the older cosmopolitical consensus (71). This breakdown is addressed in Shakespeare and Donne's literary works. Their literature addresses this loss of confidence in the old cosmic order and attempts to reconcile the new philosophy with the old certainties. Donne's decision to delineate science from poetry reflects his attempt to refashion that cosmopolitical consensus by shielding his poetry from the harsh realities of the new science that demanded that the answers to Hamlet's questions could somehow be found in the new philosophy.

The West's early modern obsession with quantification was the key factor in its rise to world dominance during the 18th and 19th centuries. Alfred Crosby describes this concept as "Pantometry." He describes how the West's decision to treat the universe in terms of "quanta uniform in one or more characteristics," or "quanta arranged in lines, squares, circles, and other symmetrical forms," whether that be in the form of music staffs, platoons, ledger columns or planetary orbits, led to its ability to develop the capacity for the unprecedented scientific, navigational, medical, military and biological breakthroughs of that era. Crosby argues that the West chose to "perceive as much reality as possible visually and all at once, a trait that became the most distinctive of its culture" (11).

Crosby contrasts this phenomenon with the ideology of earlier cultures. He describes Plato and Aristotle's aversion to metrological approaches to knowledge, claiming that they thought more highly of human reason than later cultures, but they did not believe human senses had the capability of accurately measuring nature. Crosby claims that Aristotle, for instance, once stated that the mathematician "strips off all the sensible qualities, i.e., weight and lightness, hardness and its contrary, and heat and cold" (qtd. in Crosby 13). Plato, on the other hand, recommended turning away from the material world altogether (14). Western Europeans, according to Crosby, discovered a way to reconcile these ideas. The West's distinctive intellectual accomplishment was to increasingly combine mathematics and measurement until its populace was forced to make sense of a sensorial perceivable reality, which Westerners assumed was temporally and spatially uniform and therefore susceptible to examination (17).

The literary agents of this era would have been forced, then, to either acknowledge the new preference of quantification over qualification, producing works that depicted a

universe that adhered to this exacting scrutiny, or detach themselves altogether from this concept and become Neo-Platonic, producing works that rejected this quantification, replacing it with allegories and metaphors that either represented this geometrication in an abstract manner, replaced it altogether, or as in Donne's case, mocked it.

The three works featured in this study represent literary works that were written at the cusp of this development. Marlowe's Faustus demands information about the nature of the cosmos that cannot yet be confirmed, yet he does not consider data quantification as a viable solution to this mystery. Quantitative methodologies such as the trigonometrical parallax that nullified Aristotle's theories had confirmed that the heavens, like the Earth, were corrupted, yet the quantitative measurements that confirmed the heliocentricism of the universe were not yet available. Thus, Faustus begs the question of the nature of the universe within medieval perimeters, asking, for example, about the number of crystal spheres or the mechanical workings of the universe. His demands for knowledge thus become associated with his heretical curiosity about the nature of the universe.

Shakespeare's Hamlet understands that this new quantification process has begun, coming from Wittenberg and using terms from astronomy and cartography, yet he is still limited by the idea that "There are more things in heaven and earth…Than are dreamt of in…philosophy" (1.5.166-167). Hamlet instead tries to salvage the inherent Platonism in his realm by attempting to see his tragic situation as something he can transcend. Instead, the flaws in the universe uncovered by the new discoveries in astronomy become symbolic of the flaws in Hamlet's world. They are intractable and irreversible. Hamlet suffers from outgrown ideologies. He is a poetic soul whose metaphors and similes have no application in the increasingly modern world.

Donne's poetry, the final work examined in this study, becomes the catalyst in this process. Donne understands that his culture is increasingly focusing on quantification and reification of formerly abstracted ideas and he finds a way to reconcile his own theologically driven ideas with the new philosophy and its threats to his religion and his art. Donne delineates science from both art and theology by embracing its idea of an unlimited universe. This allows him to argue the absurdity of an attempt to calculate the scope of the heavens and appropriates the methodology, along with its components, for his own use.

The crisis that heliocentrism brought to early modernists unfolded over almost seventy years. Copernicus's *De Revolutionibus,* which first proposed the new system to early modernists, was published in 1543 and Galileo's *Sidereus Nuncius* (*The Starry Messenger*), which first confirmed the new system, was written in 1610. The confirmation of a flawed universe, discovered through ever more accurate measurements of comets and supernovas was documented in 1572. It is this period of uncertainty that this study addresses, examining this period through the lens of selected literary works. These various writers demonstrate their struggle and/or celebration regarding the new philosophy, which was based on the new astronomy. Their work represents differing reactions to these discoveries and charts how literary works become separated from science and theology, paving the way for purely scientific endeavors of the modern era unaffiliated with philosophy, religion, or art. Even the science fiction genre, with its early modern roots, does not purport to reflect actual content from science.

Marlowe's celebration of the new ideology and cosmic model, Shakespeare's grief associated with the new ideology and cosmic model, and Donne's conciliation of his personal ideology with the new philosophy provide several different reactions to this vast shift in

medieval philosophy and natural philosophy. The discoveries that nullified Aristotelian physics and ideas of cosmic perfection and destroyed the prominent place that humanity held at the center of the universe along with its hierarchal schema are embodied in these works. They represent a unique time in history. Never has so much upheaval, theologically, philosophically, and socially, been experienced by a culture. It was during this time that early modernists struggled to "make trifles of terrors, ensconcing [themselves] into seeming knowledge" (Shakespeare, *Alls Well* 2.3.1-2), and some of that knowledge was gleaned through the remarkable literature that emerged out of those turbulent times.

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ABSTRACT

"TO UNSPHERE THE STARS …"[101] : EXPLORING THE EARLY MODERN ONTOLOGICAL/COSMOLOGICAL CRISIS IN ENGLISH RENAISSANCE LITERATURE

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The early modern era is traditionally defined by its significant shifts in a myriad of fields. Advances in one of these fields, astronomy, eventually redefined the physical and philosophical/theological nature of the known universe. This study attempts to connect much of this societal unrest to a previously neglected factor – the impact of Copernicanism on Renaissance thought. This work, epistemological in nature, explores the manner in which selected Renaissance writers, Christopher Marlowe, William Shakespeare, and John Donne, responded to the shifts in philosophy and cosmology that affected their culture. The crisis that heliocentrism brought to early modernists unfolded over almost seventy years. Copernicus's *De Revolutionibus,* which first proposed the new system was published in 1543 and Galileo's *Sidereus Nuncius,* which confirmed the system, was published in 1610. It is this period of uncertainty that this study addresses, examining the era through the lens of selected literary works. This lost certainty was eventually replaced by an alternate form of

[101] William Shakespeare, *The Winter's Tale* 1.2.61.

certainty as defined by Francis Bacon's scientific method and reified in the body of the Royal Society of the mid seventeenth century. As the former concept of the microcosm/macrocosm model was destroyed, I argue that these writers attempted to turn its fragments into metaphors or similes which were devoid of the validating foundation which gave them their substance as well as their attraction. I maintain that Renaissance writers responded to these shifts in various ways, often adopting metadramatic tropes, specific terminology and astronomical concepts lifted from the "new philosophy" into their works in an effort to process and anesthetize the new world order that included a radically altered cosmos.