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## RESEARCH ARTICLE

### THE OLD VS THE NEW: SHAKESPEARE'S MATURING VISION

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#### ABSTRACT

The purpose of this paper is to explore the nature of William Shakespeare's personal values and beliefs, highlighting the challenges in determining them due to the lack of material evidence. Through his literary works, Shakespeare delves into a myriad of topics, including philosophy, culture, science, human anatomy, atoms, matter, and planetary motion, indicating his exposure to and familiarity with contemporary scientific concepts. Methodologically, this paper employs literary analysis, and finding excerpts from the literary texts of Shakespeare's plays which suggest his developing knowledge of science, medicine, astronomy, etc. The main focus of this paper is the evolution of Shakespeare's vision, contrasting the old and the new worldviews. Early in his career, Shakespeare adhered to the medieval practice of linking physical traits to character. However, a noticeable shift towards modern attitudes is evident in his later works. The results demonstrate that Shakespeare's works, including "Hamlet," "Twelfth Night," "Romeo and Juliet," "King Lear," and "Macbeth," demonstrate his knowledge of matter, weight, and human anatomy. His depiction of anatomical details suggests a gradual departure from the humoral theory, opening the door to new perspectives on the human body. This shift implies a move towards the idea that a person's mood, disposition, and actions are governed by free will and reason. Shakespeare's inquisitiveness and appreciation for scientific advancements are evident throughout his works. By questioning the old system and embracing new principles, Shakespeare's evolving thought encourages audiences to challenge hierarchical structures and consider the equality of all individuals.

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## INTRODUCTION

The intellectual landscape of the Renaissance incorporates the exploration and welcoming of new ideas and perspectives, advances in the fields of medicine and natural sciences, pioneering discoveries, as well as a revival of classical art and literature and their iterations into the new artistic and literary pieces. The scientific novelties of his age are well-established in Shakespeare's imagery. Science for Shakespeare had a different meaning than the one we operate with nowadays. As Carla Mazzio (2009) explains in *Shakespeare and Science, c. 1600*, the term "science" referred to a more generalized realm of knowledge, since it was derived from the Latin word for knowledge – *scientia*. To Shakespeare, science was knowledge, and it encompassed much more than the study of the material world, as it appertained to both the quadrivium (arithmetic, geometry, astronomy, music) and the trivium (rhetoric, grammar, and logic) (Mazzio, 2009, p. 2). In her introduction to *Shakespeare and Science, A Dictionary*, Katherine Walker explains that 'science' is appropriately used as a fluid and inclusive term "to capture the capaciousness of knowledge-making of the natural world during the Renaissance" (Walker, 2022, p. 2). Therefore, Shakespeare

never needed to justify or further elaborate on his interest in and presentation of scientific discoveries in his plays. To him, that admission of scientific issues in his literary works would have been almost customary, as both science and arts were seen as structures of knowledge ingrained in the extensive system of values which was grounds for their production. Shakespeare famously did not get a university education (what with him being completely obliterated by the criticism in Robert Greene's pamphlet *Groats-worth of Witte, bought with a million of Repentance*, in which Greene refers to Shakespeare as an "upstart crow"), but he seems to have been well versed in plenty of the new discoveries and worldviews which made the Renaissance the period of cultural and scientific upturn. That transition of knowledge, of attitudes towards the world, can be seen in his plays as well. His literary works evolve in manners which appear to exhibit his altering intellectual curiosities. At the beginning of his career as a playwright, Shakespeare displayed some aspects of the old worldview, which the groundlings would be familiar with. The Ptolemaic model, the geocentric description of the Universe with Earth at its centre, the Four Humours theory etc, all of these preconceptions typical of the Middle Ages were mundane and easily recognizable to the public, which is why Shakespeare used them, or at least did so at the beginning, in

order to easily establish the nature of a character and make their prospects in the development of the play more obvious.

## METHODS AND MATERIALS

Since this paper is a literary analysis, the structure of methods and materials used is based on the approach of analysing Shakespeare's works and the sources used. This study employs a qualitative approach to analyse Shakespeare's use of scientific and intellectual themes in his plays. The analysis focuses on specific excerpts from various plays, considering the historical and intellectual context of the Renaissance. In terms of selection of texts, key plays by William Shakespeare, including *Hamlet*, *Macbeth*, *Twelfth Night*, and *Richard III*, were selected for analysis. These plays were chosen based on their notable references to scientific and intellectual themes. The following was literature review, which was a comprehensive review of secondary sources conducted to gather insights into the historical and intellectual context of the Renaissance. Works by scholars such as Carla Mazzio and Natalie Elliot were consulted to understand Shakespeare's engagement with scientific ideas. In terms of textual analysis, excerpts from the selected plays were analysed to identify and interpret references to scientific and intellectual themes. The analysis focused on the language, imagery, and context of these references to understand Shakespeare's perspective on contemporary scientific thought. The identified references were contextualized within the broader intellectual landscape of the Renaissance. This involved comparing Shakespeare's use of scientific themes with prevailing ideas and discoveries of the time, such as Copernican astronomy and humoral theory. The findings from the textual analysis and contextual interpretation were synthesized to draw conclusions about Shakespeare's engagement with scientific and intellectual themes. The discussion explores the implications of these findings for understanding the interplay between literature and science during the Renaissance.

## RESULTS

At the very onset of the play *Richard III*, the eponymous character devotes almost half of his monologue to the description of his own looks. This served primarily to provide information regarding the character traits and the divine predestination they are owed to, since it was considered that a person's wickedness is due to or a consequence of one's physical traits:

“I, that am not shaped for sportive tricks,  
Nor made to court an amorous looking-glass;  
I, that am rudely stamp'd, and want love's majesty  
To strut before a wanton ambling nymph;  
I, that am curtail'd of this fair proportion,  
Cheated of feature by dissembling nature,  
Deformed, unfinish'd, sent before my time  
Into this breathing world, scarce half made up,  
And that so lamely and unfashionable  
That dogs bark at me as I halt by them;  
Why, I, in this weak piping time of peace,  
Have no delight to pass away the time,  
Unless to spy my shadow in the sun

And descant on mine own deformity:  
And therefore, since I cannot prove a lover,  
To entertain these fair well-spoken days,  
I am determined to prove a villain  
And hate the idle pleasures of these days.” (15-32)

These are the opening lines to the play, and yet to a spectator in the groundlings it would be as clear as daylight that the character in front of them is expected to perform atrocious deeds and that this historical figure is to be presented as a vile person. His deformities combined with his premature birth would be enough to inform the public that this person is not to be trusted, which is further strengthened by his own words. *Richard III* was written circa 1592; however, it is noticeable that Shakespeare did not dwell long on those medieval preconceptions about life. In many of the plays to follow, Shakespeare expresses a conviction in an individual's responsibility for their actions as opposed to their being predestined to act in a certain manner, due to divine providence, astrology, their time of birth, their looks, etc. Only several years later, around 1599 in *Julius Caesar*, Shakespeare bestows on the character of Cassius one of his most famous quotes: “The fault, dear Brutus, is not in our stars, But in ourselves, that we are underlings” (1.2.147-148) suggesting that people of whichever social standing are personally responsible for their own actions and that they are not meant to do anything based on some religious or astrological interpretation.

Regarding the new discoveries in astronomy, it is quite probable that Shakespeare had some knowledge of them, which can be found in his imagery, as it is suggested in “UnspHERed, DisorbEd, Decentred: Shakespeare's Astronomical Imagination” by Cetera-Włodarczy *et al.* One of the revolutionary ideas of the Renaissance was that of heliocentricism, proposed by Nicolaus Copernicus. Copernican ideas had reached the English vernacular via Robert Recorde's *Castle of Knowledge*, whereas Copernicus was partially translated by Thomas Digges in 1576 (Cetera-Włodarczy *et al.*, 2021, p. 406). Renaissance ideas which challenged the widely accepted Ptolemaic theory were present in the intellectual culture of Early Modern London. As Cetera Włodarczy *et al.* (2021) suggest, from 1588 there were three conjectured orderings of the universe: geocentric, heliocentric and geo/helio-hybrid. Shakespeare lived during a period in history in which astronomy was a discipline of unsureness and question, of rivalling notions and theories. (p. 414). Shakespeare was definitely aware of this uncertainty and referred to it on multiple occasions, but the most prominent of them would be in *Hamlet*:

“Doubt thou the stars are fire,  
Doubt that the sun doth move,  
Doubt truth to be a liar,  
But never doubt I love.” (2.2.124-127)

In *Hamlet's* letter to Ophelia, he urges her to believe that he loves her more than anything else, including scientific notions regarding the sun and stars. How and whether the sun moved was not clearly resolved in Shakespeare's time and he addresses that question in the given excerpt. It is not clear whether Shakespeare believed that the solar system was heliocentric, but he certainly was aware of that idea and did not shy away from presenting it in front of the larger public.

While he entertains new ideas, Shakespeare directs the attention towards the disintegration of formerly established structures and systems and displays readiness to provide different contemplations regarding the universe. The analysis of Cetera Włodarczy *et al.* provides an insight into his fascination with stars and planets, as well as the manners in which his references to them display the “imaginative effect of the most significant scientific advances of the age on the mind of the most significant writer” (Cetera Włodarczy *et al.*, 2021, p. 422).

The presence of Copernican thought in the aforementioned excerpt from *Hamlet* is also pointed out by Natalie Elliot in her essay *Shakespeare's World of Science* (2018). Elliot's analysis of Shakespeare's alleged knowledge of his day and age's scientific dilemmas goes further into identification of Shakespeare's evident exposure to other novel ideas, which could serve as his source material. Elliot (2018) points out that from the literary text of *Hamlet*, it can be evinced that Shakespeare had certain knowledge of Copernican astronomy and that he was acquainted with the work of the Danish astronomer Tycho Brahe. Shakespeare named two of the supporting characters in *Hamlet*, Rosencrantz and Guildenstern, which are variants of Rosenkrans and Guldenstern. The names Rosenkrans and Guldenstern were on the cover of Brahe's book *Epistolae astronomicae*, on which Brahe is depicted surrounded by the crests of sixteen members of his extended family. Whether it is a pure coincidence, or Shakespeare actually did draw inspiration from Brahe's *Epistolae astronomicae*, remains a mystery.

Shakespeare's interest in science and knowledge in general is not so mysterious, though. The main scientific questions that stimulated intellectual growth during the Renaissance are profound to Shakespeare's poetic imagery and his literary works. In her essay, Elliot proceeds to indicate that Shakespeare explores other scientific issues in the plays *King Lear* and *Romeo and Juliet*. In *King Lear*, Elliot identifies the contemplation on the puzzle that is the nature of matter and weight. The references to weight, matter, and void which appear in *King Lear* were also mentioned by Mary Thomas Crane in *Losing Touch with Nature: Literature and the New Science in Sixteenth-Century England* (2014), where she argues that those were inspired by “atomistic speculations that were disrupting the human relationship with the material world” in the day and age of Shakespeare. In *Romeo and Juliet*, Elliot finds a series of references to plague, disease, germs, and infection, not only in terms of metaphors and plot devices, but also as their physical and cultural effects and scientific explanations.

Shakespeare does not devote his works to the ideas of meaninglessness and nothingness, but he does sprinkle these ideas around, centuries ahead of them being the pillars of literary and artistic movements. In *Immateriality and Early Modern English Literature*, the “referential character of the term ‘nothing’” (Knapp, 65) is presented as being well understood and exploited by Shakespeare in his play *King Lear*, as provided in Edmund's claim that he conceals ‘nothing’. In *Hamlet* there is a plot detour at the beginning of Act 5, in which Hamlet contemplates about death and decay, about the irrelevance of one's social status and achievements, since everyone ends up as a pile of dirt. The contemplation on rotting edges on denial of afterlife and it most certainly dwells

on confronting the reality of material presence, as opposed to rumination on spiritual possibilities which could never be scientifically proven.

Shakespeare also uses medical language and vocabulary which expresses an interest in anatomy. This is evident in *Hamlet*, when the prince, after having killed Polonius, refers to the corpse as a bag of “guts”. As Elliot writes, Shakespeare was probably aware of Andreas Vesalius' *De humani corporis fabrica (On the Fabric of the Human Body)*, a book whose contents commuted into Shakespeare's own imagery and representation of that interest. Elliot proceeds to explain that Shakespeare expresses an interest in anatomy in other plays as well. For instance, in *Macbeth* the line “he unseamed him from nave to th' chops” (1.2.24) is used in the description of the execution of an opponent at the hands of Macbeth, whereas in *Twelfth Night* Olivia itemizes her body parts. This interest in and depiction of the parts or innards of a human body could be interpreted as a slow abandonment of humoralism, i.e. the four humours theory. According to this theory, a person's temperament was determined by four bodily fluids, all of which are connected to different celestial bodies, seasons of the year, body parts, and life phases. That is not to say that Shakespeare fully abandoned the four humours theory. On the contrary, he used that theory to create many of his characters and imbue them with character traits specific to their supposed humour, for that would make the character's behaviour and disposition easily understandable for the public. While never abandoning humourism, it can be argued that with the presentation of those images of anatomy, Shakespeare simply opened the door towards a different perspective for the human body. By simply considering those different perspective on the human body, a space is open for the thought surrounding that supposed predestination to act in a certain way, or having one's mood, personality and general stature depend on the fluids in one's body. Such thought would inevitably lead to the consideration of the possibility that a person's mood, disposition and activities depend on their own will, which is free and governed by sense.

The analysis of Shakespeare's works reveals several key findings regarding his engagement with the intellectual and scientific themes of the Renaissance. Shakespeare frequently incorporates scientific imagery and references in his plays. For instance, in *Hamlet*, he uses language related to astronomy and anatomy to convey complex ideas about existence, death, and the human condition. Hamlet's letter to Ophelia, where he questions the movement of the sun and stars, reflects the contemporary uncertainty about heliocentric and geocentric models. Shakespeare's use of medical vocabulary and anatomical references indicates his interest in contemporary advances in medicine. In *Hamlet*, Prince Hamlet refers to Polonius's corpse as a “bag of guts,” showcasing an awareness of human anatomy. Similarly, in *Macbeth* and *Twelfth Night*, Shakespeare's depiction of bodily parts suggests a departure from humoral theory and an exploration of new perspectives on the human body. In *The Comedy of Errors*, Shakespeare draws upon the significance of the auditory senses, as explained in “Hearing at the surface in *The Comedy of Errors*”, where Katherine Hunt focuses on the “understanding of the ear as something interstitial, meditating between the inner and the outer self” (Smith, 8), presented by Shakespeare due to the developments in the science of anatomy. Shakespeare engages with themes of meaninglessness and existential contemplation, often ahead of their time. Another

dimension to Shakespeare's display of knowledge is that in the realm of poison and toxic chemicals. As Kathryn Harkup elaborates in *Death by Shakespeare*, in Shakespeare's plays "the word 'poison' appears over 130 times, 'venom' more than 40, and he scattered the names of poisonous plants and animals throughout his plays" (Harkup, 170). That is reflective of Shakespeare's apparent knowledge of basic chemistry and toxic chemicals, though the displays of their effects are not always scientifically accurate in his plays. In *Hamlet*, Act 5, Hamlet reflects on death, decay, and the irrelevance of social status, challenging spiritual notions and focusing on the material reality of existence. Shakespeare's works demonstrate his awareness of major scientific discoveries of his time, including Copernican heliocentrism. His plays reflect the intellectual curiosity and openness to new ideas that characterized the Renaissance. For example, the presence of Copernican thought in *Hamlet* suggests that Shakespeare was familiar with contemporary astronomical debates. Shakespeare's approach to scientific and intellectual themes is characterized by curiosity and openness. He does not rigidly adhere to any specific scientific theory or dogma but instead presents a blend of old and new ideas. This flexibility allows his audience to engage with diverse perspectives and encourages critical thinking.

## DISCUSSION

The interest in science and the novel scientific progress of his time is present and expressed in many of Shakespeare's works, as shown in some of the above given excerpts and examples. Shakespeare was a great literary mind, but not a scholar, and most certainly not a scientist. Therefore, our expectations for his understanding of the importance of science should not exceed his realities and his possibilities. Be that as it may, it remains notable that for the time in which he lived, Shakespeare displayed a particular inquisitiveness and appreciation for scientific practices and achievements. It is visible that he was not guided by the dogmatic rules neither of the dominating religion and values, nor of the new knowledge dispersed in scientific circles in England and in Europe. Shakespeare, in the spirit of a true appreciator of science and knowledge, leaves open space for many scientific possibilities, not strictly binding himself to any of them, but cultivating a spirit of curiosity and openness to everything that broke loose of previously established frameworks. In Shakespeare, there is no discrimination against the unknown contemporary thought, no battle of the old versus the new. He does not favour, nor strongly grips outdated attitudes, opinions, and practices. That advanced thought of Shakespeare is seen in the fact that he uses all the new knowledge which could reach him, while knowing that nothing is written in stone. That liberal spirit and openness towards all sorts of possibilities is not only evident in his approach to science, but it is also seen in his whole value system. By refusing to demonstrate concepts as fixed and unchangeable, he gives his audience food for thought and makes them ruminate about all the possibilities of the New World. As a true humanist, an intellectual, Shakespeare recognized the momentousness and substance of Copernican theory, atomism, thought about weight, matter and nothingness, human anatomy and the existence or lack thereof of an afterlife. As Elliot (2018) herself explains, it is as if Shakespeare possessed an uncanny insight, almost as though he anticipated the inquiries that science would later explore.

Shakespeare undertook the assignment to assess the capacity of science to stimulate human development, both intellectual and that of the soul. Novel scientific thought is presented in his works not as immovable colossus of truth, but as a blend of precariousness and contradictions which motivate thought and [self-]reflection. Shakespeare welcomes the scientific notions in their whole ambiguity and uses them to profoundly contemplate their influence on the development of human civilization. The contribution of Shakespeare's evolution of thought is in the fact that by questioning the old system and considering the new principles of knowledge, a possibility is given to the audience to repudiate the totalitarian hierarchy of submission. There is at least one step forwards in the direction towards considering people as equal. Those ideas might not have gotten firm ground when Shakespeare's plays were first performed, but they can certainly be explored, on stage or in the classroom, presented, and accepted by the audience/students.

## CONCLUSION

In conclusion, the quest to uncover William Shakespeare's personal values and beliefs remains an intricate endeavour due to the scarcity of direct evidence. However, through a meticulous examination of his literary works and the historical context in which he lived, it becomes evident that Shakespeare was deeply engaged with the scientific and philosophical advancements of his time. His exploration of topics such as human anatomy, planetary motion, and the nature of matter reflects a profound curiosity and an openness to new ideas. Shakespeare's evolution from the medieval worldview to a more modern perspective is marked by his nuanced portrayal of characters and themes. This shift is particularly noticeable in his later works, where he challenges traditional notions of hierarchy and individual responsibility. By incorporating contemporary scientific concepts into his plays, Shakespeare not only enriched his narratives but also invited his audience to question established beliefs and consider new possibilities.

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