

NUMERICAL AESTHETICS IN SHAKESPEARE

Matluba Sadullaeva Akhrorovna

Asia International University.

matlyuba2002@yahoo.com<https://doi.org/10.5281/zenodo.15494106>

Abstract. *When discussing the literary genius of William Shakespeare, our thoughts typically turn to his eloquent language, emotional depth, and profound exploration of the human psyche—rarely to mathematics. However, as Rob Eastaway explores in Much Ado About Numbers, Shakespeare’s plays and sonnets are subtly interwoven with mathematical concepts, especially numerical symbolism. Shakespeare’s writings demonstrate a keen awareness of numbers—not only in a literal sense but as symbolic and metaphysical tools. This article delves into the hidden mathematical elements of his work, uncovering the spiritual and structural significance of numbers such as two, three, and the so-called “crooked numbers.” Drawing from examples in King Lear, Hamlet, and the sonnets, the analysis highlights the nuanced role of numerology in Shakespearean drama.*

Key words: William Shakespeare, Rob Eastaway, Much Ado About Numbers, numerology, Arabic numerals, trinity, symbolic numbers, crooked numbers, metaphysical mathematics, sonnets.

Introduction. Shakespeare's masterful works have stood the test of time, becoming cornerstones of literature and popular culture. But it's not immediately obvious that many of his most memorable scenes are mathematically inspired. In Shakespeare's time, people were accustomed to the idea of the infinite - the planets, the skies, the weather - but far less familiar with the concept that the very small, and even nothingness, could be expressed by mathematical axioms.

The word "zero" was first used in English only in 1598. Thinkers such as the Italian mathematician Fibonacci brought the concept of zero - then known as a "cipher" - into common usage, but it was not until the philosopher René Descartes and the mathematicians Sir Isaac Newton and Gottfried Leibniz developed calculus that "zero" began to occupy a prominent place in society.

One aspect that often goes unnoticed within the beauty of Shakespeare’s language is the extent to which quantitative reasoning shaped his literary vision. From the rhythmic construction of his verses to the symbolic employ of numerology, it is clear that Shakespeare merged the fields of mathematics and poetic artistry by imbuing “calculative” thought into his works. Be it measuring time, emotions, or even hinting at metaphysical concepts, numbers in his writings were never ornamental—they had purpose. While living during what is considered the golden age of mathematics with the advent of the Arabic numeral system and the introduction of zero, Shakespeare incorporated this astonishing cultural change within his poetic and dramatic writings. The verses out of Sonnet 105 show his mastery with language and deep understanding of figures when mentioning “score,” “brace,” and even the Holy Trinity.

The deeper you look, the more it becomes evident that Shakespeare used quantification in almost all facets of life. He used numbers for anything ranging from time, age, distances, army sizes, and fortunes. The most interesting aspect is Shakespeare’s inventive and poetic usage of numbers-with his deep appreciation for language.

The struggle to come to terms with the intertwining of the very large and the very small is beautifully portrayed in many of Shakespeare's works, including *Henry V* and *Troilus and Cressida*. In the opening chorus of *Henry V*, Shakespeare demonstrates his interest in proportion and the concept of zero through repeated "O" sounds and references to contemporary mathematical thought.

Scholars generally agree that Shakespeare's "picaresque figure" is in fact zero, as illustrated by the line "a crookèd figure may / Attest in little place a million," where Shakespeare alludes to 16th-century mathematical debates surrounding the idea that the very small can represent and influence the very large.

In other works, Shakespeare uses mathematical metaphors to surround him in moments of crisis. In *Troilus and Cressida*, Shakespeare uses mathematical language to show how Troilus's psyche slowly disintegrates after he witnesses his beloved Cressida flirting with another man.

For Troilus, Cressida disintegrates into "shares," "splinters," "bits and fat relics." In response, Shakespeare's verse disintegrates into jagged pieces, like an early name for fractions: "broken numbers."

Shakespeare's plays documented the crisis of classical 16th-century mathematics in the face of new ideas. But they also offered audiences the opportunity to come to terms with these new ideas and to see the world differently through the lens of mathematics.

Shakespeare sometimes used numbers literally — to indicate age, time, or quantity:

Sonnet 2:

"When forty winters shall besiege thy brow..."

— "forty winters" means forty years, symbolizing aging.

Sonnet 104:

"Three winters cold / Have from the forests shook three summers' pride..."

— here, the mention of three years shows the beloved's beauty hasn't faded with time.

Numbers often symbolize the passage of time or the natural life cycles:

Sonnet 12:

"When I do count the clock that tells the time..."

— counting time represents the fleeting nature of life.

In several sonnets, seasons of the year are linked with stages of life, and numbers help reinforce that cycle.

In **Sonnet 6**, Shakespeare emphasizes the number ten to advocate for procreation:

"That's for thyself to breed another thee,

Or ten times happier, be it ten for one"

Here, "ten for one" suggests that having ten children would amplify happiness tenfold.

The number ten symbolizes completeness and perfection, reinforcing the poet's argument that procreation ensures the continuation of one's beauty and legacy.

Sonnet 12 reflects on the inevitability of aging and death:

"When I do count the clock that tells the time, And see the brave day sunk in hideous night;"

The sonnet's number, 12, aligns with the 12 hours on a clock face, underscoring the theme of time's relentless progression. This numerical association enhances the poem's meditation on mortality and the transient nature of beauty

Conclusion. Shakespeare's brilliance resides not only in his unparalleled mastery of language and human sentiments but also in his sly involvement with the intellectual revolutions of his period, which embrace the growing world of mathematics. Just as zero and the Arabic numeral system changed the 16th and 17 centuries' conceptualization of intellect, this dramatic change was integrated by Shakespeare in his view of poetry and drama.

His number references were much more than mere embellishments; they were deliberate meaningful tools to probe time, identity, emotion, and metaphysical depth. The works of Shakespeare show a keen, intuitive understanding of mathematical thought—from the literal use of numbers to measure years and seasons to symbolic invocations of numerology and existence—as well as questions on nothingness.

REFERENCES

1. Butler, Christopher. *Number Symbolism*. Routledge, 1970. ISBN: 0-300-08872-8.
2. Blick, Fred. "Shake-speares Sonnets 12, 60 and 126: The Uses of 12, Time and Mannerism." *Academia.edu*, 2009. (https://www.academia.edu/1244975/Shake_speares_Sonnets_12_60_and_126_the_uses_of_12_Time_and_Mannerism)
3. Eftekhari, Ali. "Fractal Geometry of Literature: First Attempt to Shakespeare's Works." *arXiv preprint*, 2004. (<https://arxiv.org/abs/cs/0408041>)
4. Peters, Roger. *William Shakespeare's Sonnet Philosophy*. Quaternary Imprint, 2005. (<https://quaternaryinstitute.com/sonnetphilosophy4vols.html>)
5. "The Shakespearean Poetic Rosary: The 'Sacred Numbers' in Shakespeare's Sonnets." *The Creative Launcher*, vol. 7, no. 4, 2022, pp. 27–33. (<https://www.redalyc.org/journal/7038/703873562004/>)
6. "Shakespeare's Sonnets and the Cabala." *Masoncode.com*. (<https://www.masoncode.com/Shakespeare-Sonnets.htm>)