

Shakespeare's: his 450th birth anniversary and his insights into neurology and cognition

Shakespeare: seu 450^o aniversário de nascimento e suas percepções sobre neurologia e cognição

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ABSTRACT

The works of William Shakespeare (1564-1616), the greatest dramatist and poet of the English language, reflect several cultural values of the Western world which are also shared by other cultures. On his 450th birthday, many of his concepts are admired as descriptions of human feelings and neurological phenomena, demonstrating his insights into what it is today considered cognitive neuroscience

Keywords: Shakespeare, neurology, cognition, perception.

RESUMO

A obra de William Shakespeare (1564-1616), o maior dramaturgo e poeta da língua inglesa incorpora diversos valores culturais do mundo ocidental que são também compartilhados por outras culturas. Em seu 450^o aniversário, muitos de seus conceitos são admirados como descrições de sentimentos humanos e fenômenos neurológicos, demonstrando a sua percepção do que hoje se denomina neurociência cognitiva.

Palavras-chave: Shakespeare, neurologia, cognição, percepção.

William Shakespeare born at Stratford-on-Avon, baptised on 26 April 1564 and died on 23 April 1616, was an English poet and playwright, who lived during the Golden Age of the English drama. Besides being a very popular dramatist, he was also an actor and a shareholder of the Globe Theatre^{1,2}.

There are doubts about his authorship of the plays mainly based on the fact that he had not attended university like some of his fellow playwrights such as Christopher Marlowe (1564-1593)^{1,2,3}. These doubts are rejected by the great majority of Shakespearean scholars nowadays.

We know that he married Anne Hathaway when he was 18 years old: she was 26 and pregnant of their first daughter (Susanna). They had two more children, the twins Hamnet and Judith. They lost their only son, in 1596, at the age of 11, probably of the plague¹.

Most of his artistic life was spent in London, during the reigns of Elizabeth I (1558-1603) and James I (1603-1625)². The majority of his plays is based on previous works of known and unknown authors transformed by his poetic genius. His canon is traditionally divided into three genres written in different phases of his career, and his comedies, histories, and tragedies were published altogether after his death in one edition

known as the First Folio (1623)^{1,2,4,5} (Figure 1). He also wrote in collaboration with other playwrights, a very common practice in the era due to the huge demand for new plays. The last play to be written by him alone is *The Tempest* and is supposed to include "Shakespeare's farewell to the stage" as some critics read this in Prospero's words saying good-bye to his magic art in the long monologue in the opening of Act V.

SHAKESPEARE, A FORERUNNER ON THE BRAIN FUNCTION?

Shakespearean medical concepts have been extensively discussed, mainly by Bucknill in his *The Medical Knowledge of Shakespeare* (1860), Simpson's *Shakespeare and Medicine* (1959) and Kail's *The Medical Mind of Shakespeare* (1986), *apud* Davis⁶. Shakespeare's knowledge of medical matters was astonishing. Simpson stated that "Shakespeare was well acquainted with the medical knowledge of his day, and probably also with medical literature"⁶. The same historian recorded more than 712 medical references in his plays, more

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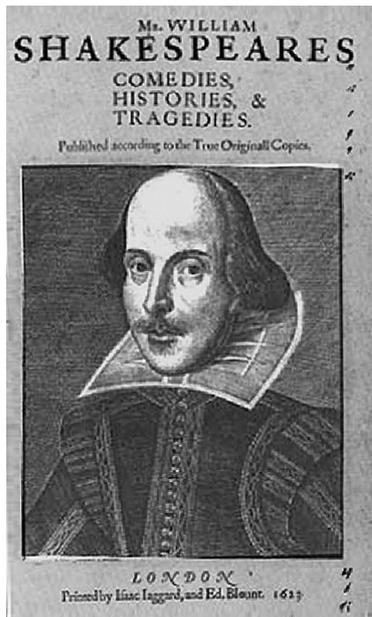


Figure 1. William Shakespeare's First Folio⁵.

than twelve major references per play⁶. It is evident that his medical knowledge was sophisticated: "It is quite remarkable that in three plays he refers to the *pia mater*", as recorded by Davis⁶. This can be either the result of his special study of the healing art, or simply the fact that Shakespeare repeated the medical knowledge of some men of learning of his time⁶. In relation to the culture at the time, the skull of Yorick, the jester at Hamlet's court, reminds us of Andreas Vesalius's (1514-1564) engraving (Figure 2), and the representativeness of skulls on the reflexion about the life-death link⁷. Such similarities suggest that Shakespeare, born in the year that Vesalius passed away, shared the same influences of the Renaissance background as Vesalius, the modern neuroanatomy precursor who is also here honored on the 450th year of his death anniversary (besides the 5th century of his birth)⁷. As far as Shakespeare is concerned, he reached the cognitive neuroscience that addresses the questions of how psychological functions are created. He also raised issues about perception, a research area that originated presumably from the time of the ancient Greeks, to understand how stimuli from the world interact with human sensory systems, forming representations of the world. This can be seen masterfully, e.g., in *The Tempest* (Box), a pearl of insight: "[...] we are such stuffe as dreames are made on; [...]".

Regarding Shakespeare's neurologist illustrious admirers, Jean Martin Charcot (1825-1893) may be included. He not only appreciated Shakespeare, as Goetz⁸ recorded, but also considered the playwright a "remarkable observer of physiology, medicine, and many other domains". Charcot savored the wisdom of the poet, as mentioned by Goetz, even more since the Bard described the symptomatology of some of his characters that fulfill diagnostic criteria for several neurological nosologies, such as parkinsonism, epilepsy,



Figure 2. The culture at the time and the meditative skeleton from Vesalius's work, at the bottom with the inscription "*vivitur ingenio, caetera mortis erunt*" (*Genius lives on, all else is mortal*). There is a similar scene in which Hamlet, Shakespeare's famous character, contemplates the skull of Yorick, who was a jester at the Danish court and Hamlet's friend, in the cemetery. This may symbolize the recognition of the cognitive abilities of the previously living person⁷.

sleeping disturbances, dementia, headache, prion disease, and paralysis⁹.

On the other hand, the relationship between thought, memory, emotion and soul versus brain is not so obvious, and in the Elizabethan and Jacobean eras, Shakespeare raised doubts about their location. The opposing theories of this dubious placement at the time were appropriately described by Shakespeare in *The Merchant of Venice* (1596): "Tell me where is fancie bred, or in the heart, or in the head: how begot, how nourished. Replie, replie. It is engendred in the eyes, With gazing fed, and Fancie dies, In the cradle where it lies: let us all ring Fancies knell. Ile begin it. Ding, dong, bell"⁴.

According to Moore¹, Shakespeare devised new words by combining others, adding beginnings or endings, changing words into different parts of speech, and creating brand new words. This may be a piece of his attractive "marketing strategy", and this may be also a neuroscience matter, more specifically of a neuromarketing interest made by the most successful poet. Consequently, the Bard may be considered a renaissance "neurologist" mainly due to his neurological phenomena repertoire. In England, as stated by Rose¹⁰, neurology started long before the 17th century because there were English physicians who took an interest in diseases of the nervous system, John of Gaddesden (1280-1361) being the first in England to produce a manuscript on neurological disorders, heralding the findings of Thomas Willis (1621-1675), the first to use the term *neurology*, and one Shakespeare's successors after the English renaissance.

The Tempest, a late production by Shakespeare, portrays the struggle for power and freedom. The main character is Prospero whose famous speech in the fourth act of the play is a talk about ephemerality, since everything is perception, including ourselves, just like a dream.

Prospero. Be cheerful, sir,
Our revels now are ended. These our actors,
As I foretold you, were all spirits and
Are melted into air, into thin air;
And, like the baseless fabric of this vision,
The cloud-capp'd towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve,
And, like this insubstantial pageant faded,
Leave not a wrack behind. We are such stuff
As dreams are made on, and our little life
Is rounded with a sleep.

Dreams may be the stuff of life, they may energize us, delight us, educate us, and reconcile us to each other, but we cannot live life as if it were a dream. Life must be lived historically, not aesthetically....

Box. The thought made substance: '*The Tempest*', Act IV, Scene i, by William Shakespeare^{2,4}.

In conclusion, many philosophers shared their knowledge with medicine in its early days, and Shakespeare probably participated in the encyclopedic culture of his time with his works that included keen thoughts on the the brain functions, such as perception, dreams, and other issues.

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