TIME TRAVEL

By Stefano Selleri

Oliver Heaviside in Music

Electromagnetic researchers are seldom popular among the general public. Maxwell is not second to Einstein or Newton when considering the advancements in our understanding of the physical world due to his theory, yet the average person knows the latter and ignores the former. Tesla is probably the best known in this group, due to his attention to promoting himself, his presence in the media and his name now synonymous with a high-tech company. And we have dozens of movies where Einstein or Tesla are cited!

Yet Oliver Heaviside (1850-1925), to whom we owe our current vector form of Maxwell's equations, making them so much easier to use than their original quaternions form[1], curiously made his name appear in probably the most successful musical of all times: Cats by Andrew Lloyd Webber.[2] Webber drew his inspiration for Cats from T.S. Eliot's poems. Thomas Stearns Eliot (1888-1965), a winner of the Nobel Prize for Literature in 1948, did not cite Heaviside in his book,[3] but it is rumored that unpublished material by Eliot did. Webber stated, in an interview on the making of Cats, "What Valerie (Eliot's widow) unearthed next…some sort of entertainment which ended with the animals getting into a big balloon that took them up, up, up past the Russell Hotel, up, up, up, to the Heaviside Layer."[4]

Screenshot of the theatrical representation of the ascension to the Heaviside Layer in Cats.

(Blue Ray Edition, 1998)

Oliver Heaviside (left), Thomas Stearns Eliot (middle) and Andrew Lloyd Webber (right).

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So, Eliot was indeed figuring that the afterworld for cats was up in the sky in the Heaviside Layer. The term "Heaviside Layer" was proposed by William Eccles (1875-1966) in 1910 and rapidly gained acceptance.[5] It describes the ionospheric layer extending from roughly 90 to 150 km above sea level. This layer was hypothesized, independently, by Arthur Edwin Kennelly (1861-1939) and Heaviside in 1902 to explain how Guglielmo Marconi (1874-1937) managed to obtain a beyond-the-horizon transatlantic radio link in 1901. Indeed, the world had to wait until 1924 for proof of its existence, thanks to Edward V. Appleton (1892-1965). We should note that Appleton won the Nobel Prize in 1947 for his discovery of the ionosphere. This was the year before Eliot wrote Cats and this might explain the placement of the afterworld for the cats!

References

1. G. Pelosi and S. Selleri, "The Roots of Maxwell's A Dynamical Theory, of the Electromagnetic Field," Firenze University Press, 2023.
2. A.L. Webber, "Cats," May 1981, New London Theatre, London, U.K.
3. T.S. Eliot, "Old Possum's Book of Practical Cats," London, U.K., Faber & Faber, 1939.
4. A.L. Webber, "The Making of Cats," Broadway revival souvenir program, 2016.
5. A. Russel, "The Kennelly-Heaviside Layer," Nature 116, 1925, p. 609.