

Why Joyce Is and Is Not Responsible for the Quark in Contemporary Physics

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Abstract

The study traces the origins of the term “quark” that Nobel Prize winning physicist Murray Gell-Mann took from Joyce’s *Finnegans Wake*. Gillespie argues that the origin of the term is not in an outmoded English verb, as some Joycean critics have proposed, but is rather an instance of “Joyce’s creative appropriation” of Goethe and Goethe’s *Faust*.

Keywords: quark, physics, Murray Gell-Mann, *Finnegans Wake*, Old and Middle English, Goethe’s *Faust*.

It really should not surprise us that a writer like Joyce, who could entertain the notion of the *coincidentia oppositorum*, might become the source of such a recondite term as “quark” in the era of quantum mechanics, particle theory, and amazing newer cosmogonies. Joyce enjoys juxtaposing the interlacing polarities of the rival brothers Shaun the postman and Shem the penman who body forth aspects of the world process that are implicated in the larger family romance in *Finnegans Wake*. The terms of this cabalistic dialectic occur with some

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frequency in the parable of the “Ondt” and the “Gracehoper” as told by Shaun in Book III (*FW* 414 ff)² and are anticipated in the long passage near the end of the “Nightletter” in Book II, with the suggestion: “Tell a Friend in a Chatty Letter the Fable of the Grasshopper and the Ant [...]” (*FW* 307.14-15). The Grasshopper is far from a coincidental antecedent of the Gracehoper, as I hope to demonstrate. But first I turn to the plural “quarks” that appear in the opening line of the bawdy song in Book II that introduces the quite un-Wagnerian version of the story of King Mark, his nephew Tristan, and the mission gone awry to fetch the royal bride Isolde from Ireland to

Brittany: “–Three quarks for Muster Mark!” (*FW* 383.1). The mystical number three, followed by the word suggesting quarts (to English-speakers), and Joyce’s further comic shifting of vowels in the poem, especially in rhyme words, so charmed the Nobel Prize winning physicist Murray Gell-Mann that he adopted quark as the name for a new particle which he hypothesized was a building block of the proton. The neatness of the fit resided in his supposition that the proton consisted of three distinct quarks. Today almost every educated person in the world is familiar with the scientific term, and quite a few are aware that it was lifted from *Finnegans Wake* even if they have never opened the pages of Joyce’s novel.

This state of affairs is what we encounter if we consult the internet. For example, the electronic publication *Take Our Word for It* ([issue 111] 2) cites Gell-Mann’s own account by quoting a letter he wrote to the editor of the *Oxford English Dictionary* in 1978:

I employed the sound „quork“ for several weeks in 1963 before noticing „quark“ in *Finnegans Wake*, which I had perused from time to time since it appeared in 1939 [...]. The allusion to three quarks seemed perfect [...] I needed an excuse for retaining the pronunciation quork despite the occurrence of „mark“, „bark“, „mark“,

and so forth in *Finnegans Wake*. I found that excuse by supposing that one ingredient of the line „three quarks for Muster Mark“ was a cry of „Three quarts for Mister ...“ heard in H.C. Earwicker“s pub.

Some sites will mention, additionally, that a rare, now outmoded English verb quark was based on imitation of natural sound to mean caw or croak, like a bird. And a very few sites, such as *Your Dictionary.com*, will note that there is a German noun Quark for a soft, tart cheese made of whole milk, a term which came into Middle High German from Lower Sorbian. However, no one ever explicitly notes that Old and Middle English never possessed and therefore did not pass such a loan word down to modern English. The sole reasonable inference, in fact, is that the source of the noun is modern German, by way of Joyce. Those not conversant with German can discover just how pervasive this language is in the *Wake* by consulting Bonheim“s lexicon³ or Hart“s concordance.⁴ Anyone who doubts that the worthy physicist Gell-Mann was seriously interested in literary and linguistic matters and would plausibly be an early reader of Joyce“s *Wake* need only consult his impressive lead chapter in the collective volume on the evolution of human languages which he co-edited for the Santa Fe Institute in 1992.⁵

Curiously, even in the third edition of *Annotations to „Finnegans Wake,“*⁶ which helpfully combs the work page by page, McHugh notes that the word “Muster” (pattern, paragon, model) is German but links the plural noun “quarks” in the very same line to the archaic English verb. It is more understandable that the American novelist and playwright Wilder did not call attention to the significance of quark in his wonderful exchanges with the equally keen Joycean researcher Glasheen,⁷ a collaboration fortunately now published under the title *The Darkling Plain*.⁸ The awareness of the rise of particle physics was not yet so widespread at the time of Wilder“s death. In a later decade, in light of the word quark“s new life in

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theoretical physics, Wilder would very probably have been excited by Joyce's use of it and have commented on its relevance vis-à-vis Goethe. After all, Wilder was steeped in both authors and drew heavily on both –on Goethe's *Faust* and on Joyce's *Wake*– in creating his own celebrated "absurdist" play *The Skin of Our Teeth* (1942). Moreover, Wilder perceived why the *Wake* is peppered with so many unflattering allusions to Goethe, a fact we can quickly check in Hart or in Bonheim. As Wilder relates to Glasheen, a fellow admirer of the great Dubliner: "Joyce's belly was filled with bile and envy and *resentment*. The greater the rival, the more violent his denigration: sneers at Goethe, sneers at Shakespeare."⁹ We readily associate the trait of sometimes almost desperate anxiety and envy with Joyce's young Stephen Dedalus in

Ulysses. However, the chief male protagonists Stephen and Bloom disappear after *Ulysses* as distinct characters, being subsumed in a number of figures in the dream spaces of the *Wake*. Yet the unease of an aspiring artist seems to linger as a psychological element in the adult Joyce and the voice of the *Wake*'s super-narrator, even though Joyce continued to express in life and in fiction his fascination for great writers with whom he would welcome being associated or compared.

Goethe was simply too close to Joyce in history, and Goethe's cosmic drama *Faust*, completed in the year of its author's death (1832), was a complex masterwork overarching millennia that demanded a lot from its initial interpreters – a challenge which Joyce hoped the *Wake* would pose, provoking its best readers and thus ensuring its survival. *Faust* was uncomfortably present at a zenith of recognition around 1900 in Europe and America. Joyce also could not fail to understand that Goethe's *Faust* had deeply informed the imaginative quester drama *Peer Gynt* by Ibsen, one of his contemporary literary heroes. In a chapter for the comparative study *European Romantic Drama*, the eminent theater man Esslin has demonstrated the power of Goethe's *Faust* to incite respondents and emulators across Europe. If one considers the

“problem” the Helena section of *Faust II* posed for Goethe in maintaining the dignity of his compound work as a tragedy, it is reasonable to speculate that the marriage theme in the German play anticipates that in the Irish novel *Ulysses* through a deeper imaginative affinity rather than any provable filiation –at least insofar as both authors connect sexual union with artistic and/or cultural creativity.

What on the surface at first sounds like a colorful nonsense syllable proves to be a salient detail loaded with referential punch in the often salacious, irreverent *Wake*. In the simple word quark is buried eloquent testimony regarding Joyce’s lifelong striving to position himself in a line of major works and authors stretching from Homer over Virgil, Dante, Milton, and Goethe to himself.¹⁰ That striving frequently entailed creative appropriation, that is, finding a way to inscribe key signs of being related to other authors rather than evidencing mere subservience in imitation of them. An obvious illustration is the way in which in *Ulysses* Joyce “continues” the *Odyssey* beyond the actual fulfilment of *nostos* and Homer’s moving celebration of marriage. Joyce carries us into the amazingly new literary moment, the unprecedented “Penelope” chapter consisting of Molly’s eight sentences. The “Penelope” chapter serves, simultaneously, as Joyce’s earthy answer to the inspiring finale of *Faust II* in the sections “Mountain Gorges” and “Chorus, Mysticus,” where Goethe celebrates “The Eternal Feminine”.¹¹ Elsewhere (“Afterthoughts of Hamlet”)¹² I have treated the complicated patterns of Joyce’s rivalry with Shakespeare and Goethe, including an attempt to outbid Goethe’s own rivalry with and use of Shakespeare and to exhibit mastery of the epochal Hamletic obsession of Europe. Ellmann¹³ has gathered many documented moments over Joyce’s lifetime of his conscious interest in *Hamlet* and *Faust*, in addition to the epic poems of Homer and Dante. Half mockingly, the *Wake* names the primary series of the great modern masters in the notable phrase, “that primed favourite continental poet, Daunty, Gouty and Shopkeeper,” (FW 539.5-6) as if they constitute a

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corporate entity. Many commentators have noted the probable influence of the “Walpurgis Night” scene and the “Classic-Romantic Walpurgis Night” in *Faust* on Joyce’s “Circe” chapter in *Ulysses*. Joyce never sought to follow Goethe in any direct way by renewing *Faust* through an extended variation on it; rather, alongside the admired earlier Dantesque example, Joyce kept in mind the recent Goethean example of creating an epochal drama which not only surveyed millennia of the human story and interpolated playful and parodic allusions to major literary milestones, but also commented on the poet’s own era and sometimes took swipes at contemporary social types and ills.

Our humble literary quark made its historical appearance in a rather important connection which the envious admirer Joyce was clearly capable of appreciating. It is spoken by a contemptuous Mephisto in the “Prologue in Heaven,” the third layer in the complex, ironic opening frame of *Faust*, when Goethe, an admirer of Shakespeare and Calderón, invokes the imaginative grandeur and temporal perspectivism of the Baroque world theater.¹⁴ Bantering with God, Mephisto describes humanity as a presumptuous earthbound grasshopper (Zikade) that appears to jump heavenward, but as an Icarus-like clown inevitably sticks his nose into trivial earthly stuff, the colloquial sense of the word “Quark” (petty details, nonsense, messy pat) of the diatribe.¹⁵

In the English version by Arndt (which I modify slightly):

He seems to me, begging your Honor’s pardon,
Like one of those grasshoppers in the garden
That bound leaping and flying all day long
And in the grass chirp out the same old song.
If only he’d just lie in the grass at that!
But no, he plunks his nose in every pat.¹⁶

When Stündel undertakes the heroic –and many would opine, hopeless– task of translating the *Wake* into German, he simply keeps the familiar derogatory “soft cheese” word Quark without any comment as self-explanatory for his German readers whereas on the annotated facing page carrying Joyce’s text he explains “Muster” as additionally a suggestion of English “mister,” which is underscored by the German interpreter now umlauting the German word in this German-saturated line: “Drei Quarks für Münster Markt!”¹⁷ Quark turns up in the *Wake* in the twentieth century as a loan word when it is assigned by Joyce incongruously to a medieval romance that had been resuscitated in nineteenth-century poetry, painting, and opera. There is a general analogy between the revisiting of the Faust story and the rekindling of interest in Tristan and Isolde by virtue of the preceding nineteenth-century interest in both, and perhaps Joyce sensed that these sorts of ties and fads in cultural history merited a “put-down” such as a self-styled Luciferic rebel like Stephen Dedalus or a demiurgic narrator above it all might dish out. More obviously, the temporal mobility of quark as an item in Joyce’s enormous vocabulary borrowed from every time and place comports with his habit of treating materials with calculated distancing and distortion. I believe the resurfacing of quark also indicates that long after Joyce had abandoned his youthful thoughts of perhaps writing his own *Faust* the Goethean example remained still strongly imprinted on his mind. Reflecting on this artistic relationship as one stratum of the *Wake* only adds to the pleasure that nowadays scientists, the lay public, and scholars alike can take in the quaintness which somehow seems so appropriate in the actually ordinary word chosen by Gell-Mann who as heir to Joyce and Goethe has granted it new life.

Notes

¹ On the relevance of cabalistic paradigms to the Joycean family romance in general and the rival brothers in particular, see the chapter

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“Entering Echoland,” in Gerald Gillespie, *Echoland: Readings from Humanism to Postmodernism* (Bruxelles: Presses Interuniversitaires Européennes, 2006).

² James Joyce, *Finnegans Wake* (New York: Penguin Books, 1976).

³ Helmut Bonheim, *A Lexicon of the German in “Finnegans Wake”* (Berkeley & Los Angeles: University of California Press, 1967).

⁴ Clive Hart, *A Concordance to “Finnegans Wake”* (Minneapolis: University of Minnesota Press, 1963).

⁵ Murray Gell-Mann, “On Complex Adaptive Systems,” in *The Evolution of Human Languages: Proceedings of the Workshop on the Evolution of Human Languages, Held August 1989 in Santa Fe, New Mexico*, ed. John A. Hawkins and Murray Gell-Mann (Reading, Mass.: Addison-Wesley Publishing Company, 1992).

⁶ Roland McHugh, *Annotations to “Finnegans Wake”*, third ed. (Baltimore: The Johns Hopkins University Press, 2006).

⁷ Adaline Glasheen, *Third Census of “Finnegans Wake”: An Index of the Characters and Their Roles* (Berkeley: University of California Press, 1977).

⁸ Thornton Wilder and Adaline Glasheen, *A Tour of the Darkling Plain: The “Finnegans Wake” Letters of Thornton Wilder and Adaline Glasheen*, ed. Edward M. Burns with Joshua A Gaylord (Dublin: University College Dublin Press, 2004).

⁹ Thornton Wilder & Adaline Glasheen 569.

¹⁰ I have treated this relationship of rivalry also to Milton at more length in the forthcoming article, “„Paradox Lust“: The Fortunate Fall according to Joyce in *Finnegans Wake*” *Neohelicon* (2011).

¹¹ See the sub-chapter “Baroque High” in chapter 3, “Apex and Core,” of *Echoland*, 55-60, for an appreciation of the conclusion of *Faust II*.

¹² Gerald Gillespie, “Afterthoughts of Hamlet: Goethe’s Wilhelm, Joyce’s Stephen,” in *Proust, Mann, Joyce in the Modernist Context*, 2nd augmented edition (Washington, D.C.: The Catholic University of America Press, 2010) 167-184.

¹³ Richard Ellmann, *James Joyce*, new and rev. edition (New York, Oxford, Toronto: Oxford University Press, 1982).

¹⁴ Gerald Gillespie, “Classic Vision in the Romantic Age: Goethe’s Reconstitution of European Drama in *Faust II*,” in *Romantic Drama*, ed. Gerald Gillespie (Amsterdam, Philadelphia: John Benjamins Publishing Co., 1994) 379-97.

¹⁵ Lines 284-89 of Johann Wolfgang von Goethe, *Die Faustdichtungen: Urfaust; Faust ein Fragment; Faust, eine Tragödie; Parolipomena; Goethe über Faust*, ed Ernst Beutler (Zürich: Aertmis-Verlag, 1950).

¹⁶ Johann Wolfgang von Goethe, *Faust, a Tragedy*, trans. Walter Arndt, ed. Cyrus Hamlin (New York: W.W. Norton and Company, 1976).

¹⁷ Dieter H Stündel, trans., *James Joyce: Finnegans Wegh: Kainnäh ÜbelSätzZung des Wehrkeß fun Schämes Scheuß* (Frankfurt am Main: Verlag Jürgen Häusser, 1993) 383.