

Beyond Philology No. 20/4, 2023
ISSN 1732-1220, eISSN 2451-1498

<https://doi.org/10.26881/bp.2023.4.05>

**“Three Quarks for Muster Mark!”
A Slavic gloss to Joyce’s
*Finnegans Wake***

KRZYSZTOF TOMASZ WITCZAK

*Received 20.12.2022,
accepted 23.12.2023.*

Abstract

The unclear verse “Three Quarks for Muster Mark!”, introduced by James Joyce (1882–1941) to his novel entitled *Finnegans Wake* (first published in 1939), was a literary source for the English word *quark* denoting ‘an elementary particle with a fractional electric charge that is part of a proton, neutron or other interacting elementary particle’. The American physicist Murray Gell-Mann, winner of the Nobel Prize in Physics in 1969, was the first researcher to introduce the English word *quark* into scientific terminology as early as in 1964. After accepting his hypothesis of quarks in the world science, most physicists adopted the English term *quark* as standard in the physical terminology of most international languages (e.g. French *quark*, German *Quark*, Italian *quark*, Polish *kwark*, Portugal *quark*, Russian *кварк*, Spanish *cuark*, Turkish *kuark*, Ukrainian *кварк* ‘an elementary particle’) and it quickly became a widely recognized internationalism. It is not commonly known that Joyce’s verse facetiously imitated loud cries of German dairy women: *Drei Mark für muster Quark!* (literally “Three Marks for an excellent curd!”). In other words, E. *quark* ‘an elementary particle’ is motivated by the German term *Quark* m. ‘weiser Käse / curd,

white cheese', metaphorically 'trifle, nonsense, trash, worthless thing', which – according to most German and Slavic etymologists – represents an obvious Slavic borrowing (especially a Polish or Lower Sorbian loanword), cf. Pol. *twaróg*, dial. *kwaruk* m. 'curd, white cheese' (< Proto-Slavic **tvarogъ* m. 'id.'). It is suggested that the specialized term *kwark* represents the so called back-borrowing in the Polish language.

Keywords

elementary particles, internationalisms, James Joyce, language contacts, lexical loanwords, Murray Gell-Mann, Polish back-borrowings, quark

„Three Quarks for Muster Mark!”

Słowiańska glosa do

***Finneganów trenu* Joyce'a**

Abstrakt

Niejasny wers “Three Quarks for Muster Mark!”, użyty przez Jamesa Joyce’a (1882–1941) w jego powieści zatytułowanej *Finneganów tren* (opublikowanej po raz pierwszy w 1939 roku), był literackim źródłem angielskiego słowa *quark* oznaczającego ‘elementarną cząstkę o ułamkowym ładunku elektrycznym, która wchodzi w skład protonu, neutronu lub innej oddziałującej cząstki elementarnej’. Pierwszym badaczem, który wprowadził angielskie słowo *quark* do terminologii naukowej już w 1964 roku, był amerykański fizyk Murray Gell-Mann, laureat nagrody Nobla w dziedzinie fizyki w 1969 roku. Po zaakceptowaniu jego hipotezy o kwarkach w światowej nauce, większość fizyków przyjęła angielski termin *quark* jako standardowy w terminologii fizycznej większości języków międzynarodowych (np. fr. *quark*, niem. *Quark*, wł. *quark*, pol. *kwark*, port. *quark*, ros. *кварк*, hiszp. *cuark*, tur. *kuark*, ukr. *кварк* ‘cząstka elementarna’) i szybko stała się powszechnie rozpoznawalnym internacjonalizmem. Mało kto wie, że wers Joyce’a w żartobliwy sposób naśladował głośne krzyki niemieckich handlarek

nabiału: *Drei Mark für muster Quark!* (dosłownie „Trzy marki za doskonały twaróg!”). Innymi słowy, angielski leksem *quark* ‘cząstka elementarna’ jest motywowany przez niemiecki termin *Quark* m. ‘twaróg, biały ser’, metaforycznie ‘błahostka, bzdura, śmieć, rzecz bezwartościowa’, który – zdaniem większości niemieckich i słowiańskich etymologów – stanowi oczywiste zapożyczenie słowiańskie (zwłaszcza polskie lub dolnołużyckie), por. pol. *twaróg*, dial. *kwaruk* m. ‘twaróg, biały ser’ (< psł. **twarogъ* m. ‘id.’). W artykule pada sugestia, że specjalistyczny termin *kwark* reprezentuje w polszczyźnie tak zwane zapożyczenie zwrotne

Słowa kluczowe

cząstki elementarne, internacjonalizmy, James Joyce, kontakty językowe, pożyczki leksykalne, Murray Gell-Mann, polskie zapożyczenia zwrotne, kwark

1. Introduction

The Polish word *kwark* means ‘an elementary particle with a fractional electric charge that is part of a proton, neutron or other interacting elementary particle (hadron) / elementarna cząstka o ułamkowym ładunku elektrycznym, która wchodzi w skład protonu, neutronu lub innej oddziałującej cząstki elementarnej (hadronu)’, metaphorically ‘a kind of fundamental building block of the universe / rodzaj podstawowej cegielki budowy wszechświata’ (Kopaliński 1989: 289) and represents a typical internationalism, the ultimate source of which is the English term *quark* ‘an elementary particle (in physics)’ (Szymczak 2001: 1028; Sobol 2002: 628; Burzyński, Paprocka, Popławska 2015: 228). The English lexeme, as well as the Polish one, appeared together with the dissemination in the scientific world of the quark hypothesis (theory) at the end of the 20th century AD.

The English word *quark* was introduced into scientific terminology in 1964 by the American physicist Murray Gell-Mann,

winner of the Nobel Prize in Physics in 1969. He did not invent this appellative himself, but he took it from James Joyce's novel entitled *Finnegans Wake* published in 1939 (Kopaliński 1989: 289; Gell-Mann 1994: 180; Sobol 2002: 628). The following words appear in this seminal novel (Joyce 1992: 383):

Three quarks for Muster Mark!¹¹
 Sure he hasn't got much of a bark
 And sure any he has it's all beside the mark.

Murray Gell-Mann, one of the founders of the theory of quarks, looking for a new term for the three elementary particles he postulated, simply used Joyce's "vague" words *three quarks*, as he himself announced in his memoirs (Gell-Mann 1994: 180).

"In 1963, when I assigned the name "quark" to the fundamental constituents of the nucleon, I had the sound first, without spelling, which could have been "kwork." Then, in one of my occasional perusals of *Finnegans Wake*, by James Joyce, I came across the word "quark" in the phrase "Three quarks for Muster Mark." Since "quark" (meaning, for one thing, the cry of a gull) was clearly intended to rhyme with "Mark," as well as "bark" and other such words, I had to find an excuse to pronounce it as "kwork." But the book represents the dream of a publican named Humphrey Chimpden Earwicker."

It is widely believed that in creating his unusual, expressive speech *Three quarks for Muster Mark!* James Joyce parodied the cries of German dairy women: *Drei Mark für muster Quark!* (literally "Three Marks for an excellent curd!"), which he once heard at the market in Freiburg. Jan Miodek, an eminent Polish philologist, explains the use of the *quark* in James Joyce's novel as follows:

¹¹ It should be emphasized that Władysław Kopaliński (1989: 289–290) quotes this passage in a different, slightly corrected form *Three quarks for Mister Mark*. Miodek (1992: 75) also acts in the same way.

"Badacze literatury zachodzili w głowę [...], skąd się wziął ten wyraz w przytoczonym wypowiedzeniu (najczęściej traktowano go jako słowo symbol, oznaczające trójkę biesów, występujących w powieści). Wreszcie ktoś odkrył, że Joyce zabawił się w grę słów. Będąc kiedyś w jakimś mieście niemieckim, usłyszał na targu wołanie przekupki: «*Drei Mark fuer Muster Quark!*» (*trzy marki za idealny, pokazowy twaróg!*). Wprowadzając trawestację tej konstrukcji do swego dzieła, na pewno nie przypuszczał, że słowiański z pochodzenia *quark* (*kwark*) zrobi karierę w języku ... fizyków" (Miodek 1992: 75–76).

"The scholars engaged in literary studies wondered [...], where the word in the quoted expression came from (most often it was treated as a word symbol denoting the three fiends appearing in the novel). Finally, someone discovered that Joyce had played a word game. Once, while in a German town, he heard a street vendor «*Drei Mark für Muster Quark!*» (three marks for an excellent, admirable curd!). Introducing a travesty of this construction into his work, Joyce certainly did not expect the word *quark* (*kwark*) of Slavic origin would make a career in the language of ... physicists"

These unusual *three quarks*, used by James Joyce (1882–1941) in his highly controversial novel, persuaded the American physicist Murray Gell-Mann to relate these "unknown" three quarks to three hypothetically postulated (yet unidentified) elementary particles, whose existence was presumed on the basis of theoretical considerations. The real nature of such particles, henceforth commonly referred to as quarks, was confirmed only by experiments carried out in 1969 in one of the specialized laboratories in Los Angeles.

If the source of the English term *quark* 'elementary particle' (hence Pol. *kwark* and G. *Quark* are adopted) was the German lexeme *Quark* m. 'weiser Käse / curd, white cheese', metaphorically 'trifle, nonsense, trash, worthless thing', then let us try to trace its further origin. This German appellative appears in written sources starting from the 14th century AD, initially in various Middle High German records such as *twarc*, *zwarg*, *quarc*. However, it is not a native word in (Middle High) German, but an old (mediaeval) borrowing from some West Slavic source.

It is now assumed that MHG. *twarc* (from which later MHG. *quarc* and G. *Quark* ‘curd, white cheese’) originates either from the Old Polish language (cf. Pol. *twaróg*, dial. *kwaruk*)¹² or from Lusatian (cf. LSorb. *twarog*).¹³ The influence of Czech, Slovak and High Sorbian (cf. Cz. *tvaroh* ‘curd’) into German is excluded for phonological reasons, as these West Slavic languages changed the Proto-Slavic phoneme **g* in *h* (in Czech, Slovak and High Sorbian). On the other hand, the lexical influence of the Polabian language on Middle High German must also be abandoned for geographical reasons.

If we assume that MHG. *quark* was borrowed directly from the Old Polish language, then the observed cycle of dependencies allows us to include the Polish word *kwark* among typical back-borrowings:¹⁴ Pol. *kwark* ← E. *quark* ← G. *Quark* < MHG. *quarc*, *twarc*, *zwarg* ← OPol. *twarog*.

If we assume another possibility according to which the (Middle High) German population borrowed the word *quark* (hence G. *Quark*) from speakers of the Lower Sorbian language, then the hypothesis of back-borrowing can also be defended, because Pol. *twaróg* derives ultimately from Proto-Slavic **tvarogъ*. Let us remember that the Proto-Slavic language (or even its later form – the language of the Lechitian Slavs) represents an earlier

¹² Brückner (1985: 586) proves that “the Germans borrowed this word from the Poles: G. *Quark* [...], dial. *Dwarg* in Prussia” (“Niemcy pożyczili to od nas: *Quark* [...], narzeczowe pruskie *Dwarg*”). Other researchers think much the same (Westfal 1956: 154; Miodek 1992: 75; Mackensen 1998: 356; Mańczak 2017: 206; Witczak 2021: 218–220). A cautious position is taken by Wasserzieher (1979: 181), who allows a borrowing from Polish or Lusatian. Miodek (1992: 75) gave three examples of Polish borrowings in German as highly probable: G. *Grenze* ‘border’ ← Pol. *granica*, G. *Peitzker* ‘wheatearfish’, *Misgurnus fossilis* L.’ ← Pol. *piskorz*, G. *Quark* ‘cottage cheese’ ← Pol. *twaróg*.

¹³ Some German researchers seem to support the Lower Sorbian source of borrowing (Mackensen 1988: 304; Kluge, Seebold 1999: 659). It should be emphasized, however, that the alternative variant *kwaruk* [kfarũk] ‘quark, curd cheese’, attested in Polish dialects, better explains G. *Quark* from a phonological point of view.

¹⁴ The linguistic term *back-borrowings* (or *reverse borrowings*, sometimes also *reborrowings*) defines words loaned to another language, and then borrowed back from that language (or by a mediation) in a different form and often with a different meaning. In his essay entitled *O twarogu i kwarku* (On the curd and the quark) Miodek (1992: 74–76) does not use the term “back-borrowing”, although in fact he discusses a lexical borrowing of this kind.

phase of the development of the Proto-Polish language. In this case, too, we can talk about back-borrowing, although we will reconstruct the cycle of interlingual interactions in a different way: Pol. *kwark* ← E. *quark* ← G. *Quark* < MHG. *quarc*, *twarc*, *zwarg* ← LSorb. *tvarog* < Lechitian Slavic **tvarogъ* 'curd, white cheese' < PSl. **tvarogъ* 'id.'

The Polish lexeme *twaróg* m. 'milk product, from which cheese is made' (attested from the 15th century AD) continues the Proto-Slavic archetype **tvarogъ*, which was formed from the lengthened variant of the verb **tvoriti* 'to create' by means of the suffix **-ogъ* (Boryś 2005: 656), cf. Pol. *pieróg* m. 'a filled dumpling' < PSl. **pirogъ*. It seems to be a typically Proto-Slavic formation, though its close counterparts, built on the different apophonic degree, can be seen in other Indo-European languages, cf. Avestan *tūri-* n. 'sour milk, whey' (Bartholomae 1904: 655; Pokorny 1959: 1083), Middle Indo-Aryan *tūra-* 'cheese', Myc. Gk. *tu-ro₂* '(white) cheese', Anc. Gk. *ὑρός* m. 'cheese, fresh cheese, cottage cheese' (Aura Jorro 1993: 379; Beekes 2010: 1520).

We treat the Polish word *kwark* m. 'an elementary particle' as a back-borrowing, because Proto-Slavic and Common West Slavic, as well as Lechitian Slavic and Old Polish, represent distant development phases of the Polish language.

3. Conclusions

The word *quark* 'elementary particle' represents an internationalism, introduced to the world of science by the American physicist Murray Gell-Mann. It owes its origin to the mysterious phrase *three quarks*, which in Joyce's novel entitled *Finnegans Wake* allegedly mimicked the screams of the female dairy traders praising freshly prepared curd in the German speech (cf. G. *Quark* 'curd, cottage cheese'). The present author agrees with the opinion that the German word *Quark* was taken from over from a Polish source (cf. Pol. *twaróg*, dial. *kwaruk* 'white cheese'), finally coming to the conclusion that the Polish scientific term *kwark* 'elementary particle' should be regarded

a back-borrowing that has returned to the Polish language via English.

Abbreviations

Anc. Gk. – Ancient Greek; Cz. – Czech; dial. – dialectal; E. – English; G. – German; Gk. – Greek; LSorb. – Lower Sorbian; m. – masculine; MHG. – Middle High German; Myc. Gk. – Mycenaean Greek; OPol. – Old Polish; Pol. – Polish; PSl. – Proto-Slavic.

References

- Aura Jorro, Francisco (1993). *Diccionario Micénico*. Vol. 2. Madrid: Consejo Superior de Investigaciones Científicas.
- Bartholomae, Christian (1904). *Altiranisches Wörterbuch*. Strassburg: Verlag von Karl J. Trübner.
- Boryś, Wiesław (2005). *Słownik etymologiczny języka polskiego*. Kraków: Wydawnictwo Literackie.
- Brückner, Aleksander (1985). *Słownik etymologiczny języka polskiego*. Fourth edition. Warszawa: Wiedza Powszechna.
- Burzyński, Mateusz, Maria Paprocka, Anna Popławska (2015). *Słownik wyrazów obcych*. Kraków: Greg.
- Gell-Mann, Murray (1994). *The Quark and the Jaguar: Adventures in the Simple and the Complex*. New York: Griffin.
- Joyce, James (1992). *Finnegans Wake*. London: Penguin Books.
- Kluge, Friedrich, Elmar Seebold (1999). *Etymologisches Wörterbuch der deutschen Sprachen*. 23th edition. Berlin – New York: Walter de Gruyter.
- Kopaliński, Władysław (1989). *Słownik wyrazów obcych i zwrotów obcojęzycznych*. Wyd. XVI. Warszawa: Wiedza Powszechna.
- Mackensen, Lutz (1988). *Das neue Fremdwörter Lexikon*. Köln: Lingen Verlag.
- Mackensen, Lutz (1998). *Ursprung der Wörter. Etymologisches Wörterbuch der deutschen Sprache*. Wiesbaden: VMA-Verlag.
- Mańczak, Witold (2017). *Polski słownik etymologiczny*. Kraków: Polska Akademia Umiejętności.

- Miodek, Jan (1992). *O języku do kamery*. Rzeszów: Krajowa Agencja Wydawnicza.
- Pokorny, Julius (1959). *Indogermanisches etymologisches Wörterbuch*. Bern – München: Francke Verlag.
- Sobol, Elżbieta (ed.) (2002). *Słownik wyrazów obcych*. Warszawa: Wydawnictwo Naukowe PWN.
- Szymczak, Mieczysław (ed.) (1998). *Słownik języka polskiego PWN*. T. II. Warszawa: Wydawnictwo Naukowe PWN.
- Wasserzieher, Ernst (1979). *Kleines etymologisches Wörterbuch der deutschen Sprache*. Leipzig: VEB Bibliographisches Institut.
- Westfal, Stanisław (1956). *Rzecz o polszczyźnie: Gawęda o języku polskim*. London: Veritas Foundation Press / Londyn: Katolicki Ośrodek Wydawniczy "Veritas".
- Witczak, Krzysztof Tomasz (2021). "Zapożyczenia zwrotne w języku polskim na tle porównawczym". *Rasprave: Časopis Instituta za hrvatski jezik i jezikoslavlje* 46/1: 209–226.

Krzysztof Tomasz Witczak
ORCID iD: 0000-0001-8895-974X
University of Lodz
Faculty of Philology
Department of Classical Philology
Pomorska 171/173
90-236 Łódź
Poland
krzysztof.witczak@uni.lodz.pl