

‘Second Sound’: The genesis of a term in Superfluidity, Cardiology and Garage Music
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How do scientists coin new terms? The naming of concepts and artefacts is usually regarded as the result of procedures that have been laid out within the traditions of various branches of science and technology. Given that a concept is more important than the sign signifying the concept, one can assume that once a concept is discarded or an artefact found wanting, the signifier or the term, or indeed a whole terminology system, is discarded (Ahmad 2000)

What scientists do is reported in learned journals. But for every learned paper there are many a drafts of the finished article; hours, indeed days, months or even years of agonising and re-evaluation are spent before a pristine paper makes its appearance in a neatly produced issue of a neatly organised journal. It is in the realm of biography or auto-biography of scientists where one finds how concepts and artefacts are actually named.

The elementary particle physicist and Nobel Laureate Murray Gell-Mann tells us that he coined the term *quark* following James Joyce’s Muster Mark in *Finnegans Wake* – an elusive character who could assume different personalities in different contexts. The quark has proved to be elusive and does manifest itself differently under physical conditions. Similarly one of the great minds of 20th century, Enrico Fermi, mediated in a dispute between two fellow physicists/ Nobel Laureates, James Chadwick the man who discovered a heavy (electrically) neutral particle, and Wolfgang Pauli who predicted the existence of a light neutral particle: both insisted on calling the particle ‘neutron’. Fermi argued that heavier one should be called neutron, but the lighter one as the little neutron or *neutrino* (Ahmad 2006).

The invention of super-fluidity, the movement of fluids on a surface without any friction, in the behaviour of liquid helium at ultra-low temperature (-235 degrees below zero) led Lev Landau (1962 Nobel Laureate) to coin the term *second sound*: ‘A type of wave propagated in the superfluid phase of liquid helium (helium II), in which temperature and entropy variations propagate with no appreciable variation in density or pressure’ (<http://www.answers.com/topic/second-sound>). He has said to have suggested the name after his reading of an earlier, and since then defunct, *calorific theory of heat* whereby heat is transmitted through an invisible and highly mobile fluid (Livanova 1980).

The term *second sound* is alive and well and is extensively used in cardiology journals for instance. However, a close reading of cardiology literature indicates that the term was coined in blood circulation studies by a French cardiologist Potain in 1866 (Boyer and Chisholm 1958). The musical resonance of the term has inevitably led to the term being adopted amongst musicians and musicologists – and in one manifestation the term stood for the *garage music* ‘tradition’ of popular music.

The term *second sound* has an allure in that it has been adopted in three different scientific fields – cryogenics, cardiology, and solid-state physics- and has made inroads in popular culture.

In this paper I present a historiographic study of the *retronym* (Ahmad & Collingham 1996) –second sound- and look diachronically at the writings of the prolific Lev Landau to see the emergence of ‘second sound’ in his writings and look at cardiology literature to see as to what extent this term is moonlighting there. The distribution of the term and the lexical and syntactic environments in which the term occurs is being studied in a specially constructed corpus of the two subjects. The results are grounded by looking at the distribution statistics in popular music press.

References

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