

Understanding William Farr's 1838 article "On prognosis": comment

In 1838, when William Farr published the accompanying article, he was a young general practitioner struggling to establish a practice near the bottom of London's highly stratified medical profession (Eyler 1979: 1–6; Peterson 1978: 5–39). To supplement his income Farr took in lodgers and gave lectures in his own home, and he turned to medical journalism. Beginning in 1835 he helped edit the *British Medical Almanack*, an annual review of the profession and its institutions and the journal that published his article "On prognosis." He also founded and edited his own journal the *British Annals of Medicine, Pharmacy, Vital Statistics, and General Science*, a weekly publication that ran from only January to August 1837. He wrote prolifically in these years in part to fill the pages of his journal. His vitriolic editorials in these years demonstrate his sympathy for radical reform of his profession. However, it was his articles on vital statistics had something novel to say, and in these early articles we can find the germ of ideas and methods he would develop during his long and productive career.

Before "On prognosis" appeared Farr had published five articles and a book chapter on vital statistics. Two were general overviews of the field (Farr 1837c, 1837f). Two were direct progenitors of "On prognosis" and used a subset of the same data on smallpox (Farr 1837a, 1837b). The final publications carried the methods he had demonstrated with clinical data for smallpox to clinical records from insane asylums (Farr 1837d, 1837e). As a whole these early works by Farr demonstrate the lamentable state of vital data before the advent of civil registration. Civil registration of births, deaths and marriages began in England and Wales in 1837 as Farr was writing. Like the few other authors who dealt with health statistics before the results of civil registration became available, he was forced to rely on fragmentary, scattered, and often very incomplete published data: returns to Parliamentary investigative committees from friendly societies, a report by

the Factory Commissioners, another by the East India Company, returns by the Army Medical Department on the health of troops, and statistical summaries published in British and foreign medical journals.

The longest of these early publications, his chapter on vital statistics for John Ramsey McCulloch's *Statistical Account of the British Empire*, provided a comprehensive review of this available data which Farr then synthesized for a general audience (Farr 1837f). This was a prominent publication, and it probably helped secure for him a job at the General Register Office as Compiler of Abstracts in 1839. However, the most original and interesting of these early publications is "On prognosis" and his two predecessor articles in the *British Annals of Medicine* (Farr 1837a, 1837b). He prepared these articles from the data he was permitted to abstract from the case records of the London Smallpox Hospital, and he used them to illustrate a method called "nosography." By computing statistical laws for individual diseases, as he had done in these articles, Farr predicted boldly that physicians could both improve their ability make accurate prognoses and obtain a superior way of judging the efficacy of therapy.

These statistical articles can be understood in at least two ways. On the one hand, they reflect the broad general interest in statistics as tools of reform in the middle 1830s. These years were the zenith of the statistical movement in Britain, when statistical societies were formed in London and in several provincial towns by professional and other middle class men intent on finding objective, non-partisan means of promoting reform, mainly social but also professional reform (Cullen 1975). On the other hand, these articles also are products of particular medical concerns. It is sometimes assumed that Farr developed his statistical approach under the influence of the Paris medical school, particularly Pierre Louis. This is not an implausible suggestion. After all Farr

did spend some months at the Paris school, and in later life he recalled with pride his exposure to some of the famous Paris faculty. What he recalled most often, however, was the prominence the teaching of hygiene had in Paris in 1830 and how neglected it was in England (Farr 1857–58: 246, 1875: LXXIX). He did recall encountering Louis, but what he described was not Louis's numerical method but observing Louis lecture on typhoid fever (Farr 1864: 179). We need to be careful in assuming what lessons Farr drew from his student experiences in Paris. An important recent historical study of the reaction of American students who studied medicine in Paris in these years emphasizes that what impressed them about Louis was his accessibility to them, his insistence on accurate observation, and his skepticism (Warner 1998: 8–9, 223–52). Like his American contemporaries Farr returned from Paris with an empirical and skeptical attitude. These qualities were certainly prerequisite for the development of modern biostatistics and epidemiology. Perhaps Louis's teaching suggested to some students, such as Farr, that medical problems could be objectified by using numbers. But can we go further and find the roots of Farr's statistical methods in Paris? I think not, and I believe that Gerry Hill has stated the case for Farr's statistical independence from Louis effectively and concisely (Hill 1997). In fact, Farr's statistical methods bear little resemblance to those of Louis. In several ways they are superior. Among other things Farr recognized the hazards in small numbers, one of the features of Louis's study for which he was properly criticized (Matthews 1995: 25–26, 30–34). On several occasions, most recently in this journal, I have argued that Farr developed his methods by following suggestions found in a series of publications by the English actuary Thomas Rowe Edmonds, most of which appeared in the *Lancet* between 1834 and 1837 (Eyler 2002, 1980). Using the best available vital data Edmonds showed that human mortality varied each year through life in three geometric series. Using this so-called law of mortality and several preliminary assumptions, he could construct theoretical or model life tables that agreed quite well with the best tables drawn from experience. Following the 1831 English census, Edmonds

was also able to demonstrate how his law of mortality could produce life tables for the general population and how, using age-specific mortality rates from these tables, the comparative health of portions the English population could be measured. More to the point of our discussion here, in 1835 Edmonds showed how he could use the same techniques to compute laws of sickness using records of the London Fever Hospital and of English and Scottish mutual benefit societies (Edmonds 1835–36a; 1835–36b). Farr was well-acquainted with Edmonds. In 1835 both of them lived on Fitzroy Square in London, and Farr published two of Edmonds's articles in *The British Medical Almanack* (Edmonds 1836; 1837). Farr also referred frequently to Edmonds's work in his own publications, including "On Prognosis" (Farr 1838: 201s).

The following year Farr joined the permanent staff of the General Register Office to address the monumental task of turning the national death registers to good statistical and epidemiological use (Eyler 1979). Farr did not forget his early interest in clinical statistics. In *The Lancet* in 1862, he revisited the smallpox data he used for his article "On prognosis" and he argued again for the usefulness of computing statistical laws of recovery and death for groups of patients suffering from that same disease but undergoing different courses of treatment. He acknowledged that the age, sex, and condition of the patient all modified prospects of recovery and death and hence the statistical law of disease (Farr 1837a: 79, 1862:195). Further studies would be needed. He made only a very modest start in his article "On Prognosis by computing a small set of case fatality rates by age group" (Farr 1838: 20–3). In the articles we have been considering Farr was certainly most interested in presenting a method rather than final, definitive results. He evidently continued to hope into the 1860s that someone with hospital privileges would be as intrigued by the potential of "nosography" he was. Might the history of clinical trials have been different, if Farr had found a kindred spirit among the consultants at London's great teaching hospitals? We will obviously never know.

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