

Video Documentary:
QWERTY: Standing the Test of Time

Ronaye Kooperberg

University of British Columbia
ETEC 540

Bolter wrote, “literacy is among other things the realization that language can have a visual as well as aural dimension. That one’s words can be recorded and shown to others who are not present, perhaps not even alive at the time of recording.” While Bolter may have been referring to earlier writing technologies such as manual writing instruments or even papyrus, it is interesting to think of this quote in terms of the typewriter. In this documentary, I will be exploring the brief history of the typewriter, the rise of the QWERTY keyboard and the subsequent demise of any competition with specific attention to the Dvorak Simplified Keyboard.

The typewriter changed the visual nature of personal and small-business recorded word. No longer was correspondence hand written, but instead typed in single copies aiding in clarity and understanding. An advertisement for a typographer in 1852 suggested personalized letters, poetry and lessons could be composed, even by a child. More importantly, the advertisement speaks to the advantages of printing documents for businesses, “as fast as the majority of people can write with a pen” (1853 Typographer advertisement). Many historians agree the rise of the typewriter changed society through the “mechanization of legible writing, democratized communication” and “served as a bridge to the feminist revolution” (Dorit, 2009).

The history of the typewriter began in 1714. Henry Mills, an English engineer, took out the first patent on a writing machine. Unfortunately, there are no surviving documents or prototypes (Development of the Typewriter, 1892). In 1845, Charles Thurber patented a writing machine to assist the blind in the creation of correspondence. This machine was referred to as the Mechanical Chirographer. The

keyboard of the Mechanical Chirographer consisted of 15 keys on a carousel-like device (Abraham, 1980).

Between 1830 and the mid 1880s, patents for approximately 60 writing machines were granted (Jensen, 1988). Many of the early typewriter keyboards mimicked Thurber's carousel-like invention, but were never successful as they were seen as slow and cumbersome. The major advancement in the modern-day typewriter came in 1863, when an American newspaperman and poet, Christopher Sholes, made advances on a crude writing machine. With failed attempts to successfully manufacture and market the invention, his group of investors approached the gun and ammunition establishment, the Remington Arms Company, to begin mass production. Known for their precision in creating reliable steel components, the company succeeded in producing the first writing machines for public use in 1874 (Abraham, 1980). Unfortunately, the early typewriter struggled to find buyers and modifications to the machine's design took place. In August 1878, the first patent which utilized the QWERTY keyboard layout, was granted. This alteration to the keyboard layout, supplanted a two-row keyboard with alphabetical arrangement of the letters (Abraham, 1980).

The QWERTY keyboard, according to Sholes, was designed for the typist to use only a few fingers and as a hunt and peck method. Many theories as to why the designers chose this particular QWERTY keyboard layout have arisen. It was suggested the QWERTY keyboard was deliberately designed to slow down typists to avoid the mechanical type bars from jamming together (Cocking, 1970). Letters traditionally paired together, such as Q and U, were separated into different

quadrants of the type bar. Logically, this makes sense until you examine a QWERTY keyboard and analyze that E and R are direct neighbors. A statistical study of the English language in 1949 found that the QWERTY keyboard “actually uses more “close” typebars (26%) than a randomly-arranged keyboard (22%) (Noyes, 1982). Therefore, statistically this theory cannot be supported.

Another explanation for the design of the QWERTY keyboard is an obscure alphabetical arrangement of the keys. Home row on a typewriter keyboard (the middle row of the keyboard) contains several letters which are in alphabetical order F, G, H and J, K, L (Noyes, 1982). In 1968, a research study suggested the QWERTY layout was “similar to the printer’s lower case font arrangement”. As Sholes and his partner Glidden were typesetters in the printing industry, this theory could be possible (Noyes, 1982).

Finally, a research paper from the Yasuoka, suggest that the QWERTY system emerged as a result of initial testing of the alphabetic keyboard. Telegraph operators transcribing morse code found this alphabetical design difficult to use and requested changes (Stamp, 2013). Ultimately, the QWERTY design was the direct result of how the keyboard was being used.

While the conundrum behind the QWERTY design will continue to remain a mystery, in 1888, the QWERTY keyboard cemented its popularity as the preferred keyboard through the first ever Typewriter Operators challenge. Frank McGurrian, a stenographer, rose to celebrity status by winning the contest which took place on July 25, 1888. McGurrian keyed on the Remington typewriter with the QWERTY keyboard (Liebowitz & Margolis, 1990). According to the Cincinnati Commercial

Gazette, McGurrin typed 8,709 words over a 90-minute session. Resulting in an average speed of 97 words per minute. According to Liebowitz and Margolis in their essay entitled *The Fable of the Keys*, “[McGurrin’s] choice of the Remington keyboard, which may well have been arbitrary, contributed to the establishment of the standard” and used daily by millions of typists (1990).

It was almost 60 years of the QWERTY keyboard before the design was questioned. Some of the concerns raised in the 1930s with the QWERTY keyboard were, the left hand is overloaded with typing and carries out approximately 57% of the typing. As well, the pinkie fingers are overloaded as these fingers are used for the shift keys, shift lock and the backspace. Another issue is a minuscule 32% of typing occurs in the home row, 52% above home row and 16% below home row. This distribution means more reaching and finger movements for words and row hopping is required for frequently used letter combinations such as BR, UN, and IN (Noyes, 1983).

In response to these issues, August Dvorak, a professor of education at the University of Washington, created the Dvorak Simplified Keyboard in 1936. The new keyboard design resulted in a home row which housed the most frequently used letters, A, O, E, U, I, D, H, T, N, S. The movement of letters resulted in a typist spending 70% of their time in home row, only 22% above home row and 8% below (Noyes, 1983). Thus, minimizing row hopping and overloading the work required by the left hand and pinkie fingers. Initial testing of the Dvorak keyboard saw successful results through investigations with the Australian Post Office in 1953 and the United States Navy in 1944. Both investigations concluded the workload for typists would

substantially decrease and the typist would become increasingly efficient (Noyes, 1983). School children were taught touch typing using the Dvorak Simplified Keyboard and were “able to exceed 50 correct words per minute” and were learning to type twice as fast with decreased spelling errors (Time Magazine, 1939). To Dvorak’s frustration, only 1000 typewriters with his simplified keyboard had been sold in a 10-year period (Time Magazine, 1939).

With many researchers and organizations confirming the Dvorak keyboard as far superior to the QWERTY, the question remains, why did the Dvorak Simplified Keyboard not take over the market? Firstly, timing. QWERTY developed approximately 60 years prior to the inception of the Dvorak Simplified Keyboard had time to embed itself into society. By the 1880’s, approximately 10 years after its first sale, 40,000 QWERTY keyboard typewriting machines had been sold and sales were rising steadily (Jensen, 1988).

Secondly, the QWERTY keyboard saw “mass training of users” as well as the embedded use in the workplace and in education. In 1889, the 3rd edition of the book entitled, *Practical Typewriting: By the All-Finger Method, Which Leads to Operation by Touch*, was printed. The introduction stated, “two hundred thousand stenographers are to be found in this country, and far more than that number undoubtedly operate the typewriter” (Torrey, p. v.). Furthermore, “commerce, the law, science, literature, art, business everywhere, education in manifold aspects” all rely upon the typewriter for assistance (Torrey, p. v.). Educators in the early 1900s had great success with QWERTY typewriters in school. Achievements were noted within schools such as students increasing their amount of writing and the length of their writing while

reducing the number of mechanical errors, and significantly bettered their attitude towards writing. Furthermore, the quality of the learner's compositions between handwriting and typewriting showed no significant difference (Kalmbach, 1996, p. 61). In 1932, a research study involving almost 15,000 school children and teachers reviewed the impact of the QWERTY typewriter in the classroom. Interestingly, those students with typewriters saw a 7% increase in their grades over those who did not. Students with typewriters had increased engagement both in the classroom as well in the school community and completed more writing tasks, reading and more research (Kalmbach, 1996).

Finally, as the evolutionary biologist, Robert Dorit advocated, "natural selection sorts among existing alternatives, but sometimes a good-enough solution may become inextricably locked in place. Evolution is not about what is best, but what works" (2009). And as Bolter suggested, literacy can move to a visual dimension and whether it is a QWERTY or Dvorak Simplified Keyboard, the words recorded will not reveal the source of its birth but rather will live on beyond the life of its author.

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