

# The QWERTY Keyboard Will Never Die. Where Did the 150-Year-Old Design Come From?

The invention's true origin story has long been the subject of debate. Some argue it was created to prevent typewriter jams, while others insist it's linked to the telegraph



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Updated: February 25, 2025 | Originally Published: May 3, 2013

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A few years after the iPhone's debut, an innovative new keyboard system started making headlines. Known as KALQ, the split-screen design was created specifically for thumb-typing on smartphones and tablets. It was billed as a more efficient alternative to the ubiquitous QWERTY keyboard, named for the first six letters in the top row of keys.

The KALQ wasn't the first to challenge the QWERTY, and it likely won't be the last. But even amid unprecedented technological innovations, the QWERTY keyboard has remained largely unchanged. We send emails using the same alphabetic interface that our ancestors who lived 150 years ago used to type letters.

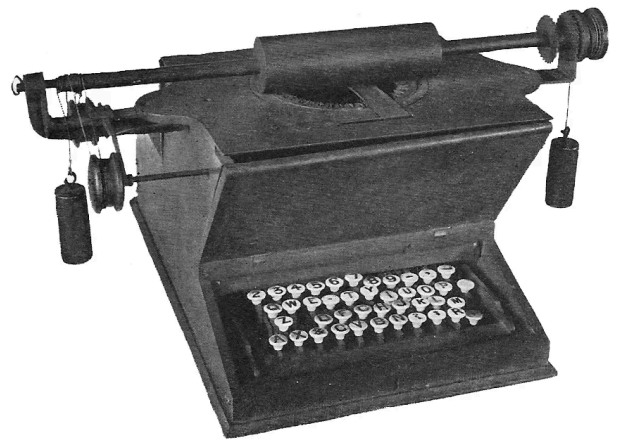
Why has the QWERTY layout endured for so many years? It turns out that lots of myths and misinformation surround its origins, but most theories seem to agree that it was developed along with, and inextricably linked to, early typewriters.

In the 1860s, a politician, printer, newspaper man and amateur inventor in Milwaukee by the name of Christopher Latham Sholes spent his free time developing various machines to make his businesses more efficient. One such invention was an early typewriter, which he and several of his colleagues patented in 1868. Their keyboard resembled a piano and was built with an

alphabetical arrangement of about two dozen keys. The team surely assumed it would be the most efficient arrangement. After all, anyone who used the keyboard would know immediately where to find each letter. Hunting would be reduced; pecking would be increased. Why change things? This is where the origin of QWERTY gets a little foggy.

One popular theory states that Sholes had to redesign the keyboard in response to the mechanical failings of early typewriters, which were slightly different from the models most often seen in thrift stores and flea markets. The type bars connecting the keys and letter plates hung beneath the paper. If a user quickly typed a succession of letters whose type bars were near each other, the delicate machinery would jam. As the story goes, Sholes redesigned the arrangement to separate the most common sequences of letters, like “th” or “he.”

In theory, then, the QWERTY system should maximize the separation of many common letter pairings. However, the “e” and “r” keys are right next to each other, even though “er” is the fourth most common letter pairing in the English language. One of Sholes’ early prototypes addressed this problem—the “r” key is swapped with the period key—though that design appears to have been scrapped. If it had been put into production, this article would have been about the QWE.TY keyboard.



The 1873 prototype used to demonstrate the technology to Remington [Public domain via Wikimedia Commons](#)

In the early 1870s, Sholes and his cohorts entered into a manufacturing agreement with the gun manufacturer Remington, a well-equipped company

familiar with producing precision machinery and, in the wake of the Civil War, perhaps looking to turn its swords into plowshares. The company started selling a typewriter for \$125 (more than \$3,000 today) in 1874. It had more than 40 keys and a decidedly counterintuitive arrangement of letters that supposedly helped ensure the expensive machines wouldn't break down. Form followed function, and the keyboard trained the typist. A few years later, Remington introduced an updated model that could produce both upper- and lowercase letters.

By 1891, Remington claimed that more than 100,000 of its QWERTY-based typewriters were in use across the country. The fate of the keyboard was decided in 1893 when several of the largest typewriter manufacturers—including Remington—merged to form the Union Typewriter Company, which adopted QWERTY as the *de facto* standard that we know and love today.

There's a somewhat related theory that credits Remington's pre-merger business tactics with the popularization of QWERTY. In addition to producing typewriters, the company also provided training courses—for a small fee, of course. Typists who learned on their proprietary system would have to stay loyal to the brand, so companies that wanted to hire trained typists had to stock their desks with Remington typewriters. This strategy still works today, as illustrated by the devout following Apple built through its ecosystem of products.



Women take typing speed tests at a Remington office in 1900 Fotosearch / Getty Images

While Remington undoubtedly helped popularize the QWERTY system, the theory that it was designed to reduce mechanical error is contentious. In a [2011 paper](#), Koichi Yasuoka and Motoko Yasuoka, researchers at Kyoto University, tracked the evolution of the typewriter keyboard alongside a record of its early professional users. They concluded that the mechanics of the typewriter didn't influence the keyboard design. Instead, the QWERTY system emerged in response to one group of early users: telegraph operators who needed to quickly transcribe messages. These operators found the alphabetical arrangement to be confusing and inefficient for translating Morse code. The researchers write:

[American Morse] code represents Z as '...' which is often confused with the digram SE, more frequently used than Z. Sometimes Morse receivers in United States cannot determine whether Z or SE is applicable, especially in the first letter(s) of a word, before they receive following

letters. Thus S ought to be placed near by both Z and E on the keyboard for Morse receivers to type them quickly.

The researchers suggested that the typewriter keyboard evolved over several years as a direct result of input provided by telegraph operators. In other words, the typist came before the keyboard. They also cite the Morse history to argue against the theory that Sholes wanted to stop his machine from jamming by rearranging the keys with the specific intent to slow down typists:

The speed of Morse receiver should be equal to the Morse sender, of course. If Sholes really arranged the keyboard to slow down the operator, the operator became unable to catch up the Morse sender. We don't believe that Sholes had such a nonsense intention during his development of [the] typewriter.

Regardless of why he developed it, Sholes himself wasn't fully convinced that QWERTY was the best system. Although he sold his designs to Remington early on, he continued to invent improvements and alternatives to the typewriter for the rest of his life, including several keyboard layouts that he determined to be more efficient. He filed a patent application for a XPMCH keyboard in 1889, a year before he died.

Sholes filed this patent in 1889, a year before his death. Google Patents

But the biggest rival to challenge QWERTY was the Dvorak Simplified Keyboard, developed by August Dvorak in the 1930s. The Dvorak increased the

number of words that can be typed using the “home” row of keys where your fingers naturally rest. These are the letters you most often type when you’re hitting keys at random: asjdfkal. sdfjkl. asdfjklasdfjk. Some research showed that Dvorak users reported improved speed and accuracy—though much of that testing was funded by Dvorak—and other research has since suggested that Dvorak isn’t more efficient. But efficiency hardly matters, as it was already too late for a new system to gain a foothold by the 1930s. While Dvorak certainly had its champions, it never gained enough of a following to overthrow King QWERTY.

When the first generation of computer keyboards emerged, there was no longer any mechanical reason to use the system—computers didn’t get jammed. But, of course, there was the minor fact that millions of people had already learned to type on QWERTY keyboards. It had become truly ubiquitous in countries that used the Latin alphabet.

When a design depends on a previous innovation too entrenched in the cultural zeitgeist to change, it’s known as a path dependency. This is also why the KALQ proposal is so interesting. It attempts to break from the tyranny of Sholes, whose QWERTY system makes even less sense on the virtual keyboards of tablets and smartphones than it does on computer keyboards.

The Dvorak keyboard never caught on. [Nayu Kim via Flickr under CC BY 2.0](#)

Is the KALQ system any different? In some ways, the answer is obviously yes. It was designed around a very specific, very modern behavior—typing with thumbs. Like the 19th-century telegraph operators, the users determined the structure of the KALQ keyboard. But it could still be argued that the KALQ

system, or any similar system that may be developed in the future, is also a product of path dependency. Because no matter how the letters are arranged, the basic notion of individually separated letters distributed across a grid dates back to Sholes and his colleagues in Milwaukee. If you gave an iPad to someone who had never used a keyboard and told them to develop a writing system, chances are they would eventually invent something more intuitive. Perhaps a gesture-based system that borrows from shorthand? Or some sort of swipe-to-type interface?

This is not to say that such a system would be better. It's merely an observation that our most advanced communication technologies still use designs created by some guys tinkering in their workshop 150 years ago. The more things change, the more they stay the same.

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