Niklaus Wirth (1934–2024)—An Appreciation

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Niklaus Wirth, the inventor of the languages Pascal and Modula, passed away on 1 January 2024, in Zurich. He was 89. His work, at the dawn of the structured programming revolution, affected many computer scientists deeply, and, I think, was a driver for our being able to produce amounts of working code that would be unimaginable in the 1960s.

I only saw him once, at a departmental seminar when I was in graduate school. He began by talking about how to pronounce his name. He said that his name could be pronounced using call by name, "Virt," or call by value, "Worth."

His obituary in the New York Times (23 February 2024) mentioned how he emphasized the importance of simplicity in programming. I would add elegance to that. I learned Pascal when I started graduate school in 1973 and ran programs using a Pascal compiler our group implemented on a PDP-11. The next year, our group TAed our adviser's assembly language class. We started by assigning the students a simple program in Pascal and pointed out any violations of the new methodology of structured programming. The purpose of this was to encourage them to use these principles in writing assembly language, which we hoped would keep them from writing the spaghetti code. Most of them did not know Pascal, so I had the job of teaching it in two 90-min class sessions. I, at first, thought this was impossible, but when I worked on it, I found that Pascal was such a simple and elegant language, with one way of doing anything, that teaching it in 3 h was trivial.

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Long before open-source software had a name, Prof. Wirth released the Pascal compiler he wrote with Kathleen Jensen to all who wanted it. That included me. For my dissertation, I defined a new object-oriented Pascal-based language for microprogramming, and I implemented a compiler for it by modifying the portable Pascal compiler. I wonder how many people are around today who studied Wirth's code with the intensity that I did. It was not easy. They tended to use two- and three-letter variable names. I spent three months documenting every variable in the compiler so that I could remember what they stood for. The program segments in his book *Algorithms + Data Structures = Programs*, which I used to teach data structures, also had two-letter variable names. I am not complaining. Having access to the Pascal compiler reduced the time I needed to do my dissertation by at least a year.

I know that many people today have a low opinion of the Pascal language, but the world was different when it was introduced. I still have my copy of the *Pascal User Manual and Report* from 1975, published by Springer-Verlag. It looks like it was printed using a line printer. This was long before laser printers became standard. In 1975, most available languages made good programming difficult. Perhaps, Algol was better, but it was rarely seen in the United States. Pascal made it hard to write bad programs. A whole generation of computer scientists learned to do it right, thanks to Prof. Wirth. ■

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