

Computing Educators Oral History Project

***Susan Gerhart* video snippet transcript**

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Sputnik launched my career

[With title page and a picture of the Sputnik, the sound of rhythmic beeping of Sputnik satellite signals.]

Well, my name is Susan Gerhart and that "beep, beep, beep" which you just heard was Sputnik, which was launched October 4, 1957. And I'd like to entitle this segment for the oral history computer educator's program that Sputnik launched my career. And I'd also like to thank Barbara and Vicki, who helped so much with this project. Well, I was a teenager in 1957, in high school, and certainly Sputnik, as we all know it, rattled the country because the United States didn't know how much missile capacity the Russians had. But Sputnik certainly changed that picture. And the responses to Sputnik are what are really important for my career, I think for the computing field, and for many of our careers. One example there is that soon after Sputnik was launched, that DARPA was created. And of course DARPA led to the Internet, which we couldn't live without now; certainly changed many, many lives there. When I was in high school after Sputnik, it seemed like the math and the science professors actually became rock stars. There was so much attention toward getting more emphasis on math and science in the high schools, getting more students coming out of the high school programs and going in to engineering and science careers. I had the opportunity in 1961 to attend a National Science Foundation Summer Institute in Illinois. And that's where I met my first computer. It was an IBM 650, you know, this big with the panel of blinking lights and card punch; it was a bi-quinary system. We learned programming, you know, very simple programs, probably in a FORTRAN dialect at that time, and it simply hooked me that we could

Computing Educators Oral History Project (CEOHP)

write in just a few lines of code something that would sum up the numbers say from one to ... a thousand numbers, or a million numbers. Or we could sum and do statistics. Very simple calculations, but it was the essence of programming that we learned at that time. Now, it wasn't just that we could come up with a calculated answer to a question but also what launched my research career was that how did we know we had the right answer to that question. And so that's what led me later on into mathematical induction and proving properties of programs, analysis of software, and testing. So after that experience with the IBM 650, I was really hooked on computing but there wasn't any computer science at that time. So I was a math major at Ohio Wesleyan University in Ohio near where I grew up. There, a far-sighted math professor, Robert Wilson, got the university to wire an IBM 1620, which was again card punch, but it had a typewriter output. And we programmed quite a lot in our math courses during the courses that we took, but we had no specific computing courses. Because there were few math majors, I actually had so many hours I could put in on that IBM 1620, it was almost like a personal computer for me at that time. And my senior project was a compiler in a dialect of FORTRAN that I developed. Also, during that summer ... the summers in my high school ... or my college period, we taught courses and I tutored high school teachers. Again, these were National Science Foundation Summer Institutes for high school teachers to get exposed to what was called then the New Math. Now, I think we'd call it discrete math. And for me, that was a lot more interesting than calculus; to learn logic and reasoning. And I had a philosophy of science course where we studied induction. And again, that influenced my career later on in terms of research. And then later, I was delighted to have the opportunity to teach discrete math and databases and related material. So the National Science Foundation responding to Sputnik produced many different events that influenced my career specifically and, I think, a lot of other people as well. Now, I've wondered what would have happened if, in fact, the United States had been first instead of Russia. How might events have occurred? And why, in fact, did the United States not get a satellite up there first? And reading a little history, here's what it looked like. That both the United States and Russia were competing, but also cooperating in an international geophysical year. So the intention was that later on, in about that time period, 1957, 1958, satellites would be launched for scientific purposes. The Russians proceeded along that path and did launch. The United States got interested more in — particularly led by President Eisenhower's concern about missiles — into a U2 program and the military got interested in having more satellites that had cameras. Now if you've got satellites with cameras but you don't have telemetry, you also have to worry about how you get the film and the images back to Earth. So they were interested ... they were producing a much more complicated satellite, then the Russians launched a very simple Sputnik that just did its own "beep, beep, beep." Now, it's a quirk of history, but what ... I think it's something to think about: What would have happened if the United States had been first? Would we have just, you know, kind of sat back? Or was it so important to have that stimulus that we really emphasized math and science in a way then that had a big effect. Maybe, now, what we need is something in — Tom Friedman from the *New York Times* suggested this the other day — that there's another Sputnik coming; another country launching green technology or leap-frogging the United States in a way that might produce the same effects as Sputnik. So, for me, Sputnik launched my career and I would urge you to go back and read about that, that time where science and math really was important and so much progress was being made. So thank you.

[With picture of the Sputnik, the sound of rhythmic beeping of Sputnik satellite signals.]