Van Duzer's Contribution: "Ted Van Duzer's Reflections on Brian Josephson's 80th Birthday"

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Dear Dr. Josephson,

I am delighted to hear of the celebration of your 80th birthday to recognize how the Josephson junction has influenced the fields of physics and electronics.

I joined the Electrical Engineering Faculty at UC Berkeley in 1961 after getting my PhD there in 1960 on microwave tubes. By 1965, the tube industry no longer needed PhDs, so I had to look for a new field. I was considering lasers; work had already started in our department. But someone came to Berkeley and gave a talk in our Physics Department on quantum interference and the Josephson junction. I was hooked.

I continued in the field until 2012. Along the way, I wrote a book with Charles Turner focused on applications of superconductivity, including the Josephson junction, graduated about 25 PhDs on work in the field, led domestic and international conferences, and helped start a company. The work in my group paralleled research in our Physics Department under John Clarke and others, and included new Josephson junction structures, circuit design techniques under Stephen Whiteley, and novel RF and digital circuits.

We were part of the international effort to build a digital computer that would surpass what could be done with semiconductors. My group's final project was to make a hybrid Josephson junction-CMOS miniature computer that would take advantage of what each technology could do best, superconductors for logic and semiconductors for memory. We were able to demonstrate our hybrid system using commercial CMOS for the memory.

Several groups continue to pursue the concept of a hybrid memory using a variety of circuit concepts for the superconducting components. There has also been an important new focus of the technology for quantum computers.

With appreciation for your pioneering work,
Theodore (Ted) Van Duzer

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