

Are Historians Failing to Tell the Real Story about the History of Computing?

Paul E. Ceruzzi

Smithsonian Institution

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A while ago I attended a symposium sponsored by the National Security Agency on cryptologic history. The NSA is a secretive US government agency, but it does support history and sponsors not only a symposium but also a museum, the National Cryptologic Museum at Fort Meade, Maryland. During the symposium, which like the museum was open to the public, one of the members of that museum's board got up and said (I am paraphrasing) that historians of computing had done a terrible job because they have failed to chronicle the critical work done by the NSA and other related agencies in computing.

As you might imagine, this remark caused me to sit up in my chair. His critique came at a time when the *Annals* had already made an effort to broaden its scope to include issues such as software, labor, games, and microelectronics. I also recalled that one of the first contributions to the *Annals* was a seminal paper by the late Samuel Snyder, a retired NSA employee, on the contributions of the crypto community to computing.¹ Historians of computing have also written about American companies with connections to cryptography, such as ERA, NCR, and Cray Research. And a lot has been published about Bletchley and the Colossus since the partial relaxation of secrecy by the British government.

This was the second time I had heard such a remark. A few years ago I gave a reading of my book *A History of Modern Computing*² at a suburban Washington bookstore, and after the talk, a gentleman came up to me and said the same thing, although it was clear that he was unwilling to give me any details about what I had left out.

Later at the NSA symposium I introduced myself and asked for clarification. I was referred to a book, *A Brief History of Cryptology*, by J.V. Boone, a former NSA employee.³ I obtained a copy, and while it does contain some new information that is relevant to the history of computing, I found it disappointing. Was that the best they could do? A further query led to an NSA history published online, "American Cryptology during the Cold War, 1945–1989," a heavily redacted version of an internal history that was recently declassified.⁴ That document contains more detail. The section that chronicles the agency's transition from mainframes to workstations contains page after page of censored text. The NSA has good reasons for keeping secrets, and I do

not have a right to tell it to declassify materials for the benefit of history. Perhaps someday the full internal history will be declassified, although probably not for a long time.⁵

Are we historians not doing our job? Although I was disappointed with Boone's history, he did provide an analysis of the American SIGABA, the American counterpart to the Enigma. SIGABA was deployed as extensively as the famous German machine, and to his knowledge it was never broken during World War II. But it is hardly ever mentioned by computing historians; I had never heard of it before. Related to that question is the lack of historical context given to the recent revelations by Edward Snowden of NSA activities. Historians could be providing useful context to this acrimonious debate, but thus far we have not.

People were absolutely shocked to learn that the NSA intercepts German telecommunications signals. But that is what the agency does. That was what Turing and others did at Bletchley Park. Why is no one upset by the revelations in Thomas Misa's recent book about the secret activities undertaken by the Twin Cities firms Control Data or ERA?⁶ Like many, I wish the NSA would declassify some of its internal histories more readily, but we as historians have a role to play as well.

The *Annals* has covered the history of code breaking at Bletchley, and the work of Alan Turing got a lot of attention in the centennial year of his birth. But the place of the Colossus in the history of computing has never been clear. That is partly due to the bias that the late Michael Mahoney pointed out: the history of computing subscribed to a notion of a linear development of calculating and data processing machines, converging on the ENIAC and then diverging after 1946 into a variety of stored-program electronic computers. The Colossus was not a computer-as-calculator; it was a text-processing machine. Colossus, not the ENIAC, was the true ancestor of the modern digital world of Google and the ubiquitous smartphone (which in spite of the name is used more for "texting" than for making voice phone calls). By the time the details of the Colossus were made public, however, historians had soured on the notion of a "first" computer anyway—a wise decision. The result was that the Colossus never took

its place among the other pioneering machines. But even as we move beyond the model that Mahoney criticized, the issue remains of how to incorporate the mostly-classified work that was done at Fort Meade.

That brings me to one of the few books that meets the objections of the NSA officer. Although be forewarned: the book is unlike any that has ever been described in this journal to date. *How to Wreck a Nice Beach* by Dave Tompkins is on one level an account of the development of digital speech processing techniques before and during World War II to allow for secure communications between Churchill and Roosevelt.⁷ But that is like saying that *Hamlet* is about a confused Dane. The title alone gives a hint of the book's complexity; it came from a speech synthesizer that listeners misinterpreted when it spoke "how to recognize speech." The starting point was the invention of the "vocoder" by Bell Labs, demonstrated at the 1939 New York World's Fair, later the basis for SIGSALY, the secure communications device that the NSA claims was the "start of the digital revolution." That is a bold claim but one that I came to agree with after reading Tompkins' book.⁸ Tompkins alternates between chronicles of furtive meetings with retired Bell Labs and NSA employees and with hip-hop and other musicians who sample, mix, remix, scratch, "auto-tune," and otherwise manipulate the sounds that come out of the radio today.

I should also add that Tompkins was one of the presenters at the NSA conference, and his talk was very well received by the crypto community. They were obviously pleased to see their work recognized publically. The SIGSALY, with its dual turntables and injections of random noise into a digital signal, would later find its doppelganger in the dual turntables of hip-hop DJs in Harlem and Lower East Side nightclubs. And the vocoder's sounds are now the stuff of pop music, Apple's iPod, Hollywood sound tracks, smartphone voice processing, spread-spectrum communications, and a lot more.

Still, this book is an exception in many ways. Are historians of computing failing by not incorporating the work of agencies like the NSA? If so, how would we address that deficiency, given the culture of secrecy surrounding cryptography and the unlikelihood that critical documents will be declassified in a reasonable time?

Are historians of computing failing by not incorporating the work of agencies like the NSA?

References and Notes

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Paul E. Ceruzzi is curator of aerospace electronics and computing at the Smithsonian Institution. He is also the author of *Computing, A Concise History* (MIT Press, 2012) and *A History of Modern Computing* (MIT Press, 1998). Contact him at ceruzzip@si.edu.

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