

SHARE and the Origins of Open Source Software: 1954-1972

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Themes Addressed:

“Implicit knowledge, embodiment, and similar themes”
Technological Revolutions – The Information Revolution

SHARE was formed in 1955 by companies using IBM’s most powerful scientific computer, the IBM 704. SHARE soon boasted hundreds of member companies and by the mid-1950s was performing a range of activities including regular conferences, an extensive software library, the production of standards and reference manuals of all kinds, and a number of joint software development projects.

My paper focuses on the role of SHARE in the development of mathematical software routines, for generic tasks such as matrix computation, elementary and special functions, and solution of differential equations. Creating these routines was laborious but brought little proprietary advantage, so firms realized they would benefit by pooling their efforts. I argue that by 1956 SHARE had many of the formal and informal characteristics of today’s open source software projects, including a software library, distribution of standards for coding and documentation, mechanisms to support discussion between project members, mechanisms to report bugs back to the authors of routines, and mechanisms for users to contribute improvements back into a common code base.

However, SHARE also demonstrated some weaknesses of this approach. Tacit mathematical knowledge was being embedded into software and rendered invisible. Programs varied greatly in quality, and many possessed subtle mathematical flaws. During the 1960s a SHARE committee attempted to adapt academic peer review methods to test and improve the library. This effort largely failed, and in the early 1970s SHARE was eclipsed by computer vendors, academic research groups and software companies as a source of high quality mathematical routines.

Sources for the paper include archival SHARE material at the Charles Babbage Institute and National Museum of American History and oral history interviews with surviving participants.