From the Editor's Desk

Lars Hiede
Editor in Chief

Jeffrey R. Yost concluded his tenure as editor in chief at the end of 2011. Jeff has done a terrific job publishing great scholarship and strengthening the journal's scope. In his tenure, *IEEE Annals* has achieved a much stronger position in publishing on social and cultural history of computing, computing as infrastructure software applications, political and business history of computing, and historiography. In addition, he chaired the magazine's expansion through the Computing Then website (http://www.computer.org/portal/web/computingthen), a department of Computing Now, the IEEE Computer Society's new electronic journal, which attracts a large number of readers. Computing Then substantially extends the visibility of the *Annals*.

As the new *Annals* editor in chief, I plan to continue Jeff Yost's line of publishing fine scholarship and will work to improve Jeff's expansion of the fields the magazine covers. I am located in Denmark, which makes me the first EIC to be situated outside the US. I will work to improve focus beyond North America and Western Europe to Asia, Africa, and Latin America. *IEEE Annals* provides an important contribution to the development of the history of computing by publishing both pioneer accounts and academic papers. We need to improve the understanding of how people in industry, universities, and government across the globe changed computing and how computing influenced society, organizations, and peoples' lives.

One of Jeff Yost's final tasks as EIC was to oversee this special issue on the early history of microcircuitry, with David C. Brock and David A. Laws as guest editors. This is an important contribution to the history of computing, and it fits well into the history and current challenges of *IEEE Annals of History of Computing*. The *Annals* started in 1979, and during its first years, it focused on the shaping of mainframe computers of that day. It published important contributions on how and why Univac and the early large computers were shaped by universities, government, and industry. It addressed computers' predecessor technologies. It studied how early computers were reshaped into mainframe computers, how hardware changed, and how software emerged and was subsequently shaped. The magazine also discussed how mainframe computers impacted work in many fields.

Simultaneously, computer technology and industry underwent basic changes. The first personal computers appeared in the 1970s, and IBM announced its PC in 1981—50 years ago last summer. Originally, PCs stood alone, but they only became attractive in industry and private homes as they were networked to other PCs and facilities in mainframe computers. PCs were based on the new microcircuitries, as were the new and more powerful mainframe computers. PCs and mainframe computers became nodes of the new decentralized networks, which contrasted with the older networks, where all terminals in a network linked to its main computer. Local area networks of personal computers linked to a server improved speed and reliability because the computer system ceased to rely on one single computer. In addition, producers and users utilized the scheme's possibilities of access beyond the original network to information on private and work issues. This transition had many elements: networks, hardware, software, business, labor conditions, games, components, education, and so forth. Industry produced the new hardware in large numbers and innovated completely new software based on new jobs and production in great numbers.

IEEE Annals has already addressed many important aspects of this transition over the years—for example, Stephen J. Lukasik's article on the emergence of the Internet[1] and a special issue on the history of database management systems.[2] This special issue provides another significant contribution that improves our understanding of this transition. It tells six stories of the emergence of microcircuitry in the 1950s and 1960s in the US, Great Britain, and Japan. Microcircuitry was an essential basis for innovating and producing PCs and new and more powerful mainframe computers since the 1980s. Japan's raise to become a major electronics producer is an important element in this transition.

As we move forward, many more elements in this transition need to be explored to further our current knowledge.

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The Early History of Microcircuitry

The advent of microcircuitry is among the most important episodes in the history of computing, and of technology generally. Starting in the early 1960s, integrated circuits became the primary components for computer input-output systems and logic and main memory, and they are on a steady rise for data storage. ICs also suffuse the technologies and systems of communication, transportation, industrial production, agriculture, entertainment, and culture.

Despite the transformative impact of microcircuitry, its origins and the contexts thereof have received little historical attention. In the course of historical research on the most successful form of microcircuitry—the silicon IC, or microchip—the guest editors of this special issue, David C. Brock and David A. Laws, realized that the early history of microcircuitry was broad, diverse, and little studied, with many interconnections within it. In the decade spanning roughly 1952 to 1962, a ferment of activity was directed toward microcircuitry, of which the silicon microchip was but one of many competing approaches. To provide, perhaps for the first time, a systematic overview of this early history of microcircuitry, the guest editors recruited historians and practitioners to write articles and personal narratives on many of the major efforts in the US, Europe, and Japan.

The eight contributions that the guest editors solicited for this special issue were all accepted for publication. Due to space constraints, however, only six of them were able to appear in this issue. The two additional articles—Mike Green's ''Dummer's Vision of Solid Circuits at the UK Royal Radar Establishment'' (http://doi.ieeecomputersociety.org/10.1109/MAHC.2011.64) and Jay Lathrop's ''The Diamond Ordnance Fuze Laboratory's Photolithographic Approach to Microcircuits'' (http://doi.ieeecomputersociety.org/10.1109/MAHC.2011.83)—are available as preprints in the IEEE Computer Society Digital Library and will appear in future issues of the *Annals*. The guest editors strongly encourage readers of this issue to download these two additional articles and to read them along with the six articles herein.

References

1. Stephen J. Lukasik, ''Why the Arpanet Was Built,'' *IEEE Annals,* vol. 33, no. 3, 2011, pp. 4–21.
2. *IEEE Annals,* special issue on the history of database management systems, vol. 31, no. 4, 2009, pp. 3–106.

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