Preface

Analog and digital computers were developed by individuals aware of an international scientific community. Likewise, although sometimes thought of as solely national projects, the first computer networks were built in an age of growing interconnectivity among nations.

The chapters of this book are drawn from papers presented at an International Federation for Information Processing (IFIP) conference on the History of Computing at the New York University Tandon School of Engineering in May 2016. The conference was run by IFIP Working Group 9.7 (History of Computing). All papers submitted for the conference were peer reviewed before acceptance, and those selected for this book were reviewed again after the authors had the opportunity to make improvements following discussions at the conference.

In concept, the conference aimed to show that, far from a deterministic view that computers and computer networks were developed in isolation and according to their own technical imperatives, the history of pre-existing relationships and communities led to the triumphs (and dead-ends) in the history of computing. This broad perspective aimed to help us tell a more accurate story of important developments like the Internet and also to provide us with a better understanding of how to sponsor future invention and innovation. The conference gathered historians, computer scientists, and other professionals to reflect on histories that foreground the international community. Themes for the conference focused on: invention, policy, infrastructure, and social history.

In the first chapter, "The Route Less Taken: The Homegrown Los Alamos Integrated Computer Network," Nicholas Lewis from the University of Minnesota and the Charles Babbage Institute discusses the Los Alamos Integrated Computer Network. He notes that between the 1970s and 1990s the Los Alamos National Laboratory built and utilized a largely custom computer network for the lab's supercomputers, designed to support the unusual performance, storage, and security requirements of an American weapons lab.

In a chapter titled "MONET – Monash University's Campus LAN in the 1980s – A Bridge to Better Networking," Barbara Ainsworth (Monash University), Neil Clarke (Deakin University), Chris Avram (Monash University), and Judy Sheard (Monash University) outline how Monash University, Australia, developed an in-house local area network called MONET during the 1980s to meet the needs of the university's computer users. The Monash University Computer Centre team created and installed an early implementation of a local area network at a time when such concepts were evolving and specific hardware and software for the purpose did not yet exist.

Frank Dittmann from the Deutsches Museum, Munich, writes on: "Technology vs. Political Conflict – How Networks Penetrate the Iron Curtain." He explains how, in July 1977, the International Institute for Applied Systems Analysis (IIASA) near Vienna organized an experimental data transmission line. His paper investigates this,

focusing on three aspects: IIASA was an important location for Eastern and Western scientists to work with each other, the team of computer specialists creating the network was remarkable, and the concept of combining computer technology with science cooperation and information transfer was very advanced in the 1970s.

"There and Back Again – Andrew Booth, a British Computer Pioneer, and His Interactions with U.S. and Other Contemporaries" by Roger Johnson from Birkbeck College, London University, explores the interchanges between Andrew Booth, an early British computer pioneer, and contemporary U.S. and other pioneers. The paper describes Booth's construction of an electronic drum, the world's first successful demonstration of a rotating storage device connected to a computer, his pioneering work on natural language processing, and finally and most notably his invention of the Booth hardware multiplier, which is the basis of the multiplier used in billions of chips each year.

The next chapter, "Machines à Comparer les Idées' of Semen Korsakov: First Step Towards AI," written by Valery Shilov and Sergey Silantiev from the National Research University Higher School of Economics, Moscow, relates to the forgotten Russian scholar Semen Korsakov. The paper describes his life and scientific activity and particularly to Korsakov's main achievement – invention of five "intellectual machines" that could be considered as the very first attempt to design a mechanical device capable of performing such intellectual operations as data analysis, comparison, and selection.

"Towards Machine Independence: From Mechanically Programmed Devices to the Internet of Things," by Arthur Tatnall (Victoria University) and Bill Davey (RMIT University), Melbourne, Australia, provides a historical account of the development of one aspect of technology and of machines, leading to information technologies, the Internet, and the Internet of Things. It points to an increasing trend toward these machines and devices becoming more and more independent of human intervention and control. A clear trend can be observed from mechanically controlled machines to modern smart kitchen and household appliances that really could be said to have a degree of independence.

Giovanni Cignoni and Giovanni Cossu from Pisa, Italy, present "The Global Virtual Museum of Information Science and Technology, a Project Idea." They point out that information science and technology (IST) has pervasively affected our everyday lives and become part of the cultural heritage of humanity. The growing curiosity about IST history has led to the creation of important collections devoted to the conservation of IST relics, but physical relics are naturally located close to their origins. Their paper proposes a global virtual museum of IST based on a knowledge base able to manage all the information of the domain, created and updated by museum keepers and other experts, and capable of offering new enjoyment opportunities to a wider public audience.

"Why Not OSI?" by Bill Davey (RMIT University, Australia) and Robert Houghton (Idaho State University, USA) argues that the OSI proposed standard is technically superior to the TCP/IP standard for network communications and presents an analysis of the historical record surrounding the adoption of TCP/IP rather than OSI. The paper does not seek to create a new history of TCP/IP but to suggest this is a case where

traditional explanations of adoption based on the nature of the technology do not explain the demise of the OSI model.

"Flame Wars on Worldnet: Early Constructions of the International User" was contributed by Christopher Leslie from NYU Tandon School of Engineering, New York. He notes that some of the earliest users of the Internet described their activities as predicting a widespread communication medium that would cross national boundaries even before the technical capability was possible. However, analysis of conversations on Human-Nets, an early ARPANet mailing list, shows how users were concerned about providing a forum for open discussion and hoped that the network would spread to provide communication throughout the world.

"The Code of Banking: Software as the Digitalization of German Savings Banks" is written by Martin Schmitt from the Centre for Contemporary History, Potsdam, Germany, and describes the history of banking software. He notes that although some literature exists on the use of computers in the banking industry, most of it focuses only on the hardware and its restrictions. This paper analyzes how German savings banks used software to digitalize their business during the Cold War period.

Evangelos Kotsioris from Princeton University, New Jersey, then offers: "Electronic 'Ambassador': The Diplomatic Missions of IBM's RAMAC 305." His paper describes how the RAMAC 305 developed by IBM during the late 1950s was instrumental as an "animate" ambassador of American computing technology abroad. He examines the impact of IBM's exhibit at the American National Exhibition in Moscow (July 1959) and Nikita Khrushchev's tour to the IBM manufacturing plant in California (September 1959) to argue that the RAMAC 305 was envisioned and designed as a modular system of combinable units and peripherals that could be easily and quite literally transferred around the world.

Herbert Bruderer, from ETH Zurich, Switzerland, writes on "The Birth of Artificial Intelligence: First Conference on Artificial Intelligence in Paris in 1951?" He notes that although the 1956 Dartmouth conference is often considered as the cradle of artificial intelligence, there is a debate about this. Other suggestions about its origin are offered including a large and important (but forgotten) European conference on computing and human thinking in Paris in 1951.

"The World's Smallest Mechanical Parallel Calculator: Discovery of Original Drawings and Patent Documents from the 1950s in Switzerland" is also by Herbert Bruderer from ETH Zurich, Switzerland. This paper describes how Austrian engineer Curt Herzstark invented the world-renowned mechanical pocket calculator *Curta*, mentioned as consisting of two models, *Curta 1* and *Curta 2*. He notes that original drawings and patent documents on a *multiple Curta*, the world's smallest mechanical parallel calculator, were discovered in Switzerland in 2015.

Contributions to the book have thus come from authors from the USA, Australia, Germany, UK, Russia, Italy, and Switzerland. We hope you enjoy the book and find it informative.

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