BOOK
REVIEW

Newgames: Strategic Competition in the PC Revolution by John Steffens

by W. Lloyd Milligan

July 1994 marked the twentieth anniversary of the start of the revolution that so profoundly changed our world. That month's issue of *Radio-Electronics* magazine featured the Mark 8—a printed circuit board computer, based on Intel's 8008 CPU chip.[1,2] The 8008 was referred to in the magazine as a "parallel processor," because it processed 8 *bits* in parallel. The instruction cycle time was 20 microseconds, and some of the processor's 48 instructions required three cycles. Thus, instructions took from 20 to 60 microseconds to execute.[3] The Mark 8 "Minicomputer" kit used the popular 1101-series memory chips that had a capacity of 256 x 1 bit. The kit included only eight chips (256 bytes). The backplane, however, could accommodate up to four memory boards, giving the Mark 8 a colossal 4096-byte capacity. "If you want to save a program, leave the power on" was the advice offered kit builders.

It is nearly inconceivable that the personal computer revolution has reached its present maturity in a mere twenty years. There has hardly been time to reflect. Nevertheless, John Steffens of Oxford University and Harvard Business School has written a penetrating technical analysis of the events and developments constituting this revolution. His analysis is based on a hybrid "newgames" schema, combining key principles of the competitive strategy and marketing models. Newgames arise from fundamental changes in an industry's underlying conditions. Steffens points out that such changes may take multiple forms including legal (e.g., deregulation), economic (e.g., governmental policy), and social, among others, but they create new concepts and new ways of thinking about the world.

Before 1970, mainframe computers were an established industry. Various bipolar logic families were used in the design of these machines. Then, Intel and Advanced Memory Systems introduced the first 1K Random Access Memory chips, based on metal oxide semiconductor technology. Around the same time, Intel developed the 4004, a 4-bit CPU, which it began marketing in 1971. These unprecedented innovations in microelectronics spawned the technical newgames that are the subject of this book.

The history of events is interesting enough in its own right. Do the names Cromemco or Vector Graphics ring a bell? Who remembers the S-100 Bus? What was the first personal portable?[4] *Newgames* is not a history, or at least, not simply a history. Steffens also brings a wealth of data and analyzes the evolution of technologies, competitive strategies, and world markets to bear on this short tumultuous history.

In software, an early quasi-standard emerged. But this standard—the CP/M (control program for microprocessors) operating system—was overtaken quickly by MS-DOS. As a consequence of IBM's unique market power, IBM-compatibility became the new standard for both hardware (Intel) and software (Microsoft).

By the late 1980s, however, software had achieved ascendancy over hardware as the revolution's driving force. Who mastered this *new* game, who blundered, and how? These are the kinds of issues Steffens illuminates by systematic and thorough analysis.

What does the newgames model predict next for the PC revolution? According to Steffens, the desktop PC industry is in transition to what he calls a *samegame* environment. Information and communications industries are converging rapidly along paths of mutual interest. He notes similar clear trends in the digital audio and video industries. Prognostication is an iffy business. Steffens does suggest, though, that network software technology will be the "greatest battleground" during this time.

Perhaps of particular encouragement to the M community, Steffens also believes we are entering an era of what he calls software systems integration and consultancy. Surely M Technology can claim a leadership position in software systems integration, having been among the first to embrace open systems while maintaining strict adherence to standards.[5]

Finally, I will note one or two minor criticisms. The American reader may find the book's Briticisms somewhat jarring. The narrative lacks vigor in places, and the index is frustratingly incomplete. On balance, however, one must admire Steffens's scholarship and attention to detail. *Newgames* is an essential study for anyone desiring to understand the phenomenonal PC revolution, or for any organization eager to prepare for the twenty-first century newgames. M

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Endnotes

1. J. Titus, "Build the Mark 8 Minicomputer," *Radio-Electronics*, 45(7), (July 1974): 29–33.
2. The 8008 CPU chip could be purchased from Intel for $120.
3. Current generation PC cycle times are at least three orders of magnitude faster.
4. Cromemco and Vector Graphics were early microcomputer manufacturers who aimed their products toward scientific and small-business markets. S-100 was the first microcomputer bus standard, and led to wide availability of compatible accessories. The first personal portable was the Osborne.
5. M health-care applications providers in the United States will likely encounter a significant newgame, as forthcoming health-care reforms are legislated.