

**The Evolution of Intimacy:
Advertising Personal Computers in the 1980s**

by

Madeleine Clare Elish

B.A. Art History, Columbia University, 2006

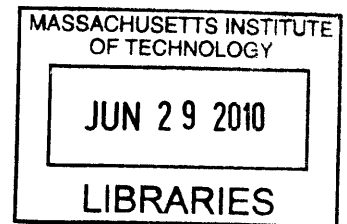
SUBMITTED TO THE PROGRAM IN COMPARATIVE MEDIA STUDIES IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN COMPARATIVE MEDIA STUDIES
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 2010

(C) 2010 Madeleine Clare Elish. All rights reserved.

ARCHIVES



The author hereby grants to MIT permission to reproduce and to distribute publicly paper and electronic copies of this thesis document in whole or in part in any medium now known or hereafter created.

Signature of Author: _____

Program in Comparative Media Studies
7 May 2010

Certified and Accepted by: _____

William Charles Uricchio
Professor of Comparative Media Studies
Director, Comparative Media Studies
Thesis Supervisor

Accepted by: _____

Nick Montfort
Associate Professor of Digital Media, Writing and Humanistic Studies

**The Evolution of Intimacy:
Advertising Personal Computers in the 1980s**

by

Madeleine Clare Elish

Submitted to the Program in Comparative Media Studies
On May 7, 2010, in Partial Fulfillment of the
Requirements for the Degree of Master of Science in
Comparative Media Studies

ABSTRACT

At the heart of this thesis is a desire to understand the evolving and situated relationship between humans and computers. Looking to a specific kind of computer at a specific moment in history, I analyze the ways in which advertising played a role in socially constructing an individual's relationship to the personal computer in the home. Based on an analysis of over 500 advertisements in widely circulated magazines during 1984-1987, this thesis examines through emblematic examples how advertisements during this period positioned the personal computer as a domestic machine. In observing the means of socially constructing the personal computer in the mid-1980s, we come to understand the role and potential implications of advertising in socially constructing meaning, as well as gain a deep perspective on how the personal computer was constituted in the early years of its introduction into the home.

Taken together, these advertisements present a portrait of a technology's evolution and begin to reveal how personal computers took on the meaning and place that they now occupy in contemporary life. Once embodiments of military and corporate de-humanizing control, computers are now accepted as evocative, social extensions of individual selves that represent individual freedom and power. With personal computers as our contemporary companions, at home, at work and in our laps, this thesis tells a history of how our relationship began.

Thesis Supervisor: William Charles Uricchio
Title: Professor of Comparative Media Studies

Acknowledgements

I would first and foremost like to thank my thesis committee, William Uricchio and Nick Montfort for guiding and supporting me during this endeavor. Their wisdom, insight and support has been invaluable. I have also benefited immensely from the generosity of individuals who spoke with me about my research, including Doris Rusch, Debbie Douglas at the MIT Museum, Patsy Boudin at the MIT Libraries, as well as Dag Spicer and Elizabeth Borchardt from the Computer History Museum.

I would also like to thank my fellow graduate students in the Comparative Media Studies department, who have been the best companions one could ever ask for during my time at MIT. I would also like to thank Henry Jenkins for his inspirational teaching and intellectual spirit.

Working becomes inseparable from living when you write and research, and so I must thank my partners in living for sustaining me always, Eloise, Herb, Marc and fern.

TABLE OF CONTENTS

<i>Acknowledgements</i>	4
<i>List of Figures</i>	6
Chapter 1. Introduction	8
Chapter 2. What the Personal Computer Can Do For <i>You</i>	38
Chapter 3. Design Matters	56
Chapter 4. Who Are We When We Use Computers?	80
Chapter 5. You, Me and the PC	99
Chapter 6. Conclusion	120
<i>Bibliography</i>	127

LIST OF FIGURES

- Fig. 1.1:** *Popular Electronics*. Cover. January 1975. Print. 21
- Fig. 1.2:** Apple II. Advertisement. July 1977, *BYTE*. Print. 21
- Fig. 1.3-4:** *DeskSet (stills)*. Film. Directed by Walter Lang. United States: Henry Ephron, 1957. 35
- Fig. 1.5:** *You've Got Mail (still)*. Film. Directed by Nora Ephron. United States: Laura Schuler Donner and Nora Ephron, 1998. 35
- Fig. 1.6:** *You've Got Mail* (Movie poster). 35
- Fig. 2.1-3:** IBM. Advertisement. September 1984 *Reader's Digest*, 48D-P. Print. 40
- Fig. 2.4:** IBM. Advertisement. 19 January 1987, *TIME*, 54-55. Print. 43
- Fig. 2.5:** Apple Macintosh. Advertisement. 20 February 1984, *TIME*, 43A-P. Print. 43
- Fig. 2.6:** RadioShack Tandy TRS-80 2000. Advertisement. August 1984. *Personal Computing*, 111. Print. 43
- Fig. 2.7:** Seagram's V.O. Advertisement. October 1984. *Reader's Digest*, 51. Print. 45
- Fig. 2.8** AT&T UNIX PC. Advertisement. 27 May 1985. *TIME*, 18-19. Print. 45
- Fig. 2.9:** IBM. Advertisement. 16 January 1984, *TIME*, 34. Print. 45
- Fig. 2.10:** IBM PCjr. Advertisement. 14 January 1985. *TIME*, 68-69. Print. 49
- Fig. 2.11:** RadioShack Tandy 1000HX. Advertisement. 13 July 1987. *TIME*, 17. Print. 49
- Fig. 2.12:** AT&T. Advertisement. December 1984. *Readers' Digest*, 77. Print. 52
- Fig. 2.13:** Commodore 128 & 64. Advertisement. 3 February 1986, *TIME*, 43. Print. 52
- Fig. 2.14:** Radio Shack Tandy 1000SX. Advertisement. June 1987. *Working Mother*, 9. Print. 52
- Fig. 2.15:** Commodore 128. Advertisement. 6 January 1986. *TIME*, 60. Print. 52
- Fig. 3.1:** Altos. Advertisement. 16 April 1986. *TIME*, 9. Print. 60
- Fig. 3.2:** Packard Bell. Advertisement. 27 October 1986. *TIME*, 76. Print. 60
- Fig. 3.3:** IBM PCjr Advertisement. 5 March 1984. *TIME*, 72-73. Print. 62
- Fig. 3.4:** IBM PCjr. Advertisement. 13 February 1984. *TIME*, 18-19. Print. 62
- Fig. 3.5:** Commodore 64. Advertisement. December 1987. *Working Mother*, 64. Print. 66
- Fig. 3.6:** Apple IIc. Advertisement. September 1984. *National Geographic*, 276-277. Print. 66
- Fig. 3.7:** Apple Macintosh. Advertisement. 20 February 1984, *TIME*, 43A-P. Print. 70
- Fig. 3.8:** Apple IIc. Advertisement. September, 1984. *National Geographic*, 268-169. Print. 74
- Fig. 3.9:** AT&T Personal Computer. Advertisement. 10 February 1984. *TIME* 62. Print. 74
- Fig. 3.10:** IBM. Advertisement. 18 May 1987. *TIME*, 8-9. Print. 78
- Fig. 3.11:** Radio Shack Tandy 1000HX. Advertisement. November 1987. *Working Mother*, 21. Print. 78
- Fig. 4.1:** Apple Macintosh. Television advertisement. Directed by Ridley Scott. United States. Regis McKenna, 1984. Video. 85

- Fig. 4.2:** Epson. Advertisement. 14 December 1987. *TIME*, 12. Print. 90
- Fig. 4.3:** Apple Macintosh. Advertisement. 30 November 1987. *TIME*, 7-8. Print. 90
- Fig. 4.4:** Radio Shack Tandy 1000SX. Advertisement. June 1987. *Working Mother*, 9. Print. 90
- Fig. 4.5:** Amiga Commodore. Advertisement. 30 September 1985. *TIME*, 21. Print. 92
- Fig. 4.6:** Epson. Advertisement. 9 March 1987. *TIME*, 18-19. Print. 92
- Fig. 4.7:** Epson. Advertisement. 15 December 1986. *TIME*, inside back cover. Print. 92
- Fig. 4.8:** Adam. Advertisement. November 1984. *R Reader's Digest*, 182. Print. 95
- Fig. 4.9:** Radio Shack TRS-80. Advertisement. 13 February *TIME*, 72. Print. 95
- Fig. 4.10:** Amiga Commodore. Advertisement. December 1986. *National Geographic*, inside cover. Print. 95
- Fig. 4.11:** Amiga Commodore. Advertisement. November 1984. *National Geographic*, 542-543. Print. 95
- Fig. 5.1:** Reprinted cartoon in "When the chips are down." November 1984. *Reader's Digest*, 94-95. Print. 100
- Fig. 5.2:** Reprinted cartoon in "When the chips are down." November 1984. *Reader's Digest*, 94-95. Print. 100
- Fig. 5.3:** IBM. Advertisement. August 1984. *Personal Computing*, 187. Print. 106
- Fig. 5.4:** Xerox. Advertisement. 10 August 1987. *TIME*, 27-28. Print. 106
- Fig. 5.5:** Xerox. Advertisement. 11 March 1984. *TIME*, 8-9. Print. 112
- Fig. 5.6:** Commodore 64. Advertisement. 14 January 1984. *TIME*, 52. Print. 112
- Fig. 5.7:** Radio Shack Color Computer 2. Advertisement. December 1986. *Working Mother*, 43. Print. 112
- Fig. 5.8:** IBM PCjr. Advertisement. 3 April 1984. *TIME*, 41-43. Print. 114
- Fig. 5.9:** IBM Personal System/2. Advertisement. 4 May 1987. *TIME*, 43-66. Print. 114
- Fig. 5.10:** Apple Macintosh. Advertisement. 20 February 1984, *TIME*, 43A-P. Print. 114
- Fig. 5.11:** IBM. Advertisement. 14 December 1987. *TIME*, 44-45. Print. 117

Chapter 1. Introduction

As the American railroad defined the contours of a nation, a culture, and an industrial age, so did—and will—the computer define the American landscape of the late 20th and early 21st century. The computer, as a technology, an ideology and a fantasy has had profound consequences for every day practices and conceptions of life in contemporary America. The meanings and uses of computers have changed drastically in the last sixty years; once a symbol of military and corporate calculation and domination, the computer has become a symbol of individual freedom and power.

This thesis is concerned with a specific kind of computer at a specific moment in history: the personal computer in the mid to late 1980s. I examine in depth how advertisements in popular magazines during this period positioned the personal computer in the home. From this analysis emerges a multi-dimensional portrait of the personal computer when it first began to enter the homes and minds of the American public. Focusing on this moment of relative stability, we observe fundamental changes in conceptions of computing compared to the past as well as specific constructions of meaning and use during a formative period of the personal computer's history.

Research Focus

My analysis focuses on 1984-1987, a moment when personal computers had begun to saturate the homes of the general population, but before the Internet and the World Wide Web had entered most of the homes of the American population. The initial exponential growth of personal computer purchases, generally understood to have occurred between 1982 and 1984

marks the beginning of the time period under consideration. From 1981 to 1984, there was a 700% growth in personal computer shipments in the United States.¹ I have chosen to examine the years immediately following this growth. Computer sales continued to rise during 1985-1986, but began to level off by 1987.² Yet, the percentage of Americans using personal computer continued to increase. In 1984 approximately 6.5% of U.S. households used a computer at home. By 1986, over 14% of households used a personal computer.³ This period suggests a moment of relative market stability before computer sales would skyrocket once again in the early 1990s, with the introduction of the World Wide Web.⁴ These years, between growth spurts, present a moment when we can witness a technology in a moment of transition, reflecting the feedback from consumers in the early years of growth. Still very much a technology whose meaning was being negotiated, this period also represents a moment of consolidation of meaning and represents the foundational concepts upon which the personal computer would be understood for the following decades.

By the mid-1990s, the personal computer at home had become increasingly identified with access to the Internet and the World Wide Web.⁵ From the position of today, in 2010, Internet

¹ Patrick Honan, "Personal Computer Trends," *Personal Computing* October 1986: 53-61, 55.

² Maria Papadakis and Eileen Collins, *The Application and Implications of Information Technologies in the Home: Where Are the Data and What Do They Say?*, National Science Foundation, February 2001: <http://www.nsf.gov/statistics/nsf01313/front.htm> (accessed March 2010). See also, Sanford C. Bernstein & Co, "Overview of Personal Computer Sector, PC Hardware Industry Report" in *Black Book Personal Computer Market* (New York: Bernstein Global Wealth Management 1987): 23-26, <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=19844015&site=bsi-live> (accessed March 2010).

³ Honan, 61.

⁴ Papadakis and Collins.

⁵ Ibid.

access, enabled through the computer, seems the most consequential component of personal computing use. However, personal computers existed and were used before the Internet and a closer examination of this history reveals cultural uses and paradigms that were embedded in notions of personal computing before the Internet.

The history of personal computing has been examined from a number of perspectives and with a focus on various time periods.⁶ Relatively few studies have focused on the relationship between mass media and the personal computer in the home during the mid 1980s, perhaps because this period represents relative stability or perhaps because this brief period has been overshadowed by the developments of the World Wide Web, which had a profound impact on personal computing beginning in the early 1990s.⁷

Focusing on advertisements aimed at the general population in general interest magazines, as opposed to the business or special-interest press, my goal was to gain insight into a broad American techno-social imaginary during this period. To this end, I examined issues of widely circulated magazines during this period, including *Reader's Digest*, *National Geographic*, and *TIME*. My analysis included over 500 advertisements for personal computers, though not

⁶ For histories of personal computing, the literature is vast. See for instance Paul Ceruzzi, *A History of Modern Computing* (Cambridge, MA: MIT Press, 2003), Martin Campbell-Kelly and William Aspray *Computer: A History of the Information Machine* (New York: Basic Books, 1996), Robert Slater, *Portraits in Silicon* (Cambridge, MA: MIT Press, 1987), and Paul Freidberger and Michael Swaine, *Fire in the Valley: The Making of the Personal Computer* (Berkeley, CA: Osborne/McGraw-Hill, 1984) among many others.

⁷ A notable exception is Jean P. Kelly's study of personal computer advertising and editorial content in popular magazines, "No So Revolutionary After All: The Role of Reinforcing frames in U.S. magazine discourse about microcomputers," *New Media & Society* 11:1/2 (2009): 31-52. Her analysis focuses on a slightly later and extended time period and takes a quantitative approach and relies on the identifying predominant frames in advertising and editorial content. Generally, our findings are consistent and compliment each other.

software. *TIME* contained by far more advertisements for personal computers (approximately 73% of the sample) than *Readers' Digest* (10%) and *National Geographic* (17%), suggesting the extent to which personal computers were still primarily aimed at a business-oriented audience. In the pages of these magazines were predominately advertisements for cigarettes and cars, as well as other consumer products more tailored to the specific magazine's audience. Other consumer electronics were advertised, including home stereo equipment, word-processors, televisions, and video games. Rather than take a quantitative approach, my method of analysis relies on the selection and interpretation of specific ads which I believe are emblematic of the sample and its predominant themes.⁸ I look to interpret the specific in order to carefully point to more broad connections and implications of the meanings contained in advertisements.

My method of analysis derives from the social shaping of technology approach articulated by Donald MacKenzie and Judith Wajcman in their introduction to the collection, *The Social Shaping of Technology*. As scholars for sometime now have been pointing out, the theory of technological determinism seems implausible. The notion that technology exists in a sphere apart from culture has been discredited. Nonetheless, the precise relationship between technology and culture is complex. As MacKenzie and Wajcman point out, "to say that technology's social effects are complex and contingent is not to say that it has *no* social effects."⁹ Exploring the social shaping of technology demands that we view technology and culture within the same sphere, as co-dependent and mutually constitutive.

⁸ For a quantitative approach to a similar set of material see Jean P. Kelly.

⁹ Donald Mackenzie and Judith Wajcman, eds. *The Social Shaping of Technology*, (Philadelphia, PA: Open University Press, 2nd edition, 1999), 14.

Indeed, it holds the development and adoption of technology accountable in a way that technological determinism does not. Thus adopting the social shaping of technology approach allows for productive and socially relevant critique. In the words of MacKenzie and Wajcman,

The view that technology just changes, either following science or its own accord, promotes a passive attitude to technological change. It focuses our minds on how to *adapt* to technological change, not on how to shape it. It removes a vital aspect of how we live from the sphere of public discussion, choice, and politics.¹⁰

However, to say that culture shapes technology is at once too simplistic and vague. The question of “how culture shapes technology” begs even such foundational questions as “what is culture?” and “what is technology?” and if they can even be productively separated. Though these questions do not form the core of this research, a further outlining of the theoretical foundations upon which this thesis is based will clarify and justify the proceeding analysis.

Pinch and Bijker, in their essay, “The Social Construction of Facts and Artefacts” suggest a model that looks to the socially relevant groups in analyzing how and by whom technology is shaped.¹¹ Actor-Network Theory, exemplified in the work of Bruno Latour, Michel Callon and John Law, provocatively and productively looks to the notion of networks and actors within these networks to investigate how technology is shaped. In their view, persons and objects are both agents, each having their own unique force upon the network. This is not to say that technological objects and persons are equated as having the same kind of agency. It is, however, to demand that the unique sites of agency for both human and non-human actors be articulated.

¹⁰ Ibid., 14.

¹¹ Trevor J. Pinch and Wiebe Bijker, “The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other,” *Social Studies of Science* 14 (1984): 388 - 441.

My approach in this thesis takes what I see as exemplary in both methods. Tracing the discourse between two socially relevant groups, marketers and consumers, I view my approach as very much informed by the social construction of technology approach. I examine what Ruth Schwartz Cowan has evocatively termed, “the consumption junction.” As Cowan points out,

There are many good reasons for focusing on the consumption junction. This, after all, is the interface where technological diffusion occurs, and it is also the place where technologies begin to reorganize social structures Such a focus brings into relief (perhaps more clearly than other foci can) the variables that have governed the behavior of all those relevant social groups who influence consumers' choices.¹²

While my analysis does not explore the networks surrounding the consumer’s position, as Cowan’s does, I have chosen to focus on the dialogue between consumer and marketer for precisely the reasons Cowan articulates. Within the cycle of innovation, production, diffusion, and re-articulation that characterizes technological development, I am most interested in exploring the interface between production and diffusion, the moments of flux stable enough to reach beyond an elite of first adopters, but still unstable and yet to take on ossified cultural form and meaning. Thus, to look at advertising of personal computers in the mid-1980s, when the market for personal computers for the general public was being established, is to glimpse a snapshot of a technology in transition, very much caught in the dialectic of technology and culture, individual and society, reality and fantasy.

In the background, meanwhile, I am also interested in observing the unique sites of agency embodied in technological artifacts, accounting for the dialectical relationship between

¹² Ruth Schwartz Cowan, “The Consumption Junction: A proposal for research strategies in the sociology of technology,” in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, Wiebe Bijker, Thomas Hughes, and Trevor Pinch eds., (Cambridge, MA: MIT Press, 1987): 261-280, 263.

technology and culture as mutually constitutive. Acknowledging the value in this position, MacKenzie and Wajcman write, "the technological, instead of being a sphere separate from society, is part of what makes society possible--in other words, it is constitutive of society."¹³

To investigate the essential question driving my research, "How were the meanings and uses of personal computers in the 1980s socially shaped?" one might take many approaches. One might look to events and people surrounding the advent of the personal computer, as has been done most notably by Paul Ceruzzi. One might gather oral histories, such as those collected in the Stanford University Archives¹⁴ or The Computer History Museum¹⁵ archives. If my analysis focused on a current time period, one might also look to the methods of ethnography. The work of Leslie Haddon, Alladi Venkatesh and Sherry Turkle, among others, were done contemporaneously to my time period, have been an invaluable resource for my research. One might also take the approach articulated by Nick Montfort and Ian Bogost as Platform Studies, and closely examine the material artifacts and their affordances as media, as exemplified in their study of the Atari VCS.

My own approach applies a form of discourse analysis, utilized in the social histories of computers, but more narrowly focused. Inspired by Lynn Spigel's work on television in the home during the Post-War period, my analysis focuses on advertising in magazines as a means to illuminate social uses and conceptions of the home computer.

¹³ MacKenzie & Wajcman, 23.

¹⁴ Special Collection of Stanford University Library, "Making the Macintosh: Technology and Culture in Silicon Valley," Stanford University, Stanford, CA, <http://www-sul.stanford.edu/mac/index.html> (accessed April 26, 2010).

¹⁵ Computer History Museum, "Catalog Search," Computer History Museum, Mountain View, CA, <http://www.computerhistory.org/collections/search/> (accessed April 26, 2010).

A Brief History of the Personal Computer

The history of the personal computer, like the development of any technology, involves a complex dialectic between social factors and technical affordances. Though the history of personal computers, let alone computers themselves, is not the focus of this thesis, it will be useful to briefly sketch parts of these histories in order to situate the reader in the following analysis.

In a 1986 article William Aspray and Donald DeB. Beaver point out the varying ways one might parse the development of the computer. Conventional computer historians, they suggest, divide the development of computer technology into eras based on the underlying technology of the central processing unit: vacuum tubes, transistors, integrated circuits and large scale integrated circuits.¹⁶ However, this classification does little to help the social historian understand the development of perceptions, uses and meanings of computers. Alternatively, they propose a model based on perceived uses and popular understandings of the computer. The first generation, then, from the mid to late 1950s, can be understood as “the computer as calculator,” an understanding in which there was little difference between the notion of the computer and the electromechanical calculator, which had been used since the 1930s and 1940s for business and scientific purposes. The next generation, occurring during the 1960s, is defined by the computer as information processor, where the computer is understood as part of a management information system. In the third generation, occurring during the mid to late 1970s, the computer becomes synonymous with office automation, “the mechanization of white-collar labor.” Aspray and Beaver explain,

¹⁶ William Aspray and Donald deB. Beaver, “Marketing the Monster: Advertising Computer Technology,” *IEEE Annals of the History of Computing* 8:2 (1986): 127-143.

Whereas in the second generation, emphasis lay on the more large-scale, global, and systematic aspects of whole business operations, symbolized by computer management information systems, the third generation brings the computer revolution to the small-scale, local, and individual components.¹⁷

Indeed, I would propose that at least one more generation could be added to the model, beginning in the early to mid-1980s, in which the computer becomes understood as information appliance, representing individual productivity and multipurpose functionality.

One manner of development not addressed in this model is the evolution of the computer as commercial product, as opposed to individually manufactured research project. The era of the modern computer as commercial product began in the 1950s. The first UNIVAC, a computer developed by the Eckert-Mauchly Division of Remington Rand, was sold to the U.S. Census Bureau in 1951. Throughout the decade UNIVACs were sold to such government agencies as the U.S. Air Force and the U.S. Army Map Service and to large corporations including General Electric, Metropolitan Life, U.S. Steel, Du Pont, Westinghouse and Consolidated Edison for about a million dollars for a complete system (more than 8 million in 2010 U.S. dollars¹⁸).¹⁹ In 1952, IBM sold its 701, similar in class to the UNIVAC. IBM called this machine the “electronic data processing machine,” avoiding the term computer, which the company felt was detrimentally associated with the UNIVAC and war research.²⁰ The company’s aim, following its

¹⁷ Ibid., 131.

¹⁸ Consumer Price Index (Estimate) 1800-2008, *Handbook of Labor Statistics*, U.S. Department of Labor, Bureau of Labor Statistics, http://www.minneapolisfed.org/community_education/teacher/calc/hist1800.cfm (accessed 1 May 2010).

¹⁹ For a complete list of UNIVAC’s sold in this decade, see Paul Ceruzzi, *A History of Modern Computing* (Cambridge, MA: MIT Press, 2003), 28.

²⁰ Ibid., 34.

original business model, was to target business customers. By the mid to late 1950s, other companies began to develop and sell large commercial computers, including Minneapolis Honeywell Corporation, General Electric, RCA, Western Electric (AT&T's manufacturing arm), Raytheon and Burroughs.²¹ By the end of 1960, around 6,000 general purpose electronic computers had been sold in the United States.²² Among all the companies that emerged to meet the needs of corporate computing, IBM successfully dominated the industry in under a decade.²³

As IBM products and distribution channels dominated the marketplace for computers, consequential technical innovations and changes in the perceptions of computing began to alter the landscape of the computer industry. In a general sense, personal computers were able to be developed because of technological innovations that allowed hardware to become smaller, cheaper and more efficient at an exponential rate. The development of the microprocessor in the 1970s led to substantial changes in the computing industry. Developed simultaneously in a number of places, Intel is most widely credited with this development. The innovation was to develop a multipurpose integrated circuit chip that could be programmed depending on the end product in which it would be placed. The notion that a chip could be programmed and become multifunctional was a crucial and new concept. Although this flexibility was not initially understood for its wide reaching consequences, the microprocessor was the chip that, in essence, started it all.

²¹ The internal workings of these computers has not been discussed, however it is important to note that though reference is made to large computers, there was not yet one standard. Ceruzzi writes, "Computers of this era stored their programs internally and used vacuum tubes as their switching technology, but beyond that there were few other things they had in common. The internal design of the processors varied widely." *Ibid.*, 44.

²² *Ibid.*, 58.

²³ *Ibid.*, 67.

In the following years, Intel, as well as other semiconductor manufactures, improved on the original chip, eventually developing ones with twice as much processing power. The cost of a microprocessor chip in 1971, with a 4-bit central processing unit (CPU) was about \$1000 by 1974, new and improved chips, with an 8-bit CPU, were selling for around \$100.^{24 25}

However, it was not until 1975, with the release of MITS' Altair, that personal computers, owned and operated by an individual, could first be said to have been developed. The innovation was announced in the pages of an electronics magazine; the Altair 8800 graced the cover of *Popular Electronics* (Fig. 1.1). The accompanying copy was revolutionary in tone, "Exclusive! Altair 8800. The most powerful minicomputer project ever presented—can be built for under \$400." The Altair was the first microprocessor-based computer. However, as Martin Campbell-Kelly and William Aspray point out, this computer should only be considered the first personal computer in the sense that its low price allowed an individual to realistically purchase it and use it at home.²⁶ The Altair did not look in any way like the personal computers that would be developed in the following years: its only interface was a set of switches and lights on the front. There was no keyboard, mouse, display, or attached teletype. There was no software to run, and even if one did successfully program the chip, the only confirmation of the program's execution would be a pattern of lights on the front. In addition, the Altair was a kit to be assembled, following the distribution pattern of electronics hobbyists. Indeed, the company who produced

²⁴ For comparison, processors on the PC market in 2010 are 64-bit.

²⁵ Martin Campbell-Kelly and William Aspray, *Computer: A History of the Information Machine*, (New York: Basic Books, 1996), 210.

²⁶ *Ibid.*, 212.

the Altair kits, MITS, was a small electronics kits supplier in New Mexico that had originally sold radio kits to control model airplanes and kits for electronic calculators.

In his history of modern computers, Ceruzzi suggests that the conceptual model of a personal computer emerged even before owning a machine for oneself was a possibility. Ceruzzi writes,

One can think of the PDP-10 [the computer in the Stanford Artificial Intelligence Laboratory on which Stewart Brand watched people playing Spacewar in 1972] as an ancestor of the personal computer. It was designed from the start to support interactive use. ... Of all the early time-sharing systems, the PDP-10 best created an illusion that each user was being given the full attention and resources of the computer. That illusion, in turn, created a mental model of what computing could be--a mental model that would later be realized in genuine personal computers.²⁷

It was the feeling, the experience, of having a computer feel like it was operating for an individual that was significant and consequential.

Still, the idea that computers could be sold and used by individuals outside corporate, university or military settings was a turning point. Seeing a small but stable market for such computers, other individuals and companies joined the competition. An interesting ecosystem of producers and consumers began to emerge, and one that looked markedly different from the vertically integrated model that characterized the rest of the computer industry. The design of the Altair was such that peripherals could easily be added and modified. Thus, what would be an important pattern in the personal computer industry emerged: small companies supplemented the basic hardware of a computer with peripherals and software. In this way, the personal computer as it was used by an individual was in fact a multiply constituted machine, rather than a stand-alone object, like a microwave. As Richard Langois points out, "To accomplish anything, one

²⁷ Paul Ceruzzi, *A History of Modern Computing* (Cambridge, MA: MIT Press, 2003), 208.

needed not just the box itself, but also the know-how, add-on boards, and software provided by a large network of external sources.”²⁸ The personal computer at its inception was constituted through a process of assemblage – quite literally in the case of the Altair.

Leslie Haddon writes,

The sheer appearance of such machines reflected the primary interest in function. They consisted of a metal box (often literally 'the black box') with toggle switches, blinking lights, and wires coming out of all sides. The lack of aesthetic considerations reflected both the do-it-yourself form of short-run production and the values of the producers.²⁹

However, the concern for reaching non-technical users soon emerged as a consequential factor in the development of personal computing, propelling the personal computer beyond the subculture of electronic hobbyists and technology enthusiasts. The first company to truly take advantage of the idea that computer could be easy to use, could be a kind of “information appliance,” was Apple, with its introduction of the Apple II in 1976 (Fig. 1.2). Created by Steve Wozniack and Steve Jobs, the Apple II was the first time a personal computer was marketed for a broad audience. The key was that the computer came pre-assembled. It was designed to run quietly, with soft edges and no sharp screws. It was decidedly not like the threatening machines of science fiction. Moreover, Apple was the first to offer customer support and, in the words of one industry insider, “behave like a genuine business back in 1976 when other manufactures were amateur shoe-string operations.”³⁰

²⁸ Richard Langois, “External Economies and Economic Progress: The Case of the Microcomputer Industry,” *The Business History Review*, 66:1 (1992); 1-50, 11.

²⁹ Leslie Haddon, “The Home Computer: The Making of a Consumer Electronic” *Science as Culture* 2 (1988), 8.

³⁰ Langois, 15.

HOW TO "READ" FM TUNER SPECIFICATIONS

Popular Electronics

WORLD'S LARGEST-SELLING ELECTRONICS MAGAZINE JANUARY 1975/75¢

PROJECT BREAKTHROUGH!

World's First Minicomputer Kit to Rival Commercial Models...

"ALTAIR 8800" SAVE OVER \$1000



ALSO IN THIS ISSUE:

- An Under-\$90 Scientific Calculator Project
- CCD's—TV Camera Tube Successor?
- Thyristor-Controlled Photoflashers

TEST REPORTS:

- Technics 200 Speaker System
- Pioneer RT-1011 Open-Reel Recorder
- Tram Diamond-40 CB AM Transceiver
- Edmund Scientific "Kirlian" Photo Kit
- Hewlett-Packard 5381 Frequency Counter

Fig. 1.1: Popular Electronics. Cover. January 1975. Print.

Introducing Apple II.



The home computer that's ready to work, play and grow with you.

Close the kitchen table. Bring in the color TV. Plug in your new Apple II, and connect any standard cassette recorder, printer. Now you're ready for an evening of discovery in the new world of personal computers.

Only Apple II makes it that easy. It's a complete, ready-to-use computer—cost a little. At \$1295, it includes features you won't find in other personal computers—waiting for you at home.

As you enter Apple BASIC, you'll be able to organize, label and store data on punched tape, magnetic tape, magnetic disk, and record cassettes. You can change them, copy them, back them up, delete them, balance your checking account, even control your home environment. Apple II will go on.

Best of all, Apple II is designed to grow with you. As your skills and experience with computing increase, you may want to add new Apple peripherals. For example, a keyboard, more sophisticated BASIC language being developed by software scientists and mathematicians, and a built-in printer.

Apple II is designed to grow with you. As your skills and experience with computing increase, you may want to add new Apple peripherals. For example, a keyboard, more sophisticated BASIC language being developed by software scientists and mathematicians, and a built-in printer.

Apple II is also available in hard-copy form for the do-it-yourself hobbyist. Has all the features of the Apple II system, but does not include case, keyboard, power supply or cassette interface. \$995. JISC's trademark of Apple Inc. Apple II plugs into any standard TV using an interconnect module (not supplied). Detailed brochure. For write Apple Computer Inc., 20520 Stevens Creek Blvd., Cupertino, California 95014.

apple computer inc.

Fig. 1.2: Apple II. Advertisement. July 1977, BYTE. Print.

Writing about the Apple II's significance, Stan Veit, founder of one of the first personal computer stores and author of a first person-account of the personal computer industry recalls,

The Apple II changed the entire business. No longer did solder iron wielding techies hang out at our store—the Apples came completely built and ready to run... The Apple users were much more oriented toward software and graphic applications. They were more interested in what a computer did than how it did it.³¹

Veit's recollection raises another important development to the surface: customers came to stores to buy computers. Slowly but surely, the personal computer market moved from a distribution pattern based on the pattern of electronic hobbyists to that of consumer electronics. No longer were computers sold by mail order. Nor were they sold through devoted sales representatives at large computing companies like IBM, the primary distribution channel for mainframes and minicomputers. Personal computers were placed as commodities in retail outlets, along side video games, software and other consumer electronics.³²

By the late 1970s, the market for personal computing had grown exponentially. The three leading companies in personal computers sales were Apple, Radio Shack and Commodore.³³ Yet this market still looked very different from what we know today. For, none of the systems were compatible. Although each machine was designed to allow peripherals and add-ons, software was not yet easily shared. This chaotic and inefficient market slowly consolidated by the early 1980s, especially in the wake of IBM's entry into the personal computing market in 1981.

IBM's entry into the personal computing market not only stimulated market consolidation, but also served to legitimate the industry itself. By the early 1980s, it was evident

³¹ Stan Viet, *Stan Veit's History of the Personal Computer* (Asheville, NC: World Comm, 1993), 99.

³² Haddon (1988), 15.

³³ Langois, 18.

that personal computers represented great market potential. This was no fad. Personal computers, as a class of product and as an idea, were here to stay. As personal computers became staples in office environments, companies sought to expand into the home. Just how companies positioned this move and re-articulation is the focus of my research.

The Domestic Sphere

Guiding my analysis are two thematic concerns that I view as central to understanding the circulation of meaning around personal computers. One primary theme is domesticity. How do computers reinforce or disrupt the meanings and values associated with the home and family at the end of the 20th century? In her history of the introduction of television into the American Post-War home, Lynn Spigel provides an excellent overview of how notions of the home change over historical periods,

While the eighteenth-century family was bound together primarily as an economic unit, working together on a farm, in the nineteenth century production shifted to the world outside the home, to an urban landscape of factories and office jobs. This shift had an important impact on the way family life was conceived and organized. ... Middle-class Victorians represented the family as a site of comfort and rejuvenation while the public sphere contained the hardships of the workaday world. ...³⁴

Spigel discusses how the family ideal of the Post-War era was characterized as a haven of ideal stability, where gender and generational hierarchies were maintained in the face of changing work patterns, and the suburban ideal, away from the city, as a natural refuge, was widespread. In the decades that followed, those of the late 20th century, many ideals remained the same, even as these ideals become harder to sustain. Though decades represent a relatively arbitrary marker

³⁴ Lynn Spigel, *Make Room for Tv: Television and the Family Ideal in Postwar America* (Chicago: University of Chicago Press, 1992), 18.

of time, in popular discourses decades stand as a way to make sense of time periods and shifts in politics and culture. In a *New York Times* editorial from 1989, reviewing the past decade, the editors point to the 1980s as an Age of Revolution, an Age of Greed, and above all, an Age of Speed, pointing to the increasing use of long-distance phone calls, cellular phones, fax machines, the VCR, microwaves, cable and microprocessors.³⁵ Embroiled in the Cold War for most of the decade, anti-Communism and rhetorics of freedom and democracy in the face of the Soviet Bloc were at full force. The 1980s were also a decade which saw the placement of economic policies which favored wealthy Americans, and a time when increasing wealth disparity was documented and called out in the mass-media. Moreover, changing norms of family life took a center stage in the mass media, with a documented decline in nuclear families and an increase in working women and mothers. The stable nuclear family as a norm deteriorated, even as the discourses of Family Values, Conservatism and the Culture Wars characterized the political atmosphere of the 1980s.³⁶

Even as economic and social realities shifted, certain conceptions of the home – as a refuge, a place of leisure, a source of moral order and as a place of self-improvement, remained

³⁵ “Faster, The 1980’s: When Information Accelerated,” *New York Times*, 31 December 1989, Opinion Page, <http://www.nytimes.com/1989/12/31/opinion/faster-the-1980-s-when-information-accelerated.html?scp=43&sq=1980s&st=cse&pagewanted=print> (accessed April 20, 2010).

³⁶ For a sense of the mass-media’s coverage of these issues, see for example: Roberto Suro, “The New American Family: Reality is Wearing the Pants” *The New York Times*, 29 December 1991, <http://www.nytimes.com/1991/12/29/weekinreview/the-nation-the-new-american-family-reality-is-wearing-the-pants.html?scp=1&sq=american%20family%201980s&st=cse&pagewanted=print> (accessed April 20, 2010), and George Johnson, “Portrait of the 1980s; Back in 1979, The Word Was Malaise,” *The New York Times*, 24 December 1989, <http://www.nytimes.com/1989/12/24/weekinreview/portrait-of-the-1980-s-back-in-1979-the-word-was-malaise.html?scp=33&sq=american%20family%201980s&st=cse&pagewanted=print> (accessed April 20, 2010).

compellingly consistent. The American home has continued to be defined by the distinction between public and private space — at least ideally. Whether as a space of pleasure and relaxation or rejuvenation and self-improvement, the home represents a place insulated from work and public life.

Nonetheless, in lived reality, the boundary between home and public world is porous. As Elaine Lally observes, “the household is articulated into wider social processes and institutions and therefore cannot be thought of in isolation from the economic, political and cultural structures within which it is embedded.”³⁷ Moreover, historically we can observe that whether in the form of newspapers, gas and electrical grids, telephones or television, new technologies and media have continually found ways to breach the insulation of the ideal home.³⁸ Thus, discourses around the technology in the home provide a window into how this boundary is broken and how its integrity is altered and re-constructed.

In the case of personal computers, even before networking and the Internet, the meanings and uses attached to personal computers also provided new ways to link the home and the public world. Indeed, personal computers are a doubly articulated technology, meaning that uses and

³⁷ Elaine Lally, *At Home with Computers*, (New York, Berg, 2002), 9.

³⁸ In his history of the industrialization of light, Wolfgang Schivelbusch provides a fascinating discussion of popular anxieties toward “getting on the grid,” linking the home to a centralized network of gas and electricity in the mid-19th century: the “loss of domestic autonomy is part of the larger dissolution of the ‘total household’ ...To contemporaries it seemed that industries were expanding, sending out tentacles, octopus-like, into every house. Being connected to them as consumers made people uneasy. They clearly felt a loss of personal freedom.” (28-29) Citing everyday practices, he writes, “While they slept, people preferred to sever all connection with such a dangerous element and restore the household’s original autonomy for a few hours. (38) Wolfgang Schivelbusch, *Disenchanted Night* (Los Angeles, CA: University of California Press, 1988).

meanings are constructed simultaneously in different spheres, home and office.³⁹ Throughout this thesis, I will look to the ways in which advertising constructed this as a positive and productive link. Indeed, I will suggest that the computer's perceived ability to act as a bridge between public and private worlds was a constituent element of the personal computer's cultural meaning and relevance.

Cultures of Consumption

Another consistent bond between the home and the public world is the process of consuming mass-produced goods. The role of consumption and the place of material objects is another theme that runs throughout this thesis. In recent decades, the role of material objects in cultural and individual lives has been explored from a variety of theoretical positions. Writing of the growth of such studies in their introduction to the *Social Shaping of Technology*, MacKenzie and Wajcman observe,

Questions initially raised, in typically strident fashion, by the theorists of the Frankfurt School have now been taken up, developed and largely transformed by anthropologists and cultural analysts drawing on both the experiences of consumption behavior in non-capitalist societies on the one hand and in 'postmodern' societies on the other. At issue is the complex and often contradictory nature of consumption, which is increasingly being seen as alternatively fragmenting, homogenizing, alienating, or liberating our daily social and economic relationships.⁴⁰

In recent work, Sherry Turkle has collected essays that evoke the dynamic and emergent possibilities contained within everyday objects, what she terms, evocative objects. She writes, "The notion of evocative objects... underscore[s] the inseparability of thought and feeling in our

³⁹ The term "doubly articulated" derives from work by David Noble, and Roger Silverstone and Eric Hirsh.

⁴⁰ MacKenzie and Wajcman, 18.

relationship to things. We think with the objects we love; we love the objects we think with."⁴¹

The meanings of objects are continually constructed, through media discourse as well as individual practices, and taking seriously the place of objects within culture and everyday living opens up the possibilities and stakes of understanding how cultural and individual identities, values and practices are shaped.

The recent body of work exploring material culture takes seriously the complexity of consumption, rather than dismissing or condemning it. Purchasing and owning objects, as Lally writes, is "not just about appropriating objects to the self, but is about how we make ourselves at home in our everyday environments, how we make them habitable and comfortable, and use objects to manage the social world."⁴² Rather than dismissing advertising as propaganda or pure marketing material, we can begin to think about the complexities and consequences at stake in purchasing an object, an act whose first stage begins with advertising.

My interest lies in the embodied discourse visible in advertisements. Advertisements present a unique moment of articulation. They are at once productive and disruptive, real and illusory. The precise nature of their influence on individuals is still rife with disagreement. Nonetheless, their presence within culture and cultural expectations of technology is undeniable. As John Berger writes, referencing advertisements in general, "One may remember or forget these messages but briefly one takes them in, and for a moment, they stimulate the imagination by way of either memory or expectation."⁴³ Advertisements are a unique window into a culture's

⁴¹ Sherry Turkle, ed., *Evocative Objects: Things We Think With* (Cambridge, MA: MIT Press, 2007), 5.

⁴² Lally, 2.

⁴³ John Berger, *Ways of Seeing* (Baltimore, MD: Penguin Books, 1972), 129.

social imaginary. They represent the ideas of marketers and executives, and what these groups believe their market wants. This is not to say that this is precisely what consumers do with the objects they buy. However, the views, attitudes, and beliefs articulated in advertisements come from within culture, not somewhere outside of it. As Spigel writes,

A popular assumption in advertising history and theory is that advertisements are the voice of big industry, a voice that instills consumer fantasies into the minds of the masses. But advertising is not simply one voice; rather it is necessarily composed of multiple voices. Advertising adopts the voice of an imaginary consumer--it must speak from his or her point of view--even if that point of view is at odds with the immediate goals of the sales effort. ... We can thus explore popular media as a ground for cultural debate, which is a very different notion from mass media as propaganda or even as 'consciousness industries.'⁴⁴

Though undoubtedly there will be unexpected interpretations and uses, advertisements present a kind of bottom line, a way to take the temperature of dominant trends and beliefs.

And how do we interpret the work done by advertisements? Articulated in a classic essay by Raymond Williams, advertising is a unique cultural form in its ability to perform a variety of functions.⁴⁵ Thus, various insights are gathered from understanding the representations in advertising through multiple lenses. A primary function of advertising is, after all, the communication of information. What is the product? What does it do? How does it work? Advertising also functions as a representation of model use, particularly during the introduction period of a new product. A new product must be shown to meet a previously unaddressed need, and an advertisement displays an example of how the product meets this need. How is the new product used? Who uses it and why? This is not to say that the information from advertisements

⁴⁴ Spigel, 7-8.

⁴⁵ Raymond Williams, "Advertising: The Magic System," in *Problems in Materialism and Culture* (1962; reprint, New York: Verso, 1980): 170-195.

moves directly from company to individual. However, the uses represented establish a sphere of use within which most users will generally operate.

Thesis Structure

This thesis aims to paint a portrait of personal computers in the mid-1980s. Who used personal computers? What were they good for? How were these meanings constructed and differentiated from previous meanings and uses? Looking to these meanings, we can begin to understand how and why the adoption of personal computers in the home developed. Even as the experience and software design of these small, relatively affordable computers constituted an extremely diverse group of products, the rhetorical move to classify these computers as “personal,” as one kind of machine, helped solidify conceptions and meanings. Thus, I will focus on the presentation and construction of personal computers holistically, rather than the differences among these machines. In each chapter I focus on one dimension of social meaning. In the first chapter I explore how advertisements positioned the personal computer as useful for the home. The 1980s were a turning point in the history of computers. Once large machines, exclusively owned by companies and universities, taking up entire rooms and requiring skilled technicians, computers had developed into smaller, more versatile machines that could be reasonably be purchased and owned by individuals. Yet, the necessity of personal computers for an individual user was still being constructed. Looking to the ways in which advertisements described the computer’s functionality and usefulness for home use brings to light how much the computer had changed -- and how much marketers needed to alter the image of the computer to an easy to use, multi-purpose machine. Its functionality, primarily worked-based, also points to how the personal computer in the home was still very much linked to the office personal

computer. As a machine that existed in both domestic and work space, advertisements seek to highlight the personal computer as an extension of and link to the exterior world.

Intricately related to the computer's functionality is the computer's form. After all, if the computer was to exist within the home, a place where a multitude of activities and other objects exist, it is important to consider how the computer was positioned as an object to live with, not just a tool to work with. In the second section, I examine how advertisements portrayed the personal computer's design, from the perspectives of industrial design as well as interaction design. We witness how marketers sought to achieve a precarious balance between familiar conceptual and formal models and potential innovations, between visibility and invisibility of the computer as a machine, and between the computer as a tool and as a collaborator. This balancing act, in tandem with the diverse functionality of personal computers, illustrates the tactics through which advertisements sought to naturalize the computer in the home.

In the second half of the thesis, I explore the more abstract meanings and consequences of the personal's computer introduction into the home. In the third section, I focus on the dimensions in advertisements that link personal computers to specific values and world-views. Examining the themes that emerge, we understand how owning a personal computer in the home was also a means of identity formation. Looking at advertisements from this period, we begin to understand how personal computers were linked with larger ideologies. This chapter focuses on what the personal computer, as an affective and evocative object, represented. Far from neutral, the ecology of signification within advertisements is thoroughly linked to specific cultural ideals and values, including independence, freedom, creativity, success and power. The personal computer does not naturally embody these ideals. Indeed, at different moments in history, we

witness how the personal computer represented different concepts. Thus, looking at the realm of social meanings associated with the personal computer during this period illuminates the stakes of owning a personal computer, and the extent to which purchasing a computer for the home was an act whose significance extended beyond word-processing in one's pajamas.

Linking the personal computer to larger systems of signification and value is one way to understand the evolving place of the personal computer in the home. Another dimension that must be considered is how the personal computer was positioned within existing systems of social relations. In the fourth and final section, I examine advertisements for what they reveal about how the personal computer was understood to relate to social interaction and communal experiences. It is important to understand the nuanced construction of the personal computer as *personal*. The extent to which advertisements position the personal computer as enabling social experiences points to the danger in conflating personal computing with isolated and individual use. Indeed, what we observe suggests how the personal computer was constructed as straddling a delicate boundary between individual and community.

Taken together, what emerges is a multi-dimensional portrait of the personal computer as a socially-constructed object for the home. As both reflections and shapers of contemporary attitudes and practices, advertisements provide a window into a culture's social imaginary. Personal computers emerge as personal in their ability to be linked to a variety of uses and meanings, and their ability to embody certain ideals and modes of work associated with individual power and accomplishment.

Focusing on a moment of relative stability within a technology's evolution has its strengths and weaknesses. What we gain in granularity we perhaps lose in dynamism. Clearly a

limitation of this thesis is its narrow focus. Focusing on advertisements presents only one side of the conversation in the dialogue of culture. Also, focusing on one moment in history does not provide the same perspective as examining a series of moments where we can clearly identify change.

Nonetheless, the risk of only valuing histories that focus on the extremes of change and innovation is that the less tumultuous times that make up the foundation of everyday experience are elided. Rather than leaving moments of relative stability unarticulated, an analysis such as that undertaken in this thesis contributes to the collective and nuanced understanding of the personal computer's history. In attempting to articulate the means of socially constructing the personal computer in the mid-1980s, we come to clearly understand the role and potential implications of advertising in socially constructing meaning, as well as gaining a deep perspective on how the personal computer was constituted in the early years of its introduction in the home.

1957/1998

Let us step back for a moment in order to bring the stakes of this history to light and to illuminate the profound changes in the status and understanding of the personal computer in American culture. These changes occurred within a relatively short period of time and have deeply impacted the relationship between humans and computers in the second half of the 20th century. As emblematic bookends, we may take two popular movies, *Desk Set*, released in 1957, and *You've Got Mail*, released in 1998.

In the romantic comedy, *Desk Set* (Fig. 1.3-1.4), Katherine Hepburn and Spencer Tracy play out a familiar tale of intellectual struggle and eventual romantic reconciliation. Hepburn plays Bunny Watson, the head librarian in the research department of a large television network.

She and her fellow librarians, “the girls,” are a group of sharp, witty, fun-loving ladies who do an excellent job of providing information resources to the company. One day, Richard Sumner, played by Tracy, arrives. His mission is unclear. It seems he has been hired by upper management to be an efficiency consultant. Charming, he talks with the librarians while also asking many detailed questions about their work and measuring the office space; it doesn’t look good for the future of the women’s jobs. It turns out Sumner has been brought in to introduce EMERAC (remarkably similar in name to the mainframes developed in the late 1940s and 1950s, ENIAC and UNIVAC), a large mainframe computer developed by IBM. Interestingly, the machine is rarely mentioned as a computer, but rather as an “electronic brain;” Up through the 1950s, even how one referred to a computer was under negotiation.

With no official information available, rumors in the workplace spread. We can only imagine these fears reflecting what would have been general fears of the introduction of computers and automation into the office workplace. Would the computer replace the team of four girls? Could it actually do their tasks more efficiently? The girls feared not only for their livelihoods but also for the loss of any kind of personal contact and community in the workplace. The circumstances and jokes throughout the movie play on these tensions, and we may likely assume that these concerns resonated with audience members.

In the end, EMERAC does not spell disaster for the research department. The computer makes many mistakes and even prints slips that fire everyone in the company, including the president. The computer is just as fallible, if not more, than humans. More importantly, we learn that EMERAC was never intended to replace the research department, merely augment it. EMERAC would bring the efficiency of automation without obviating the need for human

researchers. The fears incited by the computer's presence are neutralized. Moreover, the two lead characters, who had stood at odds throughout the movie, eventually reconcile and fall in love. From every angle, the movie suggests, fears of computers in the workplace are unnecessary. Yes, they exist. But they are unfounded; the future of computers and humans working together looks like a future in which we all might want to live.

Without analyzing audience responses and understandings of the movie, we may draw a few salient observations from our contemporary position. By 1957, computers were existent in the popular imagination of America. However, the actual uses and conceptions of how a computer fit into the human world were unclear. For instance, we might ask, who uses a computer? Given what we see in the movie, there are a few possibilities. One obvious but crucial point is that the computer is not owned by a single individual, but rather, by the company itself. People cluster around the computer in groups, and the computer in some senses, stands in as another person, rather than an extension of any one person. Indeed, EMERAC is nicknamed Emmy, and is referred to as such. Although many people work in the vicinity of Emmy and are meant to rely on her functioning, only a trained technician may operate the computer. Emmy's doyen is a frigid woman and very unfriendly. Yet, Sumner is also, in a sense, in charge of Emmy. As a management consultant, he is a user of the computer given that he is the one implementing its use.

The movie also suggests the complex way in which gender and computing are entangled. Unusually, the computer is gendered female. Indeed, the title of the UK release was *His Other*

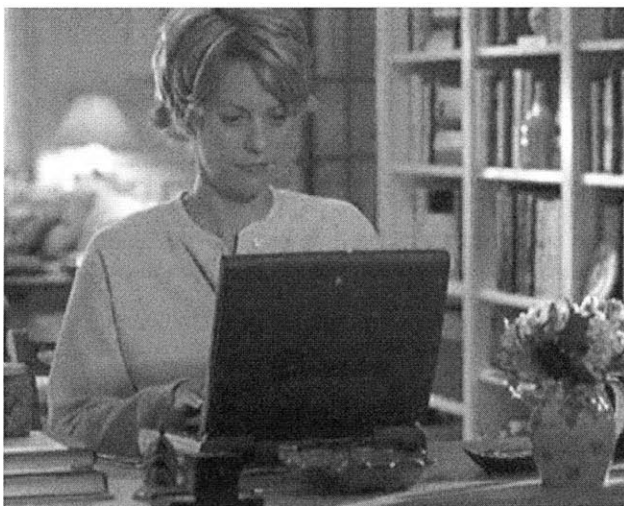


Fig. 1.3-4: *DeskSet* (stills). Film. Directed by Walter Lang. United States: Henry Ephron, 1957. (above)

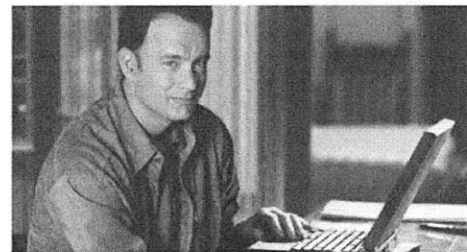


Fig. 1.5: *You've Got Mail* (still). Film. Directed by Nora Ephron. United States: Laura Schuler Donner and Nora Ephron, 1998. (lower left)

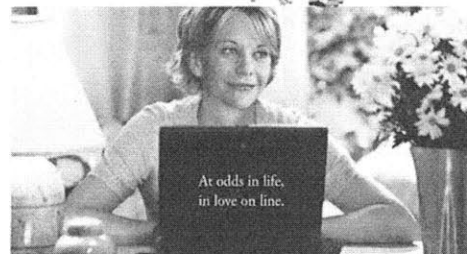
Fig. 1.6: *You've Got Mail* (Movie poster). (lower right)



Tom Hanks Meg Ryan



from the Director of *Sleepless in Seattle*
You've Got M@il



WALTER EPHRON PRESENTS
 LAUREN SIEGEL DONNER PRODUCES A NOVA EPHRON FILM TOM HANKS MEG RYAN "YOU'VE GOT MAIL"
 PARKER POSEY JEAN MARCUS DAVID CRISPELLE STEVE ZIVIAN GREG KINNEAR GEORGE HENTON DOUGLAS MILLS
 "SUGAR DAVY HAYS" JESSICA JAMES LINDALEY "BIG" ENOCH EPSTEIN JILL FURSKIN G. M. MAE BROOKS "MAMA" MARRA EPHRON ERIC EPHRON
 WRITTEN BY WALTER EPHRON DIRECTED BY NOVA EPHRON

Woman. Moreover, the computer is replacing women's work, not the work of the top male managers. While computers may actually do the work of women (as woman had once done the work of computers), their introduction and power over work practices reflects the male domination of the workplace. Men are in charge of bringing the computer to the workplace, and their power extends through the computer. Thus, a complex and at time contradictory picture begins to emerge around the uses and consequences of computing. And what are computers good for, besides efficiency initiatives? Emmy is essentially a number cruncher, a really smart calculator.

Although the film ends happily, it is impossible to miss the undercurrents of panic and uncertainty. What are computers? How will they change the ecosystem of the workplace? Will they replace humans? And if not, how are humans supposed to interact with and work with computers? The film glosses over these questions in its neat resolution. Rather than the happy ending, these questions are indicative of the social imaginary in which computers existed in the 1950s.

In contrast, consider *You've Got Mail* (Fig. 1.5-1.6), a romantic comedy released in 1998, starring another classic film couple, Meg Ryan and Tom Hanks. The driving conflict in this film is between a small children's bookstore owner, Meg Ryan, and the manager of a corporate, discount bookstore, played by Tom Hanks. Not explicitly about technology, the film centers on different but equally pervasive tensions in the workplace: the undercutting of independent, small neighborhood stores by low-cost, impersonal superstores. By 1998, computers have slipped into the background, understood as part of the fabric of people's lives. The personal computer, in the form of desktops and laptops, is that which enables connection between the lead characters, who,

like Bunny and Sumner, represent opposite poles of the driving ideological tension. However, in this film, the two fall in love in cyberspace, having met in an AOL chatroom where screen-names mask their real identity. Such anonymity is at once a threat but also, and more importantly, a great potential. Fear is expressed only in jest; “Would you actually meet someone in person you met on the internet?” one of the characters asks. “Sure!” her friend giggles. The general sense is that those who have not gotten on the internet bandwagon will be left behind. This is the future. The possibilities of the internet are endless; you can find true love.

And what of the anxieties expressed around the relationship between humans and computers in *Desk Set*? They are absent, inconsequential. The only tension we witness is when the characters feel like they are checking their email too much. The very pressing questions of how to interact with a computer -- what it could do, why anyone would want one -- all these questions are no longer questions. They are given facts of life. You type on a computer, do business tasks, and communicate with others through a network. You use a mouse, and this computer fits on your desk. You use a computer by yourself, and it becomes an extension of you. The materiality of the technology has slipped into the background. Everyone uses a computer, and we are all better for it. Our computers help make us who we are.

Clearly, the role of computers in everyday life underwent major changes in the decades between these two movies, and the 1980s presents a moment in which we can observe these transitions, anxieties, and possibilities in motion. One place to begin is by examining more closely how the specific uses of computers had changed, and what role advertisements played in constructing new paradigms in which the personal computer’s utility operated.

Chapter 2: What the Personal Computer Can Do For You

Blending into the pages of the September 1984 issue of *Reader's Digest* was a twelve-page advertising insert from IBM (Fig. 2.1-2.3). Visually and narratively structured like editorial content in the magazine, the insert tells an easy to understand, introductory story about computers. The insert, titled, "When will YOU start to use a computer?" begins by informing us that,

If you don't yet use one at work or at home — in fact, even if you can't imagine yourself ever operating a computer — you already may use one or more every day without knowing it. You had no problems learning how. And the skills and attitudes you apply to those computers actually represent your first steps toward operating one of the desk-top computers you see everywhere now.

A friendly-looking and happy woman turns away from a desk-top computer, toward us, as if beckoning to join her on the journey.

This chapter is also an introduction to the personal computer, specifically looking at how advertisements positioned the personal computer as a functional object for the home. The advertisements, generally illustrative of advertisements from the period, present computers as easy to use, as extensions of productivity and flexibility, and as all-purpose machines I will explore the predominant means by which computers were presented as such useful and functional objects for the home, briefly exploring the theoretical implications of such uses, while also laying foundational threads which will be picked up and reweaved in the following chapters.

We begin by looking more closely at the IBM insert, which stands as an emblem for the general tactics deployed to demonstrate a computer's function. The story of the advertisement, told through text and pictures, introduces and reiterates a number of important concepts. The

story insert introduces us to two couples, one couple, Mark and Mary, has a personal computer, the other, Scotty and Gail, does not. Scotty and Gail have just arrived for dinner, but upon seeing “what looked like a television set on a top of a typewriter,” the evening takes an expected turn. Mark, a true evangelist for his personal computer, “a PC, for short,” explains that after finding his productivity greatly increased at work, he decided to get a PC at home. And he loves it. When Scotty and Gail incredulously ask what someone would use a computer for — and that it must be very hard to use, Mark explains, “You already use computers!” There is nothing to fear, and everything to gain.

Above all the story suggests that computers are easy to use. This is demonstrated to be true by emphasizing all the easy-to-use computers that surround us in daily life: calculators, digital watches, and bank ATM machines. After disproving the basis for the couple’s original doubt, voiced in the highlighted quote from the woman, “You really think we could handle a PC?” the story demonstrates how useful a PC would be, that, in the words of the ad copy, the computer-less couple “had some very compelling reasons to consider a step that could enrich their lives.” Mark, the PC evangelist, explains, “We’re not trying to sell you [a computer]. It’s just that we know you and your kids will get so much out of it.” What can the computer do for these ordinary couples? It can help with small business billing and payroll, as well as personal household money work. This can be done so quickly and easily that more work can be taken on; in Mark and Mary’s case, they now keep the financial records for the volunteer fire department! Moreover, Gail can keep track of recipes, and for the children, the computer can “make learning easier and faster” with educational games. It should be noted that although personal computing is presented as accessible for the whole family, as opposed to just the father, the specific utility of

ADVERTISEMENT

12-page section to help make you more familiar
with personal computers.

When will YOU start to use a computer?

If you don't yet use one at work or at home—
in fact, even if you can't imagine yourself
ever operating a computer—you
already *may* use one or more every
day without knowing it. You had
no problems learning how. And
the skills and attitudes you apply
to work *those* computers
actually represent your first
steps toward operating one
of the desk-top computers
you see everywhere now.



IBM

ADVERTISEMENT

“You already use computers!”

That's what Scotty and Gail learned
—to their surprise—when they
had dinner with friends who had
just bought a personal computer.
Read this informative, true-to-life story
in which you might see yourself.

Almost as soon as Gail and Scotty walked through Mary and Mark's back door, Mark took his old friends by the arm, and led them into the living room.

“Voilà!” he said, pointing to what looked like a television set on top of a typewriter. “Our own personal computer. A PC, for short.”

Scotty dropped his jacket on a chair as he walked over and tentatively touched a key. “Whatever inspired you to buy this?”

“Well, I started to use one in my office, and...”

“You? A sales manager?” Scotty interrupted.

Mark explained that his company had begun a study to see where desk-top computers might increase productivity—especially in departments that had never used computers before. One of his first projects had produced a schedule increasing his sales calls by 10 percent.

That success—and resulting enthusiasm—had led him, along with his wife, Mary, to experimenting with PCs in a computer store. And they had talked about how, since they both worked, they could handle their personal finance and tax records and other such chores much faster and better with a PC.

“Then,” Mary said, “our 12-year-old came home just raving about a math game he had played for three solid hours on a computer in school. Mark and I looked at each other... and...well, there you see it. And I think we'll see one in your house before long.”

Scotty span in surprise. “When would we use a machine like this?”

But his surprise turned to thoughtful frowns as Mark pointed out that Gail, who spent two days a week doing the books for Scotty's auto-body shop, could do that work in just hours with a PC, one which she also could do their household finance and records.

“And don't forget those three fine kids of yours,” Mark added.

It estimated that in 1985 nearly about the time both families' children would finish school—some 23 percent of all office workers will need



“When would we use a machine like this?”

Fig. 2.1-3: IBM. Advertisement. September 1984 Reader's Digest, 48D-P. Print.

ADVERTISEMENT

“You really think we could handle a PC?”

That's what Scotty and Gail asked after learning
that they already use many computers...
and had some very compelling reasons
to consider a step that could enrich their lives.

Mary took on the answer. “As Mark said, it's not something you simply plug in and start using.” But if they did some reading and practiced—maybe with one of the self-teaching diskettes—she didn't see why they couldn't do it. They certainly had passed what Mary called their “aptitude tests.”

“Did I tell you Gail and I can't type?” Scotty asked.

“You heard Mark say he can't, either. He hunts and pecks...and sometimes works the computer faster than I can, and I do type.”

Scotty looked at Gail with a “nothing left to ask” expression. “What do you say we go poke around the computer center Saturday morning? Just out of curiosity.”

“I'm curious,” Gail admitted.

Mary and Mark enthusiastically encouraged them to “go experiment with the computers there.”

“We're not trying to sell you one,” Mark said. “It's just that we *know* you and your kids will get so much out of it.”

“You say I can do the body-shop

books and billing in less than a day?” Gail asked.

Not only that, she was reassured, but also the six-man payroll, and, in not much more time, also their personal household money work. And, something few people think of before they get PC's, some wonderful charity and community work.

“I put all the financial records of the volunteer fire department on our PC,” Mark said. “Now we get perfect treasurer's reports every meeting—everything we own, with its value as of this week.”

The conversation started to get a bandwagon feeling. “I read that they use computers to design cars,” Scotty ventured. “Could a PC tell me how to restore those wrecks I get?”

“Hold up,” Mark laughed. “You and that crew of yours do artistic, creative hand work. That's one of the few ways a PC can't help you.”

But it can. Scotty would learn, make quick, accurate estimates for jobs needing many parts and a great deal of specialized labor.

“If I loved the PC for no other reason,” Mark said, “it would be that it does my tedious business homework—like expense accounts—so fast and easily, I get it done on time.”

“And you say it helps the children?” Gail asked. She was told that a personal computer and the right programs can make learning easier and faster. In part, because a computer is a patient teacher that fascinates youngsters. Some innovative programs encourage students to reach *above* their class level.

“We can't keep our sons away from it,” Mary said. “Not that we want to.” That is one screen to which Mary loves to see her children glued.

ADVERTIS

QUIZ: All true, except TWO

Below, can you find the only two services a personal computer cannot do for you? (This quiz samples all the things it can do—an already long list that grows longer literally every day.) Mark T or F; then turn page

1. Save you money.
2. Pay bills for you.
3. Help keep you fit.
4. Repair your car.
5. Speed a bank loan.
6. Help you get into a college.
7. Relieve loneliness.
8. Diagnose illness.
9. “House-sit” for you.
10. Help you pick the right dog.
11. Check your spelling.
12. Teach you to type.
13. Let you shop from home.
14. Earn you tax deductions.

(Answers: Next page.)



the personal computer is still gender and age specific. Women are able to do household chores, and children learn.

If these practical applications aren't enough, a blue box beside the text beckons with a quiz explaining that out of the following fourteen things a personal computer "can do for you," only two are not true. The reader must choose which uses are false. Those things which a PC can do for its user are,

Save Money; Pay bill for you; Help keep you fit; Speed a bank loan; Help you into college; Relieve loneliness; 'House-sit' for you; Help you pick the right dog; Check your spelling; Teach you to type; Let you shop from home; Earn you tax deductions.

The two uses which are not true, "Repair your car and Diagnose illness," highlight in order to dismiss the cultural anxiety that computers will replace humans. The text that explains why each use is false emphasizes that human judgment remains an important part of using a computer, "Computer programs can help you determine what might be wrong, but it takes *human minds and hands* ... to fix it." (Emphasis added.) This list at once demonstrates how useful a computer can be, without suggesting that computers will replace humans; Computers merely augment the human intellect. As with EMERAC in *DeskSet*, an underlying cultural anxiety that computers will obviate human work addressed and emphasized for its falsity.

The setting and tone of the story also suggest that computers in the home are an immanent fact, and that, in a sense, everyone should join the party — as quickly as possible. The story repeats, through side comments by Mark and Mary, as well as the citing of statistical facts, that computers will soon be ubiquitous, "It's estimated that in 10-15 years — almost the time both families' children would finish school—some 75 percent of all office workers will need to know

how to use computers.” Thus, the story ties the computer to broader discourses about the future and success. Owning a personal computer is more than a purchase for your home, its necessity for the future. However, these insinuations are presented not as threatening but as full of potential. The very party atmosphere, the social and relaxed nature of a dinner party and the casual speech, imbue these ideas with a certain friendly festivity.

Directed to a reader unfamiliar with personal computer, the advertisement is an ideal example of the ways in which the personal computer was positioned for home use. There is an emphasis on ease of use, diverse functionality, and a certain element of keeping up with Joneses and investing in a future characterized by specific cultural ideals. Although I have focused on how this ad presents the computer’s usefulness, themes in this advertisement will reemerge through out this thesis.

Easy as 1-2-3

The potential functions and uses of the personal computer may seem obvious and, to our contemporary eye, ordinary. However, a more critical engagement with just what is being valued as useful is necessary.

Most persistent in the ads that primarily address the personal computer’s functionality is that this new technology is easy to use, a clear response to the cultural perception that computers require technical skill and training. One IBM ad from 1986 states, “You have more important things to do than learn how to use a personal computer” (Fig. 2.4) in large block letters. The rest of the page is empty of images. Clear and concise, the IBM ad suggests that buying a PC will not add clutter to your life or prove overwhelming.

The ease of use of Apple computers was a prominent marketing point for Apple computers. A Macintosh multi-page insert that accompanied the launch of the Macintosh in 1984 billed it as “the computer for the rest of us.” (Fig. 2.5) This computer was “user-friendly” and intuitive, built for people who didn’t know about how computers worked – and didn’t want to know. The ad copy begins,

In the olden days, before 1984, not very many people used computers.

For a very good reason.

Not very many people knew how.

And not very many people wanted to learn ...

Then, on a particularly bright day in Cupertino, California, some particularly bright engineers had a particularly bright idea: since computers are so smart, wouldn’t it make sense to teach computers about people, instead of teaching people about computers?...

And when the engineers were finally finished, they introduced us to a personal computer so personable, it can practically shake hands.

And so easy to use, most people already know how. ...The real genius is that you don’t have to be a genius to use a Macintosh.

You just have to smart enough to buy one.

The notion that computers could be easy to use, that they could be a casual home appliance, an “information appliance,” was a point that computer companies and marketers needed to hit home because this fact was not widely believed, as the reluctance of the computer-less couple in the *Reader’s Digest* IBM insert suggests. This notion stood in opposition to the previous decades of computer use and the social imaginary of computers, in which a “priesthood of technicians”⁴⁶ presided over computers.

Mainframe computers, most of which were produced and distributed by IBM from the

⁴⁶ Ceruzzi, 77.

1950s to the 1980s, represented the epitome of cold, corporate, centralized power.⁴⁷ These computers were viewed as the dominion of an elite circle of programmers and managers.

Describing the typical environment of the 1960s for someone who wanted to use a computer in a university setting, Paul Ceruzzi explains that such mainframes existed in special climate-controlled rooms and were meant to evoke a feeling of highly protected power,

A typical transaction began by submitting a deck of cards to an operator through a window (to preserve the climate control of the computer room). Sometime later the user went to a place where the printer output was delivered and retrieved the chunk of fan-fold paper that contained the results of his or her job. The first few pages of the printout were devoted to explaining how long the job took, how much memory it used, which disk or tape drives it accessed, and so on – information useful to the computer center’s operators and written cryptically enough to intimidate any user not initiated into the priesthood.⁴⁸

It is important to note the extent to which computers needed to be and were repositioned in the public mind. That computers could be easy to use, accessible to anyone who could afford to buy one, was a new and relatively radical possibility that needed to be emphasized.

Yet, it is also important to note the limits of such usability. Although universally presented as “easy to use,” this characteristic exists within a continuum, rather than as a solid fact. The Apple operating system (OS) was, it is fair to say, easier to use for a non-programmer, that is, the general population. This is because the Apple OS operated through a Graphical User Interface (GUI) as opposed to the text-based Command Line interface widely employed in the Microsoft Operating System, which was used in IBMs and IBM clones. By the end of the 1980s, Microsoft’s Windows OS, also employing a GUI, would be the most widely used operating

⁴⁷ Ibid., 8.

⁴⁸ Ibid., 77.

system.

A New Machine. A New Worker.

In a 1986 ad for Seagram's V.O. Canadian Whiskey (Fig. 2.7), a smiling man sits at his desk in an office, his hand beside a small personal computer. The office looks cluttered, and the space seems to be shared with other people. This man, though smiling at his desk, is clearly not an executive but instead a mid-level office worker who probably complains about work and long hours. The text beneath the photograph states, "Last year, Roy Steinmetz booked 678 corporate executives on 15,656 flights in over 115 countries. Without losing an executive. So he received a bottle of V.O." Below this, a large bottle of V.O. lies horizontally, with the text, "The reward" beside it. In addition to the pleasure and satisfaction associated with V.O., the ad testifies to the place of personal computers in the office world. His hand by the computer, the worker has been able to book all these flights flawlessly – and get his reward – with the assistance of a computer.

Indeed, increased productivity is another persistent theme within the advertising of a computer's functionality. As the computer owning couple in the IBM insert explained, the computer allowed them to not only get work done faster, but also to take on more work. Mark states, after all, that it was because of the phenomenal productivity with his computer at work that he decided to buy a PC for his home. In many instances, the home computer is positioned not in opposition to work but rather, as a comfortable and productive extension of work life. The computer at home acts a bridge between two different spheres allowing previously impossible productivity.

In an ad for an AT&T Unix PC (Fig. 2.8), under a section of text titled "Power," we are

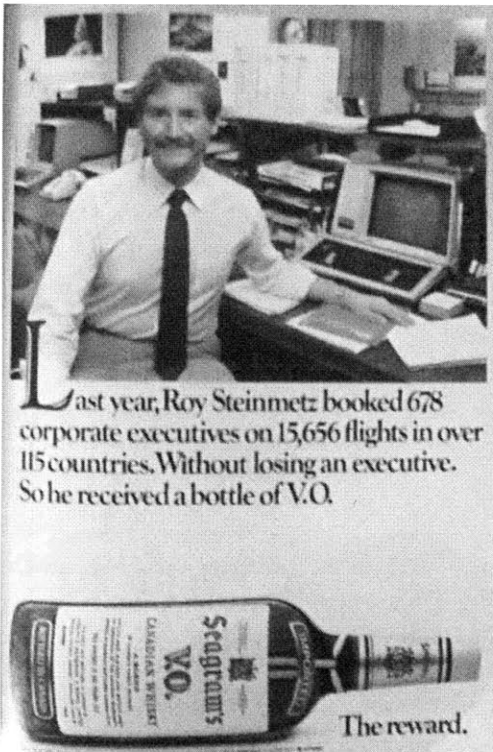


Fig. 2.7: Seagram's V.O. Advertisement. October 1984. *Reader's Digest*, 51. Print.

Fig. 2.8: AT&T UNIX PC. Advertisement. 27 May 1985. *TIME*, 18-19. Print.



Fig. 2.9: IBM. Advertisement. 16 January 1984, *TIME*, 34. Print

told that the UNIX PC “allows you to process your data faster. [Not a little more data a little faster. *Lots* more data, *much* faster.]” An IBM ad, titled “How to tame your data,” states that “... you can whip thousands of names and numbers into more manageable shape. (Helping you get a better shot at the lion’s share)” (Fig. 2.9).

The extent to which personal computers are aligned with increased productivity extends beyond the office environment. The personal computer, ads often suggest, allows a user to be more productive, by being productive *at home*. An ad for IBM’s PCjr states that “With IBM PC at the Office and PCjr at Your House, You Can Take Work Home On Your Little Finger.” (Fig. 2.10) Above this statement, taking up a third of the page in bold text, an actor portraying Charlie Chaplin, the center piece of IBM’s marketing strategy from 1981-1985, stands in a quintessential Chaplin stance, looking toward a diskette in his hand.⁴⁹ A sign for a bus stop points humorously upward. Charlie’s casual stance and the silly scene lend a frivolous, playful tone to an otherwise serious message: with IBM PCs in home and office, you can work everywhere, anytime.

In an ad for the Tandy 1000SX (Fig. 2.11) a woman sits at home on a screened-in porch. An in-set image displays the personal computer and beside it, large font states, “Now you can afford to get serious.” In copy below we are told,

The Tandy 1000SX is a professional-level business computer with two disk drives and 384K of memory. But since it’s priced at only \$999—and since it uses the same powerful PC software you use at the office—it’s perfect for serious use at home. ... Bring office software home for comfortable ‘overtime’.

These ads exemplify the way in which personal computers functioned as bridging objects

⁴⁹ Further aspects of the choice of Chaplin for IBM’s extensive campaigns will be discussed in the next chapter.

between the domestic and work spheres. By being domesticated, personal computers take on certain specifically domestic characteristics, while still also retaining and continually being redrawn by exterior formulations of value and utility.

In addition to increased and multi-locational productivity, we see that another specific kind of productivity is highlighted and thereby valued: flexibility and diversity. In an ad for the AT&T brand, which at this time was in the telecommunications and personal computer business, bold text takes up most of the page, stating, “AT&T Gives You the Outlets You Need to Cope in Today’s World.” (Fig. 2.12) Beneath the text, in the bottom quarter of the page, a series of four photographs shows the same man in four different scenes, performing four different tasks; he reads papers in a business suit at the office, he talks on the phone in his car in a dress shirt, he talks casually on the phone at home, and he leans in front of a personal computer in a dress shirt, but presumably at home, in a study with wood paneling. The ad suggests that AT&T can meet at every step the diverse needs of the common office worker, who has to work in many different capacities throughout the day. Less explicitly business oriented, an ad for Commodore 128 and 64 Personal Computers (Fig. 2.13) shows nine computer displays, each with a different image, representing the range of possibilities. With a Commodore you can “graph a spreadsheet,” “compose a song,” “paint a picture,” “organize a database,” and “play a game” to name a few. The copy for the ad reads, “All you need to do this [referencing the following images of computer displays] *is this* [referencing a Commodore].” Presenting a range of “screen shots” from a diverse array of computer programs was a common motif in advertising from this period. The array of images embodies all the different possibilities contained in one machine.

Also common in the copy of advertising is a list of possibilities detailing what a user can do with a computer. In another Commodore ad, we are told that

the new Commodore 128 jumps you into a whole new world of business, productivity, education and word processing programs, while still running over 3,000 programs designed for the Commodore 64.⁵⁰

An IBM multi-page ad from 1986 states, “Over three million IBM PCs have been put to work, doing everything from financial analysis to first-grade arithmetic. ... You do many things at once and your PCs could too ...”⁵¹ An ad for a Tandy 1000 (Fig. 2.14) boasts of six useful programs that come with any purchase,

You’ll have a complete all-in-one computer system that’s ready to run ... Choose from word processing, spreadsheet analysis, electronic filing, telecommunications, calendar/ alarm and electronic mail And there’s an unlimited number of software packages available. Choose from the most popular names in business and productivity, plus home, education and entertainment programs.⁵²

Almost all advertisements for computers stress the range of things to be done with personal computers. We might see this a rather straightforward marketing tactic; the precise ways in which users engage with personal computers was still in a moment of transition and flux. Offering a variety of uses was a way to reach the most people. Moreover, as personal computers were still a hefty financial investment for most people, stressing the endless possibilities and uses was a way to justify such a large purchase.

⁵⁰ Commodore 128. Advertisement. 4 November 1985. *TIME*, 80.

⁵¹ IBM Personal System/2. Advertisement. 4 May 1987. *TIME*, 43-66. Print.

⁵² Tandy 1000. Advertisement. 2 December 1985. *TIME*, 14.

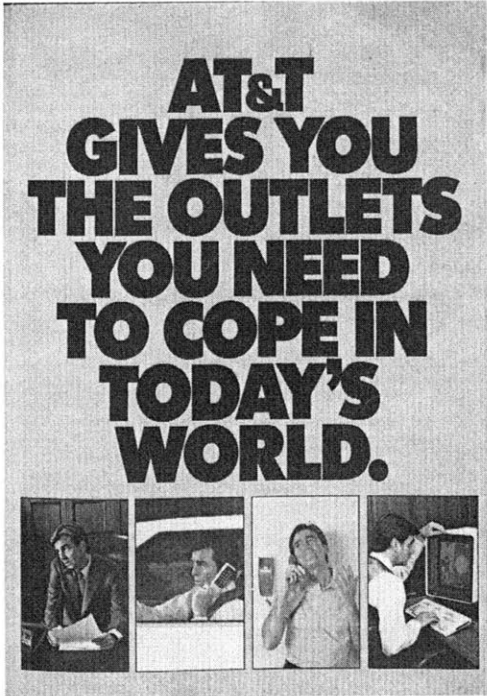


Fig. 2.12: AT&T. Advertisement. December 1984. *Reader's Digest*, 77. Print. (left)

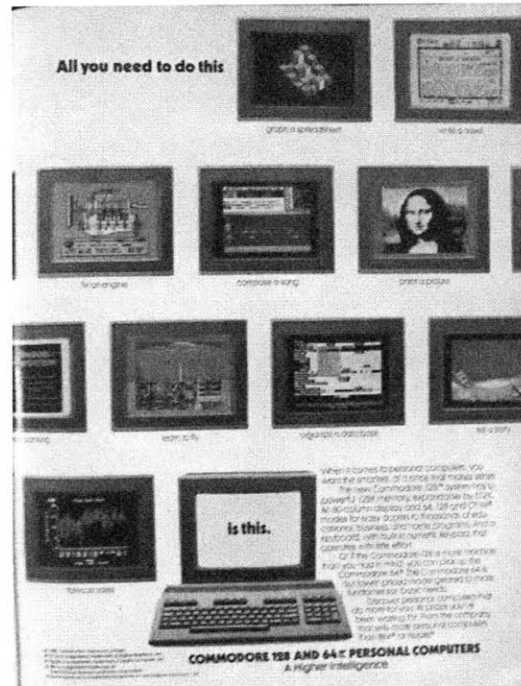


Fig. 2.13: Commodore 128 & 64. Advertisement. 3 February 1986, *TIME*, 43. Print. (right)



Fig. 2.14: Radio Shack Tandy 1000SX. Advertisement. June 1987. *Working Mother*, 9. Print. (left)



Fig. 2.15: Commodore 128. Advertisement. 6 January 1986. *TIME*, 60. Print. (right)

In addition, stepping back, it is interesting to consider how these ads both reflect and reinforce what Michael Piore, Charles Sabel, and David Harvey, among others, have described as the uniquely Post-Modern construction of work and capital accumulation: flexible specialization.⁵³ In this Post-Fordist system, a value is placed on flexibility, on the ability of both companies and workers to react and produce in a fast-paced, demanding environment. This stands in reaction to the Ford model, where workers were assigned specific tasks within a highly specialized system. In the contemporary, Post-Modern system, such rigid specialization is as seen as detrimental. The new worker must be able to move fluidly and quickly between tasks.

From one vantage point, this system of organization and values presents a certain degree of freedom. In the words of Emily Martin, "it seems to offer an escape from earlier forms of discipline that constrained our bodies and groups in the mass production era."⁵⁴ The range of possibilities presented within one computer - from games to work to creation — presents an opportunity to do a variety of things. Yet, as Martin continues, "Fresh from these [Modern] experiences, to move gracefully as an agile, dancing flexible worker/person/body feels like a liberation, even if one is moving across a tightrope. But can we simultaneously realize that the new flexible bodies are also highly constrained?"⁵⁵

In an article analyzing the use of computers from within Foucault's formulation of

⁵³ The term "flexible specialization," was first discussed in Michael Piore and Charles Sabel, *The Second Industrial Divide: Possibilities for Prosperity* (New York: Basic Books, 1984). For further discussion and analysis, see David Harvey, *The Condition of Post-Modernity* (Malden, MA: Blackwell Publishers, 1990), especially Part II. See also Albert Borgman, *Crossing the Postmodern Divide* (Chicago: University of Chicago Press, 1992).

⁵⁴ Emily Martin, 'Designing flexibility: Science and work in an age of flexible accumulation,' *Science as Culture*, 6:3 (1997): 327-362, 360.

⁵⁵ *Ibid.*, 360.

discipline, Kevin Porter suggests the personal computer is both a perfectly disciplined body and a new and highly effective disciplining agent. From its ability to make visible every keystroke, to its storage of this visibility, the computer stands a mode of perpetual surveillance and tracking. Even as he acknowledges the positive possibilities of personal computing, he writes that it is not “contradictory that the subjects of discipline should also be empowered in proportion to their submission to it: that is part of the efficacy of discipline.”⁵⁶ He writes,

my purpose has been to understand why a world without computers seems so unimaginable, why the computerization of society seems to have the entire weight of history behind it--in short, why and how computers have been so successful and inexorable in their integration, naturalization, and depoliticization.⁵⁷

While Porter’s point may be overly fraught, it is important to take note of the ways in which new technologies do in fact become depoliticized, seeming to stand apart from larger socioeconomic paradigms. The cultural values joined to personal computers must be understood within larger economic and labor relations. The emphasis on specialized flexibility offers a window into how personal computers emerge within a specific set of historical circumstances that are fully implicated within existing formations of meaning and contain within them their own set of consequences for users.

Moreover, it is important to acknowledge the extent to which computers, though aligned with the characteristic of freedom and productive flexibility, do constrain their users to the extent to which what kind of work and how much work becomes directed through their intended use.

⁵⁶ Kevin Porter, “Terror and Emancipation: The Disciplinarity and Mythology of Computers,” *Cultural Critique*, 44 (Winter, 2000): 43-83, 56.

⁵⁷ *Ibid.*, 74.

The emancipatory potential – both real and imagined – of personal computers will be discussed at length in a later chapter. For now, my purpose has been to demonstrate not only what uses advertising of personal computers suggest, but also to bring to light how these uses and their value are historically contingent and far from neutral uses.

Chapter 3. Design Matters

Form/Function/Emotion

In 1984, before the public release of the Macintosh, Apple conducted a series of usability and product image studies. One concern that emerged was “the toy factor.” Did the Macintosh look like too much like a toy? A report based on the studies suggested that “care must be taken to use simplicity to our advantage without crossing over the ‘toy threshold.’”⁵⁸ The study also found that a more positive experience using the Macintosh was based on physically interacting with the machine, “hands-on use.”⁵⁹ Both these concerns suggest the importance of design, of both hardware and software, in the experience of using a personal computer. Concerns of design include not only what the computer looks like, but also how it feels to use and interact with, qualities difficult to convey through an image alone. Thus, to examine the role of design in advertising is to often to look between the lines, to look to the unspoken and yet also the very surface of what we see, and how what we see may translate into multi-dimensional experience.

Though not often focused on in the histories of personal computer development and use, industrial design is crucial in structuring the relationship between human and computer.⁶⁰ Industrial design pervades everyday life and yet because of its omnipresence, it often goes unrecognized. Personal computers were not sold by emphasizing their design or aesthetic qualities. They were for sold what they could do. Yet, the industrial and interaction design of

⁵⁸ "Macintosh Creative Development Exploration Management Presentation," presentation by Lou Weiss, American Marketing Services, 8 April 1983. Location: Chris Espinosa Papers, Stanford University Library, <http://www-sul.stanford.edu/mac/primary/docs/focus1.html> (accessed 19 March 2010).

⁵⁹ Ibid.

⁶⁰ Notable exceptions include the work of Paul Atkinson and Donald Norman.

computers is also constituent of what a computer does and how we share our space with the computer.⁶¹ Because the home is a place of self-fashioning and comfort, filled with other objects, memories and activities, the computer had to be positioned carefully, as an object to work with as well as to live with. As Lally points out, purchasing a computer is also about ‘home-building,’⁶² and thus the computer, both conceptually as well as materially, must be understood within an ecology of the home.

In this chapter, I will explore how advertisements conveyed the design of the personal computer’s hardware and software. A tension emerges between linking familiar designs to future uses, surface to inner workings, and form itself as sliding between something to be valued and something to be hidden.

Survival Form

Writing in 1955, Henry Dreyfus articulated an important concept in the development of industrial design: survival form. He writes,

Almost without exception, our designs include an ingredient we call survival form. We deliberately incorporate into the product some remembered detail that will recall to the users a similar article put to a similar use. People will more readily accept something new, we feel, if they recognize something out of the past.⁶³

In the case of personal computers during the 1980s, an attention to “survival form” was relatively easy to accomplish, for the major exterior components of the computer, a cathode ray monitor

⁶¹ The term *interaction design* was proposed by designers Bill Moggridge and Bill Verplank in the late 1980s to articulate the dimension of industrial design related to user experience with digital interfaces. For a more complete elaboration of concepts and history, see Bill Moggridge, *Designing Interactions* (Cambridge, MA: MIT Press, 2007).

⁶² Lally, 1.

⁶³ Henry Dreyfuss, *Designing for People* (New York: Simon and Schuster, 1955), 59.

(either a television which was attached to the computer, or a stand-alone monitor) and a keyboard with its QWERTY layout derive from previously developed and standardized technologies, the television and typewriter.⁶⁴

The components that did undergo great change in design were the interior hardware components, including the central processing unit (CPU) and disk drives. Yet, with the rise of the personal computer as a consumer device, direct access to a computer's hardware (as opposed to plastic casing) was minimized. While advertisements stressed the processing power and storage capacity of personal computers, these capabilities were represented as numbers, abstracted, in a sense, from the actual physical mechanisms and circuits. A user would most likely know the speed and capacity of their personal computer (at least at the point of sale); but the average consumer would not necessarily be aware of what the inside of a computer looked like, what constituted the actual hardware from which these numbers were derived. As such, the de-emphasis on the engineering within computers moved away from the roots of personal computer kits and computing in garages and dens, and toward the standard of consumer electronics, where the workings of a machine are hidden from view. It is interesting to observe that in computer specialist magazines, such as *BYTE*, advertisements still emphasize and display the internal hardware. Thus, the move to de-emphasize a computer's internal hardware was geared toward a non-specialist audience.

With inner workings encased, the external design of computers was, in some senses, entirely familiar, engaging past experiences and mental models of use. We know to look at a

⁶⁴ For more discussion on the development and standardization of the typewriter, see James M. Utterback, *Mastering the Dynamics of Innovation* (Cambridge, MA: Harvard Business School Press, 1994), especially Chapter 1.

monitor to display something, and we know to type on a keyboard with our fingers.⁶⁵ The mouse was one novel interface that did require instructions. How to use a mouse with a computer was not at all obvious, although Apple advertising suggested that using a mouse was entirely intuitive.⁶⁶

Advertisers were eager to play upon the recognizable features, both literal and metaphorical, of personal computers. IBM, among other companies, chose to emphasize the personal computer's links with the past, confronting the anxiety raised by new and intimidating technologies with an emphasis on history and olden times. For instance, in an ad for the Altos Personal Computer (Fig. 3.1), the Altos is linked to notions of the Old American West. The headline reads, "Workhorses," and with an image of a cowboy driving a cart led by two black stallions, the tone of hard work and the excitement of the Wild West is achieved. In an ad for Packard Bell personal computers (Fig. 3.2), the personal computer is linked to a linear

⁶⁵ It is interesting to note that past mental models were not always a positive feature. In the case of the keyboard, as Paul Atkinson discusses, advertisers were keenly aware of the female connotations of typing. Atkinson observes that in advertising images, it was females whose hands were placed on a keyboard. Men watched over the women, or had one hand on a keyboard and another hand on some other device, such as a pen. In later advertising, men were shown predominantly using a mouse, while women remained the ones who typed. In the sample I reviewed, I did not see this differentiation. This may be due to the materials we analyzed; Atkinson was looking at advertisements for business computers, and my focus has been on computers for the home in general interest magazines. Later research by Atkinson and Aspray and DeB. Beaver confirms that by the late 1980s, the feminization of keyboards had dissipated. Still, it is interesting to keep in mind how old forms carry within them previous social meanings and uses, and the extent to which advertisements must embrace and also renegotiate these meanings in displaying new products.

⁶⁶ Atkinson points out that many manuals accompanied the release of the Macintosh mouse, indicating that users needed guidance to use it. Paul Atkinson, "The Best Laid Plans of Mice and Men: The Computer Mouse in the History of Computing," *Design Issues* 23:3 (2007): 46-61.

progression of technology, from radio to television to computer. A young man sits earnestly on a couch, looking into a black and white television. The headline reads, "In 1950 America saw the future in Packard Bell." An inset image shows an older man (perhaps the same man?) looking earnestly into a computer monitor. The text below this image reads, "In 1986 it still does." The young man is oriented to the left, the middle age man faces the right, toward the computer, toward the future. The ad copy begins, "Americans grew up listening to Packard Bell radios. Then Packard Bell television entertained a nation." Now, Packard Bell presents the personal computer, which is placed as the next logical step in the evolution of technology in the home. This step is understood through the past, a lens that looks forward by looking backward.

The reliance on past paradigms of technology and technological adoption is perhaps emblemized in IBM's well-known and long running campaign featuring the character of Charlie Chaplin (for examples, see Fig. 3.3 and 3.4). In 1981, with a clear market established for personal computers, IBM, the world's best known and the most respected company in the computer industry, joined the competition. To market their first personal computer, aptly named the IBM Personal Computer, IBM hired Lord, Geller, Federico, and Einstein to produce a new image for the company. Market research indicated that IBM was seen as cold and corporate; IBM wanted to put a personal face to its products, and in fact, decided on the quintessential "Everyman," Charlie Chaplin's character of the Tramp.⁶⁷ The irony of this choice is striking. The Tramp, most familiar in his adventures and mishaps in *Modern Times*, is a vulnerable figure who suffers in the face of technological advancement. Embodied in the image of the Tramp literally

⁶⁷ "Softening a Starchy Image," *TIME*, 11 July 1983, <http://www.time.com/time/magazine/article/0,9171,949695,00.html> (accessed 2 February 2010). See also Campbell-Kelly and Aspray, 227-288.

Hooking up the new IBM® PCjr isn't much harder than plugging in a lamp. But you should find it much more enlightening.

"Junior" is IBM's new personal computer and it's full of bright ideas.

THE LIVING ROOM REVOLUTION

PCjr is a tool for modern times that works with the family TV set. It will open up new channels of information for you. New avenues of education for your child. And new experiences for all.

Many of the things you now do with words, numbers, pictures or music, you may soon find yourself doing faster, easier and more accurately with the IBM PCjr.

FAMILY COMPUTING MADE EASY

IBM designed PCjr with first-time users in mind. An instructional exercise built into the machine lets the learning begin immediately. A program included with diskette-drive system lets you explore computer fundamentals at your own pace. And to get you off and running from the very first day, a sample diskette with eleven useful mini-programs is also included.

Junior's keyboard doesn't need a coat, so you're free to get comfortable with it. (Which we call it the IBM "Freeboard.")

The keys are color-coded to make hitting the right ones easy.

New software programs for PCjr are easy, too. A diskette word processing program, for example, uses pictures as well as words to guide you along.

GROWING UP WITH JUNIOR

PCjr is simple to use. But it's powerful enough to perform complex tasks. And as your needs become more sophisticated, you'll find that Junior is ready to grow up with you.

The lowest-priced PCjr has a 64KB user memory that can be expanded to 128KB.

It will work with an IBM Personal Computer Color Display, as well as a TV set. There's room to add a diskette drive and an internal modem for telecommunications. There's even a choice of printers.

Best of all, PCjr is compatible with many existing IBM software programs for other IBM personal computers.

HOME ECONOMICS FROM IBM

The IBM PCjr holds lots of surprises. But perhaps most surprising is the price.

The starting model includes a 64KB cassette/cartridge unit and Freeboard for about \$700. An enhanced model with 128KB and diskette drive is about \$1300. (Prices apply at IBM Product Centers. Prices may vary at other stores.)

Take modern times into your own hands at your local authorized IBM PCjr dealer. For the store nearest you, just dial 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.

HOW TO PLUG YOUR FAMILY INTO MODERN TIMES.

Fig. 3.3: IBM PCjr Advertisement. 5 March 1984. *TIME*, 72-73. Print.

Fig. 3.4: IBM PCjr. Advertisement. 13 February 1984. *TIME*, 18-19. Print.

The next addition to your family could be the bright little newcomer in the growing family of IBM® personal computers.

Name: PCjr. Weight: 12 pounds. Heritage: more than 30 years of computer experience.

"Junior" is a powerful tool for modern times. Yet it's simple enough for a child to enjoy.

BRINGING HOME BABY

It's a big day when PCjr comes home. The surprises begin the moment you open the carton.

Surprise #1 is the IBM "Freeboard"—a keyboard that doesn't need a connecting cord. The Freeboard frees you to move around and relax.

Then there's the Keyboard Adventure—an instructional exercise for first-time users. It's built into the computer and explained step-by-step in the Guide to Operations. It will help anyone begin learning as soon as PCjr is hooked up to a TV set.

In systems equipped with a diskette drive, there's a program that lets you explore computer fundamentals at your own pace, with PCjr as your teacher.

And to get you off and running from the very first day, a sample diskette with eleven useful mini-programs (ranging from a spreadsheet for monthly expenses to a word game and a recipe file) is also included.

But there are still more surprises.

FAMILY COMPUTING MADE EASY

Many IBM software programs written for other IBM personal computers will run on PCjr. And inexpensive new ones written especially for PCjr are being released.

An easy-to-use diskette word processing program, for example, uses pictures as well as words to guide you along. A comprehensive

IBM home budget program makes keeping track of money easier. There's also a selection of educational programs for children at home and at school.

And when the work is finished for perhaps before, the fun can begin. Just slip in a game cartridge and stand back.

GROWING UP WITH JUNIOR

Add a printer. A diskette drive. An internal modem for telecommunications. Increase user memory from 64KB to 128KB. With these and other add-it-yourself options, even the lowest-priced PCjr can grow up *out* fast.

PCjr is a powerful tool for home, school or college. With its optional carrying case, it's a powerful tool anywhere you care to take it.

SEE JUNIOR RUN

Junior's starting model includes a 64KB cassette/cartridge unit and Freeboard for about \$700. A 128KB model with diskette drive is about \$1300. (Prices apply at IBM Product Centers. Prices may vary at other stores.)

Your local authorized IBM PCjr dealer proudly invites you to see this bright little addition to the family. For the store nearest you, just call 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.

ANNOUNCING A PROUD ADDITION TO YOUR FAMILY.

caught in the gears of the factory machine in *Modern Times*, the Tramp gains his character and sympathy through his continual struggle against the dehumanization and fast-paced chaos of modern technology. In the original films, he is heroic precisely in his resistance to technology. Yet, in the 20th century imagination, the character of the Tramp has been separated from his original context. Mangled in the momentum of time and mass media, the Tramp, as a sign, has become destabilized. The signifier has become detached from the signified, leaving the sign of the Tramp free-floating and ripe for myth making, to use the framework of Roland Barthes.⁶⁸

In the IBM ads, the Tramp connotes an ambivalence toward technology but also a kindness, a deeply human-ness, which, when joined with the image of the personal computer, allows the personal computer to also take on these attributes. On one level, the advertisement suggests that if the Tramp can use a computer, it must be simple and non-threatening. On another level, the Tramp stands in as a proxy for the computer user's confusion and ambivalence while also defusing the tension with comedy. At once ridiculous and playful, the computer becomes reframed in the context of past histories and struggles from which we have emerged unscathed. The ads link the computer with the past and with play, not business or the future, bypassing any connotation of an uncertain and threatening future. Moreover, the image of the Tramp allowed IBM to bypass its connotation with business and office environments, and align computers more with the sentimental and intimate qualities of home life.

The humanizing capacity of the Tramp was played upon further in a series of ads introducing PCjr in 1984. In these ads, our familiar Tramp introduces us to the new members of his family, a line of new personal computers including the newest addition, PCjr. The computers

⁶⁸ Roland Barthes, "Myth Today," in *Mythologies* trans. Annette Lavers (New York: Hill and Wang, 1972).

are anthropomorphized to the extent that they form a “family.” Indeed, if we look to future advertising campaigns, we see this trend has continued. For instance, we speak of the Apple and HP families of computers. The ads avoid connotations of a technological future to the extreme. The baby carriage holding PCjr is a model from the 19th century (Fig. 3.4).

In most of the ads, the Tramp character is placed in a white background, effectively placed nowhere. With a few objects, such as a rose, or a stack of books, the mimed actions do little more than connote the Chaplin figure himself, relying on vague social memories of who and what Chaplin is. Although the accompanying texts describe what a computer can do, the images in the ads indicate little about how to use a computer or in what context one might implement such uses. This vacuum of meaning provides a multi-purposeness crucial to IBM’s attempt to provide computers for both the home and office. Moreover, the Tramp character is most often alone. Although he may demonstrate the computer to a group, the advertisements suggest that computers are to be used alone, by oneself, just as the Tramp sits in front of his new computer.

This campaign is perhaps one of the best-remembered personal computer campaigns of the 1980s. Anecdotally, it seems that the advertisements were able to put a human face to IBM machines. The trade press also agreed on the success of the campaign. Entering the personal computing market in 1981, by 1985, IBM held over 16% of the market share.⁶⁹

As much as advertisements stressed the continuities between older forms of technology, advertisements also sought to differentiate the personal computer from other competing home technologies and electronics. Television and video games were the predominant targets, and

⁶⁹ Langois, 34.

advertisers sought to emphasize the educational potential of personal computers for children. For example, an ad for the Commodore 64 (Fig. 3.5) shows six television monitors with a child trapped in each monitor. This striking image takes up the upper half of the page, and below the paralyzed children reads a headline in bold, “Free Your Children.” The copy explains,

Video game machines do little more than trap your children in an unproductive, limited world. It’s not that playing games is bad. It’s just that there’s a whole lot more to life than blasting space monsters.

That’s why your children need the Commodore 64. The Commodore 64 is a full function, affordable home computer that frees them to explore whole new worlds.

Thousands of programs are available to help your children prepare for anything from a third grade math test to college boards. And they can gain serious computing skills while doing it. A comforting thought because according to one estimate, by the time your children are ready to enter the job market, three out of four occupations will be computer related.

Another bold headlines states, “Kids Can Do More with a Commodore 64.” At the bottom of the page a monitor displays a color graphic and screen shots from eight other color displays, emphasizing the range of programs available and the high quality of the color graphics.

In another ad from Apple, for the Apple IIc, the personal computer is pitted against the television (Fig. 3.6). Computers, it suggests, are better for your children’s minds. The headline reads, “We Have More Good Family Programs than NBC, CBS and ABC combined.” The ad copy explains,

So, unlike TV, it can teach kids more valuable lessons than how to drive a car through the side of a building without getting a scratch. ...



Fig. 3.5: Commodore 64. Advertisement. December 1987. *Working Mother*, 64. Print. (left)

We have more good family programs than ABC, NBC and CBS combined.

You've taped every episode of the Bill Cosby Show twice. You've flipped through the channels so often that it's worn the decals off your remote control. And your eight-year-old just came downstairs wearing 12 of your best gold neckties and asked you to give him a Mohawk haircut. *Just!* If those are recurring plot themes around your house, maybe it's time you looked into an Apple IIc Personal Computer.

It can run over 10,000 different programs, the world's largest library of personal computer software. So matter what anyone in the family wants to do, an Apple IIc can help them do it.

You can manage your personal finances with programs like *Check and Sense* and *Box Prep*. Pop a program like *AppleWorks* into its disk drive, and you've got an integrated spreadsheet, word processor and data base to help you catch up your work at home.

Or you can select from thousands of specialized programs for doctors, lawyers, contractors, farmers, brokers, engineers or just about any other legitimate business.

And the Apple IIc is a compact version of the computer that's used in schools more than all other computers combined—the Apple IIe.

So, unlike TV, it can teach kids valuable lessons than how to drive a car through the side of a building without getting a scratch on your work at home.

Of course, the Apple IIc isn't all work and no play. In fact, it can provide greater fun, adventure and excitement than the networks during the new season premieres.

There are programs that let you travel space, solve mysteries, explore jungles, become an instant millionaire, get elected president and save the world.

And an Apple IIc is easier to set up than the average VCR. Just take it out of the box, plug in two co-ax and you're ready to compute.

Plus you can just as easily add things like our new *ImageWriter™* if printer, *ColorMonitor II*, *Apple Personal Modem*, mouse and external disk drive.

To see everything an Apple IIc can do live and in person, visit any authorized Apple dealer.

While they may not have all 10,000 software packages on hand, you'll find plenty of programs the whole family will want to run.

And return.

Apple Computer, Inc. Apple and the Apple logo are registered trademarks of Apple Computer, Inc. AppleWorks, ImageWriter and ColorMonitor are trademarks of Apple Computer, Inc. All other trademarks are the property of their respective owners. © 1987 Apple Computer, Inc. Apple IIc is a trademark of Apple Computer, Inc. For more information on the Apple IIc, call (800) 265-7796 or (800) 265-7637.

Fig. 3.6: Apple IIc. Advertisement. September 1984. *National Geographic*, 276-277. Print. (below)

Of course, the Apple IIc isn't all work and no play. In fact, it can provide greater fun, adventure and excitement than the networks during the new season premieres.

There are programs that let you travel space, solve mysteries, explore jungles, become an instant millionaire, get elected president and save the world. ...

And an Apple IIc is easier to set up than the average VCR. Just take it out of the box, plug in two cords and you're ready to computer.

In the move to differentiate the computer from video games and television, advertisements position the computer as at once existing within the sphere of home electronics, making its place in the home already obvious, while also more explicitly suggesting its superior qualities as a machine for the home.

Generally speaking, we have seen three themes emerge in the context of design. First, the design of internal hardware is not visually displayed, situating the personal computer as a consumer electronic for non-technical users. Second, advertisers were keen to link the personal computer, both metaphorically as well as in actual form, to previous technologies and industrial design. This was in part a function of "survival form" as well as design choices dictated by technical limitations. Third, similarity in design and function of the computer (as well as profit motives) necessitated advertisers to differentiate the new medium from existing technologies. However, we have not yet explored the more psychological role design plays in the personal computer experience.

Form Follows Emotion

Apple, as has been mentioned, was the first computer company to fully realize the potential and consequences of excellent industrial design. It was, after all, the Apple II that first

designed the personal computer as a consumer product, with all the components in a neat plastic case with rounded edges. It was Apple who first took advantage of the objectness of computers in a positive way, aligning personal computers with other consumer electronics.

The out-of-the-box functionality of personal computers had become standard by the 1980s. In 1984, with the release of the Macintosh, Apple once again produced a product with innovative industrial and software design, which would again lead the industry toward new design standards.⁷⁰ As a note from the pre-release product studies of the Macintosh pointed out, “There is definitely Mac magic--an emotional/intellectual reaction to the Macintosh experience”⁷¹

In the 12-page advertisement (Fig. 3.7) that introduced the Macintosh, design played a leading role. On the first page, we see a hand reaching down from the top of the page, picking up a small computer, which emerges from a carrying case below. The inclusion of the arm and hand in the image indicate a great deal about the design of the computer; it is small, a little larger than a hand with fingers stretched out wide. Also, the computer must not be too heavy: it can be picked up with one hand. Moreover, it is meant to be portable. It comes with a handle and a carrying case. From just one image, the advertisement points to three important affordances of the computer.

The headline on the first page reads, “Of the 235 million people in America, only a fraction can use a computer.” On the next page, the headline reads, “Introducing Macintosh. For the rest of us.” A mouse is placed to the left of a keyboard, which is placed slightly to the left of

⁷⁰ With the release of the iMac in 1995, Apple once again would revolutionize computer industrial design, adding color and transparency.

⁷¹ “Macintosh Creative Development...”

the computer, a plastic box encasing the computer's hardware and a monitor. On the screen, the word "hello," is drawn, most likely in Mac Paint. By displaying the drawn word, "hello," it is as if the computer is greeting us. Apple has just introduced us, and now it says hello, as if the machine has an agency within the relationship, establishing it as a character in the scene.

Moreover, although the text of this ad has been discussed in the previous chapter, it is worth reiterating how the text establishes this notion of agency. The copy reads,

And when the engineers were finally finished, they introduced us to a personal computer so personable, it can practically shake hands.

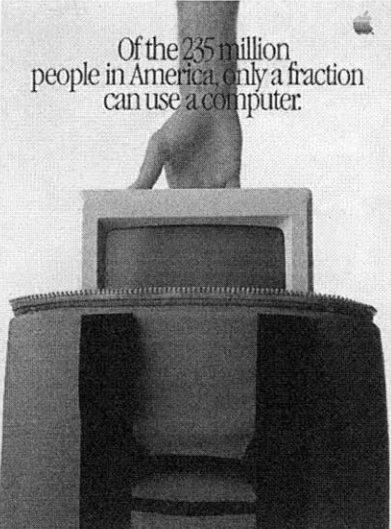
And so easy to use, most people already know how. They didn't call it the QZ190 or the Zipchip 3000.

They called it Macintosh©.

And now we'd like to introduce it to you.

At first glance, it seems remarkably simple and compact, due to combining the internal hardware, disk drive and monitor into one unit, as well as the placement of short cords, creating a united, efficient use of space. The angle from which the computer is photographed highlights the rounded, soft curves of its edges. The use of reflection and shadow, a motif used throughout the insert, emphasizes the clean lines of the design, as well as creates a tone of cleanliness, perfection, and calm, like a perfectly still reflecting pool.

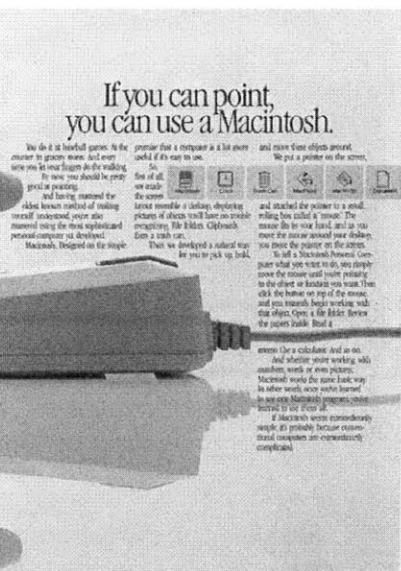
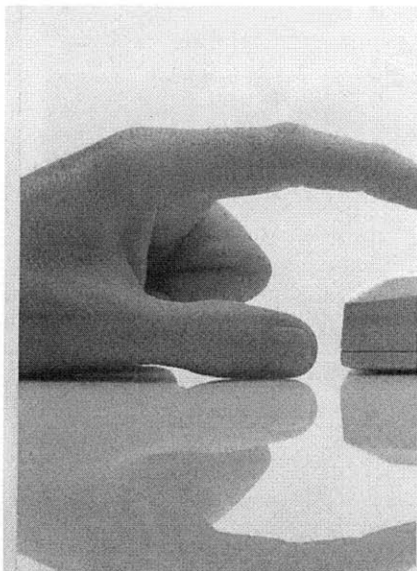
A few pages in, a two-page spread again brings the relation between the human hand and the computer to the forefront. On the left page, a hand, once again reflected on the white surface below, points with one finger to the mouse, moving toward the mouse button. Although most users would use the mouse by cupping their hand around the mouse, this image emphasizes the



Of the 235 million people in America, only a fraction can use a computer.



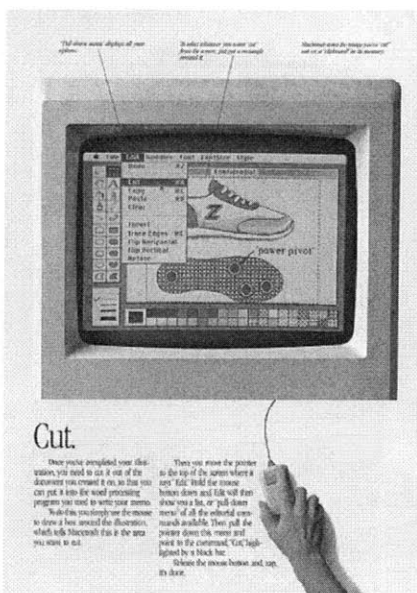
Introducing Macintosh. For the rest of us.



If you can point, you can use a Macintosh.



Point. Click.



Cut.



Fig. 3.8: Apple Macintosh. Advertisement. 20 February 1984, TIME, 43A-P. Print.

human action that is analogous to the function of the mouse. The mouse extends and acts as a virtual pointing hand on the screen of a computer.

On the following page, thirteen images display the Macintosh “in action.” We see men and women, some casually dressed, some in business suits, in offices, in home offices, in living rooms and in transit, one young man biking (with a Macintosh on his back?) and another in a suit getting into a cab. One young man, perhaps a college student, sits on a concrete ledge, reading a book, his arm resting on the Macintosh in its carrying case. Wherever you are, the images suggest, the Macintosh fits perfectly in your life and with your style. The images also suggest how the computer can exist outside a typical office environment, portraying computers as a part of life, not just office work. It seems Apple was the first to realize and build on the notion that we *want* to love the objects around us, that the computer’s form could be an element in forming a revolutionary relationship to machines.

Few other companies placed equal emphasis on the industrial design of the computer. Indeed, Paul Atkinson has written about the remarkable stasis of the industrial design of computers beginning in the 1980s. Discussing the IBM PC’s release in 1981, a form which would become the standard, Atkinson writes,

The IBM PC presented personal computing as little more than an electronic filing cabinet, and it was just about as exciting in its styling. Rather than suggesting a new, stimulating concept of work altogether, it recalled the staid and dusty world of ledgers and manila envelopes. In doing so it found a receptive audience. Rather than connoting radical change, it offered an improved method of carrying on familiar work practices.⁷²

⁷² Paul Atkinson, “The (In)Difference Engine: Explaining the disappearance of diversity in the design of the personal computer,” *Journal of Design History* 13:1 (2000): 59-72, 66.

He suggests that the IBM PC, in 1981, set the standard for computer design, and due to its market dominance, other companies followed suit. He does not analyze the reasons behind this stasis of design in depth, but does suggest that,

The acceptance of this lack of innovation in the design of such a truly global, mass-produced, multi-purpose technological artifact has had an enormous effect on the conception, perception and consumption of the computer, and possibly of information technology itself. The very anonymity of the PC has created an attitude of indifference at odds with its potential.⁷³

I would not, in fact, agree with Atkinson's final conclusion. Although the beige-box standard may embody, in some senses, an anonymous form, I would not characterize this form as evoking a sense of indifference. The forms and associations of the computer are far too complex and historically loaded to be dismissed as resolving in indifference. In the case of the personal computer in the home, the presence of an ostensibly office technology, designed as such, raises important questions about the place of this object in the home. On the one hand, a recognizable office form allows the home personal computer to be imbued with a sense of reliability and efficiency. The computer you use at home is just as powerful as the computer you use at the office: it looks the same! It is the same! On the other hand, the office design may have been an inhibitory factor in adoption. Consumers who did not want to bring the office home, or those who did not want to feel the sterility of an office environment at home, might have been put off. Moreover, the standard design, while comforting to some, may have intimidated others.

In the presentation of personal computers for the home, we witness representations that do not focus on the design of the computer (the exception being the Macintosh ad), but rather, suggest how the personal computer may fit into existing environments. In this way, the

⁷³ Ibid., 59.

anonymous form allows an ability to camouflage, providing not an attitude of indifference, but rather, of accommodation and acceptance of an external link to the work world. What we gather from advertisements is that computers are human scale and fit on a desk. An emphasis is placed either on the object itself, free from any real backdrop or scenery, or a downplaying of the form of the computer, emphasizing its ability to blend into the background of a desk or workspace (Fig. 3.8-3.9).

In an article about the phenomenological consequences of computer design, of both hardware and software, Ivan Hybs analyzes three different conceptions of tools and objects with which humans work in the world. Reviewing computers as tools from the perspectives of philosophers from Heidegger to Merleau-Ponty to Idhe, Hybs synthesizes a fascinating and, I find, compelling, thesis. Looking to the different ways in which objects mediate between individual and world, Hybs suggests that computers, because of the nature of their design and use, fall short of full use as embodied or hermeneutic relations, and take on the state of what Idhe terms *alterity relations*, that is a mode of relation analogous to how we relate with other humans, in which we interpret a set of attributes as human. Hybs succinctly explains,

In alterity relations, technology does not present a link with the world, but rather emerges as a quasi-human entity to which we relate, while the world remains in the background as the context. In this instance, we understand the technology as a clearly separate object whose hermeneutic role has ceased to exist.⁷⁴

Computers, due to their conception and design, are not, in fact capable of becoming tools, in the Heideggarian sense, in which their objectness falls away, “withdraws,” providing an ability to focus on the task at hand. The very material presence and necessities of interaction provide a

⁷⁴ Ivan Hybs, “Beyond the Interface: A Phenomenological View of Computer Systems Design,” *Leonardo* 29:3 (1996): 215-223, 216.

context in which the computer becomes a partner, another mediating entity, of whose mediation we are very much aware. Iby's continues,

Mediating between human beings and the virtuality of representations, computers do not directly reveal the world to us, but disclose predetermined simulations. They do not offer us the comfort of immersing ourselves in our activity, but stand between us and our tasks. It is not the tasks at hand we attend to, it is computing. As a result, computers evoke (potentially harmful) anthropomorphic notions of quasi-otherness.^{75 76}

I am unsure of his unease toward the anthropomorphization of computers. Indeed, I would speculate that the very presence of the computer in a home, something always on display (as opposed to a hammer, hidden in a tool box), though not always used, created a relationship where the computer was, in fact, conceived of as more than a tool in the Heideggerian sense. It was a fixture, a companion, an object we live with, not just work with. As such, its commanding and undeniable presence allowed the computer to take up a place in the home, to take up its own identity, informed by the social meanings constructed in advertising and media, as well as personal uses and memories. The weight of the computer's undeniable objectness, as well as its multi-purpose aspects allowed the computer to fully embody a range of social meanings and allow a variety of uses to be incorporated into the family and everyday household life. Whether the relationship was one of frustration, confusion or love, the computer was not an object of evoking an attitude of indifference but was capable of evoking an intense relationship.

⁷⁵ Ibid., 222.

⁷⁶ In his conclusion, he suggests that the model of multi-purpose machines is unsustainable and undesirable. Future human-computer relations must in some way strive toward the specificity of tasks, and sensorial possibilities such interactions might embody as opposed to merely simulate. Writing in 1993, Iby's suggestion seems to be playing out, as mobile computers (in the form of smart phones, GPS devices, and even, Apple's iPad). The multi-purpose computer which dominated the last century may very well give way to a series of specialized, small computers with hardware and software design dependent upon specific end uses.

Software

Different attitudes toward design were also reflected in software and interaction design. Although Microsoft released its first version of Windows, a GUI conceptually based on the Macintosh OS, most IBM and IBM compatible machines employed an operating system that relied on a command-line interface. The differences between command-line and GUI based interfaces have been discussed in a previous section with regards to use of ease. In this section, it is important to consider how advertisements emphasize the different user experience of software design. I must leave the actual difference in experience of using different software and platforms to another scholar.⁷⁷ However, I will briefly discuss how different platforms were portrayed in the advertisements I have examined.

Though ads emphasize how easy it is to learn the commands needed to communicate within a text-based interface, the displays represented on the computer screens in advertisements⁷⁸ emphasize the dynamic and graphic nature of these displays. Advertisements did not show screens at the command-line level, but rather emphasized the dynamic look of

⁷⁷ One way to analyze this difference, still using marketing materials, might be to compare instruction manuals or advertisements in specialist magazines. Such an analysis would reveal different forms of language and metaphor, as well as different emphases in value on the user must do. To my knowledge, no such comprehensive study exists.

⁷⁸ There is a fascinating history of computer displays in advertising displaying non-functional programs. For instance, Bill Atkinson, a programmer at Apple, recalls making writing a certain software because its representation appeared in the 1978 Apple II ad, "I worked on the portfolio evaluator, a Dow Jones program, because Apple had this advertisement showing hubby at the table with an Apple II with all these bar graphs of stock prices, and his wife is at the sink beaming at him, and there was no such program. It was all just drawn on the screen. There wasn't a real program, and they wanted it to be real, so that was the first big program I did for the Apple II." "Oral History of Andy Hertzfeld and Bill Atkinson," interviewed by Grady Booch on June 8, 2004, Mountain View, California *Computer History Museum*, Reference number: X2786.2004, http://archive.computerhistory.org/resources/access/text/Oral_History/102658007.05.01.acc.pdf (accessed April 12, 2010), 9.

software programs in action, placing an emphasis not on how one interacted with the machine, but what one saw once that interaction had taken place. Consider, for instance, an advertisement for IBM's PS/2 (Fig. 3.10), which suggests that the computer is like "having 256,000 crayons in one box." The advertisement emphasizes the colorful creativity contained within an IBM, emphasizing its graphic, as opposed to merely textual, possibilities.

Although command-line interfaces were still the basis for many operating systems, the graphic capabilities of computer interfaces were increasingly emphasized beginning in the 1980s. At least in presentation, the command-line and GUI interfaces were not as differentiated as their user experience might suggest. Thus, it is important to consider more closely just what is at stake in the adoption of a graphical user interface.

In his book, *Interface Culture*, Steven Johnson proposes an understanding of the GUI as akin to the cultural influence of architecture. Specifically, he writes that the GUI has structured our understanding of information space – and by extension – even physical space, in a manner that has deep cultural implications. Johnson writes,

Where the Victorian novel shaped our understanding of the new towns wrapped around the steel mill and the cotton gin, and fifties television served as an imaginative guide to the new suburban enclaves created by the automobile, the interface makes the teeming, invisible world of zeros and ones sensible to us. There are few creative acts in modern life more significant than this one, and few with such broad social consequences.⁷⁹

Rather surprisingly, there have been only a handful of extensive studies of the GUI from a cultural studies perspective, most notably work the work of Johnson and Howard Rheingold.

⁷⁹ Steven Johnson, *Interface Culture: How New Technology Transforms the Way We Create and Communicate* (San Francisco, CA: Harper, 1997), 17.

It's like having 256,000 crayons in one box.

The new graphics.

Back in the dark ages of personal computing, the world was ruled by numbers and words. Graphics were a novelty, but rarely a necessity.

Welcome to the Renaissance.

The IBM Personal System/2 has a talent for graphics that's dazzling.

Each new system can paint up to 256 colors on the screen at once, drawing from an incredible palette of over 256,000. And not one of those colors costs a penny extra.

Even in monochrome, things aren't monotonous. There can be up to 64 shades of gray for less dimension and contrast.

And the images themselves are greatly improved. The new "pixels"

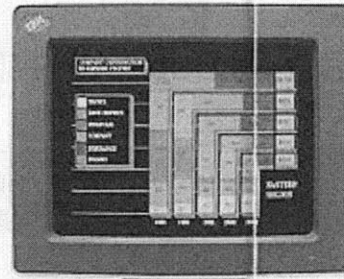
that create the image can now be finer, and there can be lots more of them. Even the space between them seems to have disappeared. So pictures are

sharp and clearly defined.

Better letters. Equally important, letters and numbers are clean-edged and precise.



The IBM Personal System/2 Monochrome Display 5010.



The IBM Personal System/2 Color Display 5012.



The IBM Personal System/2 Color Display 5012.

the big 16" color display with even higher resolving power.

Your favorite programs.

Just about any program you can run on the IBM Personal System/2 will look better, and will likely be more pleasant to spend time with.

Many other programs are being reworked just to take advantage of the new graphics.

But the future holds real surprises. The success of the Personal System/2 and the brand new kind of careers. How the artists will use them should be something to see.

© 1987 International Business Machines Corporation

The IBM Personal System/2 Model 5010 and the IBM Personal System/2 Color Display 5012.

Fig. 3.10: IBM. Advertisement. 18 May 1987. *TIME*, 8-9. Print.

Tandy Computers:
Because there is
no better value.™

The New Tandy® 1000 HX

The first desktop PC compatible with MS-DOS® built in.



The new Tandy 1000 HX is the low-priced leader in 3 1/2" disk-based PC compatibles. Best of all, MS-DOS is included as ROM—just turn it on and you're ready to go.

A high-capacity, 720K 3 1/2" disk drive is built in—and there's room for a second 3 1/2" drive. The Tandy 1000 HX is PC compatible, so you can use all of the popular MS-DOS programs available on 3 1/2" disks.

Your first program is included—the 1000 HX comes with its own graphics-oriented Personal DeskMaster™ screen-oriented applications software.

You'll be able to plug in a printer, a mouse, a printer—even an external 5 1/4" disk drive—without buying extra-cost adapters.

The Tandy 1000 HX is expandable, too! By installing the Memory PLUS Expansion Adapter you can add main memory, communications, and classroom network options.

The Tandy 1000 HX has 156,000 characters of memory and a built-in keyboard with the same layout as the popular Tandy 1000 SX.

Come into Radio Shack today and see the Tandy 1000 HX—only \$699 (25-1031)

Send me a new 1000 HX computer system.

Name: _____

Company: _____

Address: _____

City: _____ State: _____

Zip: _____

Phone: _____

Radio Shack
The Technology Store™
A DIVISION OF TANDY CORPORATION

Price applies at Radio Shack Computer Centers and participating stores and dealers. Monitor and keyboard sold separately. Personal DeskMaster 2 requires an MS-DOS compatible MS-DOS/2.5™ MS-DOS/2.0™ MS-DOS/2.1™ MS-DOS/2.2™ MS-DOS/2.3™ MS-DOS/2.4™ MS-DOS/2.5™ MS-DOS/2.6™ MS-DOS/2.7™ MS-DOS/2.8™ MS-DOS/2.9™ MS-DOS/3.0™ MS-DOS/3.1™ MS-DOS/3.2™ MS-DOS/3.3™ MS-DOS/3.4™ MS-DOS/3.5™ MS-DOS/3.6™ MS-DOS/3.7™ MS-DOS/3.8™ MS-DOS/3.9™ MS-DOS/4.0™ MS-DOS/4.1™ MS-DOS/4.2™ MS-DOS/4.3™ MS-DOS/4.4™ MS-DOS/4.5™ MS-DOS/4.6™ MS-DOS/4.7™ MS-DOS/4.8™ MS-DOS/4.9™ MS-DOS/5.0™ MS-DOS/5.1™ MS-DOS/5.2™ MS-DOS/5.3™ MS-DOS/5.4™ MS-DOS/5.5™ MS-DOS/5.6™ MS-DOS/5.7™ MS-DOS/5.8™ MS-DOS/5.9™ MS-DOS/6.0™ MS-DOS/6.1™ MS-DOS/6.2™ MS-DOS/6.3™ MS-DOS/6.4™ MS-DOS/6.5™ MS-DOS/6.6™ MS-DOS/6.7™ MS-DOS/6.8™ MS-DOS/6.9™ MS-DOS/7.0™ MS-DOS/7.1™ MS-DOS/7.2™ MS-DOS/7.3™ MS-DOS/7.4™ MS-DOS/7.5™ MS-DOS/7.6™ MS-DOS/7.7™ MS-DOS/7.8™ MS-DOS/7.9™ MS-DOS/8.0™ MS-DOS/8.1™ MS-DOS/8.2™ MS-DOS/8.3™ MS-DOS/8.4™ MS-DOS/8.5™ MS-DOS/8.6™ MS-DOS/8.7™ MS-DOS/8.8™ MS-DOS/8.9™ MS-DOS/9.0™ MS-DOS/9.1™ MS-DOS/9.2™ MS-DOS/9.3™ MS-DOS/9.4™ MS-DOS/9.5™ MS-DOS/9.6™ MS-DOS/9.7™ MS-DOS/9.8™ MS-DOS/9.9™ MS-DOS/10.0™ MS-DOS/10.1™ MS-DOS/10.2™ MS-DOS/10.3™ MS-DOS/10.4™ MS-DOS/10.5™ MS-DOS/10.6™ MS-DOS/10.7™ MS-DOS/10.8™ MS-DOS/10.9™ MS-DOS/11.0™ MS-DOS/11.1™ MS-DOS/11.2™ MS-DOS/11.3™ MS-DOS/11.4™ MS-DOS/11.5™ MS-DOS/11.6™ MS-DOS/11.7™ MS-DOS/11.8™ MS-DOS/11.9™ MS-DOS/12.0™ MS-DOS/12.1™ MS-DOS/12.2™ MS-DOS/12.3™ MS-DOS/12.4™ MS-DOS/12.5™ MS-DOS/12.6™ MS-DOS/12.7™ MS-DOS/12.8™ MS-DOS/12.9™ MS-DOS/13.0™ MS-DOS/13.1™ MS-DOS/13.2™ MS-DOS/13.3™ MS-DOS/13.4™ MS-DOS/13.5™ MS-DOS/13.6™ MS-DOS/13.7™ MS-DOS/13.8™ MS-DOS/13.9™ MS-DOS/14.0™ MS-DOS/14.1™ MS-DOS/14.2™ MS-DOS/14.3™ MS-DOS/14.4™ MS-DOS/14.5™ MS-DOS/14.6™ MS-DOS/14.7™ MS-DOS/14.8™ MS-DOS/14.9™ MS-DOS/15.0™ MS-DOS/15.1™ MS-DOS/15.2™ MS-DOS/15.3™ MS-DOS/15.4™ MS-DOS/15.5™ MS-DOS/15.6™ MS-DOS/15.7™ MS-DOS/15.8™ MS-DOS/15.9™ MS-DOS/16.0™ MS-DOS/16.1™ MS-DOS/16.2™ MS-DOS/16.3™ MS-DOS/16.4™ MS-DOS/16.5™ MS-DOS/16.6™ MS-DOS/16.7™ MS-DOS/16.8™ MS-DOS/16.9™ MS-DOS/17.0™ MS-DOS/17.1™ MS-DOS/17.2™ MS-DOS/17.3™ MS-DOS/17.4™ MS-DOS/17.5™ MS-DOS/17.6™ MS-DOS/17.7™ MS-DOS/17.8™ MS-DOS/17.9™ MS-DOS/18.0™ MS-DOS/18.1™ MS-DOS/18.2™ MS-DOS/18.3™ MS-DOS/18.4™ MS-DOS/18.5™ MS-DOS/18.6™ MS-DOS/18.7™ MS-DOS/18.8™ MS-DOS/18.9™ MS-DOS/19.0™ MS-DOS/19.1™ MS-DOS/19.2™ MS-DOS/19.3™ MS-DOS/19.4™ MS-DOS/19.5™ MS-DOS/19.6™ MS-DOS/19.7™ MS-DOS/19.8™ MS-DOS/19.9™ MS-DOS/20.0™ MS-DOS/20.1™ MS-DOS/20.2™ MS-DOS/20.3™ MS-DOS/20.4™ MS-DOS/20.5™ MS-DOS/20.6™ MS-DOS/20.7™ MS-DOS/20.8™ MS-DOS/20.9™ MS-DOS/21.0™ MS-DOS/21.1™ MS-DOS/21.2™ MS-DOS/21.3™ MS-DOS/21.4™ MS-DOS/21.5™ MS-DOS/21.6™ MS-DOS/21.7™ MS-DOS/21.8™ MS-DOS/21.9™ MS-DOS/22.0™ MS-DOS/22.1™ MS-DOS/22.2™ MS-DOS/22.3™ MS-DOS/22.4™ MS-DOS/22.5™ MS-DOS/22.6™ MS-DOS/22.7™ MS-DOS/22.8™ MS-DOS/22.9™ MS-DOS/23.0™ MS-DOS/23.1™ MS-DOS/23.2™ MS-DOS/23.3™ MS-DOS/23.4™ MS-DOS/23.5™ MS-DOS/23.6™ MS-DOS/23.7™ MS-DOS/23.8™ MS-DOS/23.9™ MS-DOS/24.0™ MS-DOS/24.1™ MS-DOS/24.2™ MS-DOS/24.3™ MS-DOS/24.4™ MS-DOS/24.5™ MS-DOS/24.6™ MS-DOS/24.7™ MS-DOS/24.8™ MS-DOS/24.9™ MS-DOS/25.0™ MS-DOS/25.1™ MS-DOS/25.2™ MS-DOS/25.3™ MS-DOS/25.4™ MS-DOS/25.5™ MS-DOS/25.6™ MS-DOS/25.7™ MS-DOS/25.8™ MS-DOS/25.9™ MS-DOS/26.0™ MS-DOS/26.1™ MS-DOS/26.2™ MS-DOS/26.3™ MS-DOS/26.4™ MS-DOS/26.5™ MS-DOS/26.6™ MS-DOS/26.7™ MS-DOS/26.8™ MS-DOS/26.9™ MS-DOS/27.0™ MS-DOS/27.1™ MS-DOS/27.2™ MS-DOS/27.3™ MS-DOS/27.4™ MS-DOS/27.5™ MS-DOS/27.6™ MS-DOS/27.7™ MS-DOS/27.8™ MS-DOS/27.9™ MS-DOS/28.0™ MS-DOS/28.1™ MS-DOS/28.2™ MS-DOS/28.3™ MS-DOS/28.4™ MS-DOS/28.5™ MS-DOS/28.6™ MS-DOS/28.7™ MS-DOS/28.8™ MS-DOS/28.9™ MS-DOS/29.0™ MS-DOS/29.1™ MS-DOS/29.2™ MS-DOS/29.3™ MS-DOS/29.4™ MS-DOS/29.5™ MS-DOS/29.6™ MS-DOS/29.7™ MS-DOS/29.8™ MS-DOS/29.9™ MS-DOS/30.0™ MS-DOS/30.1™ MS-DOS/30.2™ MS-DOS/30.3™ MS-DOS/30.4™ MS-DOS/30.5™ MS-DOS/30.6™ MS-DOS/30.7™ MS-DOS/30.8™ MS-DOS/30.9™ MS-DOS/31.0™ MS-DOS/31.1™ MS-DOS/31.2™ MS-DOS/31.3™ MS-DOS/31.4™ MS-DOS/31.5™ MS-DOS/31.6™ MS-DOS/31.7™ MS-DOS/31.8™ MS-DOS/31.9™ MS-DOS/32.0™ MS-DOS/32.1™ MS-DOS/32.2™ MS-DOS/32.3™ MS-DOS/32.4™ MS-DOS/32.5™ MS-DOS/32.6™ MS-DOS/32.7™ MS-DOS/32.8™ MS-DOS/32.9™ MS-DOS/33.0™ MS-DOS/33.1™ MS-DOS/33.2™ MS-DOS/33.3™ MS-DOS/33.4™ MS-DOS/33.5™ MS-DOS/33.6™ MS-DOS/33.7™ MS-DOS/33.8™ MS-DOS/33.9™ MS-DOS/34.0™ MS-DOS/34.1™ MS-DOS/34.2™ MS-DOS/34.3™ MS-DOS/34.4™ MS-DOS/34.5™ MS-DOS/34.6™ MS-DOS/34.7™ MS-DOS/34.8™ MS-DOS/34.9™ MS-DOS/35.0™ MS-DOS/35.1™ MS-DOS/35.2™ MS-DOS/35.3™ MS-DOS/35.4™ MS-DOS/35.5™ MS-DOS/35.6™ MS-DOS/35.7™ MS-DOS/35.8™ MS-DOS/35.9™ MS-DOS/36.0™ MS-DOS/36.1™ MS-DOS/36.2™ MS-DOS/36.3™ MS-DOS/36.4™ MS-DOS/36.5™ MS-DOS/36.6™ MS-DOS/36.7™ MS-DOS/36.8™ MS-DOS/36.9™ MS-DOS/37.0™ MS-DOS/37.1™ MS-DOS/37.2™ MS-DOS/37.3™ MS-DOS/37.4™ MS-DOS/37.5™ MS-DOS/37.6™ MS-DOS/37.7™ MS-DOS/37.8™ MS-DOS/37.9™ MS-DOS/38.0™ MS-DOS/38.1™ MS-DOS/38.2™ MS-DOS/38.3™ MS-DOS/38.4™ MS-DOS/38.5™ MS-DOS/38.6™ MS-DOS/38.7™ MS-DOS/38.8™ MS-DOS/38.9™ MS-DOS/39.0™ MS-DOS/39.1™ MS-DOS/39.2™ MS-DOS/39.3™ MS-DOS/39.4™ MS-DOS/39.5™ MS-DOS/39.6™ MS-DOS/39.7™ MS-DOS/39.8™ MS-DOS/39.9™ MS-DOS/40.0™ MS-DOS/40.1™ MS-DOS/40.2™ MS-DOS/40.3™ MS-DOS/40.4™ MS-DOS/40.5™ MS-DOS/40.6™ MS-DOS/40.7™ MS-DOS/40.8™ MS-DOS/40.9™ MS-DOS/41.0™ MS-DOS/41.1™ MS-DOS/41.2™ MS-DOS/41.3™ MS-DOS/41.4™ MS-DOS/41.5™ MS-DOS/41.6™ MS-DOS/41.7™ MS-DOS/41.8™ MS-DOS/41.9™ MS-DOS/42.0™ MS-DOS/42.1™ MS-DOS/42.2™ MS-DOS/42.3™ MS-DOS/42.4™ MS-DOS/42.5™ MS-DOS/42.6™ MS-DOS/42.7™ MS-DOS/42.8™ MS-DOS/42.9™ MS-DOS/43.0™ MS-DOS/43.1™ MS-DOS/43.2™ MS-DOS/43.3™ MS-DOS/43.4™ MS-DOS/43.5™ MS-DOS/43.6™ MS-DOS/43.7™ MS-DOS/43.8™ MS-DOS/43.9™ MS-DOS/44.0™ MS-DOS/44.1™ MS-DOS/44.2™ MS-DOS/44.3™ MS-DOS/44.4™ MS-DOS/44.5™ MS-DOS/44.6™ MS-DOS/44.7™ MS-DOS/44.8™ MS-DOS/44.9™ MS-DOS/45.0™ MS-DOS/45.1™ MS-DOS/45.2™ MS-DOS/45.3™ MS-DOS/45.4™ MS-DOS/45.5™ MS-DOS/45.6™ MS-DOS/45.7™ MS-DOS/45.8™ MS-DOS/45.9™ MS-DOS/46.0™ MS-DOS/46.1™ MS-DOS/46.2™ MS-DOS/46.3™ MS-DOS/46.4™ MS-DOS/46.5™ MS-DOS/46.6™ MS-DOS/46.7™ MS-DOS/46.8™ MS-DOS/46.9™ MS-DOS/47.0™ MS-DOS/47.1™ MS-DOS/47.2™ MS-DOS/47.3™ MS-DOS/47.4™ MS-DOS/47.5™ MS-DOS/47.6™ MS-DOS/47.7™ MS-DOS/47.8™ MS-DOS/47.9™ MS-DOS/48.0™ MS-DOS/48.1™ MS-DOS/48.2™ MS-DOS/48.3™ MS-DOS/48.4™ MS-DOS/48.5™ MS-DOS/48.6™ MS-DOS/48.7™ MS-DOS/48.8™ MS-DOS/48.9™ MS-DOS/49.0™ MS-DOS/49.1™ MS-DOS/49.2™ MS-DOS/49.3™ MS-DOS/49.4™ MS-DOS/49.5™ MS-DOS/49.6™ MS-DOS/49.7™ MS-DOS/49.8™ MS-DOS/49.9™ MS-DOS/50.0™ MS-DOS/50.1™ MS-DOS/50.2™ MS-DOS/50.3™ MS-DOS/50.4™ MS-DOS/50.5™ MS-DOS/50.6™ MS-DOS/50.7™ MS-DOS/50.8™ MS-DOS/50.9™ MS-DOS/51.0™ MS-DOS/51.1™ MS-DOS/51.2™ MS-DOS/51.3™ MS-DOS/51.4™ MS-DOS/51.5™ MS-DOS/51.6™ MS-DOS/51.7™ MS-DOS/51.8™ MS-DOS/51.9™ MS-DOS/52.0™ MS-DOS/52.1™ MS-DOS/52.2™ MS-DOS/52.3™ MS-DOS/52.4™ MS-DOS/52.5™ MS-DOS/52.6™ MS-DOS/52.7™ MS-DOS/52.8™ MS-DOS/52.9™ MS-DOS/53.0™ MS-DOS/53.1™ MS-DOS/53.2™ MS-DOS/53.3™ MS-DOS/53.4™ MS-DOS/53.5™ MS-DOS/53.6™ MS-DOS/53.7™ MS-DOS/53.8™ MS-DOS/53.9™ MS-DOS/54.0™ MS-DOS/54.1™ MS-DOS/54.2™ MS-DOS/54.3™ MS-DOS/54.4™ MS-DOS/54.5™ MS-DOS/54.6™ MS-DOS/54.7™ MS-DOS/54.8™ MS-DOS/54.9™ MS-DOS/55.0™ MS-DOS/55.1™ MS-DOS/55.2™ MS-DOS/55.3™ MS-DOS/55.4™ MS-DOS/55.5™ MS-DOS/55.6™ MS-DOS/55.7™ MS-DOS/55.8™ MS-DOS/55.9™ MS-DOS/56.0™ MS-DOS/56.1™ MS-DOS/56.2™ MS-DOS/56.3™ MS-DOS/56.4™ MS-DOS/56.5™ MS-DOS/56.6™ MS-DOS/56.7™ MS-DOS/56.8™ MS-DOS/56.9™ MS-DOS/57.0™ MS-DOS/57.1™ MS-DOS/57.2™ MS-DOS/57.3™ MS-DOS/57.4™ MS-DOS/57.5™ MS-DOS/57.6™ MS-DOS/57.7™ MS-DOS/57.8™ MS-DOS/57.9™ MS-DOS/58.0™ MS-DOS/58.1™ MS-DOS/58.2™ MS-DOS/58.3™ MS-DOS/58.4™ MS-DOS/58.5™ MS-DOS/58.6™ MS-DOS/58.7™ MS-DOS/58.8™ MS-DOS/58.9™ MS-DOS/59.0™ MS-DOS/59.1™ MS-DOS/59.2™ MS-DOS/59.3™ MS-DOS/59.4™ MS-DOS/59.5™ MS-DOS/59.6™ MS-DOS/59.7™ MS-DOS/59.8™ MS-DOS/59.9™ MS-DOS/60.0™ MS-DOS/60.1™ MS-DOS/60.2™ MS-DOS/60.3™ MS-DOS/60.4™ MS-DOS/60.5™ MS-DOS/60.6™ MS-DOS/60.7™ MS-DOS/60.8™ MS-DOS/60.9™ MS-DOS/61.0™ MS-DOS/61.1™ MS-DOS/61.2™ MS-DOS/61.3™ MS-DOS/61.4™ MS-DOS/61.5™ MS-DOS/61.6™ MS-DOS/61.7™ MS-DOS/61.8™ MS-DOS/61.9™ MS-DOS/62.0™ MS-DOS/62.1™ MS-DOS/62.2™ MS-DOS/62.3™ MS-DOS/62.4™ MS-DOS/62.5™ MS-DOS/62.6™ MS-DOS/62.7™ MS-DOS/62.8™ MS-DOS/62.9™ MS-DOS/63.0™ MS-DOS/63.1™ MS-DOS/63.2™ MS-DOS/63.3™ MS-DOS/63.4™ MS-DOS/63.5™ MS-DOS/63.6™ MS-DOS/63.7™ MS-DOS/63.8™ MS-DOS/63.9™ MS-DOS/64.0™ MS-DOS/64.1™ MS-DOS/64.2™ MS-DOS/64.3™ MS-DOS/64.4™ MS-DOS/64.5™ MS-DOS/64.6™ MS-DOS/64.7™ MS-DOS/64.8™ MS-DOS/64.9™ MS-DOS/65.0™ MS-DOS/65.1™ MS-DOS/65.2™ MS-DOS/65.3™ MS-DOS/65.4™ MS-DOS/65.5™ MS-DOS/65.6™ MS-DOS/65.7™ MS-DOS/65.8™ MS-DOS/65.9™ MS-DOS/66.0™ MS-DOS/66.1™ MS-DOS/66.2™ MS-DOS/66.3™ MS-DOS/66.4™ MS-DOS/66.5™ MS-DOS/66.6™ MS-DOS/66.7™ MS-DOS/66.8™ MS-DOS/66.9™ MS-DOS/67.0™ MS-DOS/67.1™ MS-DOS/67.2™ MS-DOS/67.3™ MS-DOS/67.4™ MS-DOS/67.5™ MS-DOS/67.6™ MS-DOS/67.7™ MS-DOS/67.8™ MS-DOS/67.9™ MS-DOS/68.0™ MS-DOS/68.1™ MS-DOS/68.2™ MS-DOS/68.3™ MS-DOS/68.4™ MS-DOS/68.5™ MS-DOS/68.6™ MS-DOS/68.7™ MS-DOS/68.8™ MS-DOS/68.9™ MS-DOS/69.0™ MS-DOS/69.1™ MS-DOS/69.2™ MS-DOS/69.3™ MS-DOS/69.4™ MS-DOS/69.5™ MS-DOS/69.6™ MS-DOS/69.7™ MS-DOS/69.8™ MS-DOS/69.9™ MS-DOS/70.0™ MS-DOS/70.1™ MS-DOS/70.2™ MS-DOS/70.3™ MS-DOS/70.4™ MS-DOS/70.5™ MS-DOS/70.6™ MS-DOS/70.7™ MS-DOS/70.8™ MS-DOS/70.9™ MS-DOS/71.0™ MS-DOS/71.1™ MS-DOS/71.2™ MS-DOS/71.3™ MS-DOS/71.4™ MS-DOS/71.5™ MS-DOS/71.6™ MS-DOS/71.7™ MS-DOS/71.8™ MS-DOS/71.9™ MS-DOS/72.0™ MS-DOS/72.1™ MS-DOS/72.2™ MS-DOS/72.3™ MS-DOS/72.4™ MS-DOS/72.5™ MS-DOS/72.6™ MS-DOS/72.7™ MS-DOS/72.8™ MS-DOS/72.9™ MS-DOS/73.0™ MS-DOS/73.1™ MS-DOS/73.2™ MS-DOS/73.3™ MS-DOS/73.4™ MS-DOS/73.5™ MS-DOS/73.6™ MS-DOS/73.7™ MS-DOS/73.8™ MS-DOS/73.9™ MS-DOS/74.0™ MS-DOS/74.1™ MS-DOS/74.2™ MS-DOS/74.3™ MS-DOS/74.4™ MS-DOS/74.5™ MS-DOS/74.6™ MS-DOS/74.7™ MS-DOS/74.8™ MS-DOS/74.9™ MS-DOS/75.0™ MS-DOS/75.1™ MS-DOS/75.2™ MS-DOS/75.3™ MS-DOS/75.4™ MS-DOS/75.5™ MS-DOS/75.6™ MS-DOS/75.7™ MS-DOS/75.8™ MS-DOS/75.9™ MS-DOS/76.0™ MS-DOS/76.1™ MS-DOS/76.2™ MS-DOS/76.3™ MS-DOS/76.4™ MS-DOS/76.5™ MS-DOS/76.6™ MS-DOS/76.7™ MS-DOS/76.8™ MS-DOS/76.9™ MS-DOS/77.0™ MS-DOS/77.1™ MS-DOS/77.2™ MS-DOS/77.3™ MS-DOS/77.4™ MS-DOS/77.5™ MS-DOS/77.6™ MS-DOS/77.7™ MS-DOS/77.8™ MS-DOS/77.9™ MS-DOS/78.0™ MS-DOS/78.1™ MS-DOS/78.2™ MS-DOS/78.3™ MS-DOS/78.4™ MS-DOS/78.5™ MS-DOS/78.6™ MS-DOS/78.7™ MS-DOS/78.8™ MS-DOS/78.9™ MS-DOS/79.0™ MS-DOS/79.1™ MS-DOS/79.2™ MS-DOS/79.3™ MS-DOS/79.4™ MS-DOS/79.5™ MS-DOS/79.6™ MS-DOS/79.7™ MS-DOS/79.8™ MS-DOS/79.9™ MS-DOS/80.0™ MS-DOS/80.1™ MS-DOS/80.2™ MS-DOS/80.3™ MS-DOS/80.4™ MS-DOS/80.5™ MS-DOS/80.6™ MS-DOS/80.7™ MS-DOS/80.8™ MS-DOS/80.9™ MS-DOS/81.0™ MS-DOS/81.1™ MS-DOS/81.2™ MS-DOS/81.3™ MS-DOS/81.4™ MS-DOS/81.5™ MS-DOS/81.6™ MS-DOS/81.7™ MS-DOS/81.8™ MS-DOS/81.9™ MS-DOS/82.0™ MS-DOS/82.1™ MS-DOS/82.2™ MS-DOS/82.3™ MS-DOS/82.4™ MS-DOS/82.5™ MS-DOS/82.6™ MS-DOS/82.7™ MS-DOS/82.8™ MS-DOS/82.9™ MS-DOS/83.0™ MS-DOS/83.1™ MS-DOS/83.2™ MS-DOS/83.3™ MS-DOS/83.4™ MS-DOS/83.5™ MS-DOS/83.6™ MS-DOS/83.7™ MS-DOS/83.8™ MS-DOS/83.9™ MS-DOS/84.0™ MS-DOS/84.1™ MS-DOS/84.2™ MS-DOS/84.3™ MS-DOS/84.4™ MS-DOS/84.5™ MS-DOS/84.6™ MS-DOS/84.7™ MS-DOS/84.8™ MS-DOS/84.9™ MS-DOS/85.0™ MS-DOS/85.1™ MS-DOS/85.2™ MS-DOS/85.3™ MS-DOS/85.4™ MS-DOS/85.5™ MS-DOS/85.6™ MS-DOS/85.7™ MS-DOS/85.8™ MS-DOS/85.9™ MS-DOS/86.0™ MS-DOS/86.1™ MS-DOS/86.2™ MS-DOS/86.3™ MS-DOS/86.4™ MS-DOS/86.5™ MS-DOS/86.6™ MS-DOS/86.7™ MS-DOS/86.8™ MS-DOS/86.9™ MS-DOS/87.0™ MS-DOS/87.1™ MS-DOS/87.2™ MS-DOS/87.3™ MS-DOS/87.4™ MS-DOS/87.5™ MS-DOS/87.6™ MS-DOS/87.7™ MS-DOS/87.8™ MS-DOS/87.9™ MS-DOS/88.0™ MS-DOS/88.1™ MS-DOS/88.2™ MS-DOS/88.3™ MS-DOS/88.4™ MS-DOS/88.5™ MS-DOS/88.6™ MS-DOS/88.7™ MS-DOS/88.8™ MS-DOS/88.9™ MS-DOS/89.0™ MS-DOS/89.1™ MS-DOS/89.2™ MS-DOS/89.3™ MS-DOS/89.4™ MS-DOS/89.5™ MS-DOS/89.6™ MS-DOS/89.7™ MS-DOS/89.8™ MS-DOS/89.9™ MS-DOS/90.0™ MS-DOS/90.1™ MS-DOS/90.2™ MS-DOS/90.3™ MS-DOS/90.4™ MS-DOS/90.5™ MS-DOS/90.6™ MS-DOS/90.7™ MS-DOS/90.8™ MS-DOS/90.9™ MS-DOS/91.0™ MS-DOS/91.1™ MS-DOS/91.2™ MS-DOS/91.3™ MS-DOS/91.4™ MS-DOS/91.5™ MS-DOS/91.6™ MS-DOS/91.7™ MS-DOS/91.8™ MS-DOS/91.9™ MS-DOS/92.0™ MS-DOS/92.1™ MS-DOS/92.2™ MS-DOS/92.3™ MS-DOS/92.4™ MS-DOS/92.5™ MS-DOS/92.6™ MS-DOS/92.7™ MS-DOS/92.8™ MS-DOS/92.9™ MS-DOS/93.0™ MS-DOS/93.1™ MS-DOS/93.2™ MS-DOS/93.3™ MS-DOS/93.4™ MS-DOS/93.5™ MS-DOS/93.6™ MS-DOS/93.7™ MS-DOS/93.8™ MS-DOS/93.9™ MS-DOS/94.0™ MS-DOS/94.1™ MS-DOS/94.2™ MS-DOS/94.3™ MS-DOS/94.4™ MS-DOS/94.5™ MS-DOS/94.6™ MS-DOS/94.7™ MS-DOS/94.8™ MS-DOS/94.9™ MS-DOS/95.0™ MS-DOS/95.1™ MS-DOS/95.2™ MS-DOS/95.3™ MS-DOS/95.4™ MS-DOS/95.5™ MS-DOS/95.6™ MS-DOS/95.7™ MS-DOS/95.8™ MS-DOS/95.9™ MS-DOS/96.0™ MS-DOS/96.1™ MS-DOS/96.2™ MS-DOS/96.3™ MS-DOS/96.4™ MS-DOS/96.5™ MS-DOS/96.6™ MS-DOS/96.7™ MS-DOS/96.8™ MS-DOS/96.9™ MS-DOS/97.0™ MS-DOS/97.1™ MS-DOS/97.2™ MS-DOS/97.3™ MS-DOS/97.4™ MS-DOS/97.5™ MS-DOS/97.6™ MS-DOS/97.7™ MS-DOS/97.8™ MS-DOS/97.9™ MS-DOS/98.0™ MS-DOS/98.1™ MS-DOS/98.2™ MS-DOS/98.3™ MS-DOS/98.4™ MS-DOS/98.5™ MS-DOS/98.6™ MS-DOS/98.7™ MS-DOS/98.8™ MS-DOS/98.9™ MS-DOS/99.0™ MS-DOS/99.1™ MS-DOS/99.2™ MS-DOS/99.3™ MS-DOS/99.4™ MS-DOS/99.5™ MS-DOS/99.6™ MS-DOS/99.7™ MS-DOS/99.8™ MS-DOS/99.9™ MS-DOS/100.0™ MS-DOS/100.1™ MS-DOS/100.2™ MS-DOS/100.3™ MS-DOS/100.4™ MS-DOS/100.5™ MS-DOS/100.6™ MS-DOS/100.7™ MS-DOS/100.8™ MS-DOS/100.9™ MS-DOS/101.0™ MS-DOS/101.1™ MS-DOS/101.2™ MS-DOS/101.3™ MS-DOS/101.4™ MS-DOS/101.5™ MS-DOS/101.6™ MS-DOS/101.7™ MS-DOS/101.8™ MS-DOS/101.9™ MS-DOS/102.0™ MS-DOS/102.1™ MS-DOS/102.2™ MS-DOS/102.3™ MS-DOS/102.4™ MS-DOS/102.5™ MS-DOS/102.6™ MS-DOS/102.7™ MS-DOS/102.8™ MS-DOS/102.9™ MS-DOS/103.0™ MS-DOS/103.1™ MS-DOS/103.2™ MS-DOS/103.3™ MS-DOS/103.4™ MS-DOS/103.5™ MS-DOS/103.6™ MS-DOS/103.7™ MS-DOS/103.8™ MS-DOS/103.9™ MS-DOS/104.0™ MS-DOS/104.1™ MS-DOS/104.2™ MS-DOS/104.3™ MS-DOS/104.4™ MS-DOS/104.5™ MS-DOS/104.6™ MS-DOS/104.7™ MS-DOS/104.8™ MS-DOS/104.9™ MS-DOS/105.0™ MS-DOS/105.1™ MS-DOS/105.2™ MS-DOS/105.3™ MS-DOS/105.4™ MS-DOS/105.5™ MS-DOS/105.6™ MS-DOS/105.7™ MS-DOS/105.8™ MS-DOS/105.9™ MS-DOS/106.0™ MS-DOS/106.1™ MS-DOS/106.2™ MS-DOS/106.3™ MS-DOS/106.4™ MS-DOS/106.5™ MS-DOS/106.6™ MS-DOS/106.7™ MS-DOS/106.8™ MS-DOS/106.9™ MS-DOS/107.0™ MS-DOS/107.1™ MS-DOS/107.2™ MS-DOS/107.3™ MS-DOS/107.4™ MS-DOS/107.5™ MS-DOS/107.6™ MS-DOS/107.7™ MS-DOS/107.8™ MS-DOS/107.9™ MS-DOS/108.0™ MS-DOS/108.1™ MS-DOS/108.2™ MS-DOS/108.3™ MS-DOS/108.4™ MS-DOS/108.5™ MS-DOS/108.6™ MS-DOS/108.7™ MS-DOS/108.8™ MS-DOS/108.9™ MS-DOS/109.0™ MS-DOS/109.1™ MS-DOS/109.2™ MS-DOS/109.3™ MS-DOS/109.4™ MS-DOS/109.5™ MS-DOS/109.6™ MS-DOS/109.7™ MS-DOS/109.8™ MS-DOS/109.9™ MS-DOS/110.0™ MS-DOS/110.1™ MS-DOS/110.2™ MS-DOS/110.3™ MS-DOS/110.4™ MS-DOS/110.5™ MS-DOS/110.6™ MS-DOS/110.7™ MS-DOS/110.8™ MS-DOS/110.9™ MS-DOS/111.0™ MS-DOS/111.1™ MS-DOS/111.2™ MS-DOS/111.3™ MS-DOS/111.4™ MS-DOS/111.5™ MS-DOS/111.6™ MS-DOS/111.7™ MS-DOS/111.8™ MS-DOS/111.9™ MS-DOS/112.0™ MS-DOS/112.1™ MS-DOS/112.2™ MS-DOS/112.3™ MS-DOS/112.4™ MS-DOS/112.5™ MS-DOS/112.6™ MS-DOS/112.7™ MS-DOS/112.8™ MS-DOS/112.9™ MS-DOS/113.0™ MS-DOS/113.1™ MS-DOS/113.2™ MS-DOS/113.3™ MS-DOS/113.4™ MS-DOS/113.5™ MS-DOS/113.6™ MS-DOS/11

Though not the focus of this thesis, it is important to point out that visual perception, far from a “natural” mode of sense-making, is historically situated and constructed through specific scientific and philosophical discourses. In the case of a GUI, there is much work yet to be done in exploring the implications and consequences of the pervasive desktop metaphor, and how specific, culturally situated forms of perspective and visual organization are specific to Western scientific and psychological discourses of the late 20th century. Nonetheless, whether graphically or text based, interfaces perform acts of translation. The difference is, perhaps, in valuing where the elisions within translation take place.

The previous discussion has attempted to draw forth the presence and consequence of design in the advertising of personal computers. As in the discussion of the personal computer’s constructed functionality, we witness the extent to which even as personal computers were positioned for home use, they relied on understanding the computer through an office and work based lens, thus aligning the personal computer as a transitional object, linking the domestic and work sphere. We also witness how differing deployments of design, in both industrial design and software, began to align the personal computer with specific modes of thought and interaction paradigms between humans and computers.

The dimension of design is only one way in which to examine how advertisements aligned personal computers with specific modes of thought. The following chapter will draw out from the specific dimensions of design and functionality, in order to examine how the systems of signification within advertisements more broadly suggest specific world-views associated with personal computers in the home.

Chapter 4: Who Are We When We Use a Personal Computer?

Mythic Bonds

The scene takes place in a boardroom in New York City in the early 1960s. Seated around the table are men, executives from the Sterling Cooper advertising agency, and representatives from the Eastman Kodak Company. The meeting is a pitch for Kodak's next advertising campaign, which is to revolve around the "wheel," Kodak's latest invention to display slides. Don Draper, the debonair, brilliant and mysterious head of Creative for Sterling Cooper, begins the pitch, "Technology is a glittering lure. ... But there is the rare occasion when the public can be engaged on a level beyond flash, when they have a sentimental bond with the product."

The lights dim, and the camera focuses on a screen on which slides from the wheel are projected. Don narrates each image, as solemn, drawn out notes play, creating a tone of intense emotion. The mechanical click of the slide wheel punctuates the change of each image,

Nostalgia. It's delicate but potent. Teddy told me that in Greek nostalgia literally means the pain from an old wound. It's a twinge in your heart, far more powerful than memory alone. This device isn't a spaceship. It's a time machine. It goes backwards and forwards. It takes us to a place where we ache to go again.

It's not called the wheel. It's called a carousel. It lets us travel the way a child travels, around and around, back home again, to a place where we know we are loved.

This scene is from the first season of *Mad Men*, a widely acclaimed television drama from 2010, which centers around the lives of Sterling Cooper's staff, a fictional ad agency in New York in the 1960s. These men – and their secretaries, wives and lovers – represent the so-called Mad Men, due to their location on Madison Avenue.

The show's often cynical take on consumerism and the Modern American family is also a

testament to the art of persuasion, and to the banal but powerful ways in which advertising influences the cultural meaning of products.

In the world of Sterling Cooper advertising isn't about conveying information, it's about storytelling. Advertisements must illicit desire, not for the product, but for what the product's ownership could bring. This psychological approach to the work of advertising, generally understood to have been inaugurated by Edward Bernays, has continued to be a guiding force in marketing.⁸⁰

This chapter will look more closely at the stories being told about personal computers through advertising. The last chapters have focused on the more literal content and context of personal computer advertising. This chapter will take a step back in order to examine the myth making or ideological dimensions of personal computer advertising during this period, particularly those in which the personal computer is linked to individuality, freedom, creativity, power and success.

On Ideology

Myth making and ideology are loaded terms and a few caveats must be stated before proceeding. In Terry Eagleton's introduction to his study of ideology, he points to the lack of

⁸⁰ In the 1980s, an interesting new wave of studies of advertising emerged. For a comprehensive social history of advertising, and a focus on the culture of ad agencies see Roland Marchand, *Advertising the American Dream: Making Way for Modernity* (Berkeley: University of California Press, 1985). For a business and market oriented examination of advertising, see Daniel Pope, *The Making of Modern Advertising* (New York: Basic Books, 1983), and for a critical examination of advertising's effects, see Michael Schudson, *Advertising, the Uneasy Persuasion: Its Dubious Impact on American Society* (New York: Basic Books, 1984). For an excellent introduction to the study of advertising, written from a Cultural Studies and Communications perspective, see William Leiss, Stephen Kline, Sut Jhally, and Jacqueline Botterill. *Social Communication in Advertising* 2nd Ed. (New York: Routledge, 1997).

consensus surrounding the definition of ideology. He writes,

The word ‘ideology,’ one might say, is a *text*, woven of a whole tissue of different conceptual strands; it is traced through by divergent histories, and it is probably more important to assess what is valuable or can be discarded in each of these lineages than to merge them forcibly into some Grand Global Theory.”⁸¹

Eagleton’s discussion of the differing conceptual strands is too nuanced to be summed up in a few sentences, as is the concept of ideology itself. However, it is important for the purposes of this thesis to enunciate the sense of ideology which which I am engaging and the role that advertisements plays in its construction and propagation. Rather than engaging with ideology as “false consciousness,” it seems more productive to consider ideology as the means of constructing a world-view and a kind of common sense that negates questioning. Following Althusser’s elaboration of ideology, I find it productive to understand ideology, in the words of Eagleton, as “a particular organization of signifying practices which goes to constitute human beings as social subjects, and which produces the lived relations of production in a society.”⁸² Advertising’s role in this formulation can be understood as the ways in which abstract or theoretical ideas are translated and reified in everyday scenarios.

This is not to say that ideology’s power over individual expression and practice is absolute. It is, however, to suggest there are systems of meaning and value that provide the substrate of a culture. The work of ideology, then, is to set the terms of engagement.

Our individual experience tells us that such structures of meaning are neither so complete nor so dictatorial. Yet, advertising presents a site where ideologies begin to take root and find

⁸¹ Terry Eagleton, *Ideology: an introduction* (New York: Verso, 1991).1.

⁸² *Ibid.*, 18.

expression. Judith Williamson, writing from a Marxist perspective, finds advertising to be an ideal place for the dissemination of ideology. She writes, “Advertisements provide a structure which is capable of transforming the language of objects to that of people, and vice versa.”⁸³ As such, advertisements are exemplary carriers of ideology, for they mediate abstract or theoretical ideas into material objects and everyday situations.

It is not my claim that the messages and sense of advertisements translate directly from marketing to consumer, nor that there exists only one interpretation of these ads and this interpretation is the only possible meaning. What I am proposing is that advertising is one meaning-making site, albeit among many. Though individuals may reject or reposition the meaning in advertising, we must take account of the weight and inertia of the signification in advertising as both reflective and constructive of larger cultural meanings and world-views.

Apple's 1984

Perhaps more than any other advertisement about personal computers, Apple's 1984 Macintosh 30-second television spot stands as the embodiment of the way in which specific world views became reified in personal computers. The thirty-second advertisement⁸⁴ begins by showing a series of bars and then a line of lifeless men marching down a dark corridor, moving into seated rows in the haze of a dark, dystopian environment. The ambiance and tone recall the

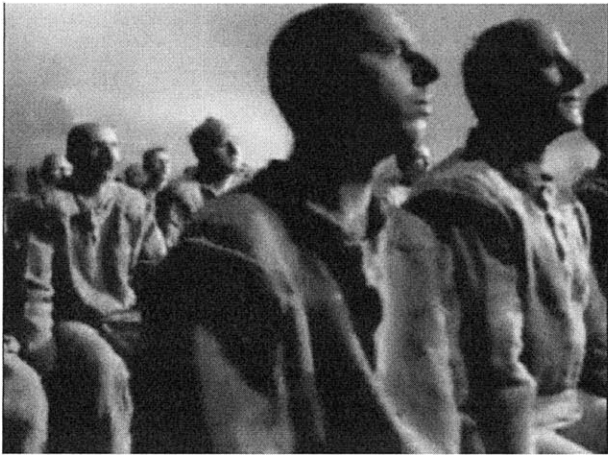
⁸³ Williamson, 12.

⁸⁴ Perhaps one of the most famous advertisements about computers of all time, the ad aired only once, during the 1984 Super Bowl. However, the advertisement was circulated and repeated through other media, re-shown on television by news shows and written about in newspapers and magazines, initiating what has become a standard of Super Bowl commercials: ad time as media event and showcase. For further discussion of this ad as a media event, see Ted Friedman, *Electric Dreams: Computers in American Culture* (New York: NYU Press, 2005), 111.

post-apocalyptic science fiction world of Ridley Scott's recent hit, *Blade Runner* (1982), as well as Terry Gilliam's *Brazil* (1985). Scott, the director of the commercial, establishes the sense that this is not a world in which we want to live. Everyone looks the same. Everyone is hypnotized by the preaching figure of a bald man, reminiscent of Big Brother in 1984 (as well as the Tramp's boss in *Modern Times*). The man on the screen intones propaganda in a bone-chilling voice,

Today, we celebrate the first glorious anniversary of the Information Purification Directives. We have created for the first time in all history a garden of pure ideology. Where each worker may bloom secure from the pests of contradictory and confusing truths. Our Unification of Thoughts is more powerful a weapon than any fleet or army on earth. We are one people, with one will, one resolve, one cause. Our enemies shall talk themselves to death and we will bury them with their own confusion. We shall prevail!

As the man speaks, we see a woman, healthy and full of life, clad in red running shorts and a white tank top with the Apple logo, running with something in her hand. The ad cuts to authority figures, storm trooper like, chasing the woman. They too lack individuality or humanity. Their faces are covered by protective masks and they all look identical. The scene cuts back and forth between the woman running and the men chasing her, creating a sense of immanent threat. Finally, she reaches the room where the workers are seated and hurls a hatchet at the screen. Then, the screen and the man explode into a white, revelatory light that bathes the lifeless drones. A man's deep voice intones, "On January 24, Apple Computer will release the Macintosh. And you'll see why 1984 won't be like 1984." By highlighting and subsequently rejecting a specific world view tied to computers (especially IBM computers), the advertisement links Apple computers with an alternative and emancipatory perspective on computing and the computer's potential. At stake in owning a personal computer, the advertisement suggests, is not only an object, but also the future. And the computer you buy suggests the kind of future in which you want to live.



On January 24th,
Apple Computer will introduce
Macintosh.
And you'll see why 1984
won't be like "1984."

Fig. 4.1: Apple Macintosh. Television advertisement. Directed by Ridley Scott. United States. Regis McKenna, 1984. Video.

The ad was produced by the well-known Silicon valley advertising firm, Chiat/Day and cost an astounding \$900,000 to produce.⁸⁵ However, at least in terms of the bottom line, Apple succeeded. Demand for and sales of the Macintosh in the following months exceeded all expectations.⁸⁶

The advertisement has been hailed as one of the best computer advertisements of all time and discussions of the advertisement have been endless, especially in the popular press. Most noteworthy is Ted Friedman's reading in *Electric Dreams*. Friedman suggests that, on the one hand, Apple was able to "harness the visual fascination of a high-tech future, while dissociating itself from its dystopic underside." Perhaps more important is his interpretation of the running woman. She stands in as both a Mac user and the Macintosh itself, effectively gendering the Mac female, signaling that the company "stood for something different, affiliating the Apple with the goal of equal access to computing for women"⁸⁷ and the potential emancipation Macs held for all underdogs. Friedman writes,

It turned the confusing complexity of the Information Age ... into a Manichean battle of good versus evil. There's the bad technology—centralized, authoritarian—which crushes the human spirit and controls people's minds. Read, IBM. But we can be liberated from that bad technology by the good technology—independent, individualized—of the Mac.⁸⁸

Moreover, the Macintosh is not just the computer for the underdog and the oppressed. The Macintosh is not just an expression of liberation and good technology. It is an expression of individuality. I would add that the running woman, embodying the Macintosh, is the only

⁸⁵ Friedman, 109.

⁸⁶ Thomas Hayes, "Strong Sales Seen in '84 For Apple's Macintosh," *The New York Times*, 25 February 1984.

⁸⁷ Friedman, 111.

⁸⁸ *Ibid.*, 111-112.

character who expresses individuality and the inherent freedom that comes with it. Although the Big Brother figure is an individual, we assume that he is toeing a party line and he, in a sense, becomes part of the collective as the figurehead for all the other worker drones. The Macintosh personal computer doesn't just provide liberation, it provides individuality – that which is lost in Orwell's dystopian *1984*.

The theme of individuality is echoed in less dystopian ways in some of Apple's earlier ads, in which men such as Ben Franklin and Thomas Jefferson use a personal computer. The copy asks, "What kind of man owns his own computer?" The kind of idealized men who founded the United States, smart, independent, supporters of liberty and equality are the kind of men who own computers. The implications of the 1984 Macintosh ad as well as Apple's other ads are that using a computer is an act of individual expression and personal freedom.

In his book, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*, Fred Turner looks to the work of Stewart Brand and the Whole Earth Network in order to answer how computer culture served as "the defining devices of the cold war technocracy... technologies of dehumanization, of centralized bureaucracy and the rationalization of social life" then became "the symbols of its transformation."⁸⁹ Turner argues that Brand orchestrated and forged the links between San Francisco's countercultural hippies, technologists and entrepreneurs of Silicon Valley. Also, the book seeks to reveal the seemingly paradoxical but crucial significance of innovative and experimental military-industrial research culture during and after World War II. This culture and its contributions to ways of thinking are not as different from 1960s American counterculture as

⁸⁹ Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 2.

they may seem, Turner argues. In fact, both cultures sought out new ways of defining and understanding the world, and finding ways for individuals to be empowered as well as necessarily connected to the external world.

Turner points to a number of factors that contributed to this change. In one instance, computers became smaller and relatively affordable, allowing the expansion of uses and functions for computers and their surrounding social relationships. But these functional changes, according to Turner, do not adequately account for “the particular utopian visions to which computers became attached.”⁹⁰ Technology contains the affordances but not the imperatives for any of the meanings and uses that emerged. Turner writes,

Together, the creators and readers of the *Whole Earth Catalog* helped synthesize a vision of technology as a countercultural force that would shape public understandings of computing and other machines long after the social movements of the 1960s had faded from view.⁹¹

Though he does not speak about advertising directly during this period, I would suggest that advertisements played a crucial role in disseminating this world-view to the general public, such that it became the common sense of our age.

All the Good Things in Life

Advertisements consistently suggest, though none as explicitly as the Macintosh 1984 ad, that computers will help us achieve spectacular heights, at least within an American value system: individuality, freedom, creativity, power and success. The majority of advertisements of personal computers display confident individuals using computers. The presence of an individual

⁹⁰ Ibid., 2.

⁹¹ Ibid., 6.

confers this individuality and independence upon the computer itself, while also suggesting that these individuals are such because they use personal computers. For instance, a series of ads for Epson personal computers (Fig. 4.2) display serious black and white portraits of individuals and their computers. In one ad, a woman in a dress-suit leans in toward the viewer, over her printer and beside her computer. We are told, "Imagine that. The power of Epson being put into millions of hands. Like the hands of Kate Grant." The ad suggests that everyday people, people like Kate Grant, can and do use computers, and are all the more powerful and independent for it.

Moreover, individuals who use computers are shown to have achieved more freedom. Two ads, one from Apple and one from Radio Shack display remarkably similar compositions. Both show individuals happily engrossed in their personal computers in a home setting, but also seated in front of windows that open onto larger landscapes. In the Apple Macintosh ad (Fig. 4.3), a man, some sort of creative professional, leans back at a desk looking at a document he has just printed from his computer. His feet are up on a stool, and a city skyline at dusk stretches out before him. The headline reads, "How to succeed in business without leaving the house." The image and the ad copy below suggest that the home, with a Macintosh, can be a comfortable but productive place to work. Moreover, the expanse of the city skyline metaphorically suggests that the city, and even the world, is open to him. He stretches out with the world at his fingertips.

In the ad for Radio Shack's Tandy 1000SX (Fig. 4.4), a woman in a blue shirt sits at her desk on a porch. Her back is to the viewer, and she faces toward a wall of windows opening onto a backyard. Though the yard doesn't connote the expanse of a city skyline, the scene is not one of confinement. She faces her beautiful backyard, looking out into the world. Free from the constraints of the office or an ugly, closed in environment, she is working at home. With the

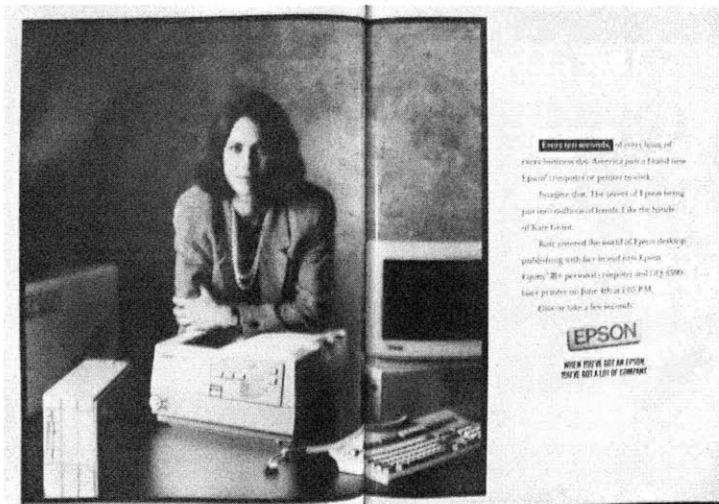


Fig. 4.2: Epson. Advertisement. 14 December 1987. *TIME*, 12. Print.

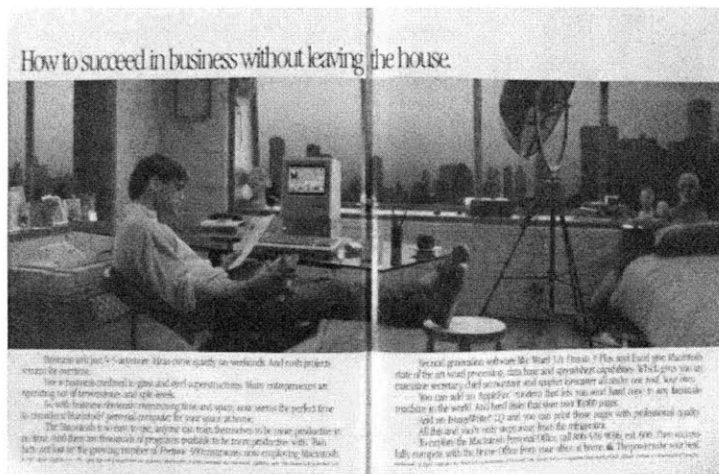


Fig. 4.3: Apple Macintosh. Advertisement. 30 November 1987. *TIME*, 7-8. Print.



Fig. 4.4: Radio Shack Tandy 1000SX. Advertisement. June 1987. *Working Mother*, 9. Print.

Tandy 1000SX, we are told, “you can afford to get serious.” But, is important to note, serious on your own terms.⁹²

Other ads stress the creativity that will result from using personal computers. Many Amiga ads from this period have the tag-line, “The personal computer that gives you the creative edge.” In one rather startling ad, an infant’s face turns towards the viewer, from within the profile of an old man (Fig. 4.5). The two merging heads fill the page, and at the very bottom large text states, “Experience the mind unbounded.” The image references a *2010: Odyssey Two*, which had just been released in 1984. This film, a sequel to *2001: A Space Odyssey*, offers a profoundly more positive view of computers in the future. Though creativity is not a central theme in *2010*, the possibilities of a future, augmented by computers in a positive way, is a theme that emerges.

Though creativity enabled by the computer may seem counter-intuitive, the notion that computers lead to power and success makes a great deal of sense, and can be traced throughout the computer’s history. It is not surprising that we find the computer to be a tool to achieve power. Mainframe computers, in the hands of military and corporate elites, had been used to win wars, make scientific advances and increase profit. Achievements in American society that represent power and success. The advertisements that pick up on this theme are far from subtle. One series of ads for Epson personal computers merely relies on the word, “Power,” and a diagram of a computer to represent this meaning. In one ad, enormous bold font takes up an entire page, stating, “Super Power.” (Fig. 4.6) The opposite page shows a kind of blueprint diagram of the computer, and ad copy describing the functionality below. The ad copy ends by

⁹² The sense that computers at home augmented office work as well as independent use, and that doing work at home evoked feelings of control and empowerment is described in Turkle (1984/2005), especially Chapter 5.

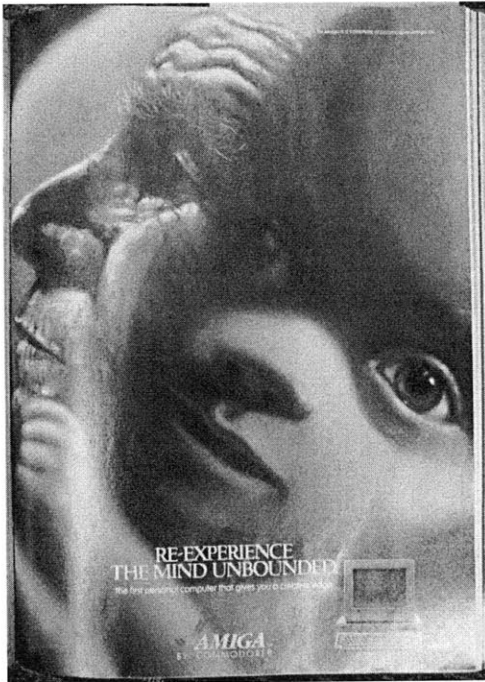


Fig. 4.5: Amiga Commodore. Advertisement. 30 September 1985. *TIME*, 21. Print.

Fig. 4.6: Epson. Advertisement. 9 March 1987. *TIME*, 18-19. Print.

Fig. 4.7: Epson. Advertisement. 15 December 1986. *TIME*, inside back cover. Print.

advising, “The power is now in your hands. Use it wisely.” Another ad headlines with “The Power. The Glory.” Yet another ad states, “Power Broker.” (Fig. 4.7) The aesthetic of the ad plays on the functionality of the computer. The illustrated diagram suggests a kind of transparency of the machine, a mastery of the machine. In fact, Turkle describes how this kind of mastery of machines, as hardware, was an experience that lent feelings of power and control to experienced users.⁹³

In addition, the sense that owning a computer was a means to achieving success was a key component of discourses around personal computers. Many people bought personal computers as a means to get ahead, either in their own work or home business, or especially for their children. One advertisement for a Radio Shack TRS 80 (Fig. 4.8) explicitly states that the computer is “for today’s upwardly mobile society.” Articles in popular and women’s magazines stress that computers are an immanent part of the future, and one must have computer skills to take part in and be successful in this future.⁹⁴ Consider the advertisement for an Adam Personal Computer (Fig. 4.9), which presents a young, proud boy in graduation robes. The headline states, “Adam help kids prepare for college, and helps pay for it too.” Referencing a scholarship fund established by Adam, nonetheless the advertisement portrays the computer as the child’s means to success.

⁹³ Turkle writes, “When those I interviewed spoke of their home computers they spoke of the sense of power that came from having full knowledge of the system, of the ‘feeling of control when I work in a safe environment of my own creation.’” Turkle (1984/2005), 160.

⁹⁴ For a small selection of such articles, see E. Wood, “And a Machine Shall Set You Free,” *Working Woman*, May 1985, 64-74; C. O’Malley, “Boosting your child’s creativity,” *Personal Computing*, March 1985: 100-101; John Oppenheim, “Do your kids need a computer?” *Parents*, October 1985, 96-98.

Many advertisements allude to the anxiety of being left behind in the inevitable progression of technology. Rather than stress how successful a user could be, they emphasize how potentially *unsuccessful* someone without a computer will be. For instance, in another ad for the Amiga Commodore, the top of the page attracts the most attention with the statement, "Today If You Come in Second, You've Lost the Race." Below, a black and white picture of a soapbox derby race takes up most of the page. Another similar ad, showing a classroom with children's hands raised states, "You've Always Had a Lot of Competition. Now You Can Have an Unfair Advantage." In world in which we are the same, personal computers can help us stand apart and give us the tools to achieve unparalleled success. If we don't use them, we'll be left behind.

Implications and Consequences

At this point in the analysis, it is important to bring questions of gender and racial inequality into the picture. Thus far, this thesis has largely ignored feminist considerations and implications of an advertising discourse that almost exclusively represents white male domination. This is in part due to the focus, both in content and time period, of this analysis. The mid-1980s represents a time when the personal computer was moving into the homes of the general population, beyond committed early-adopters. Still, ownership of personal computers was confined to specific segments of the population, those who were relatively affluent, well educated and working in white-collar jobs.⁹⁵ Marketers knew the kind of people who would be

⁹⁵ For an examination of gender in advertisements from this period in business-orientated magazines see Andrew Cox, "Visual Representations of Gender and Computing in Consumer and Professional Magazines." *New Technology, Work and Employment* 24:1 (2009): 89-106. For an excellent introduction to issues of gender and race in computing and computer science, see the work of Jane Margolis, including Jane Margolis and Allan Fisher, *Unlocking the Clubhouse: Women in Computing* (Cambridge, MA: MIT Press, 2001) and Jane Margolis, *Stuck in the Shallow End: Education, Race and Computing* (Cambridge, MA: MIT Press, 2008).

likely to buy computers, and aimed their advertisements at this population. Thus, while we see women as potential computer users, the majority of users remain men. However, it is during this period that women are increasingly shown using a computer, though often gendered for household activities (as in the case of the IBM insert), women are also shown as owners of businesses and office workers. By the mid-1980s, we witness that women have become an undeniable audience, as computers move into the home, typically a domain controlled by women, and the general population.

Yet, racial and class diversity is practically non-existent in these advertisements, and we must consider the consequences of these advertisements and discourses for populations beyond the intended market. I have chosen to focus on advertisements from two of the most widely circulated magazines during this period in order to examine the imaginary of personal computers as it was constructed within a broad-cross section of the American population. Although owners of personal computers may have remained relatively confined during this period, advertisements of personal computers know no such boundaries. As Williamson points out, advertisements exist in the pages of magazines, on television screens and billboards, and

their very existence in more than one medium gives them a sort of independent reality that links them to our own lives; since both share a continuity they constitute a world constantly experienced as real. The ad 'world' becomes seemingly separate from the material medium—whether screen, page, etc.—which carries it.⁹⁶

Though individuals may not experience the world of personal computers directly, the “alternate reality” of advertising discourses remains a shaping factor of social meaning.

⁹⁶ Williamson, 11.

Though personal computers allowed the use of computers to extend beyond an elite-priesthood of technicians, during this time, personal computers in the home remain the province of a privileged and educated population. Though the barriers to use and ownership were destabilized and expanded, barriers remained.

In her study, *The Second Self*, Sherry Turkle beautifully illustrates how computers become objects to think with, objects for self-reflection, and in essence, self-improvement. Whether in the case of hackers, early personal computer owners, or children learning to program, Turkle illustrates how working with computers can and often does lead to the kinds of psychic goals and experiences the advertisements in this section suggest. Yet, in reflecting on her observations, both at the end of her study and on the occasion of its reprinting, Turkle takes on a tentative and cautionary tone,

The political hopes of the first-generation personal computer users were pinned not only on how the computer presence would democratize access to information, but on how a particular relationship with the computer (a sense of the machine's transparency) would generalize to a new and more empowered relationship with politics. In the main, these hopes have not been realized. In 2004 the cultural message of digital technology is not about simplicity but complexity, not about transparency but opacity.⁹⁷

The dominant experience of using a computer today, for the average user, is far from the mastery and experience of transparency Turkle observed in the late 1970s and early 1980s, yet the rhetorics of power and freedom remain. The computer can indeed be a tool of empowerment and success. Yet, the direct link between computers and the ideas it is portrayed to embody are problematic, because they are not necessarily true. Advertisements present them as true, but it is only in individual practice that such consequences unfold. As Williamson points out, "The

⁹⁷ Turkle (1984/2005), 10.

technique of advertising is to correlate feelings, moods or attributes to tangible objects, linking possible *unattainable* things with those that *are* attainable, and thus reassuring us that the former are within reach.”⁹⁸ Though the ideologies linked with personal computers may have the potential to be true, we must constantly question those truths, and ask who is being left behind, and what is at stake in allowing certain meanings to take hold.

⁹⁸ Williamson, 31.

Chapter 5: You, Me and the PC

Isolation vs. Interaction

Among a set of cartoons about computers collected from newspapers across the country in the September 1984 issue of *Reader's Digest*, two cartoons stand out as embodying two stereotypes of computer use in a world of human relationships. In the first cartoon, a man in a lab coat strides into a room filled with large computers, his exuberance is captured in a speech bubble, "Good morning terminals!" In the second cartoon, a man and woman are sitting at a table in their dining room, a full spread of food before them. The woman, annoyed, looks across at her husband as he hunches over, focused on a personal computer. The caption reads, "I liked it better when you read the paper at breakfast."

In the first cartoon we are perhaps laughing at the absurdity of a grown man greeting computers as if they were people. Beneath most humor is also an unease, a rupture in normalized meaning, some element of the uncanny, as Freud described it, "the return of the repressed." The cartoon wouldn't be as funny if greeting computers were completely absurd. There is recognition of a potential alternate world, one that we find humorous in its possibility. Thus, we can extrapolate a set of possible social meanings from this cartoon. It is not deemed socially acceptable to treat computers as human colleagues – this is something we laugh at. Yet, the sense that someone, even a particular kind of someone, might feel emotionally attached to his or her computer stands as a potentially recognizable situation.

Another moment of recognition that emerges from the cartoon is that the work world is populated with computers; a world in which being surrounded by computers, not people, seems a



Fig. 5.1: Reprinted cartoon in "When the chips are down." November 1984. *Reader's Digest*, 94-95. Print.

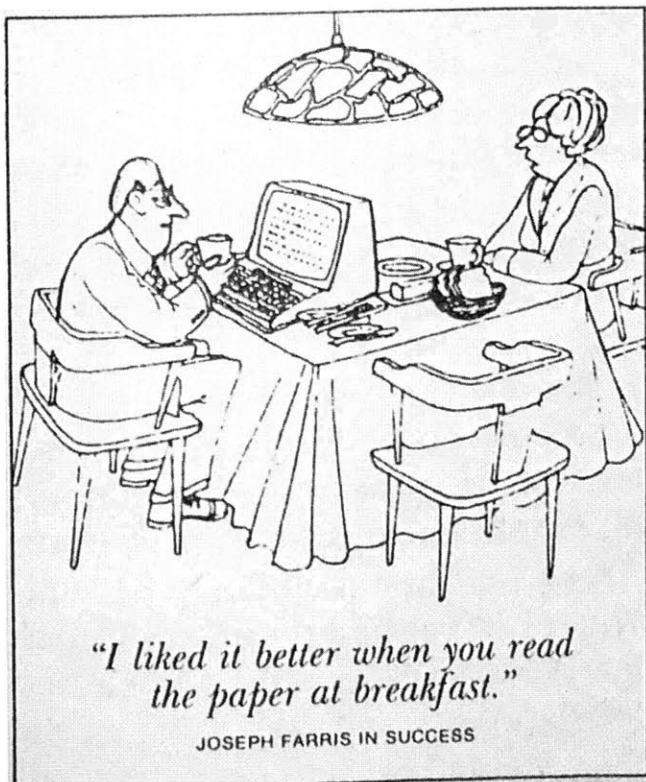


Fig. 5.2: Reprinted cartoon in "When the chips are down." November 1984. *Reader's Digest*, 94-95. Print.

future potential.⁹⁹ However ridiculous, the idea exists that computers are contributing to our social world and challenging notions of community. We might also note the more concrete details of the situation: a man, presumably a scientist or engineer, works with computers, and these computers appear to be terminals or minicomputers, not stand alone personal computers marketed to the independent consumer. The kind of person who would work with and lovingly greet his computer is a stereotypical white male geek.

In the second cartoon, again we see a stereotypical set of characters in a stereotypical male-female situation. The comedic trope of a woman complaining about a man not paying enough attention to her is reenacted with new technology, and again it is a white male who uses technology and a woman who controls the domestic sphere. It seems likely we could find expressions of this same anxiety during the introduction of any new technology, from radio to television. Again, the humor rests on the uncanny recognition of a possible alternate world. Though computers at the breakfast table are now a reality for many American families in the 21st century, the idea that someone would and could set up their large personal computer and all its peripherals and wires on the dining room table was ridiculous. A computer at the table, never! Yet, the recognition of possibility resides in the very real increase of personal computers at home

⁹⁹ Office automation and the increasing ubiquity of computers in work environments produced a wealth of media coverage and speculation. Economists and journalists noted the increasing wage disparity, perhaps due to the introduction of technology, and emphasized the Information Economy as America's future. For a historical examination of automation in the work place see Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988). For examples of popular media coverage see Robert Geline, Christopher Byron and Sue Raffety, "Business: Now the Office of Tomorrow," *TIME*, 17 November 1980, <http://www.time.com/time/magazine/article/0,9171,950497,00.html> (accessed 14 March 2010); Charles P. Alexander, Adam Zagorin and Gisela Bolt, "The New Economy," *TIME*, 30 May 1983, <http://www.time.com/time/printout/0,8816,926013,00.html> (accessed 14 March 2010).

– many of which were in fact kept in dining rooms, kitchens, or other communal family areas¹⁰⁰
– as well as the growing media hype around “computer widows.” During the 1980s, articles in women’s magazines, from *Ms.* to *Good Housekeeping*, advised on how to prevent or ameliorate “being widowed” by the computer,¹⁰¹ a phenomenon in which men brought computers home and never emerged from behind the screen.

Both cartoons satire the isolating nature of personal computing, yet they also point to the extent to which these machines are implicated in our social world and are entangled within the relationships we form with others.

The cultural correspondence between isolation and personal computing is complicated by the immediate history of personal computers, which was in some instances very communal, as well as contemporary practices of computing. Moreover, we see in advertising how this anxiety was addressed and the attempts to mitigate it. This chapter explores the dimensions of how personal computing was and was constructed as a social, in addition to individual, practice and concludes with demonstrating how this potential dimension of social experience was integral to the adoption of the home computer.

Histories Play Out in the Present

First, it is important to reiterate certain strands of the social history of personal computers, and examine how different communities played a role in their development. In

¹⁰⁰ Lally.

¹⁰¹ For a discussion of computer-widows and surrounding discourses, see Lori Reed, “Domesticating the personal computer: The mainstreaming of a new technology and the cultural management of a widespread technophobia, 1964--” *Critical Studies in Media Communication*, 17:2 (2000), 159-185.

addition to the individual innovators and companies, driven by the concerns of the market, other communities, driven by different concerns, helped to shape the development of the personal computer. Aspray and Campbell-Kelly have suggested that the early development of the personal computer is in many ways akin to the early development of radio. Hardware innovations and actual use were not immediately consequential. The possibilities presented by new technology required exploration and use by a committed subculture. They observe that it was hobbyists and electronics enthusiasts who developed uses and innovations with personal computers such that a small but stable market developed and the social uses and potentials of the new technology were explored.¹⁰²

The Altair and many of its early competitors followed the distribution model of electronics hobbyists. Computers were purchased as assembly kits, to be tinkered with and experimented on in a hobbyist's workspace. Many of these hobbyists were already familiar with electronics and computers through their work in the industry or at universities.¹⁰³ Still, a unique kind of community evolved. United through the pages of specialist magazines, newsletters and often physically in computer club meetings, working with a computer was often as much about working on one's own as working with others, sharing tips, software and general camaraderie. It was a community of sharing.

Jumping forward to the 1980s and the introduction of personal computers to non-specialized communities, it is interesting to witness how strands of the communal environment carried through to a general audience. For instance, the early 1980s saw the rise of dozens of magazines focused on home computing. Not quite sub-culture publications, these magazines

¹⁰² Campbell-Kelly Aspray, 209.

¹⁰³ Haddon (1988), 5.

attempted to tap into the variety of uses and kinds of people who might use personal computers. One article from 1984 in the *New York Times* sites the statistic that a new personal computer magazine was emerging every week, though they might not all survive.¹⁰⁴ Ranging from *Personal Computing* to *MacWorld* to *Family PC*, these magazines offered advice on using and buying computers, creating a sense of community in their own right.

Moreover, it is interesting to witness how the computer clubs of hobbyists and enthusiasts were translated to more widespread use. Service and support when buying a computer was a crucial consideration during the 1980s. The computer store might be seen to have become a kind of community gathering place. Slowly but surely, the personal computer market of the 1970s had moved from a distribution pattern based on the pattern of electronic hobbyists to that of consumer electronics. No longer were computers sold by mail order. Nor were they sold through devoted sales representatives at large computing companies like IBM, the primary distribution channel for mainframes and minicomputers. Personal computers were placed as commodities in retail outlets, along side video games, software and other consumer electronics, as well as in specialized computer stores.¹⁰⁵ These personal computer stores, such as Radio Shack and Computer Land, emerged as a key site of consumption and support.¹⁰⁶ The average consumer did not buy a personal computer in the store, and then go home, never to contact the store or company again. Computer retailers as well as producers stressed that buying a computer was also entering into a relationship with a company and dealer. A support system for users was a major

¹⁰⁴ Eric N. Berg, "The Computer Magazine Glut" *The New York Times*. 8 September 1984, 31.

¹⁰⁵ Haddon (1988), 15.

¹⁰⁶ For a first person account of owning a computer store at this time and the daily goings on of such a store, see Seymour Merrin, "Selling PC Software: A Once-Irresistible Opportunity." *IEEE Annals of the History of Computing*. 28(4) 2006: 80-86.

selling point. Most ads of the period close the ad copy by suggesting the consumer go visit the nearest computer retailer or call the company directly. A typical ad for a Tandy 1000 closes with, “Best of all, the Tandy 1000 is backed with total support, including expert service, training courses—even a telephone ‘hotline.’” A typical IBM ad suggests that, “to learn more about how the IBM Personal Computer XT can help you more efficiently handle high-volume application, visit your authorized IBM Personal Computer dealer.” This emphasis on personal attention was clearly an integral part of the consumer experience of personal computers of this period. Of course, such attention was not altruistic. Companies sought to improve their brand reputation as well as to entice users back into the store for more purchases. Still, such support provided a feeling of a safety-net for new users, as well as linked personal computers with the consumption patterns of other, easy-use, home electronics.¹⁰⁷

An emblematic ad from IBM shows a female computer user with an IBM personal computer (Fig. 5.3). Cartoon drawn characters make up a menagerie – eleven different people are crowded together along with fish and birds. The scene is confusing. Perhaps the woman owns a pet shop? In all cases, the first quick glance at the ad suggests a crowded and happy community of people. Below the colorful image the headline reads, “Why people choose an IBM PC in the first place is why people want IBM service ... in the first place.” The copy of the ad stresses the importance and presence of support services offered by IBM, “Quality. Speed. Commitment. That’s why an IBM maintenance agreements means blue chip service.” The ad repeats the tagline “blue chip service” three times in the copy, stressing the reliability and support offered by the IBM community. Another ad from the Team Xerox campaign (Fig. 5.4) stresses the reliability

¹⁰⁷ For further discussion of the positioning of computers in retail outlets and the consequences of such placement for home adoption of personal computers, see Haddon (1988).

of the Xerox brand and the support community it provides. Again, we must look not only to the ad copy but also to the connotations of the image that occupies most of the advertisement. A group of five people (two females and three males) look out toward the viewer. Happy and confident, the image suggests that these brilliant people are there for the Xerox customer – and in a way, allows the viewer to feel like they would belong to that community if they owned a Xerox. In another series of ads, these for Epson personal computers, a tag-line accompanies the brand's logo: "When you've an Epson, you've got a lot of company."

This sense of community was not only about belonging, but also about not being alone with an unfamiliar technology. Support, that is help, not friendship, meant that a new computer user felt secure in taking a new step. Thus, the emphasis on a community of support was also a way to address anxiety around an unfamiliar technology.

Moreover, these ads point to the ways in which communities form around brands; when one buys an IBM computer, one is buying not only service but the very brand of IBM. As the saying goes, "One never got fired for buying an IBM." Different brands stood for slightly different things. For instance, IBM was seen as reliable, business-oriented and powerful. Apple was seen as counter-cultural, creative and an underdog. Thus the brand of the computer was a way to identify with a certain community and place in the world.

Another community that deeply influenced the development of the personal computer was the Computer Liberation movement, largely centered in California. This movement was embodied in Ted Nelson's manifesto, *Computer Lib*, originally published in 1974, a few months before the release of the Altair. In addition, the community centered on the activities of the Homebrew Computer Clubhouse, a swap shop and gathering place for computer hobbyists and

Computer Liberation enthusiasts to hang out. The Computer Liberation movement emphasized the utopian potential of personal computer use, and Campbell-Kelly and Aspray propose that it was in large part this group and Nelson, in particular, who "changed the intellectual climate" surrounding personal computer use.¹⁰⁸ According to this community, computers could become a tool for empowerment, a way to fight back the system and take control of one's life and individuality. In the words of Nelson,

Many people look in amazement at the changes wrought by the personal computer, and think it's a revolution.
You ain't seen nothing yet. ...
There is a spirit abroad of exuberance and intelligent change—not judicious and solemn, but wild, experimental, and hopeful in every direction. ...
The future is too important to be left to the pompous and stuffy people.
COMPUTERS BELONG TO ALL MANKIND.¹⁰⁹

Although community and collaboration were deep and lived values, it is important to note that the ideology of Computer Liberation was also deeply libertarian. As Nelson writes in a section entitled, the "Summary of this book,"

[Some people] see computers for what they really are: versatile gizmos which may be turned to any purpose, in any style. And so a wealth of new styles and human purposes are being proposed and tried, each proponent propounding his own dream in his own personal way.¹¹⁰

Although they were fighting for the betterment of all mankind, such power and liberation could only stem from individual action. Still, there was a clear emphasis on collective and inclusive progress. Apple was a company embedded within this utopian subculture, and the multi-page

¹⁰⁸ Campbell-Kelly and Aspray, 213.

¹⁰⁹ Ted Nelson, *Computer Lib* (Redmond, WA: Tempus, 1974), 4.

¹¹⁰ *Ibid.*, 3.

insert which introduced the Macintosh in 1984 very much embodies this feeling in its tag-line, “The computer for the rest of us.”

The history of how personal computers were taken up as a symbol and tool for liberation is detailed in Fred Turner’s study of Stewart Brand and the Whole Earth Catalog, *From Counterculture to Cyberculture*.¹¹¹ His compelling thesis points to the intertwining forces of personal vision and post-war theoretical and research paradigms to explain how this incredible metamorphosis occurred. Suffice it to say that by the 1980s, the personal computer had indeed become a symbol of progressive techno-utopianism and advertisers were eager to pick up and extend this meaning of the personal computer.

Standardization

By the late 1970s, the market for personal computing had grown exponentially. The three leading companies in personal computers sales were Apple, Radio Shack and Commodore.¹¹² Yet this market still looked very different from what we know today. For, none of the systems were compatible. Although each machine was designed to allow peripherals and add-ons, software was not yet easily shared. This chaotic and inefficient market slowly consolidated by the early 1980s, especially in the wake of IBM’s entry into the personal computing market. Hardware and software standards were established, with the notable exception of Apple, leading to consolidation and a reliance on compatibility.¹¹³ As Langois points out, by the 1980s it was clear

¹¹¹ Turner.

¹¹² Langois, 18.

¹¹³ Augarten, Stan *Bit by Bit: An Illustrated History of Computers* (New York, Ticknor and Fields, 1984), 261.

That all players have abandoned a proprietary strategy. All recognize[d] that an open standard, for both hardware and software, is inevitable, and the strategic issues are one of placement within a mostly nonproprietary world.¹¹⁴

This consensus allowed for a better consumer experience, especially as high competition drove prices down quickly.¹¹⁵ In advertising a computer, compatibility was almost always a key selling point. The work done on a computer had to be able to be shared and transported, between computers. Personal computers were not merely machines to tinker with in isolation in one's basement. With the exception of games, information and work produced on computers was meant to be shared and communicated with others.

The Family

Thus far, I have described the quite literal ways in which personal computing was far from an isolated, individual activity. It is also important to examine the more metaphorical ways in which computers were constructed as having social or communal qualities. For instance, a dominant theme in advertising of this period was that computers would enable one to spend more time with family.¹¹⁶ In particular, the major ad campaign for Xerox, appropriately named Team Xerox, portrayed business people getting home to their family. In one ad, a young child takes up most of the page. The shot is a close-up and she looks out inquiringly at the viewer. Text beside her face reads, "The real reason for getting my office running smoothly is waiting for me at home." In another ad from the same campaign (Fig. 5.5), a woman and man are walking

¹¹⁴ Langois, 37.

¹¹⁵ Ibid., 26

¹¹⁶ For a discussion of ads focused on family togetherness in personal computing special interest magazines from the 1990s, see Tara McPherson, "In the Fun House: Visions of Information Technology in the Domestic Sphere," Conference paper. *Proceedings of the 29th Annual Hawaii International Conference on System Sciences*, 1996: 118-125, especially 121-123.

somewhere together, perhaps out of an office. Again, the close up shot focuses on the emotion portrayed in their faces. The background is a blur, as if in motion. All the photographs in the campaign look like this: the background is blurry, as if frozen in the midst of fast, constantly moving action. The text beside the couple reads, "Finally, a vacation we didn't have to cancel." These ads focus on the environment of the office, although the computer models advertised include Xerox's line of personal home computers.

In addition, many ads portray the possibility of using a computer as a group, in both the ad copy as well as most effectively, in the accompanying image. In an ad for Commodore personal computers (Fig. 5.6), which stresses their affordability, suggesting their computer is priced for "everybody," the accompanying image shows a father and two young children happily focused on a computer screen, perhaps playing a game. Another ad, for the Radio Shack 64K Color Computer 2 (Fig. 5.7), again embodies the notion that computers will bring people together. In this instance, three young boys (two white, one black) are crowded around a computer, happily pointing to the screen. The ad copy below emphasizes how the computer can become a family tool, and suggests that the computer is "a colorful gift for the whole family."

Ethnographic studies from this period suggest that computer use in the home was indeed often a family activity. Though not necessarily in the configurations pictured, when children used computers, often parents wanted to be involved.¹¹⁷ Thus the group use and family togetherness suggested in the ads both proposes a specific meaning of personal computers, as well as reflects kinds of every day practices.

¹¹⁷ Lally, Haddon (1992).

Moreover, the use of imagery in an advertisement can connote the warmth of community. This elision of meaning allows certain qualities to be effectively graphed onto the product. For instance, recall that IBM's ad campaign for PCjr introduced the new computer as a member of the family. In one ad, the Charlie Chaplin character looks admiringly into a old-fashioned baby basinet, with the words beneath stating, "Announcing a Proud Addition to Your Family." In other ad (Fig. 5.8), Charlie looks through an old-fashioned camera, followed by two pages that look like a family album. A title, in font that looks hand-written, reads, "The IBM PC Family ... Our Growing Family." Snapshots of the different lines of IBM's PC in use by Charlie and his friends populate the page. A circled text reads, "The IBM PC Network, the tie that can bind many members of the family together." Although the ad is referencing the many lines of personal computers, a so-called "family," a term still used to describe groups of computers, the positioning of the computers as members of the family in the ad extends to a more psychological level. IBM was trying to insert, quite literally, computers into the human realm of family relations.

In a later campaign, IBM featured the cast of M*A*S*H (Fig. 5.9), the popular television drama that was very much about a close-knit community on the front during the Korean War. In one ad, Radar, the office assistant, pulls out a new computer from among a pile of IBM boxes. The cast members are crowded around him joyously, touching his shoulder, smiling at him and at the camera, portraying a sense of warmth and togetherness. Indeed, in a contemporary article about the campaign, a marketing executive from IBM is quoted as saying, "The reason for the

assembly of a group of celebrities ... is that they are supposed to communicate the idea of interconnected, interrelated productivity, and that is not a concept for one little lonely tramp.”¹¹⁸

The Apple Macintosh insert is another campaign that draws on a sense of community by displaying the advertised computer with a happy group of friends. The ad campaign was unique, among ads at this time, in that it showed the programmers and designers who had actually worked on the development of the Macintosh (Fig. 5.10). In showing this group, the ads stress the accessibility of this community. These programmers, these computer people, look like nice-ordinary people. Moreover, they are young, exuberant and are presented very much as a community of forward-looking thinkers. These computers geeks don't look like the anti-social, isolationists that some might think computer programmers are. They look like people we'd want to be friends with. Thus, the ads position the personal computer as not only friendly and accessible, but also as the product of a friendly community.

In addition, it is important to consider the anxiety of “being left behind” and how advertisements that portray groups of computer users perhaps touch upon this anxiety. This theme has been discussed in the previous chapter, but a consideration of the kinds of communities that were shown to form around personal computers must take account of this anxiety. By displaying all the people who happily use computers, advertisements play into the fear that everyone *does* use computers. An individual will be left out of the group if they do not join the bandwagon.

The Network

¹¹⁸ Philip H. Dougherty, “M*A*S*H Reunion for I.B.M.” *New York Times*. 3 April 1987: D15.

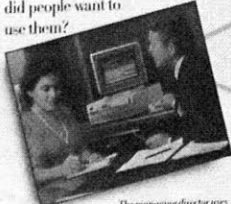
Although widespread internet connectivity would not reach most of the United States until the mid-1990s, office networking capabilities and limited internet connectivity was in fact present during the 1980s. The presence of Local Area Networks (LAN) began to be discussed in the mass media around 1983. Many ads, particularly those by companies who were already in the telecommunications business like AT&T, stressed the availability of networking. Though most home users would not have had access to this functionality, one cannot dismiss the influence of such networking possibilities implied in advertisements. Without the World Wide Web, being connected to the Internet or an internal network was more about connecting to other users than “going somewhere” online. Just as the move to standardization implied the value of sharing information between users, so too the promise of a networked future placed the personal computer within a community of users. One emblematic ad from IBM states, “The future belongs to the well-connected.” Most of the two-page ad is taken up with small photographs and explanatory text, connected by a web of lines. The copy begins,

The earliest computers were big and costly, so people shared them.
Then people wanted smaller computers just for themselves. Soon PCs were in offices everywhere. And how did people want to use them?
For sharing things. So the idea of PC connectivity was born.”

Of course, the idea of sharing information among a network of computers did not come about in the manner this ad implies. Whether through Arpanet or even in the ability of terminals to connect to a mainframe, the history of the computer is also one of information sharing and networking. Though the personal computer of the 1970s and 1980s seems to stand apart from this history and functionality, ads from the period do draw on the present and future implications

The future belongs to the well-connected.

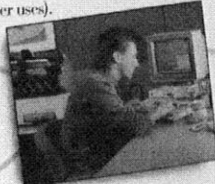
The new connectivity.
 The earliest computers were big and costly, so people shared them. Then people wanted smaller computers just for themselves. Soon PCs were in offices everywhere. And how did people want to use them?



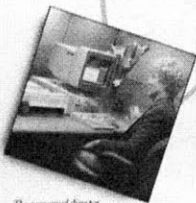
The managing director uses IBM 3270 Emulation and Professional Office System™ software (PROS) for checking calendars and sending electronic mail.

For sharing things. So the idea of PC connectivity was born. From the start, the IBM Personal System/2 was designed to connect; with other IBM personal systems, with bigger IBM systems.

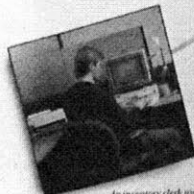
Each new system comes with built-in asynchronous communications (which can save you an option slot for other uses).



An executive assistant uses IBM DisplayWrite 4 to juggle up memos and reports for distribution through IBM DPOSS.



The personal clerk too sends bulletin using the IBM 3270 Workstation Program and PWS.

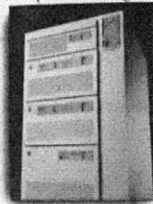


An inventory clerk uses an inquiry in a data base to compare what's out in the warehouse with sales orders.

So information has no trouble traveling back and forth. But the real news is what happens inside.

Going with the flow.

The new architecture in Models 50, 60 and 80 will improve the flow of traffic within the system, so when an important message comes in from corporate headquarters, it's less likely to see stop signs. And if the sender has a properly equipped IBM PC, PC XT, Personal Computer AT or IBM Personal System/2 Model 30,



The IBM 8530 computer stores information and provides data base management support for the business.



A design engineer uses an IBM Personal System/2 Model 80 to create a product covering designs from the base computer.

that's okay too—they work together. And as the new IBM Operating System/2 unfolds, communication will become even easier. Its multi-tasking capability will make it easier for your system to receive and store electronic mail, main-frame data, or whatever, while you're busy doing something else.

The scope of communication has been increased, too.

A wide array of local area network and connectivity products is part of the IBM Personal System/2 family, so your resources can be as broad as your needs; from the first IBM PC your company ever bought, to mid-range systems, to the biggest IBM 3090 mainframe, the lines are open. And this is just the beginning.



Product manager finds his spreadsheet using the IBM 3270 Ring Network to access information.



Programmers work within the framework of IBM Systems Application Architecture to develop applications.



Meanwhile, from a hotel room, a salesman uses the remote to his IBM PC Convertible to send back details of a new order.

Fig. 5.11: IBM. Advertisement. 14 December 1987. TIME, 44-45. Print.

of networking. And a network is also a way to describe a community. As such, if only pointing to the future, the personal computer, as it entered the home market, was placed within the idea of networks and linked to groups of users, not just isolated individuals. Still, the benefit of such connectedness remains rooted in the safety of home. One can still be at home and be connected. Thus, rather than denying the ways in which the computer breaks the boundaries of the domestic sphere, advertisements position this rupture as productive and positive.

There's No "I" in Personal Computer

From the range of examples discussed, we see how the notion of individual personal computing is interlaced with a sense of community and social interaction, even before networking capabilities were widespread. It should be noted that though the examples above represent a significant portion of the advertising I examined, an individual using a computer by himself is still the dominant way in which computers were portrayed. Nonetheless, the extent to which computers were also constructed as *not* merely an isolated, individual practice is significant. On the one hand, these attempts to portray computing as a potentially social activity could be seen as a response to the negative social anxiety that using a computer was an isolating and anti-social activity.¹¹⁹ On the other hand, I believe the extent to which personal computers were constructed as potentially social machines represents the framework upon which future uses and conceptions of the computer in the Internet age were based.

From this position, we can understand how the social interaction and communication enabled by widespread internet connectivity was not a radical break from the personal

¹¹⁹ For an in-depth discussion of the changing but persistent nature of techno-phobia and personal computer use in the home, see Lori Reed, "Domesticating the Personal Computer: The Mainstreaming of a New Technology and the Cultural Management of a Widespread Technophobia, 1964--" *Critical Studies in Media Communication* 17:2 (2000): 159-85.

computer's past. In fact, personal computers began to be positioned as social when they began to enter the home. Advertisements represent the vacillating meaning of personal computers, at once celebrating individual, independent use while also pointing to the ways in which individual computing could and would lead to the creation of community.

In this way, personal computers emerge as not only bridge objects between home and work, but also between public and private worlds. The computer allows for feelings of independence while still remaining inherently linked to others, it allows the barriers of privacy to be maintained, if only psychologically, while still being connected to the external world. This duality is at the heart of the personal computer experience, and constitutes part of how the computer fits into the ecology of meaning in the home.

Chapter 7: Conclusion

When I speak to people about my thesis topic, personal computers during the 1980s, I am inevitably interrupted. Everyone has a story tell. One young man remembers seeing a personal computer on *Sesame Street* and then begging his parents for a computer for months. He finally received a Commodore for Christmas. A software designer remembers drawing for the first time in MacPaint, and unleashing the possibility of creating within and alongside computers, an idea that has since shaped his career. Another older woman remembers with apparent consternation how much she hated using her first IBM, and yet found it indispensable to complete her dissertation.

At first, as I patiently listened to these stories, I grew frustrated. It seemed everyone had an opinion, their own personal take on history. Would anyone read my research with interest, if they had their own memories to rely on? What I began to realize was that these intense, irreplaceable, memories demonstrated the relevance of my topic. My goal was to retrace a specific moment in history, read through advertisements, in order to understand how personal computers were able to take up such an intimate and evocative place in people's lives.

This thesis by no means answers this question. Nor does it effectively trace the ways in which the computer's place in everyday life has evolved since the late 1980s. What I hope, however, is that this thesis provides a portrait of a technology in transition, a moment of stability where we can finely examine one dimension of the construction of a social imaginary. Taken together, these advertisements present a snapshot of a technology's evolution and begin to reveal how personal computers took on the meaning and place that they now occupy in contemporary life. Examining this snapshot suggests how computers transitioned from impersonal, military

elite machines to evocative, social extensions of individual selves that represent individual freedom and power. With personal computers as our contemporary companions, at home, at work and in our laps, this thesis has hoped to tell a history of how our relationship began.

A Machine of One's Own

This thesis has explored how advertisements positioned the personal computer for the home in the 1980s. In order to parse the construction of meaning, I have examined four major dimensions of meaning that constitute the personal computer. Though advertisements present only one side of the conversation in technological adoption, this thesis has provided material to think through the development of the personal computer and now we may look back and take stock of what has emerged from this analysis.

One over-arching theme is the positioning and acceptance of the personal computer as a class of consumer electronics. It is important recall that even during the move to standardization and inter-operability, the experience of using a personal computer varied greatly depending on the specific brand of computer. Yet, taken as a whole, we see advertisers relying on a consolidated and common conception of personal computers. This very emergence of a category, personal computers, follows paradigms of other consumer electronics. Though there is variation, personal computers emerge as a consolidated notion during this period. Moreover, advertisements emphasized that a non-technical person could easily use the personal computer. Though this ease of use actually existed along a continuum, and we may recognize that using a computer required learning new skills and vocabularies, it is important to consider the extent to which advertisements described the personal computer as user-friendly and simple, not arduous or difficult. In terms of industrial design, we see a standard form emerge, one which de-

emphasized the computer's internal workings and placed an emphasis on the potential interactions one had with software, the achievement of an end goal, rather than the process of computing itself. Even in the case of command-line interfaces, advertisements emphasized the graphical nature of software, suggesting that the mental model of information space as a graphical representation occurred earlier than many scholars, such as Steven Johnson, might suggest. Like TV or radio, after widespread acceptance, value and use of the object was emphasized over technical skill or understanding.

We also see how computer ownership was implicated in discourses beyond computing, positioning the computer as an evocative object. In this sense, the personal computer was positioned as more than a consumer electronic or even a tool. It was positioned as an embodiment of and key to specific lifestyles, values, and world-views. Though perhaps common sense from our contemporary perspective, personal computers were aligned with specific cultural values, including freedom, individuality, success and power. It is crucial to keep in mind how revolutionary was this linking. For the previous decades, computers had represented the military, elite corporations, de-humanization and centralized control. Clearly, the activities of the Techno-Liberation and hobbyist electronics communities, in addition to Stewart Brand, the Whole Earth Network and a host of other communities played a major role in challenging and repositioning this historic meaning. Yet, as much as we take account of these communities and sub-cultural discourses, we must also take account of the extent to which advertising became a means to disseminate sub-cultural views (which, in this case, were in the interest of the computer industry) to a broader audience and take seriously the extent to which advertising shapes social meaning. Only with computers as embodiments of individual freedom and power could the history of

personal computing have developed as it has. It is not the purpose of this thesis to challenge the authenticity of such understandings of the personal computer. It is, however, a goal of this thesis to articulate how these meanings are socially informed constructions, rather than technologically determined or implicitly necessary. Looking to the social constructions of meaning, we gain the means to fully understand and, when necessary, critique meanings presented as a priori facts of a technology's development.

Moreover, emerging from this thesis is a complicated perspective on the personal computer as a communications medium. This perspective is this thesis' most substantial contribution to the study of personal computing. Though popular understandings of the personal computer associate its potential for sociability, interconnectedness and interpersonal relationships with the advent of the World Wide Web in the early 1990s, this thesis has pointed to the ways in which the personal computer was positioned in this way before wide-spread network connectivity. Whether as a way to link home and office, unite families or be a part of fast-approaching future, advertisers attempted to position the personal computing as a practice with deep social implications and possibilities. Thus, looking to this history we can more clearly see how the discourses that arose around Internet use in the 1990s were not a break with previous paradigms, but rather an extension of existing discourses.

Personal computers, as a doubly articulated technology, for both offices and homes, inherently emerge as a blurring of the domestic and work sphere. The extent to which this is embraced, rather than denied, in advertising speaks to the complicated nature of personal computers in the home. The very ability to merge these spheres was emphasized in a positive light by advertisements. The embracement of such blurring suggests a great deal about the

evolving conceptions of home and work in 20th century America. As such, the computer stands not only as a shaping factor in work and everyday life but also as a reflection of a specific historical moment. The 1980s stood as a decade of economic prosperity as well as economic anxiety. The advertisements examined were published in the boom years of the American economy, before the stock market crash of 1987. Expendable income abounded, for a select portion of Americans. For the 1980s were also a time of increasingly unequal wage-distribution. Economists pointed to the ways in which the America economy was transitioning from an industry to service based economy.¹²⁰ Computers were seen as a major cause and embodiment of this change, as well as a way to emerge from this transition successfully.

As much as computers represented the changes and possibilities of economic success, computers were also implicated in larger social imaginaries of progress and international competition. Following the successful space race and America's love affair with space exploration,¹²¹ computers emerged as a new way to control the future. In the height of the Cold War, technological development and dominance was a major national discourse. The personal computer stands implicated in these larger national concerns. Moreover, the personal computer, as a site potential individual articulation, within a world understood as increasingly interconnected, emerged as a way to stake one's place, and define new boundaries, within larger, uncontrollable networks and systems. One could be a part of the world, feel connected, and yet

¹²⁰ For an economic analysis of the causes and consequences of increasing inequality in relative wages and earnings during the 1980s, see John Bound and George Johnson, "Changes in the Structure of Wages in the 1980's: An Evaluation of Alternative Explanations," *The American Economic Review* 82:3 (1992): 371-392.

¹²¹ For a fascinating collection of advertisements from this era, see Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962* (New York: Blast Books, 2010).

maintain a sense of safety, privacy and control by owning one's own machine, appropriating it in the home, and using it on one's own terms.

This thesis has examined only a fraction of advertisements from this period, and its limited scope of material inhibits any grand conclusion to be reached. However, having performed this research, future avenues for productive research are revealed. To explore further the ways in which meaning was constructed, internal material from the advertising agencies that produced personal computer advertisements or material from the public relations departments of computer companies might be analyzed. This might allow a deeper understanding of how meanings were generated, and what influences popular culture, user studies or powerful individuals had on developing the representations of computers in advertising.

Focusing on the 1980s, it might also be fruitful to explore personal computer advertisements in relation to the marketing of other home electronics, revealing a broader picture of how machines were integrated into the home during late 20th century. Having witnessed this moment as a one of consolidating the concept of the personal computer as well as differentiating it from other consumer electronics and from among competing brands, it would be interesting to perform a comparison of advertising of video games or television during this period. Such an analysis might reveal more about the construction of brand identities through advertising, as well as the relationships between home electronics.

An expanded scope of advertising material, including earlier decades of computer advertising, would reveal changes in notions of computer use more strikingly. It might also prove interesting to compare this expanded analysis to contemporaneous discourses around work, self-

improvement and productivity, comparing prevailing notions and values to their expression, or non-expression, in computer advertising. This thesis has only touched upon the connections between larger socio-political and economic discourses. Further work is necessary to more directly anchor advertising material to other contemporary discourses, and such work might help reveal a larger portrait of the way in which computers are implicated in and productive of larger socio-economic and political movements and discourses.

What we ask of our machines, and how we interpret their responses is a historically and culturally situated conversation. At the heart of this thesis is a desire to understand the evolving and situated relationship between humans and computers. Looking to a specific kind of computer at a specific moment in history allows a portrait to emerge, illustrating the ways in which advertising played a role in socially constructing an individual's relationship to a computer. Implicated in work life, family life, freedom and power, the past and the future, the personal computer was positioned in advertising as integral to contemporary life well before its uses might have indicated it as such. As tool and companion, object and idea, the personal computer ushered in a new era in the ongoing relationship between human and machine.

Bibliography

- Alexander, Charles P., Adam Zagorin and Gisela Bolt, "The New Economy," *TIME*, 30 May 1983, <http://www.time.com/time/printout/0,8816,926013,00.html> (accessed 14 March 2010).
- Aspray, William and Donald deB. Beaver, "Marketing the Monster: Advertising Computer Technology," *IEEE Annals of the History of Computing* 8:2 (1986): 127-143.
- Attfield, Judy. *Wild Things: The Material Culture of Everyday Life* (New York: Berg, 2000).
- Atkinson, Paul, "A Bitter Pill to Swallow: The Rise and Fall of the Tablet Computer." *Design Issues* 24:4 (2008): 3-25.
- . "The Best Laid Plans of Mice and Men: The Computer Mouse in the History of Computing," *Design Issues* 23:3 (2007): 46-61.
- . "The (In)Difference Engine: Explaining the disappearance of diversity in the design of the personal computer," *Journal of Design History* 13:1 (2000): 59-72.
- "Man in a Briefcase: The Social Construction of the Laptop Computer and the Emergence of a Type Form," *Journal of Design History* 18, no. 2 (2005): 191-205."
- Augarten, Stan, *Bit by Bit: An Illustrated History of Computers* (New York: Ticknor and Fields, 1984).
- Barthes, Roland, *Mythologies*. Trans. Annette Lavers (New York: Hill and Wang, 1972).
- Berg, Eric N "The Computer Magazine Glut" *New York Times*. 8 September 1984, 31.
- Berger, John, *Ways of Seeing*, (Baltimore, MD: Penguin Books, 1972)
- Bijker, Wiebe, Thomas Hughes, and Trevor Pinch eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, (Cambridge, MA: MIT Press, 1987).
- Bound, John, and George Johnson, "Changes in the Structure of Wages in the 1980's: An Evaluation of Alternative Explanations," *The American Economic Review* 82:3 (1992): 371-392.
- Bush, Vannevar. (1945). *As We May Think*. In Wardrip-Fruin, Noah and Nick Montfort, eds. (2003). *The New Media Reader* (Cambridge, MA: MIT Press).
- Cassidy, Marsha. "Cyberspace Meets Domestic Space: Personal Computers, Women's Work, and the Gendered Territories of the Family Home." *Critical Studies in Media Communication* 18, no. 1 (2001): 44-65.
- Csikszentmihalyi, Mihaly and Eugene Rochberg-Halton, *The meaning of things: Domestic Symbols and the self* (New York: Cambridge University Press, 1981).
- Campbell-Kelly, Martin and William Aspray *Computer: A History of the Information Machine* (New York: Basic Books, 1966)
- Ceruzzi, Paul, *A History of Modern Computing* (Cambridge, MA: MIT Press, 2003)
- Computer History Museum, "Catalog Search," Computer History Museum, Mountain View, CA, <http://www.computerhistory.org/collections/search/> (accessed April 26, 2010).
- "Consumer Price Index (Estimate) 1800-2008," *Handbook of Labor Statistics*, U.S. Department of Labor, Bureau of Labor Statistics, http://www.minneapolisfed.org/community_education/teacher/calc/hist1800.cfm (accessed 1 May 2010).
- Cox, Andrew. "Visual Representations of Gender and Computing in Consumer and Professional

- Magazines." *New Technology, Work and Employment* 24:1 (2009): 89-106.
- Cook, Guy, *The Discourse of Advertising* (New York: Routledge, 1992).
- Cowan, Ruth Schwartz, "The Consumption Junction: A proposal for research strategies in the sociology of technology," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, Wiebe Bijker, Thomas Hughes, and Trevor Pinch eds., (Cambridge, MA: MIT Press, 1987): 261-280, 263.
- Dougherty, Philip H. "M*A*S*H Reunion for I.B.M." *New York Times*. 3 April 1987: D15.
- Dreyfuss, Henry, *Designing for People* (New York: Simon and Schuster, 1955).
- Eagleton, Terry, *Ideology: an introduction* (New York: Verso, 1991).
- Engelbart, Douglas. (1962). "Augmenting Human Intellect: A Conceptual Framework" *Doug Engelbart's INVISIBLE REVOLUTION*. Retrieved May 14, 2009 from http://www.invisiblerevolution.net/engelbart/full_62_paper_augm_hum_int.html.
- "Faster, The 1980's: When Information Accelerated," *New York Times*, 31 December 1989, Opinion Page, <http://www.nytimes.com/1989/12/31/opinion/faster-the-1980-s-when-information-accelerated.html?scp=43&sq=1980s&st=cse&pagewanted=print> (accessed April 20, 2010).
- Friedberg, Anne, *The Virtual Window: From Alberti to Microsoft* (Cambridge, MA: MIT Press, 2006).
- Friedman, Ted, *Electric Dreams: Computers in American Culture* (New York: NYU Press, 2005).
- Freiberger, Paul, and Michael Swaine, *Fire in the Valley: The Making of the Personal Computer* (Berkeley, CA: Osborne/McGraw-Hill, 1984).
- Geline, Robert, Christopher Byron and Sue Raffety, "Business: Now the Office of Tomorrow," *TIME*, 17 November 1980, <http://www.time.com/time/magazine/article/0,9171,950497,00.html> (accessed 14 March 2010).
- Giaquinta, Joseph B., Jo Anne Bauer and Jane E. Levin, *Beyond Technology's Promise* (New York: Cambridge University Press, 1993).
- Haddon, Leslie. "Explaining Ict Consumption: The Case of the Home Computer." In *Consuming Technologies: Media and Information in Domestic Spaces* (London: Routledge, 1992): 82-96.
- Haddon, Leslie, "The Home Computer: The Making of a Consumer Electronic" *Science as Culture* 2 (1988).
- Hall, Stuart. "Encoding and Decoding." In *The Cultural Studies Reader* (New York: Routledge, 1993): 90-103
- Harvey, David, *The Condition of Post-Modernity* (Malden, MA: Blackwell Publishers, 1990).
- Hayes, Thomas, "Strong Sales Seen in '84 For Apple's Macintosh," *New York Times*, Feb. 25, 1984.
- Patrick Honan, "Personal Computer Trends," *Personal Computing*, October 1986: 53-61.
- Hybs, Ivan, "Beyond the Interface: A Phenomenological View of Computer Systems Design," *Leonardo* 29:3 (1996): 215-223.
- Johnson, George, "Portrait of the 1980s; Back in 1979, The Word Was Malaise," *The New York Times*, 24 December 1989, <http://www.nytimes.com/1989/12/24/weekinreview/portrait-of-the-1980-s-back-in-1979-the-word-was-malaise.html?scp=33&sq=american>

- [%20family%201980s&st=cse&pagewanted=print](#) (accessed April 20, 2010).
- Johnson, Jeff and Teresa L. Roberts et. al. (1989). *The Xerox Star: A Retrospective*. Retrieved April 16, 2009 from <http://www.cs.umd.edu/~bederson/classes/hci/handouts/10%20-%20johnson%20-%20xerox%20star.pdf>.
- Johnson, Steven., *Interface Culture: How New Technology Transforms the Way We Create and Communicate* (San Francisco, CA: Harper, 1997).
- Kelly, Jean P., "No So Revolutionary After All: The Role of Reinforcing frames in U.S. magazine discourse about microcomputers," *New Media & Society* 11:1/2 (2009): 31-52.
- Lally, Elaine, *At Home with Computers* (New York, Berg, 2002).
- Langois, Richard, "External Economies and Economic Progress: The Case of the Microcomputer Industry," *The Business History Review*, 66:1 (1992); 1-50.
- Leiss, William, Stephen Kline, Sut Jhally, and Jacqueline Botterill. *Social Communication in Advertising* (New York: Routledge, 2005).
- "Macintosh Creative Development Exploration Management Presentation," presentation by Lou Weiss, American Marketing Services, 8 April 1983. Location: Chris Espinosa Papers, Stanford University Library, <http://www-sul.stanford.edu/mac/primary/docs/focus1.html> (accessed March 19, 2010).
- Mackenzie, Donald and Judith Wajcman, eds. *The Social Shaping of Technology*, (Philadelphia, PA: Open University Press, 2nd edition, 1999),
- Marchand, Roland, *Advertising the American Dream: Making Way for Modernity* (Berkeley: University of California Press, 1985).
- Margolis, Jane, *Stuck in the Shallow End: Education, Race, and Computing* (Cambridge, MA: MIT Press, 2008).
- Margolis, Jane and Allan Fischer, *Unlocking the Clubhouse: Women in Computing* (Cambridge, MA: MIT Press, 2001).
- Martin, Emily, 'Designing flexibility: Science and work in an age of flexible accumulation,' *Science as Culture*, 6:3 (1997): 327-362.
- Marvin, Carolyn, *When Old Technologies Were New: Thinking About Electric Communications in the Late Nineteenth Century* (New York: Routledge, 1998).
- McPherson, Tara, "In the Fun House: Visions of Information Technology in the Domestic Sphere," conference paper, *Proceedings of the 29th Annual Hawaii International Conference on System Sciences*, 1996: 118-125
- Merrin, Seymour. "Selling PC Software: A Once-Irresistible Opportunity." *IEEE Annals of the History of Computing*. 28:4 (2006): 80-86.
- Messaris, Paul. *Visual Persuasion: The Role of Images in Advertising* (Thousand Oaks, CA: Sage Publications, Inc, 1997).
- Moggridge, Bill, *Designing Interactions* (Cambridge, MA: MIT Press, 2007).
- Nelson, Ted, *Computer Lib* (Redmond, WA: Tempus, 1974).
- Norman, Donald. *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution* (Cambridge, MA: MIT Press, 1999).
- , *The Design of Everyday Things* (New York: Basic Books, 1988).
- Nye, David. *Electrifying America: Social Meanings of a New Technology* (Cambridge, MA:

- MIT Press, 1990).
- O'Malley, C., "Boosting your child's creativity," *Personal Computing*, March 1985: 100-101.
- Oppenheim, John "Do your kids need a computer?" *Parents*, October 1985: 96-98.
- "Oral History of Andy Hertzfeld and Bill Atkinson," interviewed by Grady Booch on June 8, 2004, Mountain View, California, *Computer History Museum*, reference number: X2786.2004, http://archive.computerhistory.org/resources/access/text/Oral_History/102658007.05.01.acc.pdf (accessed April 12, 2010).
- Papadakis, Maria and Eileen Collins, *The Application and Implications of Information Technologies in the Home: Where Are the Data and What Do They Say?*, National Science Foundation, February 2001: <http://www.nsf.gov/statistics/nsf01313/front.htm> (accessed March 2010).
- Pinch, Trevor J., and Wiebe Bijker, "The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other," *Social Studies of Science* 14 (1984): 388 - 441.
- Piore, Michael and Charles Sabel, *The Second Industrial Divide: Possibilities for Prosperity* (New York: Basic Books, 1984)
- Prelinger, Megan, *Another Science Fiction: Advertising the Space Race 1957-1962* (New York: Blast Books, 2010).
- Pope, Daniel, *The Making of Modern Advertising* (New York: Basic Books, 1983).
- Porter, Kevin, "Terror and Emancipation: The Disciplinarity and Mythology of Computers," *Cultural Critique*, 44 (Winter, 2000): 43-83.
- Reed, Lori. "Domesticating the Personal Computer: The Mainstreaming of a New Technology and the Cultural Management of a Widespread Technophobia, 1964." *Critical Studies in Media Communication* 17:2 (2000): 159-85.
- Rheingold, Howard, *Tools for Thought: The History and Future of Mind-Expanding Technology* (New York: Simon & Schuster, 1985).
- Sanford C. Bernstein & Co, "Overview of Personal Computer Sector, PC Hardware Industry Report" in *Black Book Personal Computer Market* (New York: Bernstein Global Wealth Management 1987): 23-26, <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=19844015&site=bsi-live> (accessed March 2010).
- Schivelbusch, Wolfgang, *Disenchanted Night* (Los Angeles, CA: University of California Press, 1988).
- Schudson, Michael, *Advertising, the Uneasy Persuasion: Its Dubious Impact on American Society* (New York: Basic Books, 1986).
- Selfe, Cynthia L., and Richard J. Selfe, Jr. "The Politics of the Interface: Power and Its Exercise in Electronic Contact Zones." *College Composition and Communication* 45, no. 4 (1994): 480-504.
- Silverstone, Roger and Eric Hirsch, *Consuming Technologies: Media and Information in Domestic Spaces*. (New York: Routledge, 1992).
- Slater, Robert. *Portraits in Silicon* (Cambridge, MA: MIT Press, 1987).
- "Softening a Starchy Image," *TIME*, July 11, 1983, <http://www.time.com/time/magazine/article/0,9171,949695,00.html> (accessed February 2, 2010)

- Special Collection of Stanford University Library, "Making the Macintosh: Technology and Culture in Silicon Valley," Stanford University, Stanford, CA, <http://www-sul.stanford.edu/mac/index.html> (accessed April 26, 2010).
- Spigel, Lynn, *Make Room for Tv: Television and the Family Ideal in Postwar America* (Chicago: University of Chicago Press, 1992).
- Suro, Roberto, "The New American Family: Reality is Wearing the Pants" *The New York Times*, 29 December 1991, <http://www.nytimes.com/1991/12/29/weekinreview/the-nation-the-new-american-family-reality-is-wearing-the-pants.html?scp=1&sq=american%20family%201980s&st=cse&pagewanted=print> (accessed April 20, 2010)
- Turkle, Sherry, ed. *Evocative Objects: Things We Think With* (Cambridge, MA: MIT Press, 2007).
- , *The Second Self: Computers and the Human Spirit*, (New York: Simon & Schuster, 20th anniversary edition 2005).
- Turner, Fred, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006)
- Utterback, James M, *Mastering the Dynamics of Innovation*. (Cambridge, MA: Harvard Business School Press, 1994).
- Veit, Stan, *Stan Veit's History of the Personal Computer* (Asheville, NC: World-Comm, 1993)
- Venkatesh, Alladi "Computers and New Technologies for the Home," *Communications of the ACM*, 39:12 (1996): 47-54, <http://www.crito.uci.edu/noah/paper/ACM.pdf> (accessed January 28, 2010).
- Venkatesh, Alladi and Ruby Roy Dholakia, "Households and Technologies: A Socio-Historical Analysis of Two Cultures," CRITO conference paper, *Association for Consumer Research, International Meeting at Singapore*, July 18-20, 1985, <http://www.crito.uci.edu/noah/paper/Household&Tech.pdf> (accessed January 28, 2010).
- Wardrip-Fruin, Noah and Nick Montfort, eds, *The New Media Reader* (Cambridge, MA: MIT Press, 2003)
- Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society* (Boston: Houghton Mifflin, 1954).
- Williams, Raymond, "Advertising: The Magic System," in *Problems in Materialism and Culture* (1962; reprint, New York: Verso, 1980): 170-195.
- Williamson, Judith. *Decoding Advertisements: Ideology and Meaning in Advertising* (London: Marion Boyars Publishers Ltd, 1978).
- Winston, Brian. *Media Technology and Society: A History from the Telegraph to the Internet* (New York: Routledge, 1998).
- Wood, E. "And a Machine Shall Set You Free," *Working Woman*, May 1985: 64-74.
- Zuboff, Shoshana, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988).