Constructing Gender and Technology in Advertising Images

Feminine and Masculine Computer Parts

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It is commonly assumed that the computer is somehow masculine, the product of a highly masculine subculture of computing, and that consequently the computer excludes women. This assumption prevails in existing gender studies of computer advertisements. As a result, inquiries into the gender–computing relationship tend to focus on the aspects of computing work and education from which women are excluded. In this chapter, we adopt a somewhat contrarian viewpoint. We try to show that the computer is not uniformly masculine since it contains certain components that are strongly linked to feminine images and presumed feminine traits. At the same time, we maintain, women are not so much excluded from computing; they are included in computing but through a specific gender-stereotyped manner. As we show through an extensive analysis of 1500 computing advertisements, there is a dramatic overrepresentation of women shown working at the keyboard-input and the printer-output parts of the computer. We believe that these advertising images have been consequential in constructing the public image of the computer and in shaping, or at least reinforcing, gender-specific relationships to the computer.

By focusing on the links between computing education and computing work, we can understand how exactly women are included in computing. For

example, during the mainframe era, women in the Greek banking sector as elsewhere ended up in disproportionately large numbers at office positions doing the immense job of routine data entry—even when they had computing educations equivalent to men. Senior and junior managers, conservative and progressive union representatives, and the women themselves found it "natural" that men would design computer configurations and avoid routine office computing. This division of computing labor inevitably reproduced a salary gap between men and women (see Chapter 4 in this volume). Notably, this gap was formed despite remarkably similar male–female educational backgrounds. After all, before the 1980s, there was no university computing education in Greece [1].

The feminine–masculine gender difference in computing work persisted through the emergence of formal university computing education in Greece. Maria Karamesini collected comprehensive statistics on university graduates, including 499 men and 176 women who graduated with an informatics-related science or engineering degree between 1998 and 2000. The employment of those graduates has been equally high for men and women, 88% for both. Similarly full-time employment has been almost the same for men (97%) and women (94%). A somewhat higher percentage of women than men (96% vs. 82%) found permanent as compared to temporary work [2]. From a quantitative perspective, women are clearly included in computing work just as frequently as men.

But there are important differences in the computing work of men and women. In this Greek sample the percentage of men in manufacturing (3.5%), construction (3.3%), transportation, communication, and related industries (9.8%) is about double that of women (1.1%, 1.7%, and 5.1%, respectively). Men are dominant in real estate, business, and entrepreneurial activities (39% vs. 25%). By comparison, women are more prevalent in the lower wage service sector, where the percentages of women who found work in the financial (4.6%) and state institutions office-type environment (13.1%) are double that of men (2.5% and 6.1%, respectively). Very likely, a female Greek computer science graduate could end up keyboarding and printing in an office. Her only practical alternative would be to teach in secondary or primary education, following a typically feminine work path. Indeed, the percentage of women in secondary education (45%) is almost double that of men (26%). In fact, nearly half of all women computer graduates work as teachers. By contrast, the percentage of women who at minimum tried a career in computer-related engineering is around one-third that for men (13.9% vs. 32.2%).

Male informatics graduates in this sample hold executive positions at more than double the rate for women (3.6% vs. 1.7%). Only a tiny percentage of Greek women graduates have been self-employed (1.6% vs. 11.4% for men). Far more women work in the safer, but lower-paying public sector office and teaching jobs than men (63% vs. 41%). These differentials, not surprisingly, result in considerable salary disparities: the majority of men (63.7%) made more than 1100 euros per month, whereas the majority of women (57.2%) made less than this amount. At the lower end of the payscale, 6.2% of men made less than 900 euros, while 9.4% of women did so.

Women comprised around one-quarter (27%) of the Greek computer science and engineering 1998–2000 graduates. Informatics students at Greek

universities 5 years later (2003–2004) included 13,513 males and 4491 females (again about 25%). (This percentage drops to about 14% in the population of doctoral students, where there were only 222 women and 1382 men.) These figures actually compare well to computer science departments in the United States and in several European Union countries, even ones ranking higher than Greece in the United Nations Gender-Related Development Index. How can a country ranking lower in a gender-equity index have a comparable, if not higher, percentage of women computer science students than a country that ranks higher in the gender index? We meet extreme versions of this paradoxical phenomenon in several other countries: Malaysia (ranked #58) and Turkey (#79) seem to be doing substantially better than Greece (#24) or the United States (#16) in the measures of women in university computing education [3,4].

There are an unusually large number of women in Malaysian computer science departments—over 50% in some cases— but the results fall far short of a "cyberfeminist utopia" [3]. Malaysian women choose computer science as an entrance into traditional office work, not as an escape from it. It seems that the much-anticipated "coming gender revolution in science" in Malaysia, Turkey, or other countries as a result of university system expansion may be accompanied by "status decline" [5]. As in the Greek case, women can end up at lower paying computing jobs even after starting with the highest possible computing education. Relatively speaking, in these countries the effect of gender becomes more visible *after* a top computing education; in a country such as the United States, *before* it.

Greece is actually a middle case. In Malaysia, women desire university computing education to make it to the office [3]. In the United States, women end up in low-paying office jobs because of educational choices and tracking. For whatever reason, U.S. women are not attracted to computer science university education. Yet they are included in computing education, if we include the vast multitude of nonuniversity computing training paths followed by women [6]. Through different educational routes, women in the United States, Greece, and Malaysia (and many other countries as well) end up disproportionately in lower-status and lower-paid computing work at the keyboard and the printer. In the United States, the route is simply more direct from nonuniversity computer training to low-paying computing work. Regardless of the route followed, women all over the world continue to end up at the keyboard and the printer of the office computer, thereby reproducing in the era of the electronic computer a gender pattern that was introduced during the era of mechanical and electrical typewriters and calculators/tabulators (see Chapter 4 in this volume) [7].

In emphasizing women's lack of attraction to computing, we are emphasizing their active agency. (By contrast, studies focusing on "exclusion" imply their more or less passive response to coercion, which we find problematical.) They are agents, however, who act by being immersed in a certain imaginary order regarding what is natural when it comes to computing [8]. Indeed, study after study of the shrinking proportion of U.S. women studying computer science (see Chapter 2 in this volume) find that women themselves describe the situation as natural: university education in computing "just does not look like a natural choice for women" [9]. The phenomenon has been disheartening for policymakers. Given that women themselves seem to agree to limits, how can they

escape their historical placement in computing work at the keyboard and the printer and the low salary that comes with it?

Their poor placement in computing work is even assumed to be "natural" by women who have received the best computing education. Had the Greek female informatics graduates been coerced in any way into office or educational work, they might have been unhappy. But they are not. The most telling finding about the 1998–2000 Greek computer science and engineering graduates is not that women end up at-low paying office and teaching computing jobs in disproportionate numbers. Rather, it is that female graduates believe that this outcome is natural. Despite earning substantially less than men graduates, women graduates overwhelmingly believe that their work matches their educational qualifications (87.0%). In fact, men hold a similar belief about their own work (87.5%). The percentage of women who believe that their job offers positive prospects for moving up the career ladder is only slightly lower than that of men (56% vs. 62%). Identical proportions of women and men are unhappy about their jobs (14.4%). Even more tellingly, more women are happy with their work than men (75% vs. 73%) [2]. A recent comparison of 1957 female and male engineering students who majored in computing at the University of Patras over a period of 21 years found similar results [10].

This chapter seeks to understand this gendered difference in computing work and salaries, to understand why a woman finds it "natural" to end up at the keyboard and the printer after undergoing university education in computing (e.g., Greece, Malaysia, and Turkey) or, alternately, after avoiding university education in computing altogether, such as in the United States and many other OECD countries with substantial male "overrepresentation" in computer science [11]. The 17 countries range widely in a calculated male "overrepresentation" rate; that is, the proportion of male computing students "above" the national university population of men. On the lower side is the United States (at 2.10), ranging upward through Austria, Belgium, Czech Republic, Denmark, Germany, and Slovak Republic (all above 5.0). Other countries with substantial male overrepresentation include Australia, Finland, France, Hungary, Netherlands, New Zealand, Norway, Spain, Switzerland, and the United Kingdom (between 2.1 and 5). In this study, the countries with the "least" male overrepresentation are Turkey (1.79), Sweden (1.95), South Korea (1.92), and Ireland (1.84); Greece and Malaysia were not included in the data.

We posit that there is an imagined difference, not a natural one. Specifically, we have sought to understand the construction of an imagined difference in the public image of computing. We examine how this image has been constructed in and through computing advertisements.

METHODOLOGY

We believe that our method for examining the public image of computing formed through advertising is a means to better understand the placement of women in regards to information technology. Earlier studies sought to document the masculine image of the computer [12]. In effect, the existing literature on the gender–computing relationship in advertisements assumes that the computer is fully masculine. These studies focus on the way men and women compare

in advertisements, either quantitatively (number of appearances) or qualitatively. Some of the qualitative themes have been how tall men are pictured next to women, how the eyes of women are directed to these taller men, how the arms of the taller men are protecting these women, or how old/prudent men are pictured next to young/careless women [13]. Quite logically, these studies look only at the male–female relationship in computing advertisements, not at the male–*computer*–female relationship. For this literature the computer is a closed or even absent black box. The process of the construction of computing images and practices—through the co-construction of computing and gender—receives no attention. In contrast, we are interested in *how* the computer *mediates* the male–female relationship—and in how this mediation interacts with the male–female relationship in order to construct both the computer and gender. As we see it, examining the co-construction of computing technology and the gender relationship requires an integration of perspectives from gender studies, labor studies, and the history of technology. Given that we look at advertisements, we also draw selectively on media studies, popular culture studies, and cultural studies more generally. Our interdisciplinary endeavor has benefited considerably by reading studies on the gender–computer relationship in computing advertisements (cited in Ref. 13).

In our research, we examined 1500 advertisements published in *Computer for All*, the longest-running Greek home computing journal. (We thank Konstantinos Rizopoulos, Dimitrios Kourouvakalis, and their colleagues at the Evgenides Institute Library for their help in accessing the issues of *Computer for All*.) Published monthly since 1983, this journal has been a prime medium for domesticating computing technology in Greece. Its columns reported innumerable comparative tests and responded to numerous issues raised by readers [14]. To survive in Greece, *Computer for All* had to balance between covering the amateur and the professional, the newcomer and the experienced expert, the hobbyist enthusiast and the profit-seeker. It had to be, simultaneously, a journal for scientific readers and casual readers. *Computer for All* translated articles from international magazines and also published articles written locally. Similarly, the advertisements drew on ones available internationally as well as ones produced nationally. In many of them we found products of international computer companies that were advertised through the mediation of their Greek representatives.

Home computing publications were rather new in 1983. To examine an earlier history of computing advertisements, Aspray and Beaver utilized trade journals from the advertising industry [15]. They found that between the 1950s and the 1970s the advertising image of the computer user changed dramatically, reflecting the computer's radical transformation from a room-size mathematical machine, installed in just a few places in the richest countries, to a desk-sized minicomputer used by tens of thousands around the world. This transformation has been aptly called an "unforeseen revolution" [16]. The post-1983 period that we focus on witnessed a different unforeseen revolution, as the computer evolved from an autonomous unit for word processing, game playing, and spreadsheet accounting into a multipurpose networked device [17].

Our study concludes in 2003 when the transition of the computer to a networked device for email and web browsing was well underway. The years

after 2003 were also marked by the transition from the paper-based version of home computing journals to a hybrid print-electronic one. These electronic versions of recent years have become a different media genre. Home computing journals now look like a vast web portal that may be accessed at will, based on thematic or other criteria. This ongoing transformation is also affecting the structure, content, and context of computing advertisements. This transformation deserves its own study, which would have to address the a posteriori repositioning of advertisements in the various places of home computing journals' electronic version. Our study is limited to the print era of home computing journals.

Had we chosen to place our emphasis on the change in computing *technology*, we could easily show a pattern of rampant change being the defining characteristic in the history of computing technology—whether a technical history of computing based on changes in computer circuitry and software applications or a social history based on changes in the perceptions and uses of the computer. Looking at computing advertisements and focused on gender, we were led to a different emphasis. Our argument in this chapter points to continuity, not change. More accurately, it points to continuity over change. From a gender perspective, impressive technical change in computing technology has been coupled by equally impressive social and cultural continuity.

MEN ON THE PHONE

One of the most persistent advertising themes has been the portrayal of men as being on the phone instead of working with the computer: talking rather than keyboarding. There are innumerable examples. In a 1993 advertisement of a DTK computer, the man was seated in front of the computer but talking on the phone [18]. The Greek soccer star Dimitris Saravakos posed in the same manner in a 1988 advertisement of Hantarex Vegas (represented in Greece by Seicon) [19]. Men talking on the phone can be found in advertisements of hardware components, which ranged from screens to modems; the same can be found in advertisements for software, ranging from general support by a software house to special-purpose software for stockmarket brokers [20]. In these advertisements, it is unclear whether men ever did any "work" on the computer itself.

When men were actually in some physical contact with the computer, they did so in order to click a mouse button rather than to work at the keyboard, to control the computer rather than to type. This is implied by the fact that they were using only one hand, while the other hand was holding the phone, reaching out to the desk corner where the phone was, or simply resting [21]. The 1984 advertisement of Apple's Lisa computer showed a man clicking on the computer and touching his head in a manner that implied thoughtfulness. He did not have to worry about doing much more because, as the text of the advertisement explained, "[t]he computer works just like you" [22].

In some advertisements, men did not use their hands at all. In the 1989 advertisement of Profex, which was selling Commodore, Amiga, Amstrad, and other personal computers, a man in his bathing suit used his feet to touch the screen while sitting on a comfortable chair, relaxing his one arm on the chair and holding a drink with the other. The accompanying text read: "Work by

Letting Them Work" [23]. In a similar 1985 advertisement for an IBM PC, through a Greek dealer, a man rested on a comfortable chair with his arms around his neck. A drawing of the computer unit was placed at the opposite corner of the advertisement [24]. In the 2000 Datamedia's wireless network advertisements we find a similar detachment. On the top half of the advertisement a man was relaxing with his arms around his neck. In the bottom half there was a set of wireless network devices, hierarchically placed, with the phone on the top [25].

Men were consistently portrayed to be relaxed and comfortable around computers. They had a cup of coffee, a pair of glasses, or an open book on their desk [26]. They had plenty of space to move freely. This was frequently indicated by the detachment of the computer desk from an enclosed office space—an office with visible walls. The man–computer–desk ensemble was often liberated from the boundaries of a traditional work place [27]. In the 1989 advertisement of Tobasi Company, the man, the computer, and the peripherals were not placed in an office at all but on the top of a mountain [28].

We have so far introduced advertisements that showed only men and computers. Before we turn to advertisements including women, we may inquire why men were so often on the phone. Important clues can be found in a set of advertisements that showed an office space with men on the phone juxtaposed with a separate space where women were waiting. In the lower half of a Philips PC advertisement from 1988, there was a desk with a man who sat comfortably, talked on the phone, and didn't even look at the computer screen. This part of the advertisement was about the Philips home PC, described as the "perfect personal computer." On the upper half another Philips PC was the "perfect professional computer." The man shown in this part of the advertisement was also on the phone and also not looking at the computer. A woman was shown walking up a staircase—from some place below—to arrive at the man's space (Fig. 9.1) [29].

A Microsoft Office version for Greek users from 1998 showed the same juxtaposition of men and women. Men on the phone were near a computer while women at some separate place waited for their call. In this advertisement, we see only the shadows of the women, separated from the men by a glass window [30]. In a 1985 advertisement for a Televideo Systems minicomputer, a drawing depicted several persons in an abstract open-space office. The leading person, a man, talked on the phone and held a pen. He did not look straight at the screen. Incredibly, there was no keyboard whatsoever on his desk. By contrast, the woman placed in a row behind him had output and input equipment on her desk [31].

Phones rarely appear in advertisements showing computers, men, and women together in a closed-space environment, near each other physically. Perhaps no phone was needed because men were directly dictating their instructions to women. Here and in other cases, images of gender and computers were shaped by what was excluded and not only by what was included. The phone was also absent from settings with only women or only men. The suggestion was that the phone was not needed for communication solely between men or between women. In computing advertisements, at least, the phone was a sort of Dictaphone through which men gave orders to women.

Figure 9.1. Woman ascending to the man's space. (Source: *Computer for All*, Vol. 61 (1988): 12.)

THE KEYBOARD VERSUS THE MOUSE

If placing both hands on the top of a rectangular keyboard seemed a forbidden act for men, gripping a round mouse was positively recommended. Unlike typing on the keyboard, which signified routine laboring, clicking on the mouse could signify something that might be equivalent to piloting a sailboat, governing in the open space rather than working in a closed room. We see this clearly in a 2001 advertisement for the Logitech cordless mouse, which showed a male sailor holding the boat's steering wheel with his left hand and the mouse with his right (Fig. 9.2) [32]. The analogy between the two was in a way foreshadowed by a 1991 Acer advertisement that juxtaposed a picture of a man sailing and a second picture of a computer [33]. A 1992 advertisement showed a man with a Linotype desktop publishing computer. He was sitting in an open-space desk that was equipped with the typical signs of comfort (e.g., a cup of coffee).

Figure 9.2. Mobile man with computer mouse. (Source: *Computer for All*, Vol. 203 (2001): 157.)

He was not touching the keyboard but his right hand was grasping the mouse while his left simply rested on the desk [34].

In sharp contrast to men, women were always shown facing the computer screen directly and most often typing with both hands. They were crammed into tight, bounded spaces in enclosed offices. In the 1985 advertisement of the Greek hotel management system Infoplan, a woman concentrated at her work, looking directly at the computer screen while keyboarding data. A Charlie Chaplin figure was pointing to a similar computer placed on a desk

HOTELPLAN

ένα ελληνικό πακέτο σχεδιασμένο σύμφωνα
με τις απαιτήσεις του έλληνα ξενοδόχου!

ΛΕΙΤΟΥΡΓΕΙ:
● ΣΕ ΜΕΜΟΝΩΜΕΝΑ PERSONAL COMPUTERS
● ΣΕ NETWORK (Πολλά Personal Computers συνδεδεμένα μεταξύ τους)
● ΣΕ ΣΥΝΔΕΣΗ PERSONAL COMPUTERS ΜΕ ΚΕΝΤΡΙΚΟ ΣΥΣΤΗΜΑ ΥΠΟΛΟΓΙΣΤΗ
● ΜΕ ON-LINE REAL-TIME INQUIRY (Δυνατότητα άντλησης πληροφοριών στην οθόνη ανά πάσα στιγμή)

ΠΕΡΙΕΧΕΙ:

FRONT OFFICE
● ΚΡΑΤΗΣΕΙΣ
● ΚΙΝΗΣΗ ΠΕΛΑΤΩΝ
● NIGHT AUDIT
● BANQUETS
● M.I.S.
● ΙΣΤΟΡΙΚΟ
  ΑΡΧΕΙΟ ΠΕΛΑΤΩΝ

BACK OFFICE
● ΓΕΝΙΚΗ ΛΟΓΙΣΤΙΚΗ
● ΜΙΣΘΟΔΟΣΙΑ
● ΑΠΟΘΗΚΗ
● ΣΥΣΤΗΜΑ ΕΛΕΓΧΟΥ
  ΚΑΙ ΔΙΟΙΚΗΤΙΚΩΝ
  ΠΛΗΡΟΦΟΡΙΩΝ

HOTEL MANAGEMENT SYSTEM

INFOPLAN

Figure 9.3. Chaplin makes routine assembly-line work into "fun." (Source: *Computer for All*, Vol. 31 (1985): back cover.)

a few meters away from her (Fig. 9.3) [35]. Infamous in Greece for his protest against routine assembly line work in *Modern Times* (1936), Charlie Chaplin was added to several Greek computing advertisements to promote the idea of the computer being something "fun" to work with. But fun was to take place at very different desk settings for men and women. A poster of Charlie Chaplin decorated the wall in the 1991 advertisement of Axis, the Greek representative of Copam computer peripherals. The man was again not touching the keyboard. He was rather relaxing by resting his legs on the desk. He was not looking straight at the computer. The way he held his pen and the placement of a globe and compass next to the computer added to a feeling of relaxation, which the Charlie Chaplin wall poster reinforced [36].

The men–mouse versus women–keyboard associations remained a standard advertising trope into the Internet age. In the four-picture set used in the

2001 advertisement for the Internet service provider Groovy Net, a woman in the second picture was leaning toward the keyboard and typing, while a man in the fourth picture was only holding a phone. No other artifacts were shown in either picture. In the other two pictures only teenagers were shown, in both cases boys. The exclusion of girls is obviously suggestive. But we find it even more suggestive that the boys were not actually typing on the keyboard, even though there were keyboards in front of them [37]. It was as if the screen itself was enough!

The 1985 Hotel Plan advertisement typified an advertising image of women who were keyboarding, concentrating on the screen, sitting in closed-office settings, and having limited space available to them. There were many variations. The 1986 IMC-Prince IBM clone advertisement, addressed to those interested in office mechanization, featured a stereotypically small Asian woman. The woman–computer combination was introduced as "The Little Bigshot." As was customary in advertising images of female computer desks, flowers were shown [38]. Flowers were something like the feminine equivalent of the man's cup of coffee. In some advertisements an instruction book was added on the woman's desk, presumably so the woman could review instructions or copy data from it. When men were shown to read something, usually an engineering or financial graph, they had their legs crossed and they looked obviously relaxed. The 1985 Alpha Micro PC advertisement for an upgrade board offers a classic example [39].

In men–computer–women configurations, the women were usually seated while the men were standing above them. The 1983 advertisement of the Greek representative of the DRS-20 ICL computer systems was rather typical [40]. We find other early examples in the 1984 advertisement of an authorized dealer of Apple's Lisa, in the 1985 advertisement of Corona's representative Delmar Ltd., and in a 1989 Macintosh advertisement [41]. The 1985 Casio advertisement featured a slight variation: a standing woman stood as a relay between a standing man and a keyboarding woman [42]. The 1985 advertisement for the Lotus SmartSuite software representative in Greece (Byte Computer) showed another variation: a group of men, one mediating woman, and one woman in front of the computer [43].

Uses of the computer beyond the office environment were featured in the 1988 advertisement of an assist arm computer accessory by the Greek representative of Liarco and the 1997 advertisement of SONY Trinitron screens [44]. In both advertisements the man and the woman were sitting, either next to each other (1997) or against each other (1988), in which case the keyboard was placed in front of the woman. The man leaning against her could obviously not type on the keyboard. In the 1997 advertisement the woman had both hands on the keyboard while the man had one hand in between them. Yet, he too could not type because he looked at her, not the screen.

Placing women in closed offices, giving them little space to move, locating them in lower positions, sitting rather than standing, looking straight at the screen while having their hands on the keyboard—all these implied that women were doing the routine work of a secretary or data-entry clerk. This interpretation can be confirmed by considering an important exception to this rule. When the user of the computer was clearly a high-status creator (e.g., a

scientist or engineer), the person sitting in front of the computer was nearly always a man [45]. Some advertisements made explicit reference to automatic design, like the OrCAD advertisement by the Greek representative (micro-tec) [46]. Here, the man was seated in front of the computer and the computer screen was full of technical and economic diagrams and drawings. In striking contrast, when women faced the computer, the screen contained lines of typed text or data.

The computer screen might be seen as a mirror of the user. When it was placed in secretarial environments a man would have to avoid this (secretarial) mirror. He could recognize himself in it only if he was a creator-designer. Given the keyboard–female versus phone–male contrast, the gendered advertisements of the computer considered so far clearly overlap with the manual-versus-mental division of computing labor. This is an obvious point. The manual–female computing connection contained an extreme variant in which only a human finger was shown. We find this pattern from early on—when an input key was touched by such finger—through more recently with touch-screens [47]. Signs like jewelry and the red-painted fingernails left no doubt this was a feminine job.

We have so far considered advertisements depicting various forms of productive computing work. To conclude this section, we may also consider images of computing reproduction, that is, computing education. Advertisements of Greek computer training schools, aiming at those lacking university education, consistently showed female students with keyboards. The male teacher was usually standing. Adult men were rarely shown to be taught by women. Only boys were regularly shown sitting while their female teachers were standing, at a school or at home (in which case the teaching was done, stereotypically, by the mother). The advertisements for Constantinou Computer Studies in 1985 and for Control Data Greece in 1986 typify this pattern [48].

Several of the themes identified in office environments were also present in educational advertisements. In a 1989 advertisement for Control Data Greece, a man sat next to a woman and, while she keyboarded, he read [49]. The "mediating woman" theme also appeared in the 1985 advertisement for the Data Rank Corporation [50]. When both the man and the woman were students, as in the 1991 advertisement of the Corelco training schools, the woman clearly did the keyboarding work [51]. In the 1985 advertisement of General Systems, which showed a boy and a girl learning at home with their mother, the girl looked at the computer screen while the boy held the computer manual [52].

Adult male students were rarely shown, but when they were the advertisement was about training higher-level computing technicians or programmers. In 1984 a training school called Advanced Computer Education featured only male students—and only training in programming [53]. In a subsequent advertisement for the same school, secretarial training was also advertised and then women were shown [54]. A comparison of these two advertisements further shows a difference between the hardware used to train men as compared with the hardware used to train women. When the students were men, the computers shown were larger and varied, and the space was less structured, resembling an artisan workshop. By contrast, women were trained in a more uniform educational and orderly environment, through the use of generic PCs.

THE PRINTER VERSUS THE HARD DRIVE

At the printer-output end of computing, we also find a dramatic overrepresentation of women. A 1997 Hewlett-Packard (HP) advertisement showed a robot-servant that carried the printer output to a man who was sitting comfortably in an open-space office, holding a pen, and with a nearby telephone. The new HP printer was advertised as "the most disciplined servant" this man ever had [55]. But who did this serving in the absence of such robots? A 1997 advertisement for OKI printers, with three men standing around one woman sitting in front of the computer, left no doubt as to who was to execute the order: "OK! PRINT IT" [56]. An alternative featured a woman standing in front of the printer while the men sat around. We find an example in the 1986 advertisement of Televideo Systems, represented in Greece by Delta Computer Systems (Fig. 9.4) [57]. There was maximum distance between men and printers. Men were in contact only with the printer output; they clearly did not work with the printer. In a 1999 advertisement of the Greek representative of Lexmark, a comfortably sitting man was looking at a printout. The printer itself was placed in the lower part of the page, outside the picture that showed the man [58].

For a suggestive image of the gendered division of computing labor that was promoted by the placement of women and printers, we can look at the advertisement on the cover of the August 1984 issue of *Computer for All*. The cover image was actually an advertisement of the journal's own contents. To promote the introduction of computers in Greek hotels—the special theme of this issue—a picture of a hotel reception was chosen for the cover. The hotel reception desk divided the enclosed space of the female receptionist and the more open space of the male guest. The woman was holding the printer output, preparing to give it to the man [59]. In many advertisements only the printer and a woman were shown. A typical early advertisement was that of Technoland in 1987 [60]. In a series of 1998 Canon advertisements, we see an extreme instance. The new Canon printers were introduced as "explosive" by young women who actually held explosives in their hands, or in their mouth, while posing seductively [61].

Such explicitly sexual themes were quite common in printer advertisements. In a 1997 advertisement of Epson's representative in Greece, a young woman placed amidst a sea of printers provocatively showed her tongue. The printer's resolution was tattooed on her arm. Showing her tongue appeared to be equivalent to paper issuing from a printer [62]. In a 2000 advertisement by Intersys, a Canon representative in Greece, a man and a woman were lying in their bed. He was reading a newspaper that covered his face. The setting implied a man who had lost sexual interest in his wife. The new Canon color printer, placed at the lower right of the advertisement, was to change their situation. In the real bed the woman was shown only in black and white. By contrast, her image coming out of the printer was in bright color. It showed her upper body in a seminude position and alluring pose. The text explained that the husband now could have "everything … at home too" [63].

The color–woman–printer association featured several stereotypic variants. In a 1993 Hewlett-Packard advertisement, an attractive woman with green eyes watched her own face coming out of a color printer. The face of the woman

με ἐναν απὀ τους
25 COMPUTERS της

TeleVideo

ΓΕΝΙΚΟΙ ΑΝΤΙΠΡΟΣΩΠΟΙ
Delta Computer Systems

Figure 9.4. Women get the order to "print it." (Source: *Computer for All*, Vol. 33 (1986): 147.)

and the printed page were mirror images, with the beauty of the one transferring to the other. The text promoted the new printer as a means to make the profile of a business more attractive [64]. A 1990 drawing of a woman who cried because she didn't know that "a MITA laser printer could have saved him!!!" offered one emotional situation, while a 1992 advertisement for STAR's representative Infoquest depicted a calm woman dreaming next to the printer [65]. All these images linked the female–printer ensemble to emotional or sexual situations, and utilized rather crude gender stereotypes to do so.

When men were connected to printers in a manner similar to that of women, they were uniformly portrayed as silly looking, boyish, and nonserious, as if they were not real men. Bright-colored or loose baggy clothes indicated their ambiguous place. We find typical variants of this theme in the 1986–1987 Star printer advertisements by info-quest, in the 1992 advertisement of Microtek TrueLaser, and in the 1996 advertisement of Tally printers. A 1993 Canon advertisement showed a man dressed in bright colors and chained on a chair [66]. A 1999 advertisement for Kyocera printers showed a seminaked man— only his genitals and head were covered—who was cursing his printer problems. The advertisement indicated that he lost his clothes because he paid too much for the printer ink and paper. His body was not in the least athletic, but typical of a middle-age businessman. (The owner-possessor of the printer was always shown to be a man [67].)

In contrast to printers, advertisements for hard drives featured only serious looking men. "There is only one way to construct a hard drive: my way," we read in a 1990 advertisement for Kalok hard drives. It showed a mature hard-drive designer-creator sitting in a director's chair (Fig. 9.5). Endurance was singled out as a key technical feature of this hard drive [68]. In the 1997 advertisement of Western Digital hard drives, also showing only a man and a hard drive, the accompanying text stressed professionalism in general [69]. A Bull advertisement of the same year linked the strength of the server to a team of U.S. football male players [70]. Quite unlike the colorful male clowns sometimes associated with printers, only ruthlessly professional males were associated with hard drives.

WOMEN ON THE SCREEN

In addition to connecting female hands to the keyboard, advertisements connected female faces to the computer screen. In a 2001 Hitachi computer monitor advertisement, the woman and the screen were explicitly presented as mirror images. A picture of a woman who was sending a kiss, placed in a framework in the shape of a heart, was put next to the computer screen. The computer screen was a desirable substitute for the here-today-gone-tomorrow woman: "At least the screen will still be here after five years," reads the text [71]. A 1987 advertisement for Amstrad computers showed a woman on the monochrome screen. The main line read: "Challenge to compare" [72]. Faces of Asian women featured in advertisements of the Datamicro monochrome screen computers in 1990 (Figure 9.6) and of ActionTec colored camera cards in 1999 [73]. Closer to the present, we find computer screens frequently advertised independently from computer systems. These advertisements often showed a satisfied female face on the screen, such as the 2003 CTX computer screen [74].

When the advertisement showed a computer screen that was embraced by a woman (instead of the woman being shown on the screen), there were often symbols of feminine friendliness on the screen. In the 1985 advertisement series by Busisoft, women who were dressed in red embraced the computer screen while the screen showed a feminine red heart [75]. In an advertisement (also in 1985) of a Greek computer supply store, a woman embracing a computer screen included the drawing of a smile [76]. By contrast, when men

Figure 9.5. Male computer designer in the director's chair. (Source: *Computer for All*, Vol. 84 (1990): 183.)

appeared in monitor advertisements, the image on the screen inevitably showed technical or business drawings. In a 1995 advertisement of Philips monitors, a technical design of a car was shown on the screen while the shadow of a thinking man was placed behind [77]. In 1999 Philips advertisements for flat-screen monitors, a man was sitting on a desk that had screens with business-related tables and charts [78]. In the 1992 advertisement of Taxan high-definition monitors, a martial arts Asian fighter was standing above a computer screen filled with business charts [79]. In the rare advertisement that showed a male face actually on the computer screen, it was that of a teacher. For example, the man

Figure 9.6. Connecting female faces to the computer screen. (Source: *Computer for All*, Vol. 85 (1990): 17.)

pictured in the 1995 series of advertisements of Eriqson Soft Education was identified as one of the best computer trainers in Greece. The trainee, who was holding the educational material outside the monitor, was a woman [80].

We mentioned earlier the frequent replacement of the keyboarding woman by her fingers. There was a similar replacement on the computer screen, with the female eye substituting for the full female face. This type of replacement became more frequent in recent years with the availability of computer screens sold independently, of computer cameras and scanners, and of imaging software. The Pinnacle Systems 2002 advertisement is representative of imaging processing techniques [81]. A Panasonic monitor advertisement of 1996 is a typical scanner advertisement [82]. In the case of scanner advertisements the eye was clearly the focus. Here, often, glasses were added on the female eye in advertisements, suggesting perhaps the glass screen in the device itself as well as the (female) labor in using the scanner. A 1998 Agfa advertisement showed a woman alongside pictures of scanners and related apparatus. She was positioned in a manner that put her eyes, with glasses lowered, in the center of the advertisement [83].

CONCLUSION

In these advertised images of the computer, the screen often shows an image of a female eye or a whole female face. This is a mirror image of the female eye that looks straight at the screen while using the keyboard. In computing advertisements, it is quite striking that men do not look at this feminine part of the computer (screen). The construction of gender in the advertised image of

the computer comes full circle with the image of men talking on the phone when sitting near the computer. Men are not working with the computer; they are in control of computing work. It is the females who do the computing work. Men are on the phone, whereas women are on the screen.

This strongly gender-specific pattern was not followed when an engineer or a manager was shown: only then the image on the computer screen was changed from a female eye or face (or the lines of typed-in figures or text) to a financial or engineering chart. Similarly, the pattern of showing the women sitting and keyboarding and the men standing and dictating—or using a phone to dictate—was broken only when the sitting male was a student of a standing female teacher. In this case women were depicted as providing education to boys and only rarely to adult men.

For men, holding the computer mouse was seemingly the only alternative to holding the phone. The mouse is a masculine input-equivalent of the feminine keyboard. The image of the computer–gender relationships in advertisements runs full circle. The hard drive and the invisible masculine mind are juxtaposed with the printer and the disclosed feminine body. Encased as it is, the computer part that mediates between input and output, that is, the part that contains the hard drive, makes an invisible connection to the keyboard-printing work of women. In computing advertisements and, in reality, it is men who design this part.

Noticeably, unlike the digitally restricted motions of the keyboard and printer, the phone and the mouse can be moved freely without constraint. This advertising arrangement places women closer to the standardized, routinized, and digital side of computing, the side that is already analyzed and awaits passive computation. Men are placed at what has always been the expensive side, that of the analog computing required to actively produce the computing analysis (the analogy between the computed and the computable). This follows a historically deep pattern of imaging men as "analysts" and women as "computers" (also called "computors") [84].

In this chapter, we have interpreted images in computer advertisements from a perspective that connects gender construction to the way men and women have been related in advertising images as well as to the way the computer mediated in this relationship. As a closing example, we may take a popular 1996 advertisement for the Computer Trade Center that featured the top model and gymnast Eleni Petroulaki. Wearing a gymnast suit that looked more like a bathing suit, Petroulaki was measuring the size of a computer's central processing unit. "Size is decisive," she cautioned in the text of the advertisement, "Measure your needs properly." On the lower right of this advertisement Petroulaki's face was shown in the screen (Fig. 9.7) [85].

Gender was explicitly imported into this advertisement through the masculine measure that Petroulaki held as well as her stereotypically feminine dressing. In this chapter, we have been interested in an implicit construction of gender, which takes into account what the model held and wore but moves on to relate it to the image of the computer. These images construct the computer as having two different sides. The one part is constructed through the screen image of the face of the female model. This would be the mirror image of the model if she were to look at it from the distance of a keyboarding user. Sitting

Figure 9.7. "Size is decisive" advises the model-gymnast. (Source: *Computer for All*, Vol. 151 (1996): 199.)

at the keyboard and looking at the computer would be natural to the model. We know it because her face shines in the mirror image. Her inclusion in this part of the computer is, indeed, natural. By contrast, the other part of the computer is constructed through her exclusion, which likewise might appear "natural." The encasement excludes her body from this part of the computer, just as the screen includes her image in the other part of the computer. The keyboard–screen part is constructed in analogy to her. The other part is constructed by her measurement, by her digitalization. In turn, this constructs the one computer part as feminine (inclusion of the female model) and the other as masculine (exclusion of the female model). In this way, the computer constructs gender.

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