See No Women, Hear No Women

Explaining the Absence of Women from Audio-Visual Engineering

This article investigates the gendered aspects of audio and visual technologies, and the ways in which these produce and reinforce gender stereotypes and segregation in the industry, suggesting that advancement is limited until these deeply rooted notions are overcome.

Natalie Sappleton

is currently researching the participation of women in the Audio-Visual industries at the University of Salford, and strategies for managing maternity in small firms at Manchester Metropolitan University. Natalie graduated from The University of Glasgow in June 2002 with First Class Honours in Economics and Politics, and began a career in Policy and Research. She is particularly interested in strategies for improving the participation of women in the non-traditional occupational areas, especially e-learning and the improvement of workplace culture.

E-mail: N.Sappleton@mmu.ac.uk or n.sappleton@salford.ac.uk

Introduction

Whilst there has been a proliferation in the number of public initiatives aimed at increasing the representation of women in various disciplines of Science, Engineering and Technology (SET), schemes focussing on female recruitment to, and participation in Audio-Visual (AV) forms of engineering are thin on the ground. These sectors are some of the most highly segregated of all the engineering professions, yet they also offer possibly the greatest potential for women to make significant progress.

Technology and the Audio-Visual Sector

What do we mean we talk about Audio-Visual Engineering? Whilst engineering as an occupational sector has traditionally related to the design and operation of engines and machines, AV engineering refers to those subsectors utilising computers, modern processors and electronics. Drawing on several branches of learning – including electronics, electrical engineering, computing, acoustics and music – this small but growing industry comprises individuals engaged in the recording, reproduction and manipulation of sounds, visuals and images via electronic, digital and mechanical processes (Skillset 2006). Engineers working with such technologies are undoubtedly required to possess creative as well as technical skills, indicating that this field is free from the traditional 'heavy machinery' stereotypes that has for many years been criticised as unappealing to females. Yet whereas females comprise around 8% of engineering roles in the UK, the evidence indicates that women make up a tiny propor-

tion of AV technical occupations. Because of the mechanisms used by the UK government to collect data relating to labour participation, it is difficult to say with any accuracy the number of females engaged in careers in audio-visual engineering. However, Labour Force Survey data suggests that even in the best case scenario, the maximum number of female TV, video and audio engineers can be no greater than 1% of the total (LFS 2006). Where women are prominent in these forms of media, it is normally in roles in which they deliver the results of creation, rather than as creators themselves – roles which in turn are heavily circumscribed by stereotypes. In rock and pop music for example, women are acknowledged as vocal performers rather than composers, producers or instrumentalists; in television and radio broadcasting, they are relegated to passive, supportive or consumerist roles.

These exclusions can be at least partially attributed to the historical and modern gendering of AV technologies. Constructivists argue that technology tends to be gendered by association, that is, according to the imagery accorded it by the network of actors involved in its design and use (Gray 1987). Because audio and video equipment are designed for, and equally available to both sexes in the way that say, sewing machines and hand tools are not, some commentators have argued that this machinery is gender-neutral (see Hellman 1996). However, these technologies typically become 'boys' toys', due to the irrevocable links with the traditional divisions of labour in which men have redesigned and redeveloped these media to meet their own needs (Hellman 1996; Cockburn 1985), or, as radical feminists have argued, because these growing, wealth-creating technologies are where the power lies (Faulkner 2001; Sandstrom 2002). Drawing on elements of both of these standpoints, audio-visual technology, I argue, is doubly gendered, straddling as it does two worlds – the worlds of technology and the media – both of which are essentially masculinist.

The Historical and Modern Gendering of AV Technologies

It has been suggested that before World War II, audio technology was not particularly associated with men (Keightley 1996). However, many men in the armed forces received considerable electronics training which they put to use in do-it-yourself home hobbyism following the end of the war. It became extremely popular for male audio hobbyists to assemble sound systems from scratch, or to upgrade mass-manufactured sets using add-on adjustment kits – thus blurring the lines between the utilisation and design of these types of technology. Later, the mainstreaming of the hi-fi meant that even the technologically unfamiliar male could assume the role of 'engineer'. Interestingly, the discourse of the 1950s often dismissed television as a low, feminine form of entertainment, whilst audio reproduction equipment was cast as a high, masculine medium. Keightley suggests that the gendering of these two forms of recording equipment was based in the relationship between the user and the technology – males actively handled and manipulated audio apparatus, whereas the passive television viewer was typically female. Cynthia Cockburn (1985; 1997) has discussed extensively the identification of technological products with gender via case studies of the consumer behaviour and commercial practices of retail stores. Cockburn classifies goods into two distinct categories; brown goods such as hi-fis, televisions and photography equipment are imbued with masculine symbolism, whereas white goods – domestic equipment such as freezers, washing machines and vacuum cleaners – tend to be associated with females. In an empirical study of European design engineers, she found that engineers felt excited and challenged by the design and development of state-of-the-art technologies, including visual and audio equipment, whereas white goods were deemed simple, uninteresting technology. Despite the indisputable economic importance and sophistication of domestic technologies, they are accorded far less worth than 'new technologies'. For Cockburn, this dichotomy of 'private' and 'public' technologies reflects the traditional male/female hierarchied dualism, and the continuing eschewing of the very real and important relationship between women and technology is yet another product of an undervaluing of the feminine and the private sphere. In fact, technologies which exist in the domestic sphere – in food preparation, home organization and maintenance, in caring activities, in entertainment and leisure – are rarely defined as 'technology' in the most commonly understood sense. Both the creative and technical elements of audio-visual equipment are subject to gendering, and as a result of very different processes. The effective utilisation and manipulation of musical and visual machinery can be a solitary and individualistic task, completely incompatible with typical cultural constructions surrounding females' femininity and preference for nurturance and social impact (Hinkle-Turner 2003; McCartney 1995; Bryce, Rutter 2003). For example, Keightley (1996) suggests that early engagement in eremitic or solitary activities, such as tinkering with electronics, was a component of a wider male strategy for escaping the family unit or corporate routines and asserting masculine individualism. Keightley suggests that early male audio experimenters were obsessed with searching for ever-wider frequency responses and dynamic ranges, and points out that at the time, they were known as 'sound-for-its-sound-sake enthusiasts' (Keightley 1996: 152). Articles published during the 1950s – the early boom period of sound equipment – pitched audio technology firmly within a battle-of-the-sexes context, often employing titles as humorous as 'I Am A Hi-Fi Wife: For Richer For Poorer, For Woofer, For Tweeter', 'Of Speakers And Spouses' and 'The High Fidelity Wife, Or, A Fate Worse Than Deaf' (op. cit.). This battle, though instigated by the male hobbyist, was greeted with collusion by their wives; equipment occupied a shared space in the home, but was operated solely by the husband as it increased in complexity. Other observational and ethnographic studies have shown that new 'domestic' technologies entering the home over the past few decades – including the Video Cassette Recorder (VCR) and the home computer – tend to be controlled by male householders who at the same time do not become fully conversant with new technologies associated with housework. Gray (1992), referring to the VCR, suggests that in domestic situations, women deliberately choose not to become familiar with new technologies so that the operation of them does not develop into an added household chore. Indeed, many women simply do not have time to learn fully about the operation of home-based machinery like the video recorder and PC. In her conversations with female householders, Gray also finds evidence that women suffer from self-esteem issues when faced with unfamiliar equipment. The decision to leave the operation of these units to their husbands or partners creates a mutually reinforcing cycle – these women never become fully confident using the machines, reinforcing negative perceptions and self-perceptions of their technological competence.

Discourses of Power and Control

It has often been argued that technology from its origins reflects male power, strength and control; engineering is primarily concerned with man's (sic) mastery over (Mother) nature, and this reinforces the image of male mastery over the female. These associations have persisted into modern times. Popular culture tends to represent the 'voice' of technology or computers as female or homosexual and/or effeminate (for example, Holly/Hilly in TV's Red Dwarf; Hal 2000 in the film 2001) – and, importantly, dangerous and subject to the control of the active male agent. The effective utilisation and manipulation of sound and video technologies is yet another form of mastery that allows males to confirm their sexual identity (Hellman 1996). For McCartney (1995), men view electroacoustic technology as a beast that must be tamed; in doing this, they favour sound frequencies at painful levels, which amounts to a kind of technological rape of the ear (see also Keightley 1996). It has also been noted that in popular music, those who have achieved technological mastery – usually male – are revered as stars, whereas front-line performers – usually female – are seen as providing entertainment only (Bradby 1993). The language, metaphors and imagery which have evolved in AV cultures too marginalises women and reinforces the masculinist nature of its associated technologies. Technical control of equipment is conceived of in terms of mastery, power, competitiveness and strength. In this world, computer programmes are "crashed", "killed" or "aborted", unused tape is described as "virgin", discs are "raped", and the "information superhighway" conjures up an image of speed, control and even aggression that many females cannot relate to (McCartney 1995). Advertisements rely on appeals to technological mastery and control rather than knowledge and skill, drum beats are described as "killer", phallic symbolism is omnipresent. Masculine "sounds" defined overwhelmingly by strength, are accorded higher status than feminine, weak beats. For instance,

Wikipedia describes a musical cadence as follows: "A masculine cadence occurs on a strong position, typically the downbeat of a measure. A feminine cadence occurs in a metrically weak position, for instance, after a long appoggiatura (see also feminine ending). Masculine cadences are considered stronger and are generally of greater structural significance." Source: http://en.wikipedia.org/wiki/Cadence_(music).

Conclusion

The gendering of audio-visual technologies is deeply rooted in traditional societal conceptions of masculinity and femininity, producing a context which severely limits opportunities for women to enter and remain in technical AV occupations. However, women do have very real relationships with these forms of technology. The difference is grounded in the "social relations of technology" (Hellman 1996: 7); that is the way that men and women use the technologies. Masculine identities are confirmed and reinforced by technical ability whereas a relationship with technology does not strengthen a woman's gender identity. Further, in a climate which is beginning to recognise and value complex social and spatial diversities, there are growing opportunities for women to participate in the sector. Given the prevalence of a number of new user-friendly and financially accessible technologies, there is now improved access to and education about sound and video technologies during childhood (McCartney 2003; Gray 1987). Even if prepubescent girls are alienated from such technologies, teenage girls have been found to become most interested in technology as it relates to popular culture during their adolescent years, at the same time as becoming avid consumers of products related to entertainment (Hinkle-Turner 2003). The increasing move to the domestic environment as the site for audio-visual activities (through home entertainment, information and professional services including electronic shopping and banking and home working, amongst other activities) and the ever-increasing blurring of boundaries between technology and leisure practices has the potential to relocate the public sphere to the predominately female-dominated private sphere of the home (Gallagher 1987; Bradby 1993; Bryce, Rutter 2003). Similarly, increasing technological sophistication and the onset of the 'digital dawn' has implications for the way in which AV output is produced, and particularly the amount of in-

put, potentially opening up employment in it to women (Thynne 2000).

As AV technology develops and penetrates previously neglected areas, more girls and young women will develop a dialogue with audio or video devices, helping to dissolve traditional stereotypes about gender and technology. This means that opportunities for women in AV forms of engineering in the future are surely greater than in say, mechanical or chemical forms. However, it is essential that research keeps up with the pace of technological development. In order to develop a more complete explanation of gender segregation in AV, scholarship focusing on women's contributions to audio and video technology, engineers' relationships with artists and the gendered nature of the institutions associated with AV – contracts, work environments, funding mechanisms, equipment, supply chains and so on – is crucial. The gendered associations of existing audio-visual technologies may be immutable, but with the right knowledge, it will be possible to monitor the impact of future changes and developments on gender relations and stereotypes.

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