Visual representations of gender and computing in some consumer and professional magazines

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Abstract

Studies in the nineteen-eighties showed that advertising images of computers were gendered, with women relatively less represented, and shown in association with less empowered roles, problems or presented as sexual objects. Subsequent studies have confirmed this character continuing somewhat ameliorated into the present. This paper explores the complexity of images about computing and gender across consumer and professional publications. It uses a mix of content and interpretative analysis to analyse imagery in a number of consumerist and professional society publications. Although the sheer number of females represented in an out and out consumerist magazine is equal, there were signs of subtle discrimination masked by references to entertainment technologies. The gaming magazine examined was openly sexist. While the IT professionals' magazine had more images of men than that for librarians, really the gendered character was at a deeper level. The IT magazine constructed a complex, abstract and imaginary imagery, whereas the library magazine dealt with tangible things, real places and people, especially groups of people.

Keywords

Visual culture, representation of gender, computers, computing profession, librarianship

Background

In their paper in the mid eighties Ware and Stuck (1985) pursued the simple and persuasive feminist logic of analysing the frequency and manner of depiction of women in advertisements in computer magazines as a way of investigating sources of the failure of women to get the best IT jobs. They found that women were represented far less often than men and where women did appear they were less empowered, often portrayed as having

problems with the computer or confused or they were exploited purely for sexual decoration. Such representations clearly have some constructive role in influencing how we see the likely relationship of gender and computers, as much as simply "reflecting realities".

These themes were echoed in studies in the 1990s (Turner and Hovenden 1997, Dilveko and Harris 1997, Weinstein 1998) and much of the logic Ware and Stuck identify still seems to apply today. Johnson, Rowan and Lynch (2006) report the decline of sexist imagery (see Mihalec (2003) for its continuance in Eastern Europe) but women are still shown in "passive, non-expert or very limited kinds of roles". Such imagery reflects (and helps to construct) (Wilson 2004) the persistent under-representation of women in core IT jobs (Wilson 2004: 82, Webster 2005) despite decades of interventions by governments and the concern of educators (e.g. Clegg and Trayhurn 1999) and several waves of optimism about how women could be advantageously placed to be key players in computing (Woodfield 2000).

Webster (2005) summarises the characteristics of the UK IT workforce at the turn of the century as: 80% male, young, unattached and without domestic responsibilities, working long hours and with a privileged position in the job market, typically working in organizations with relatively flat, non-hierarchical structures. The industry, in its self image is young, dynamic and heroic - and sexist. This failure reflects the complexity and resilience of sources of discrimination in computing.

The reasons for the exclusion of women from IT are complex and work at many levels. They are usefully modelled in WWW ICT 2003 (148). Firstly, the exclusion reflects gendered patterns of socialisation in relation to technology in general and computers in particular. The under-representation of girls and women on computer related courses at school and university is also a factor. The characteristics of work and workplaces for IT are also unfavourable for women. Typically in the IT industry there is an expectation to work long hours which fits badly with women's greater involvement in domestic responsibilities. The small scale of many IT sector organizations militates against the operation of legislation that prevents discrimination in larger organizations (Webster 2005: 7). Rapid changes in technology prevent part time and intermittent participation in the workforce typical of women's work. Male social networks are particularly important in getting ahead in IT (Adam et al. 2004). Fundamentally, IT has a male culture associated with long hours, an ascetic neglect of the body (Woodfield 2000:15) and a warrior ethic of competition and male bonding (Wajcman 1991:144). Much IT language seems to have military or mechanic references (Bernstein 1999). It seems to be both true that men are attracted to high status activities and that male

activities tend to be given high status (Adams et al. 2004, Woodfield 2002). Thus according to Kotamraju (2004) typical female activities in web design are downgraded while "hard" coding are taken "seriously" and rewarded better.

As a rational, scientific, possibly ascetic activity computing would seem to sit neatly in the sphere of the male in a dichotomous view of the world in which male and female principles are sharply delineated, with an implicit preference for the male side of the divide (see Table 1).

Table 1. Gendered representation of the world

Male	**Female**
Technology, culture, science	Nature, reproduction
Abstraction, rationality, the ascetic	The body, emotions
The public arena, work	The private, domestic, familal
Powerful controlling and creative activities	Caring and service activities

Computing is seen as a powerful male sphere transforming businesses and other organizations through the application of novel scientific and technical practices. It creates immaterial and often ideal "virtual" worlds, such as the Internet. Women are clustered into caring or service activities or activities that are constructed as such. Thus whereas IT is a male dominated profession, librarianship with its ethic of service and open access is female dominated (except perhaps at senior levels). It has lower social status and lesser material rewards.

It is important to acknowledge that in a global perspective the argument about the under-representation of women in computing may miss the point that the key pattern of exploitation in the computer industry is its dependence on low paid women in poor countries who build computers (McCracken 2002). Such work is inherently oppressive and restrictive, in a way radically at odds with the image of computing as liberating and egalitarian. Discrimination in the rich countries could be seen, therefore, as secondary. Further, the move of much programming work out of the UK and other Western states to the developing world may make the problem of women's inclusion in the best paid jobs in the industry seem less important. Even in the western context what counts as core IT is itself constructed. Most computer related jobs have always been clerical female ones (Weinstein 1998: 94) the focus on

innovation as somehow the core of IT privileges male activities (Wilson 2004: 82, Edgerton 2006: xiv). Further, and despite the computer's role as emblematic of modernisation and the future, Rose (2002) has recently argued that IT people are not very influential in organizations. For, he argues, they lack the networked position in the organisation to actually be vehicles of major change and are in fact more socially conservative in their attitudes than other types of managers. This echoes the findings at the organizational level of Zabusky (1997) who found IT technicians socially and organizationally marginal, distrusted by management and generally sited in peripheral locations.

If men have a privileged relationship with computers it is also true that much of the imagery of men who work in computing is negative. They are often portrayed as physically weak, socially isolated and socially incompetent (as in the 2006 Channel 4 TV series, *the IT crowd*). They willingly label themselves as a "nerd" or "geek", socially unsuccessful and deviant, if ultimately also powerful and arrogant. This image has numerous manifestations within computing itself from *Geekus Unixus* (Chmielewski and Wellman 1999) to the hacker identity (Raymond 2003, Seebach 1999) or linux geek (Cowen 2003). These humorous self caricatures generally portray the "techie" as young, male and, self deprecatingly, as social misfits and obsessives. This is the negative side of the positive values of aestheticism, power and mathematical skill that feminist scholars identified as characterising the masculine nature of IT (Woodfield 2000). Feminists have seen this negative imagery as part of making computing unattractive to women, as a practice of closure. But it is also a problem for computing, perhaps in a way linked to Rose's observations about their lack of organizational influence.

The discussion must also be coloured by two major trends in computing, namely towards ubiquity and convergence. Few jobs today have no involvement with computers at some level; many are being fundamentally refashioned through this contact. This suggests a need to look in detail at professional constructions of the relationship between the computer and people, including in visual representations. Computers are also increasingly found in the home as well as the workplace. The convergence of media means that the computer may be tightly linked to communication and entertainment channels such as the mobile phone, DVD player and TV. As technologies for everyday entertainment in the domestic sphere they are increasingly pink as well as blue (Gray 1987: 329). The implication is that the computer as a symbol is worth investigating beyond the pages of magazines for computer enthusiasts or experts.

This paper expands the scope of the study of the representation of people and computers beyond IT advice magazines to other consumer images of the PC, specifically those in a magazine intended for home consumers of PC and other entertainment products (the in-house magazine of the chain of shops, PCWorld, *PCWorld Magazine*) and a niche market, gaming (*PCGamer*). This is to recognise the variety within imagery about computing.

The primary focus of this paper, however, acknowledging the role of the computer in many professions through ubiquity, is to look at the role of representations of people with computers in professional identity. Specifically, it compares the representation of people and computers in two professional worlds, through the magazines of the British Computing Society (BCS *ITNews*) and of Chartered Institute of Library and Information Professionals (CILIP *Update*). Whatever its image at the level of public debate librarianship increasingly refashioned through electronic information and the new challenges this raises. So the paper endeavours to explore a variety of constructions of the relationship of people and computing and how this might bear on women's participation in their use.

Methods

Most of the previous literature looking at representations of computers and gender draws on content analysis and interpretative methods, chiefly semiotics (Turner and Hovenden 1997, Johnson, Rowan and Lynch 2006, Dilveko and Harris 1997, Weinstein 1998, Ware and Stuck 1985). While the purist content analyst would see it as a positivist method, and self evidently it is quantitative, it would be reasonable to recognise that there is an element of qualitative interpretation in most actual content analysis (Rose 2001: 55). Thus Ware and Stuck's (1985: 207) classification of women's relationship to computers in the images they looked at is fundamentally semiotic. We feel we understand the categories and the inter-coder reliability implies that the authors came to share a similar interpretation, yet it *is* a matter of interpretation. The strength of content analysis is that its systematic approach reduces the danger of picking and choosing cases to prove a point (Rose 2001). Measures of inter-coder reliability offer hope of measuring agreement in interpretation. The method appears to be transparent and replicable.

These strengths are balanced by a number of weaker points. One is that the quantitative presentation masks the element of subjective judgement behind the rhetoric of the tables of figures. The notion of inter-rater reliability implies that a single interpretation of an image is possible, denying semiotic stress on potential differences of interpretation, the importance of

what is absent in an image or the complexity of symbolic relationships set up within it. The counting approach tends to imply that every image should be treated as equally important, whereas we may think that certain images are more important or, at least, to be interpreted differently (e.g. cover images). And there is an important interpretative element in the choice of the sample to be analysed.

The strength of semiotic approaches is the exploration of rich and complex webs of connotations and ideological constructions made by images. It draws on rich theoretical terminology. Yet by definition such in-depth analysis can only deal with a few cases which are claimed to be representative or somehow especially significant. This paper takes a mixed approach in which the stress is on interpretative analysis (Alexander 2001) of a few key images, but balanced with a concern to provide a count to show how representative these images are. There was no second coder. Dyer's (1982) checklist of how the human body is used in advertising to symbolise different qualities was used as a guide to analysis (cited Rose 2001: 75-6). Of course, even used together content analysis and semiotics have their limits, specifically they both rely on an interpretation of the image by the analyst without regard to the process by which the image came to be produced and published or with regard to audience reception (Rose 2001: 191-9). The ultimate justification of the method is its fruitfulness and interest rather than proof of a hypothesis.

Previous studies have typically focussed on advertisements, explicitly excluding editorial images (with the exception of Dilveko and Harris 1997). This reflects the origin of the research strand in feminist interest in the construction of gender in advertisements (Stuck and Ware 1985: 205-6, Williamson 1995). Weinstein suggests that the process of production is more complex for editorial imagery (1998: 86). This is a reasonable point, but should not be a reason for not examining editorial images. The reason for their neglect may simply be that professional magazines on the whole contain fewer images. But it does appear worthwhile going beyond adverts to look at editorial content. In *PCWorld magazine* there is a distinctly grey distinction here between the advertorial content of some of the articles which seem to mix journalism and the promotion of specific products. In the other magazines the focus chosen in this paper was specifically on editorial content, and adverts were excluded. In fact, there were few adverts in either *ITNow* or *Update*.

The paper proceeds by offering an analysis of the four sampled magazines, and then draws out conclusions from comparing the four codes found there.

Findings

PC World magazine

The sampled issue of *PC World magazine* (Winter 2006/7) is divided into five sections: a table of contents, "upfront" (a short section featuring some new products, to page 10), some more extended articles under the headings of features (12-48) and know-how (48-76) and, finally, a buyer's guide (77-129). The features are essentially advertorial and although the know-how section introduction implies that it contains expert advice, specific products feature quite heavily. The buyer's guide is a directory of products, many illustrated.

Table 2 Total frequency of images of adult and children by gender

	Buyer's Guide	**Whole magazine**
Adult male	21	53 (38%)
Male child	5	17 (12%)
Total male		70
Adult Female	19	58 (42%)
Female child	2	11 (8%)
Total female		69
Total number of people represented (61 pictures in total)		139

Table 3 Groups by type

Social unit	**Frequency**
Couples	14
Adult(s) with children groups	
Mother/ father/ son / daughter	4
Mother / father / son	1
Mother / father / daughter	1
Mother / son	4
Mother / daughter	1
Mother / daughter / son	0
Father / son	2
Father / daughter	0
Father / daughter / son	3
Total	16
Non family groups	
Males	3
Females	2
Individuals	
Males	8
Females	10

The vast preponderance of images in the magazine are of consumer products, but where people are represented (61 pictures) there was an almost perfect balance of male and female images taking the magazine as a whole (Table 2). Where relationships are represented, the commonest is some sort of adult with children group, closely followed by couples. Same gender groups are infrequent. Individual males or females are quite common. The figures are low but the frequency of mother with son compared to the absence of pictures of father and daughter is interesting. Broadly the images seem to follow social preferences for families, couples or the individual rather than non-family groups. However, it would not be true to say that the representation was simply balanced, women are frequently shown as empowered in relation to technology, but this was more commonly "entertainment" technologies. Individual men were far more often shown with a laptop, especially in larger images. Where there was a problem with a computer (5 images) (individual) women were usually shown, only once a man (and he is pictured realising a solution, whereas the women illustrate the problem). In groups of mixed gender men were usually empowered, especially in couples, but not always; even where the woman was represented with a boy child, the child seemed as empowered as the female adult.

Each of the twenty plus sections of the buyers guide has a small image associated with it. The very first image, on the front page of the Buyer's guide, is in some ways the prototypical consumerist image of a computer, repeated with slight variation throughout the magazine. A man sits at the computer keyboard. A woman appears behind him, learning forward in a supportive role or as an audience. A male child's strong bond with the father is symbolised by the child's hand resting on the man's shoulder. No female child is present. The adults are relatively young. The context is not clear but the clothing suggests a domestic setting. The computer itself is little more than a black box glimpsed in the foreground. The figures around it are animated, sharing some delightful experience through the computer (on reflection it is difficult to imagine quite what they could be looking at on the screen to produce their expressions of unbridled joy). To summarize the key features of the image: the man is in control; the woman is subordinate, an audience or supporter; the male child is bonded to the man through his computer mastery; a female child is absent; the computer animates the happy relationships around it, but is itself essentially invisible; all the figures are young, well-groomed and prosperous looking.

Table 4 The world according to the PC World magazine Buyer's guide

Title of section	**Image associated**

Title of section	Image associated
PC	Couple with male child (described above)
Laptops	Young men (perhaps students)
Entertainment laptops	Father with daughter, wife in background. Daughter controls keyboard.
Ultra-mobile laptops	Young woman in café, male in background
Desktop PC	Father with male child
TFT Monitors	Couple
Digital entertainment	Young man
Flat panel TV	Couple
Home cinema and portable DVD	Couple
Projectors	Group of young men
Home Audio	Couple
Mulitmedia players	Female with personal stereo/ ipod
Digital cameras	Group of young women
GPS	Suited middle aged man
Handheld PCs	Male in informal wear
Printers	Couple
Ink and paper	Family by pool
Office supplies	Female at desk (in an office)
Gaming	Family with two male children, no female
Software	Couple
Networking	Suited couple

From the total figures (Table 2), one can see that the Buyer's guide as a whole is quite balanced. Overall there are 21 adult males and 19 females, with 5 boys and 2 girls. While three young men with popcorn are using a projector to view a movie, a group of five young women illustrate the digital camera section. There is a spread of racial groups with gaming represented by a black family and women are quite often portrayed in control at the keyboard. This is not very surprising because the target of the journal is the consumer market for electronics as a whole. But on closer examination of the taxonomy pictured in the images there is some quite strong stereotyping. Thus "Office supplies" is a woman at a desk, whereas the latest handheld PC is a male in informal wear and the GPS is represented by a suited man. Notably under-represented are female children. The one representation has her at the keyboard of an "entertainment PC" with her father, whereas an equivalent image of a boy is at a "desktop PC".

This form of stereotyping recurs in a more concentrated form in on the "Gear on the go" feature (pp.28-9) which pictures various people on a station platform. The table below summarizes the image.

	Text associated with images	Associated commodity
Jack	10 year-old gamer, heading home and dreading the start of term	Handheld game
Fiona	36 year-old mother taking son Jack home after	Digital camera

	staying with his grandparents	
Mike	35 year-old account manager heading off to a business meeting	Handheld device
David	20 year-old student going back to Uni for the spring term	Ipod
Susie	24 year-old banker getting her Nextbase SDV1102 DVD player ready for use on the train	Portable DVD player

Table 5 "Gear on the go"

This is a conservative image. The older male is going to work, while the equivalent female is involved in child care. The boy is playing a computer game, there is no female pre-teenager. Susie, although she is a banker, is dressed casually and is apparently going to spend the train journey watching a DVD, not using her laptop. No one is over the age of 36.

Generally images of computers in the magazine are positive. But part of the advertising works through fear about viruses and problems with computers, and there are a number of feature pages about security issues. Here women are prominent. "Protect your identity" (p.74) is a feature about identity theft. A young woman pictured in a vaguely corporate/office setting represents vulnerability. Her good looks and light clothing implies sexual vulnerability. It would probably be wrong to say that the intention of the advert is "to construct women as inherently vulnerable". Rather its purpose seems to be to remind the reader about fears about computer security and so buy a product. This is achieved by borrowing the power of the social trope of women's vulnerability to represent the vulnerability of all. Nevertheless, often repeated such images are likely to make it more difficult for women to feel in control of the computer.

Again in "How to fight spyware" (p.73) the woman is in control of the computer, but the (male) child appears to be directing her activity (to make a particular choice) while she smiles compliantly at his suggestions. Although this could hint at the child's greater competence at the computer, the context is an article about spyware. A railing in the background of the picture hints at the need to protect children as vulnerable. Perhaps the idea is that although the child is confident ultimately a protective parental presence is necessary to achieve this. So we may be both getting the message that the woman does not really know about computers (the image would have a very different impact if the child was directing the father what to do) but it is primarily portraying her as in power as a protector.

In "The danger of power surges" (p.58) again computer problems are associated with women. Here a young woman clutches her head with an exaggeratedly pained expression. The image

perhaps reminds us of an advert for headache relief (medicalising the female body). The "power surges" discussed might even hint at menstrual associations. The solution to the problems of the woman in the power surges image are represented in "Norton Internet security" (p.59). Here there is a positive image of a woman in control of her computer and with a close bond not just via her touch of the keyboard (more typical) but leaning on the central processor itself. But this is not a direct image of a woman but an image of image - an image of a box with a picture of a woman on it. Perhaps this hints that the image is an idealisation, undercutting the possibility that a woman could really have this trusting relationship with her computer.

Notwithstanding the impact these associations set up between women and computer problems, it would be wrong to say that the images of women are negative. There are some very positive images, e.g. the image on the back cover of the magazine is a very positive one of the creativity of the young woman. Even here though, while the advert is for the computer operating system XP it is very much potential musical creativity that is celebrated, not more work or scientific orientated applications. More balanced representation of women with computers partly reflects the convergence of home computing and entertainment, rather than a greater representation of women in control of workplace IT.

The last page of the magazine makes a fascinating switch of genre. Here are three apparently first hand accounts by women who work for the company the chain of shops, *PCWorld*, that distributes the magazine talking about what working for the company has done for them. The text is presented as the individual's own story in their own words. The stories draw on pervasive discourses about work such as work as learning, the importance of variety and meeting people or being part of a team, the life-work balance (meaning bringing up a child and working, i.e. work/work balance). Each piece of text is accompanied by a passport style photo of the woman, in company uniform. Part of the first text draws on the "True stories" genre with a harrowing tale of the woman's double mastectomy. It is interesting how the male partner is written out of this story and there is a hint of a non "ideal" family. They are "real" women in the sense of not young idealized images as in the rest of the magazine but average looking and a little older. One of them even looks over 40 (the only woman or indeed any person of this age represented in the entire magazine). Their faces are represented but not their bodies; they are not sexual objects.

This is indeed *PCWorld magazine* trying to have the best of both worlds, by hailing the reader as consumer with idealized views of the family at one moment and then as a potential

employee with "realistic" tales of self improvement and rewarding work, at the next. This perhaps reflects an increasing transparency of the organization, in which company's treatment of its employees is part of the brand alongside the image of the actual products (Gabriel 2007).

Summary

The magazine as a whole predominately contains images of things, consumables. Where people were represented there is a broad balance in sheer quantity of images of women. The way that the computer is converged with all sorts of entertainment products, obviously facilitated this balancing of gender in image count. But girls are under-represented, compared to boys. Women are over-represented in the context of computer problems. All the images are rather stereotypical and associated with conservative family structures. Yet one could also say that women have more complex relationships to computers than men do, appearing variously as creative individuals, people with a problem, employees. Male images are of placid users or are orientated towards work. So while things have improved from when Ware and Stuck were writing there is still a deep conservatism to the imagery.

PCGamer

To illustrate the variety of representations of gender and computing, this analysis of *PCworld magazine* is compared to represenations in the niche market of gaming, drawing on *PCGamer* issues 173 and 176 (April and July 2007).

The witcher (173: 36-7) spread gives a good feel for the visual character of the whole magazine which take its quality from screenshots from games. A male figure with long blonde hair and a colossal sword fights a number of monstrous or androgynous enemies, against an idyllic backdrop of a wooded valley, and in the background, soaring snow covered mountain peaks. The games are often set in exotic locations (perhaps linking the game activity to tourist travel as consumption) as contexts for hand to hand "heroic" violence often using archaic weaponry. So there is ironically an anti-technology feel to the technologically created world. Much preferred are violent games:

> "Crushing girls to death using only your mind! Giant robot suits! A rocket launcher in each hand! This shooter is the stuff dreams are made of. Manly, manly dreams. So why is it so disappointing?" (*PCGame*r 176: 89).

Non violent, SIMS like games, even though they appear in the top 20 selling titles (173: 15) tend to get short shrift. For example the review of the Life stories game (173:100) describes a game with more female characters, but the mundane setting and activity is ultimately dismissed by the reviewer as boring.

The majority of the avatars are male or robotic but quite a few are female. These are invariably young and idealized with, as with the male figures, powerful, semi-naked bodies. The caption "Unleash your dark side" (173: 14) associated with a lithe female avatar seems, in its invitation to the reader to unleash their dark side, to hint that they should gender switch. This implies that the female is "dark" and that the reader is male. In edition 175 the editor's head appears on Lara Croft's body (169). More directly, the article "Play as a girl" (173: 52) explicitly enjoins the gamer to consider the advantages of pretending to be female. In fact, the supposed depth of the "real" difference between men and women is portrayed by the totally unandrogenous appearance of the man represented in the picture associated with the article. The article clearly assumes that the reader is in fact male, as do the representations of gamers in 175:51, 55, 62-3. All the readers' letters are from males. Gaming is a male dominated domain (Dovey and Kennedy 2006: 36, although it was a significant choice to look at a PC Gaming magazine not for players of massively multiplayer online games).

Whereas the avatars are idealized, lithe, powerful, we know that backstage the gamers are probably not like this at all. They are more likely to be like the magazine review team pictured in "The PC Gamer Review Commanders" (*PCGamer* 173: 61). Rather expressionless, unkempt white males between the ages of 25 and 35. The caption proclaims "fear their tank rush", but their actual physical prowess does not jump out of the page. This is the equivalent of the "best of both worlds" shift in *PC World Magazine*, where we are shown a reality behind the glossy images of the family. But in *PCGamer* the whole magazine has an ironic tone to the writing and the representation of the reviewers captures the pervasive tension between triumphant action in an ideal virtual world and a real world sense of inadequacy. This echoes the common theme in writing about computer cultures which do represent themselves as powerful but acknowledge a sense of social inadequacy and unhealthy life styles. Weinstein points to the way that some advertisements play on the ability of the less successful male to destroy the better looking and successful male through their superior gaming skills (1998: 90).

There is only one representation of a real woman in issue 173. In the story "How to… Remove a virus from your PC" (PC Gamer 173: 133) rather than the female representing the

vulnerability to a computer virus as in *PCWorld Magazine*, here the female figure *is* the virus. Condoleezza Rice is pictured with the American flag representing the type of file which might have a virus embedded in it. Thus there is a sexist and racist undertow to an essentially anti-American gesture.

Whereas *PCWorld magazine* seems at least on the surface to balance the genders in an idealized wholesome family world, the *PCGamer* world is very much a youthful masculine idealization of violence and physical mastery. Women are other, dark, sexualized or a persona to adopt for tactical advantage.

British Computing Society's *IT Now*

Whereas *Update*, as the analysis below will show, is rather literal, set in real space, about actual people, *IT now* is primarily metaphoric in its approach to representing its subject matter. Images are self consciously "clever", things are not represented as themselves, but through analogy and through ideal forms not everyday actual objects. Table 6 below summarizes the dominant imagery in the sample (the last six months of 2006 48 (4-6) and the first six of 2007 49 (1-3).

Table 6 Selected frequency of occurrence of imagery in IT Now

	Frequency	Percentage of all images that contain reference
Identified Male (such as a picture of an interviewee)	7	4%
Identified Female	6	3%
Male model	22	11%
Female model	6	3%
Group of models	3	2%
Models of undeterminable gender	15	8%
Animals	26	13%
Sport	8	4%
Robots (including robotic animals)	7	4%
Book covers	19	10%

Screenshots	16	8%
Schematics or charts	5	3%
Identified places	7	4%
Images including a computer	22	11%
Gadgets and peripherals	15	8%
X-ray photos	8	4%
Total images	193	
Total pages	216 (36 per issue)	

Often things are represented in a non-obvious way or ordinary things are viewed from odd angles/perspectives. For example, rather than a specific man playing golf on a recognisable course, the image in *ITnews* 49 (3) page 20 is taken from a very low level such that the head of the club looks larger than the man, the man is out of the field of focus and all the colour has been saturated with blue. These changes signal that the image is not about golf as such - it is metaphoric.

Some use is made of synecdoche, the device of representing something by one part of it. For example, the concept of professionalizing IT, implying accreditation, is represented by a row of mortar boards (48 (5): 32-33). Synecdochally the mortar boards represent university graduation, indeed the whole world of education and training. The mortar boards are set across a double spread. They are rotated (perhaps reminding us of both manipulation of a computer graphic, but perhaps also mortar boards being thrown in the air at graduation, though they are in a neat horizontal row). The same message might have been conveyed through pictures of ivy covered buildings or students in a quadrangle, but symbolic representation is preferred.

Thus synecdoche is used, but metaphor is far more frequent. Metaphor is more abstract, for whereas synecdoche does include objects directly relevant to the referent, in metaphor the approach is to transform/abstract everything. This characteristic of *ITnews* can be conveyed by analysing an article that appears under the section heading “Future of computing” (49 (3) : 32). It is an article on computer ethics with the title “an uncertain voyage”. Exploiting this metaphor of a journey from the headline, the picture associated with the article is indeed the representation of a boat, as suggestive of seafaring, a risky enterprise. However the boat is

made out of folded paper. It is graph paper hinting at a scientific purposes. Furthermore, rather than being set on real water, the paper boat is placed on a highly reflective blue surface with beads of water on it. Thus the sea is symbolised by a simple blue sheet of glass. It is metaphor of a metaphor. Here nothing is what it is. The glassy quality of the surface hints at high technology and newness more than any sort of difficult journey.

Although the human form is the commonest image used in the journal, this is not usually representations of specific people (such as award winners or interviewees, described as identified people in Table 6). Rather, more often it is a human model being used to represent some thing or group of people. Often the model is seen from a strange perspective (vertically above a man in a chair so that he becomes just abstract shape (49 (3): 8-9) or by a body part (an eye or hands). Overall there are far more pictures of people in *PC world* or *Update*. And whereas groups are more common than individuals in both those magazines, in *ITnow* it is invariably a single individual. It is interesting that an article specifically about human collaboration is represented by a paper chain of figures (48 (5): 26). Even human collaboration is represented through abstraction.

Where there are human bodies represented, they are more often male models. Generally it is a suited male. Numbers are small but there did seem to be some tendency to associate representations of females with security doubts, as in *PCWorld magazine*, e.g. the closed female eye (49 (3): 6). Computer criminals are male (using a gangster metaphor) (49 (2) : 8). A young woman of oriental appearance with a laptop goes with an article about engaging with the public (48 (6): 30). It is ambiguous but the more obvious interpretation is to see the young woman as representing the public Other, implying a male self.

Metaphors using images of animals are the second most common image. This is surprising if one sees animals falling within the realm of nature in a male-female/ science-nature dichotomy. But typically the animals are rather abstracted (or sometimes cartoons). An article about content management, for example, entitled “making your website fly” is associated with a picture of a soaring sea bird (48 (5): 18). Rather than being a picture of a particular gull in a particular place (on a ledge for example), perhaps with the overtones of mess and dirt represented by the gull, this bird is set against a flat blue background. It is as if it is a representing a genus not a specific bird - or flight as such. The image imparts to the topic a sense of beauty and perfection.

According to Gabriel (2000: 157) computing terms are either completely obscure or make a strong reference to a real world object, using analogy to make their use more immediately understandable or familiar. This suggests another reason for the frequency of animals. The naming of a computer mouse refers to the visual similarity of the computer peripheral to a rodent, with its small body and long tail. *IT now* translates the metaphor back to the literal, with a picture of a real mouse to stand for the computer mouse (with which one makes choices) in the table of contents for the online-only content of the magazine (e.g. 48 (4): 3).

The complexity here is also found in the way metaphors are sometimes nested. Thus the name "the web", is itself a metaphoric use of a natural analogy to describe technology, partly perhaps based on the visual similarity between a computer network and a spiders web. It is not a particularly good metaphor in the sense that a spider travels along the threads of a web, but this is not how computer communications work. In *IT Now* this metaphor is translated back to a photo of a real spider web to represent the world wide web (48 (5): 6). But it is also in other images transformed into a computer graphic of a mechanical spider in a mechanical web (48 (5) cover, 14). So there is a chain of translations from a computer network to a natural analogy to a man made version of the natural object. This produces a man made analogy for a man made thing. As such there is no very strong connection between a mechanical spider and a computer network, but it hints at the triumph of man over nature through emulation of its most complex creations, though in fact the mechanical spider is imaginary, and not actually technically possible.

Robots are represented quite often, but they are not serious, e.g. a retro styled robot (49 (3): 5) or a comical image of a man oiling gendered robots in an office (49 (2): 10). Other technology imagery occurring but not very commonly in the sample included: a chain, a clock, an abacus. Thus the computer is understood by more familiar technologies as well as through natural analogies. Sometimes there are metaphors of travel (a stop sign, a path) or architecture as a technology.

X-ray photography is used several times. And there is one time lapse photo of traffic. These representations hint at a link to scientific uses of photography. So a strong reference point is the imagery of science. There are not many references to pure science, an exception being grid computing represented by a molecular structure (48 (4): 32). Presumably this reflects computing's stronger ties to engineering than pure sciences like physics or chemistry.

Notably absent are images of food (the nearest is a fortune cookie) or the domestic (a young woman lying on a bed looking at laptop is the nearest). There is no glamourised body/naked flesh (the nearest is a very schematic silhouette of a singer to represent the industry "talking with one voice" (48 (5): 5). This suggests a lack of interest in "feminine" concerns.

On the other hand, one could argue that many of the metaphors/representations are masculine: for example one of the commoner metaphors is of sports: boxing occurs twice, archery, golf, fishing (a fish on a line), surfing and pool. Images of warfare occur a few times (always archaic warfare with armour).

Real, recognisable buildings and actual physical spaces are also not commonly represented (a rare example is a picture of Bletchley Park (49 (3): 5). Thus the soaring gull referred to above is set against a flat blue background. Footprints in sand seem just like a pattern across a flat surface, rather than in a real space (48 (4): 8). Presumably this reflects ubiquity, where the computer is everywhere and effectively has no special place like the early computer room or lab.

The main physical objects directly represented are computer gadgets and kit (there is a section on this in each issue). Yet computers themselves (a laptop or wiring) are relatively uncommon considering it is a computer magazine. Actually there are as many thumbnails of book covers as screenshots of useful web sites.

In general, it is characteristic of *IT Now* for there to be a certain idealisation in the imagery, as in the seagull. Images are typically also of whole objects. This might imply rather static images, since movement is often conveyed by representing an object passing out of the frame. This would be consistent with iconic forms. Images are in high definition conveying a sense of perfection and quality. This could be termed a super-realist style of representation as in the paper boat set on a reflective surface. Images are clean without the messiness of real world, extraneous details, the local, the specific. The pictures are large competing with rather than simply illustrating the text. It is quite surprising that the visual itself is so significant, given that a rational science such as computing might wish to privilege text over image.

A particularly interesting image is with an article about project management failures (49 (1) : 9). The title of the article is "over the waterfall" presumably this verbal metaphor implies a loss of control and unwisely trusting to luck in a project. The picture associated with the article, is a droplet of water hitting a water surface, perhaps hinting at a ripple effect of disruption arising from a mistake. While this does work as a representation of disruption it

does not quite represent the chaos of a waterfall. The image has more overtones of scientific photography, ie high speed photography where the frozen image of a splash; a classic image. Ironically in the context of the article it is another image of perfection.

Interestingly, pure abstraction is rare, with the nearest being a globe surrounded by strings of binary and text (49 (2): 8). Perhaps this is because divorced from real world referents pure colour and texture would be highly emotive and also refer to the world of art. Some level of representation is essential to ground the imagery.

Summary

In several senses the imagery in *IT now* can be seen as masculine. Firstly, there are simply more males where images contain people. There may be a slight tendency for problems/ordinary users to be represented by females. More of the celebrity interviewees are male. The relative low count of real people could be seen as conveying a "male" unconcern with people. Again, some of the metaphors could be seen as male. Sport is the most frequent reference point, with boxing, a particularly male sport being represented twice. There are some images of warfare, though archaic warfare: jousting, armour. In this only are there some echoes of the stress in *PCGamer* on hand to hand combat. The references to science and technology are masculine if one reads science and technology as still a sphere of male activity. A more typically feminine repertoire of metaphor and imagery is absent: e.g. food, the (naked) body, the domestic. There is only one child or baby, and it is looking at a computer apparently intelligently (49 (2): 32) and there is no caring adult presence. And the focus on abstraction i.e. through not representing real spaces or actual places or real things, the tendency of photos to be very clean, perfect images of whole objects, the elaborate visualisations of metaphors is "masculine" in its lack of concern with the concrete, the embodied. It could be argued that this is a quality partly derived from the use of stock images, as these are typically homogonized, decontextualized and generic (Machin 2004). However this does not account for the choice of metaphor. Actually most of the images are predominately in blue and black, which perhaps hints at quite a gendered colour palette. This is difficult to quantify but of the six covers of the sample issues the dominant colour in four of them was blue, one green/grey and one red. The colours are unreal, glossy - not natural, textured ones.

Significantly and in stark contrast to *ITGamer* absent is the representation of computing people as geeks or nerds. The male body is invariably suited. There are several articles

complaining about the image of computing, e.g. one proposing a new term a "neek" meaning "an intelligent individualist attracted to technological issues or a person who is very knowledgeable with regard to one or more particular subjects, often to the detriment of other aspects of their life" (48 (4): 26). Ironically this definition seems to retain the main features of the nerd, ie a focus on technology not socio-technological systems and the disregard for other aspects of life. There were relatively few references to computer games. Overall the magazine projects a strong if subtle male image of the profession.

CILIP *Update*

In stark contrast to *ITNews*, what is characteristic of *Update* is pictures of people, especially of librarians themselves, and invariably in groups. The table below sets out numbers of staff, dignitaries/celebrities and users by gender in the sample (the last six issues of 2006, ie volume 5, issues 7/8-12 and the first six of 2007, ie volume 6 issues 1-6).

Staff		
Male Staff	214 (42%)	
Female Staff	290 (58%)	
Total Staff		504 (65% of all people)
Users		
Adult male users	22 (11%)	
Adult female users	45 (23%)	
Male child users	49 (25%)	
Female child users	82 (41%)	
Total users		198 (26% of all people)
Dignitaries		
Male dignitaries	53 (73%)	
Female dignitaries	20 (27%)	
Total dignitaries		73 (9% of all people)
Total males	338 (44%)	
Total females	437 (56%)	

Total people in images		775 (1.4 per page)

Table 7 Images of people in CILIP Update

In total about 775 people are represented (this underestimates the total slightly because numbers in a few very large groups were not counted since they were not identifiable as individuals). This represents nearly 1.5 people per page.

65% of all people in images were of staff, a total of 504 individuals. Staff are shown to illustrate stories about library events, news about staff changes and in obituaries. About 60% of the people pictured are female. Many of the females are from the over 40 group, a population almost entirely invisible in all the other publications examined. Virtually none of these were models in photos from image banks, i.e. idealised representations - rather they were real people in pictures contributed by readers. Compare with *PCWorld magazine* where all are idealised, except the staff images or *PCGamer* where all are except the staff writers and images of users. Often cover shots on magazine were stock images of models, perhaps because of the quality required for this size of reproduction.

Library users are also represented, but there were fewer than of staff, about a quarter of all images of people (198). For users there were more images of children than adults. Among both adults and children there is a stronger female bias than among staff. Celebrities such as writers or politicians on visits made up about 10% all people represented. Here, in contrast to the other groups, the bias was strongly towards males. Three quarters were male.

Table 8 Images of things other than people in CILIP Update

Image	Frequency	
Library space (with people)	53	
Library space (without people)	56	
Total library space		109 (15% of all images)
Book covers	119	
Screenshots	32	
Pictures of posters or promotional material	36	

Pictures including a computer	54	7%
Total pictures		728 images (1.3 per page)

Apart from pictures of people, two other types of images were common (Table 8). Firstly, book covers (with promotional material such as posters) and screenshots were also quite frequent representing traditional and digital library content. Library buildings and spaces were the other common theme of pictures, appearing in 15% of all images (109). Often these included people, but slightly more often they were uninhabited (53:56). This stresses the extent to which libraries are about real space and is in stark contrast to *IT news*, with its lack of real space or places.

Computers did feature in the sample quite prominently as an accessory on covers and where stock images had been used. Four out of the ten covers in the sample had a computer in them. The cover "I am a cataloguer hear me roar!" is a somewhat idealised (young, well groomed, happy) image of a woman with a laptop. This represents a female affirming the value of the profession, as symbolised by her reclaiming the potentially old fashioned notion of the cataloguer as of continuing relevance in the computer age. In the picture, the computer is balanced on books, implying that the world of computers arises from more conventional knowledge that would be associated with a library. The same loose association with books is repeated in the cover of March 2007. A young woman in informal clothes, types at a keyboard. At her feet is a pile of books. She is seated on a futuristic domestic staircase. On the November 2006 cover is a young black man, representing an article on community information. The May 2007 cover shows four people clustered (implausibly) around a laptop. The older man (in his 50s) has his hands on the keyboard, but is closely overlooked by two young females. A young male looks on further towards the background. This perhaps is intended to convey the young learning from the old, as relating to the main story "towards a 21st century association". Notably absent is an older female, and the image feels odd for there being two young women crowded in. They all wear that inexplicably joyous expression found in representations of people touching consumer goods (cf Machin 2004: 334). Emphasis on computers on covers with models (usually young, the majority female) hints that involvement with computers remains aspirational. The cover seems to be reserved for futuristic visions relative to the images associated with news stories.

Overall pictures of computers were relatively rare, but were present in about 7% of images. This is not in itself necessarily highly significant, for as we have seen they were infrequent in *ITNow*, perhaps because they are not very interesting visually and the hard drive and VDU in the era of the network and powerful software, do not represent what computing is actually about. Of the magazines examined here only *PCWorld magazine* had many representations of computer hardware. But as an indication of the importance of computers and the Internet to librarianship, of the 83 articles in December 2006 edition of *Update*, 31 were substantially to do with computer systems (37%), 29 had a URL for a source or more information. Thus together over half articles were about computers or could be followed up online or both.

Where computers were represented in *Update* they were typically either a screenshot of a web site, library spaces with people at computers in them or a few representing the librarian as intermediary. The latter are particularly interesting, but could not be said to occur commonly in the sample. "Developing reference services in the electronic age" (6 (1/2): 40-1) seems to encapsulate the relation for the library profession of the professional, technology and space. In the upper picture a young girl (perhaps from an ethnic minority) is seated at a computer. But she is not directly in control of it rather the protective maternal figure of the librarian stands over her bridging between the computer and the child, i.e. acting as an intermediary for the computer "user". Her hands rest on the back of the child's chair and on the computer. The notion of an interest in or even of representing the library user is central to library ideology. In the lower image a male librarian again acts as a bridge, for an older male figure (perhaps a local councillor) - implying the bridging between those with power and the computer. There is a stress in these images on what is on the screen i.e. the content delivered through the computer, unlike in most *PC World magazine* images of people with computers, for example, where the screen is not seen. The computers are rather old fashioned box computers not the more modern laptop. As in the cover images discussed above, the computer is closely associated with books (recognisably an encyclopaedia) piled close to the computer. Also noteworthy is the wider space of the library visible behind the woman in the first image, the library is a real space.

Thus *Update*'s references to real identified people and places, its stress on real space is in contrast to the complexity and intellectuality conveyed by the abstraction of the imagery in *ITNow*. This could be partly attributable to the different place the journals have in relation to the profession and contingencies of the production process. *Update* contains more user generated content, the glossy production values of *ITNow* would probably preclude usage of low resolution user generated content. But this is probably not a mere contingency, *ITNow*

seems to be playing the role of a professionalising and scientific ambitions of computing. *Update* expresses the people centric, embodied values of the library profession.

Discussion

The table below presents a comparative analysis of the codes of representation identified in the four magazines.

Table 9 Summary of findings

	People	**Technology**	**Space**
PC World Magazine	Idealized models (young, well groomed, happy), conservative image of the family	Laptop, but it is a black box, we do not see the screen, where they are pictured with people	Primarily domestic spaces
PC Gamer	Very idealized, often avatars, young, emphasis on body, figures mostly male	Transparent, actually imaginary worlds often low tech ones	Imaginary, virtual, exotic landscapes
BCS *ITnews*	Abstraction, few people, mostly models	Abstraction, technology, mechanized animals, some gadgets	Images with little depth, no real space
CILIP *Update*	Real people, a majority female and including those normally invisible e.g. women above 40	Books and computer screens	Real spaces, though sometimes populated only by books not people

Overtly sexist images of women as sex objects or "decoration" or to represent stupidity (Weinstein 1998: 95) were not evident in most of this material (confirming Johnson, Rowan and Lynch (2006)) Yet in the consumer magazine there was still stereotyping; men were more often shown as in control and images of individual women were associated with problems. This is partly masked by the importance of women in images about entertainment technologies, increasingly mixed with computers because of technical convergence. Yet in a niche market such as PCGamer a sexualized image was still very much present, reflecting the readership of the magazine and the culture of gaming.

What is most evident, however, it that the codes of the professional magazines were quite different from those in the consumer magazines and from each other. The most positive images of women generally and in association with computers were found in CILIP *Update*. *ITnow* is not masculine directly but creates a sort of high-tech abstraction that could be seen as making IT an uncomfortable culture for women. In *ITNow* the abstract fantasies seem more real than reality. The doubts about the social competence of the geek or nerd are suppressed behind corporate gloss and perfection. This repressed nerd identity finds voice in *PCGamer*. Clearly the sexist imagery of P*CGamer* is something one could complain about, but it is difficult to say that in any way *ITNow* could be construed as discriminatory. Certainly, however, the images do give us some sense of the depth of the cultural divide that stands between librarians and computer professionals though they often need to work together (e.g. in "converged" services).

It is a limitation of this study that no data was collected about the reception of the images (Rose 2001: 191-203) by relevant audiences such as IT professionals. The interpretation of the images is very much that of the author of the paper. The research could be continued by showing the images to people working in IT roles and librarians to see how they interpret them, perhaps in small focus groups or by asking women how they feel about the overall representation of computers (as Milhavic (2003) does). It is important also to consider who the readership might be. Bernt, Bernt and Kanayama (2005) show that whatever the general patterns of representation, if one looks at what middle school girls read, computers are rarely shown, in contrast to the magazines consumed by boys. It may be less significant that *PCGamer* is sexist than that computers are rarely represented in women's interest magazines at all.

Equally, little data about the process of producing or selecting the images was collected. For example, the personal preferences of the editor of *ITnow* (or whoever selected the images) would clearly influence its visual look quite strongly. To substantiate a link between the self image of the profession and images in a particular journal we would need to know much more about what considerations went into choosing the images. For example, we need to know about editorial decisions in *PCgamer* and how they reflect the perceived nature of the market the publication is produced for.

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