

“HYBRIDS” AND THE GENDERING OF COMPUTING JOBS IN AUSTRALIA

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ABSTRACT

This paper presents recent Australian evidence on the extent to which women are entering “hybrid” computing jobs combining technical and communication or “people management” skills, and the way these skill combinations are valued at organisational level. We draw on a survey of detailed occupational roles in large IT firms to examine the representation of women in a range of jobs consistent with the notion of “hybrid”, and analyse the discourse around these sorts of skills in a set of organisational case studies. Our research shows a traditional picture of labour market segmentation, with limited representation of women in high status jobs, and their relatively greater prevalence in more routine areas of the industry. While our case studies highlight perceptions of the need for hybrid roles and assumptions about the suitability of women for such jobs, the ongoing masculinity of core development functions appears untouched by this discourse.

INTRODUCTION

A recurring theme in debates over the representation of women in computing professions has been the idea that opportunities for women would increase with the maturation of the IT industry and the need to supplement technical creativity with social and organisational skills. As Woodfield (2000, 2002) notes, problems in the 1980s and 1990s were often attributed to over-reliance on technical “wizards” in the drive for innovation, and a consequent lack of communication and management skills that hindered the ability to meet project deadlines and respond effectively to the needs of end users. The industry of the future, it was argued, would need multi-skilled managers with “people-oriented skills” as much as technical expertise (Morris 1989), with social aspects of technology such as user friendliness essential to profitability (see Fountain 2000: 57). The optimal computing professional, therefore, was not simply a wizard or geek, but a “hybrid” able to bridge technical and social/management skills. The (expressly essentialist) extension of this position was that it was “women’s” skills that were necessary, and that women would make the best hybrids. This was seen as providing a “golden opportunity” for women to enter professional IT occupations (Deakin 1984), and the basis for a “second wave of optimism” about prospects for women in the industry (see Woodfield 2000).

Regardless of the “truth” of essentialist assumptions about women’s skills (that is, in terms of whether, on average, women do have better communications skills, or make the best hybrids, or – more fundamentally – are less likely to be technical wizards), it is an empirical question as to whether recruitment and training practices have been influenced by a perceived need for hybrid roles, and if so, whether women are choosing to take up such positions. Additionally, even if there is evidence of movement of women into educational programs and jobs that might be classed as “hybrid”, a further empirical question is how such skills are valued in the industry, and the extent to which this occurs along traditionally gendered lines. Cockburn’s (1983, 1985) work on the ongoing processes of gendering skills continues to remind us that the reshaping of occupations and notions of skill in response to technological and other influences usually happens in ways that advantage men. Thus a broadening of skills in the IT industry could just as easily consolidate gendered divisions as ameliorate them. In particular, an extension of hybrid roles could allow the “unadulterated and prestigious” aspects of what Grundy (1991: 356) has referred to as “abstract computing” to remain a

masculine domain, while women move into the “messy” side of IT work, or take up the more user oriented tasks that tend to be devalued as “soft computing” (Fountain 2000: 57, Mahoney and van Toen 1990:320-2).

This paper seeks to extend analysis of these possibilities, adding recent Australian research to the existing body of evidence. Our goals are relatively modest. We do not address fundamental questions about the social processes that shape the relationship between masculinity and IT (as in, for example, Wajcman 1991, Webster 1996) or assess notions of gendered skill differences such as Turkle’s (1984) comparison of “soft and hard mastery”; rather we simply examine evidence on employment patterns and organisational discourse relating to hybrid roles in computing employment. We adopt a combination of methods, drawing on survey research to examine the presence of women in occupational roles that most closely correspond with the notion of “hybrid” and elaborating this picture with qualitative analysis of a set of organisational case studies that examine the discourses around recruitment and valuation of different types of skills. Such an approach is consistent with a feminist perspective (Brannen 1992, Chapman 1995, Stoker 1995), providing both context and depth (Greene et al. 1989), and has the advantage of reducing the influences of weaknesses inherent in any one method. Findings from the survey research are reported first, with the rest of the paper devoted to the organisational case studies.

HYBRID ROLES: EVIDENCE FROM SURVEY RESEARCH

The prevalence and feminisation of hybrid roles is illustrated here using data from a commissioned survey of employment patterns and pay rates for males and females in selected computing roles. The survey was undertaken in November-December 2003 by Classified Salary Information Services (CSI), a private consultancy company specialising in monitoring market trends in pay for large IT companies operating in Australia. One hundred and eight organisations were contacted, and responses were obtained from 77 companies, ranging in annual turnover within Australia from \$2 million to over \$5 000 million, and together employing over 63 000 staff. Specific information was collected on 12 706 employees working in 106 designated occupational roles. This total included regular full-time employees and long term contractors, but excluded part-time, short-term contract, casual and expatriate staff. The sample was not representative of the IT sector or computing professionals as a whole – as well as excluding some types of employees (in particular short-term contract staff who may be very highly paid), it did not include smaller IT firms or organisations in which IT was not the primary function. However, it did provide a comprehensive picture of regular employment in large IT organisations, with its main advantage being the fine level of occupational detail available within these specialised firms. This detail is far superior to the occupational categories in the Australian Standard Classification of Occupations (used in Australian census and labour force survey statistics), and it enabled us to focus on a number of different occupational roles that could be labelled “hybrid”.

A complexity not elaborated in the introductory section of the paper is the lack of specificity about what exactly constitutes a hybrid role and the range of possibilities that can be envisaged, from highly paid professional jobs involving specialised design for individual clients to more routine tasks such as technical writing. The three sets of occupational roles we examine below are situated at different points on an innovation/support spectrum of tasks, as well as illustrating different points on a management hierarchy. They are: Consultants (required to combine technical and business expertise in the delivery of individualised systems to clients); Software Project Managers (required to have a detailed knowledge of developing technologies and user needs, plus oversee projects and manage staff); and Technical Writers (required to present technical information in a manner accessible to end users). In elaborating the occupational roles within these categories, we draw on

CSI's position descriptions, which have been developed in consultation with the IT companies that comprise its clientele.

Table 1 presents information on occupational roles within the first category – Consultants. The position descriptions used by CSI define the role of consultant as involving the development of industry specific systems services for clients, evaluating clients' business needs and liaising with customers during installation and testing. Consultants are expected to have a blend of "technical, commercial and consulting skills" and although an IT degree may be part of their qualifications, many also have Business qualifications, and at the higher levels, an MBA. At the highest level, employees are expected to have around 20 years experience. Levels of remuneration (represented in the third column of the table as the average nominal base salary of employees in each role as a percentage of the average nominal base salary for employees in the job role "Programmer") are high at the top of the scale, reflecting the importance of this role in shaping core business as well as maintaining client linkages. This is a conservative estimate of relative pay – if the ratio is based on total remuneration costs rather than base salaries, those at the top rung of this job ladder are earning over 400 per cent of a programmer's average remuneration.

Occupational roles	Career level	% Female	Average pay relative to programmer	N (employees)
Consultants				
Associate Consultant	2	31	105	346
Consultant	3	31	150	1135
Senior Consultant	4	19	203	594
Principal Consultant	5	23	214	449
Senior Principal Consultant	6	19	273	326
Associate Consulting Director	6	15	371	115

Table 1: Consultants – female share and relative pay in large IT organisations, 2003

While we are unable to gauge from our cross-sectional survey data whether the proportion of consultants has increased over recent years in these organisations, we can estimate levels of representation of women in these jobs in 2003. As column 2 in Table 1 shows, although women make up close to one-third of the first two career levels represented in the table (compared with 22 per cent of employees in our sample as a whole), they comprise only around one-fifth to one-quarter of the next three levels, and only 15 per cent of the top rung. Overall, the data suggest that although these jobs are consistent with the notion of hybrid, the upper echelons are the well paid managerial jobs usually associated with unbroken career patterns – that is, the types of jobs in which women are consistently underrepresented.

Information on the second group selected for examination – Software Project Managers – is presented in the upper half of Table 2. Position descriptions for these jobs emphasise the need for a high level of technical expertise in software design, as well as experience in "people management" and an ability to understand the needs of users. The senior management position may also involve control of budgets and the recruitment and training of staff. As Table 2 shows, these are high level career positions (from level 4-6), with relative pay ranging up to about two and one-half times that of a programmer.

Occupational roles	Career level	% Female	Average pay relative to programmer	N (employees)
Software project managers				
Project Leader	4	32	145	523
Software Project Manager	5	22	190	166
Senior Software Project Manager	6	15	249	79
Software developers				
Programmer	2	29	100	345
Analyst Programmer	3	27	143	909
Senior Programmer	3	22	158	778
System Analyst	4	28	139	224

Table 2: Software project managers and software developers – female share and relative pay in large IT organisations, 2003

The lower half of Table 2 illustrates the group of Software Development roles beginning with Programmer that are likely to provide the stepping stones into project management positions. In contrast with the software project management roles, the development roles are normally associated with “pure” or “hard” computing, although the move into “analyst” positions will involve some of the oversight and needs assessment skills associated with the notion of hybrid. In contrast to expectations about women’s entry to hybrid roles, the pattern is one of relative concentration of women more routine technical jobs – as illustrated in Table 2, column 2, women make up a little under 30 per cent of entry-level programmers. From this position it appears they are slightly more likely to move into analyst type roles than Senior Programmer (which delivers the highest pay levels on average amongst the group of software development job titles in spite of not being rated at the highest career level), but are even more likely to be found in Project Leader positions. However, in a manner very similar to that illustrated for consultants, the proportion of women in project management roles falls sharply with steps up the career levels.

The final hybrid category we examine is Technical Writing – obviously located more towards the “support” end of an innovation/support continuum and included under the umbrella of Software Project Support in the CSi classification. These jobs involve considerable technical knowledge as well as an ability to present information that is easily accessible to users, for example in manuals and online tutorials. The need for sophisticated communications skills distinguishes them from the more technically oriented test analysts that also fall within the broad project support group. Table 3 shows that technical writing jobs are rated at a higher career level than test analyst jobs (although we note that highly skilled private contractors can earn extremely high salaries doing advanced level testing work – see Grey and Healy 2004), and this is similarly the case for the “senior” role in both groups. Unfortunately, low numbers in the technical writer roles mean that the results for female share and average pay in these jobs may be unreliable, but there is a strong suggestion that they are jobs more likely to be performed by women, particularly at the initial level of Technical Writer. However, relatively high female share is not limited to the roles most closely linked with the notion of hybrid. The lower panel in Table 3 also shows that the proportion of women in test analyst roles is relatively high (47 per cent compared with 22 per cent for the survey as a whole) and that women are more likely to be represented in the top career level of Quality Manager than they are in the equivalent career level positions for the jobs shown in Tables 1 and 2. It also shows that the pay increment for Quality Manager is lower than for the equivalent career level jobs in the earlier tables, although relatively small numbers in this group mean the figure should be treated with some caution.

Occupational roles	Career level	% Female	Average pay relative to programmer	N (employees)
Software project support				
Technical writing				
Technical Writer*	3	82	113	22
Senior Technical Writer*	4	41	146	17
Testing and quality management				
Test Analyst	2	47	105	66
Senior Test Analyst	3	41	127	78
Quality Manager*	5	32	172	28

Table 3: Software project support roles – female share and relative pay in large IT organisations, 2003

*Note: Small numbers reduce the reliability of estimates for these occupational roles

Overall, these findings are consistent with a traditional picture of labour market segmentation, and echo patterns found in studies of computing professionals in other countries (see, for example, Panteli et al 2001). Our focus on hybrid roles suggests that those most likely to be taken up by women are at the more routine or support end of the IT job spectrum, and that women's representation in management roles decreases significantly with seniority. Although the survey cannot inform us about trends such as the extent to which hybrid roles are becoming more prevalent or drawing more women into the industry, it has provided a background for the case study research and emphasised the need to consider a variety of hybrid roles within computing work. The following section of the paper turns to a qualitative analysis to try to uncover perceptions about the need for hybrid jobs, their suitability for women and the value of hybrid skills.

HYBRID ROLES AND GENDERED SKILLS: CASE STUDY EVIDENCE

The evidence drawn on in this section of the paper was gathered in a series of organisational case studies conducted in 2003-4. Although our research spanned both public and private sectors and included organisations in which IT was not the primary function, in order to be consistent with the population of organisations on which our survey data was based we focus here on evidence from four specialised IT companies. All four were private sector companies selling IT services and/or software. While they were all engaged in similar tasks and so employed staff in similar jobs, the scale of each organisation and the local product market in which it operated differed, allowing for useful comparison and contrast. Table 4 provides information on the number of employees and types of jobs in these four organisations, as well as the labels we will be using to identify them in the following analysis. We note that the job titles listed will not match exactly with those used in the previous section of the paper – one of the ongoing difficulties of research in this field is the varied terminology used in different firms and by different data collection agencies. The problem is addressed as far as possible by elaborating the nature of the jobs we focus on in the course of the qualitative analysis.

Org.	Workplace size (employees)	IT jobs*
IT1	1131	Consultants, support analysts, software developers, internal IT consultants
IT2	266	Technical analysts, programmers, testers, business analysts, developers, consultants
IT3	42	Professional services consultants, software architects, programmers, technical consultants, analyst programmers, project managers
IT4	25	Developers, database administrators, system analysts, web designers, IT security, network administrators

Table 4: Case study organisations

*Note: Jobs titles are those used by the organisation themselves. Information about the job tasks would indicate that similar roles have different names, and different roles have similar names, in different organisations.

Information from these organisations was gathered from senior managers, human resource managers and IT workers themselves, using interviews and focus groups conducted according to semi-structured interview schedules. These covered a broad range of issues including qualifications and skills, recruitment, training and careers, work organisation, pay, working time and flexibility, work/family, work regulation and organisational culture. The semi-structured format meant that the sessions were less question-and-answer and more like group discussions where respondents reflected on recent experience and interacted with each other. The sequence of questions, apart from initial introductory questions, was not crucial and most topics could be pursued as they arose.

At IT1, a senior HR manager was interviewed and then a focus group was held with seven staff. A senior HR manager and the senior IT manager were interviewed at IT2. Another interview was then held with a line manager who had a long association with the company. A focus group of nine IT staff was then undertaken. At IT3 and IT4, both of which were smaller companies, the researchers interviewed the MD/CEO and then held focus groups with employees – eight and five IT staff, respectively. Each session was recorded and transcribed verbatim before being rechecked by one of the interviewers.

The transcripts from these interviews were analysed using the Miles and Huberman (1994) Thematic Conceptual Matrix. This analysis was initially undertaken manually, but the transcripts were subsequently re-examined with the assistance of NUDIST 6. Our focus was on gendered perceptions of skill, particularly communication and people management skills and the extent to which these might be seen as “soft” skills in comparison with “pure” technical roles. The findings are reported in two sections: the first focusing on women and hybrids; the second on men and “pure” computing roles. The analysis utilises direct quotes as appropriate, setting these in organisational context and noting possible reasons for differences among the four cases. The organisations are labelled IT1-4 (see Table 4), and our citations give the sex and position (manager or employee) of the interviewee. Page numbers refer to the typed transcripts.

Perceptions of women’s skills and hybrid roles

The case studies provided examples of women in a wide range of hybrid roles from senior management to technical writing. In three of our four cases we interviewed a female senior manager, and while the jobs these women held did not directly involve technical work, the importance of a technical background in achieving a management position was often noted – as the female MD of

IT3 explained, having a programming background provided her with credibility she would otherwise lack as a woman in the industry. In general, women were seen as most likely to progress through management rather than technical roles, "It's not that they don't have the technical capabilities but they seem to progress to management as opposed to technical specialists" (Female manager, IT2: 8). Women in these organisations, however, faced the usual barriers in career advancement: "It's the old boys' network" (Female employee, IT1: 17); "... what I see happening is that it's men in [IT1] who are setting the requirements for people to aspire to executive roles, and are setting them according to a male set of criteria" (Female employee, IT1: 14).

At the other end of the IT job spectrum, and in line with the data presented in the previous section of the paper, support roles such as technical writing were predominantly female. This hybrid role linking technical expertise with communication skill and a focus on end users, was seen as important because:

... the big problem with the programmers is they write all the stuff down and it's in programmer gobble-dee-gook and someone reads it and goes, "Oh! I don't quite understand that". So they [the technical writers] basically take that and turn it into something that [can be understood by customers who can then] do their own configuration. (Female manager, IT2: 6)

However, these jobs were seen as isolated from the "main business". The only part-time worker at IT3 was a female technical writer and it was explained that her role could be part-time because "her job is quite isolated" (Female manager, IT3: 18).

Another job in these organisations that linked technical and communication or administrative skills at the support end of the spectrum was database administration, and this was clearly seen as the kind of job likely to be performed by women:

They keep the operational wheels turning ... It's a little bit tech, but not really tech. It's sort of operational. So yes, more females there ... they're probably more conservative people. You know they've got families, they've got houses, they've got commitments. (Male manager, IT4: 14-15)

The most positive ideas about hybrid roles that would offer more than routine jobs or support role opportunities for women emerged in discussion of "analysts" – a term used somewhat differently across the organisations to encompass varying degrees of proximity to the technical aspects of the software development process, although typically distinguished from the less technically engaged "business analysts". In an echo of the literature cited in the introduction to this paper, the female manager we interviewed at IT3 predicted an increasing representation of women in the industry in analyst roles:

I think the importance in the analyst role will grow and grow and grow ... I think 20 years ago the IT industry was full of men, and they decided that they knew best and people would get what they would give them because this was best for them to do ... That world has changed. The end-user is much more sophisticated now ... So the role of analyst, which I believe women are much better at, is a strong role. (Female manager, IT3: 16-17)

In this manager's view, women were innately suited to such roles – "I think this is a natural job for a woman, for a technical woman" (Female manager, IT3: 5). She felt that women performed better in these roles because of a capacity to think broadly, while men tended to think in a linear fashion. Such jobs, however, did appear to remain separate from the core of "pure" computing in the organisations we examined. Also somewhat detached from "pure" technical work were presales and consulting roles combining business and IT skills – areas where women were reasonably well represented in IT1 and IT2. These were often seen as desirable jobs:

Presales is an area that perhaps a lot of consultants and other technical people would aspire to because it's dealing directly ... with the customers. It's a little bit more ... glamorous

than the other roles. It's more highly paid than the other roles. (Female manager, IT1: 5)

In IT1 there was a clear recruitment strategy to provide the organisation with some of these higher skill hybrid employees and enhance the level of communication and business skills in the organisation. As a manager at IT1 explained: "We actually sponsor the [Business/IT dual] degrees of [two local universities], and we get involved in actually screening [school] leavers" (Female manager, IT1: 6). This meant that employees for the consulting group in this organisation: "...generally come out of a Business/IT type degree, have some technical skills ... some functional as well. So that the mix is good". Moreover, our interviewee noted that this meant they were hiring more women – there were more women undertaking these types of degrees and their skill base was: "well rounded [with good] communication skills" (Female manager, IT1: 6). This approach to recruitment was clearly evident to the employees: "Communication skills are definitely what they're looking for ... communication skills and customer focus" (Female employee, IT1: 11).

In all four organisations there was some indication that recruitment into hybrid roles could also occur through non-IT channels. While this was sometimes through Masters level degrees in different fields, there were also examples of older women who had developed a talent for IT in the course of their work and moved in that direction from administrative or other support roles. In the smaller organisations (IT3 and IT4), project manager and business analyst were singled out by managers as roles that did not require formal IT qualifications. Also, at IT2 some staff members were recruited because of particular industry experience and knowledge of the product market, and a manager observed: "We've actually got a good mix of males and females across that range" (Male manager, IT2: 4).

The range of hybrid roles and entry pathways was thus extremely varied, and appeared to depend to a large extent on the nature of the organisation, including its size and primary function. For example, IT1's main product was largely developed overseas, and the local need was mainly for adaptations for the Australian market and development of a local clientele, making business and customer liaison skills a primary focus. While these skills were obviously important for all the organisations, IT2 (although part of an overseas owned corporation) was primarily focused on a locally developed product and the technical development staff that would best ensure its competitive edge. Similarly, the smaller organisations (IT3 and IT4) were mainly dependent on technical innovation.

Nevertheless, there was a widespread perception that a greater variety of jobs was emerging in the industry and that women would be well suited to a number of these. In IT1 in particular, there was a clear focus on well-paid IT/business jobs that were not located at the "routine" end of the spectrum. However, in many cases the technical component of the jobs under discussion was relatively limited, and the other side of the hybrid role – the communications and people management skills – sometimes appeared devalued and not compatible with technical skill. For example:

This might sound like a generalisation but ...[she has] more of the *softer* skills. She seems to be far more caring and ...yeah, she just seems to... have a better relationship with the people we work with than say I do. ... I think it seems if people have a problem in our department they'll go and see [her]. Unless it's technical and then they're at my desk. (Male employee, IT3: 30)

Moreover, assumptions about women's skills sometimes flowed over into expectations that they would pick up basic secretarial and other support roles. As one of the female employees in IT2 told us:

... sometimes ... when you're in a client meeting they say, "Oh yes [respondent's name] you can take the notes, ... you ... can type up the minutes"...[or] "You *are* the minute taker"; and, "Oh [respondent's name], can you organise this or can you organise that?" And it's just like ...Right, okay... so we're just pulling that hat back on. (Female employee, IT2: 25)

A consistent theme alongside these perceptions of women's skills and potential roles in the IT industry was the notion that "pure" computing remained a masculine domain. Ideas about men's skills – including the lack of communications skills among technical experts – are examined in the following section.

Perceptions of men's skills and "pure" computing

In all our organisations the primary determinant of business success was the capacity for technical innovation, and jobs around this function were always prioritised. For example, in spite of the positive views reported above about analyst roles for women in IT3, the most important role in that organisation was identified as "architect" – a crucial development function that was exclusively male in that workplace: "We don't recruit men more than women on that role [architect] but I think that's where they naturally fall" (Female manager, IT3: 1).

In the small firms in particular it was clearly technical skill and inventiveness that was seen as providing the leading edge. The recruitment of technical experts was a highly focused process that tended to reproduce masculine culture and a male dominated technical workforce. In IT4, the manager viewed it as essential to maintain the intimacy of the development team because:

... the relationships between them and how everything should be done [is crucial]. And there's a lot of ... I describe it as technical religion. You know, where they believe things should be done a certain sort of a way (Male manager, IT4: 9)

A new member must suit this existing orthodoxy: "They work in teams, and they'll actually shift as teams – typically" (Male manager, IT4: 11). The recruitment process was therefore intense:

I will do five or six interviews involving all of the [development] team because the environment they operate in together is very important. And to upset that environment is really costly ... I'm looking for someone that can fit in and does subscribe to the same view, but is also willing to ... question the given logic at any time. (Male manager, IT4: 9-10)

The masculinity of this team, similar to that described by Newton (2001), was also underscored by the manager's observations that:

The developers could easily find jobs but] it's finding a job which is interesting to them, where they're going to fit in, where they're going to feel valued, where there's an alpha geek that they ... want to learn from. There's a real alpha geek sort of a thing – you know, that is there a key person here that I really respect and I can learn from. (Male manager, IT4: 16)

In this context, the (all male) development staff were the opinion leaders, and their lives revolved around IT:

... there's a clear hierarchy ... they know everything, they're arguing about stuff, and they're really opinionated and they just live it ... They've all got, have LAN at home with eight computers on it, and that's all they do. ... I let them do what they want to do...[and they] get paid a lot. (Male manager, IT4: 9, 14-15, 20)

These observations suggest that any drive to recruit hybrids is likely to be focused on the types of roles that can be more easily detached from the design core of IT, and that there is likely to be a cultural core in IT organisations that devalues the status of hybrid jobs. This is in spite of a recognition of the benefits of enhancing communication and business skills in all our case studies, and widespread perceptions that technically adept men tended to lack good communications skills. For instance:

I think these ... really kind of pointy-end roles, the software architect and programmer type roles, I think will still attract more men. I don't know why but that's what I think these

guys, our development guys don't really get exposed to clients because they don't have a lot of client skill. (Female manager, IT3: 17)

Similarly, the CEO of IT4 elaborated his view of development and network engineering as "pretty blokey" with some observations on the communication skill deficiencies of these staff:

... they can have, not the greatest sort of personal skills ... They'll sit in two rooms, one room apart, and they won't go and talk to each other. They'll do it all through email ...

There're sort of strange stuff that goes on like that. (Male manager, IT4: 10, 13)

These oddities were nevertheless tolerated – perhaps even expected as a trade off for technical brilliance (see also Woodfield 2002 on perceptions of men's communication skills in IT work). They are a reminder that the basis for optimism about women and hybrid roles – the need for better communication within organisations and with end users – should be accepted with some caution.

CONCLUSION

Overall, our research has raised some questions over the idea that business pressures in computing firms will lead to the extension of hybrid roles involving both technical and communication or "people" skills, and that this will in turn increase the representation of women in IT work. The survey data we examined was consistent with traditional patterns of gender segmentation across both hybrid and non-hybrid types of roles, although it did underline the existence of well paid roles in the industry that extended beyond purely technical functions. At the organisational level, we found some resonance with the idea that hybrid roles were important to the industry and perceptions of women's skills that were consistent with their suitability for such jobs. In one case in particular, there was evidence of recruitment practices and links with tertiary programs that appeared to be assisting women's entry to relatively well paid jobs combining technical and other types of skills. However, there was also evidence that business pressures were primarily driven by the need for technical creativity, particularly in the smaller organisations, and there was ongoing reinforcement of a masculine culture around these types of jobs and at least a tolerance of what was perceived as men's lack of communication skills. Thus although our findings suggest a more complex scenario than a clear-cut separation of women into devalued "soft computing" roles and men into "pure" technical roles, the research does illustrate aspects of the gendering of occupational roles and highlights the prevalence of essentialist ideas about gender and skill that are as likely to reinforce inequalities in the sector as they are to erode them.

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