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# Migrant Women and the Australian Information, Communications and Technology Sector — A Special Case?

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## ABSTRACT

*This paper traces the experiences of migrants working in information technology in Australia, particularly migrant women from non-English speaking countries, examining the impact of both 'supply-side' factors like skills, birthplace and sex, and 'demand-side' institutional characteristics of information, communications and technology sector employers. Australian Bureau of Statistics data are used to study characteristics of information technology workers in NSW, while government longitudinal data are used to examine the flows of recent migrants. These quantitative data are complemented by information gathered from interviewees and key informants, some of whom worked for a large US-based multinational corporation. Our findings indicate that compared with other industries, the information, communications and technology sector has successfully utilised the skills of migrants, and is characterised by a culture of relative openness and mobility. However, in tighter economic times, discrimination becomes more of an issue for migrant workers. Additionally, information, communications and technology remains a male-dominated sector, and female migrants in the industry, who need to re-establish not only their careers but also viable work-care arrangements, typically experience a more difficult transition to Australian life than their male counterparts.*

## Introduction

Migrants from non-English speaking countries have historically been concentrated in low paid, low status jobs in the Australian workforce (Collins 1984). Political economy researchers have argued that this reflects not migrants' productive assets, but processes of exclusion and labour market segmentation operating in Australian industry and labour market institutions (Jakubowicz and Castles 1986;

Collins 1991). Such processes were seen to derive from the gender, as much as the ethnic, structure of Australian social relations (Martin 1984). In the last fifteen years, with an increased emphasis on qualifications, capital and language skills in Australian migration policy, new arrivals have been more skilled than ever before (see VandenHeuvel and Wooden 1999). Are these new skilled migrants reversing the traditional employment profile of newcomers to Australia as the federal government claims? Is 'human capital' suddenly being fairly evaluated and conveyed in labour markets, as neo-classical economists have always argued, and Collins (1997) subsequently seemed to concede? The information and communication technology (ICT) sector provides an excellent case study for exploring these questions. Like other developed countries, Australia experienced an IT boom during the second half of the 1980s and throughout the 1990s, with employment in computer services growing by 315 percent in the ten years to 1996 (Jureidini and Healey 1998: 58) and relentless demands for workers with the skills to develop and operate the changing computing and communications technologies.

The presence of a large migrant workforce is due to the reliance on migration to overcome the ICT sector's skilled labour shortage. The failure of Australian educational institutions to equip a sufficiently large Australian-born student body to meet the industry's needs has been criticised by both academics and professional associations (Birrell et al 2000; CIE 2001). Partly in response to developed countries' demands for labour, many of Australia's Asian neighbours generate a large surplus of trained information technology (IT) workers, creating an ambitious, mobile transnational workforce.

Already by 1996, around 45 percent of all those holding degree qualifications in computing in Australia were overseas-born, mainly from Asian countries (Birrell et al 2000: 82). Between 1995 and 2000, the net gain to Australia of computer professionals was larger than for any other occupational group – some 7000 people (Birrell et al 2001: 12).<sup>1</sup> Birrell et al (2001: 14) calculate that, Australia-wide, the computing professional labour force was amplified by migration by around fifteen percent in the five-year period.

How have these skilled migrants been incorporated into the Australian workforce? To what extent has the sharp expansion in the ICT sector opened doors for migrant women in a traditionally male-dominated industry? The research described below was conducted in Sydney, NSW, Australia's largest city and a focal point for its 'new economy' development, as well as being home to nearly two-fifths of Australia's ICT workforce (ABS 2004: 4).

The first section of this paper provides a quantitative overview of the role of migrants in the ICT sector, drawing on census data and the Longitudinal Survey of Immigrants to Australia (LSIA). This is followed by a discussion of qualitative findings from in-depth interviews with migrants working in the sector in Sydney.

### The Representation of Migrants in the NSW ICT Sector

The ICT sector is internally heterogeneous and definitional issues are complex. We adopt the ABS definition of it as 'that part of the economy which produces computers and communications equipment, and the services which facilitate the use of this equipment' (ABS 2000: 56).<sup>2</sup> Many IT workers, however, are employed outside the ICT industry in IT user industries (acirt 2003). In NSW in 2001, while nearly 27 000 computer professionals worked in the ICT sector, some 23 000 worked in other industries (ABS Census of Population and Housing 2001, unpublished data). Only around half of those who work in the ICT sector work in what could be called 'IT occupations' — the main occupations associated with information technology work.<sup>3</sup>

The NSW ICT sector is highly ethnically diverse, with migrants from non-English speaking countries (NESC) comprising 30 percent of IT workers in 2001 (see Table 1). This is nearly 1.8 times the percentage of NESC migrants in the general NSW workforce. NESC migrants increased their representation in the industry from an already large share of 25 percent in 1996.

Table 1 also shows that English-speaking country (ESC) migrants were also significantly over-represented, by a factor of nearly 1.5. This left Australian-born workers as only 56 percent of the ICT workforce in 2001 (down from 62 percent in 1996).

**Table 1: Employment in IT occupations in the ICT sector and all jobs, NSW, 2001 (percentages)**

	Birthplace		
	Australia	ESC	NESC
ICT sector	56	14	30
Male	57	14	29
Female	52	14	34
N = 55,297			
All jobs	72	10	18
Male	72	10	19
Female	74	9	17
N = 2,748,448			

Source: ABS, Census of Population and Housing, 2001, unpublished data.

The dramatic recent growth of NESC migrants in ICT is evident in Table 2. The Australian-born workforce grew by around 22 percent between 1996 and 2001, while the NESC migrant workforce grew by 61 percent. While female employment

overall grew faster than male employment (53 percent compared to 31 percent) over this period, the NESC migrant female workforce was the fastest growing group, increasing by 85 percent, over twice the rate of increase of ESC migrant women in the sector. Employment growth for Australian-born men in the ICT sector, on the other hand, was slowest out of all groups – at around half the rate of the sector as a whole.<sup>4</sup>

**Table 2: Employment growth by birthplace for males and females, IT occupations in the NSW ICT sector, 1996 and 2001**

Birthplace of workers	1996	2001	Change %
<b>Australia</b>	25,227	30,654	22
Male	21,535	25,500	18
Female	3,692	5,154	40
<b>English-speaking country</b>	5,505	7,647	39
Male	4,522	6,248	38
Female	983	1,398	42
<b>Non-English speaking country</b>	10,225	16,418	61
Male	8,365	12,979	55
Female	1,860	3,439	85
South East Asia	2,600	4,099	58
North East Asia	1,769	3,362	90
Southern Asia	1,098	2,767	152
<b>Total</b>	N = 41,167	N = 55,297	34
Male	34,554	45,190	31
Female	6,614	10,107	53

Source: ABS, Census of Population and Housing, 1996 and 2001, unpublished data.

As noted in the introduction to this collection, the ICT sector in Australia is very male-dominated. This is in contrast to certain Mediterranean and Asian countries where, at least in tertiary education, women make up half or more of IT enrolments (Newmarch, Taylor-Steele and Cumpston 2000: 6). In the NSW ICT sector, women's employment levels changed little during the 1990s (women's participation increased by two percentage points between 1996 and 2001). However, at 34 percent of all women in ICT in 2001, women from non-English speaking countries were strongly over-represented in the ICT workforce compared to their representation in NSW's female workforce as a whole (17 percent).

*Occupational patterns*

Historically, patterns of occupational and industrial clustering have characterised migrant workers' employment in Australia, with migrants generally over-represented in jobs designated as semi-skilled and unskilled, and under-represented in highly paid jobs. The picture has become more complex in recent years, but persistent patterns of occupational clustering in low-paid production and labouring jobs remain. In 1996, for example, NESC migrant women were significantly over-represented (by up to three times their general workforce representation) in mainly low-paid jobs, for example textile and clothing machine operators, production and transport workers, labourers and process workers (ABS Census of Population and Housing 1996, unpublished data).

**Table 3: Female employment by birthplace in IT occupations, all industries, NSW, 2001 (percentages)**

Occupation	Birthplace:	Australia	ESCs	NESCs	Total* Number
Managers		61	20	19	2,688
Engineers		40	8	52	308
IT technical sales reps		67	17	16	1,101
Computer professionals		49	13	38	11,459
Associate professionals		51	8	41	374
Technicians		66	11	23	3,597
Electrical/electronic trades		61	7	32	633
Communication trades		66	8	26	349
Keyboard operators		73	10	17	18,272
Telemarketers		75	11	14	2,270
<b>Total IT occupations</b>		<b>64</b>	<b>12</b>	<b>24</b>	<b>40,951</b>

Source: ABS, Census of Population and Housing, 2001, unpublished data.

\* The total numbers include those whose occupation was 'not stated'.

IT professional is one of the very few higher paid occupations where NESC migrant women are concentrated. However, as noted above, there is a range of IT occupations, including professional, technical sales, trades and operator jobs. What is the distribution of NESC women amongst IT occupations as a whole?

Table 3 shows that NESC migrant women are over-represented in professional and associate professional jobs. Nearly two-fifths of NSW female computer

professionals are from NESCs, as are over half of NSW's female computer engineers. The electrical and electronic trades (accounting for only two percent of female IT occupations) also have a disproportionate number of NESC women.

However, there is internal differentiation within some of these large professional groups. Within the category of computer professionals, for example, there is a marked concentration of NESC migrants in the lower status professions of programmer and software designer, where they made up 52 and 47 percent of women respectively (ABS Census of Population and Housing 2001, unpublished data). Meanwhile, the more highly paid occupations of computer auditor and systems manager contained more ESC migrant and/or Australian-born women.

Overall, while migrant women are well represented among some professional groups, they are significantly under-represented in management,<sup>5</sup> high-level sales jobs, the communication industry trades, and clerical positions. This is the case for women in general, who are concentrated in the lower status jobs in IT. In 2001, women made up 31 percent of the NSW ICT workforce, but only 23 percent of managers. An even smaller proportion (18 percent) worked in 'IT occupations', with many of the others working in business process (information) outsourcing and other routine jobs that need no high-level computing skills beyond competence in standard applications. They 'work knowledge' rather than being 'knowledge workers', to use Brown and Hesketh's (2004) useful distinction.

On the whole, recent census data show the growing importance of NESC migrants within the NSW ICT workforce during the 1990s and beyond. NESC migrant women's involvement in this growing industry is as important as the participation of NESC men, and would seem to reflect the introduction into Australian labour markets of a different configuration of gender relations shaped in overseas contexts. However, the data also show occupational segmentation based on birthplace and gender, particularly a managerial/non-managerial divide, and a sales/technical work polarisation that revolves around the degree of customer contact in the job.

#### *Recently arrived computer professionals*

The government's skilled migration policy assumes that overseas professionals will be able to move automatically into employment once they have arrived, thus overcoming skills bottlenecks and boosting the local economy. Historically, the difficulty encountered by some professional groups in negotiating Australian labour markets casts doubt on the validity of this assumption. Birrell et al found that only two-fifths of NESC migrants with degree-level qualifications who arrived in the 1986 to 1991 period were working in a managerial or professional position in 1996 (2001: 32). The unemployment and underemployment of some NESC

professionals has been well documented (see Hawthorne 1994 on engineers and 2001 on nurses<sup>6</sup>). What have been the experiences of IT workers after their arrival in Australia?

The Longitudinal Survey of Immigrants to Australia (DIMIA 2002) is a useful data source for examining the employment experiences of migrant computer professionals. The first LSIA (LSIA1) sample (principal applicants holding residents' visas<sup>7</sup> who arrived in Australia between September 1993 and August 1995) included 191 migrants whose last job prior to migration was computer professional or data manager. One hundred and twenty-three of these were also interviewed at Wave 3 of the survey, conducted three-and-a-half years after their arrival.

The second LSIA (LSIA2) sample (principal applicants arriving in Australia between September 1999 and August 2000) included 105 migrants formerly employed in IT, 88 of whom were also interviewed in the survey's second wave, six to eighteen months after arrival. There was no third interview in LSIA2.

Women formed a distinct minority among the IT migrants. In LSIA1, only 31 percent were female, although females comprised 43 percent of all principal applicants. In LSIA2, women were an even smaller minority (29 percent) of computer professional migrants, although the proportion of females among primary applicants generally increased to 46 percent.

How did this group fare in the labour market, compared to other migrants and other professionals in particular? Was birthplace or gender significant in explaining their employment outcomes?

#### *Employment experiences of computer professionals soon after arrival*

Six months after their arrival in Australia, computer professionals were much more successful in gaining employment than the average experience in the sample. In LSIA1, 60 percent of computer professionals were employed, compared to around 44 percent of all LSIA1 principal applicant migrants. Among LSIA2 migrants, IT professionals fared even better. At the first interview, soon after arrival, almost 80 percent were working, more than 30 percentage points higher than for the entire LSIA2 sample (45 percent).

Computer professionals were also more likely to be in the same occupation they held before emigrating. Among those who answered the question in LSIA1, 83 percent held the same occupation, compared to less than 40 percent of the overall sample (see Table 4).

Data on the main problems encountered when looking for work indicated similar results for computer professionals and other migrants. Lack of local experience, not enough jobs available and English language difficulties were the

significant responses in each case. However, in LSIA1, more computer professionals (around 30 percent) said that they had no particular problems in finding work, compared to around 20 percent of others.

**Table 4: Six months after arrival, does migrant have same occupation as last held in former country? (percentages)**

	Computer professionals	Other professionals	All others
Yes	83	40	38
No	17	60	62
Total	100 n=76	100 n=260	100 n=812

Source: LSIA1, P.A. migrants arriving between 1993-5, at wave 1.  
p<0.001

#### *Employment experience of computer professional migrants after initial settlement*

'computer professionals' labour force experiences continued to be relatively smooth. Three-and-a-half years after migration, 88 percent were employed, compared with 63 percent of other migrants. And while other migrants had an unemployment rate of nine percent, none of the computer professionals identified themselves as unemployed, although twelve percent were not in the workforce, either studying or undertaking home duties.<sup>8</sup> Of those in the labour force, some 68 percent were working as computer professionals or data processing managers — that is, in the same occupation they had prior to migration.

LSIA2 computer professionals arriving at the end of the 1990s fared even better, despite the IT downturn starting in 2000. While only 45 percent of all respondents were employed in the first six months in Australia, 78 percent of computer professionals were. Six to 18 months after arriving, 90 percent of IT workers were employed, compared with only 57 percent of all migrants.

#### *Female computer professional migrants*

Consistent with the workforce experiences of migrant women in other industries, the female computer professionals had poorer employment outcomes than males. Around one-half (31 out of 59) of the LSIA1 women were working six months after arrival, compared to some 64 percent (81 out of 127) of the men. Also, women's experiences showed less continuity with their pre-migration employment: 16 out



23 of the women worked in the same occupation as last held in their former country, compared with 45 out of 51 of the men.

However, as can be seen by the comparisons above, even the female computer professionals appeared (at least at this stage after arrival) to be faring relatively well in terms of employment compared to other migrants. Among the LSIA2 sample, there were no statistically significant differences in employment outcomes between men and women. This is consistent with the analysis discussed earlier showing a relatively high proportion of NESC women working in the computer industry compared to other women.

Overall, analysis of LSIA data indicated that computer professionals had superior employment experiences to other migrants, including when compared to other professionals. Those who had worked as a computer professional in their last job before emigrating were quicker to find employment in their area and less likely to experience unemployment than other migrants. Looking at migrants who arrived in an earlier period (between 1986 and 1991), Birrell et al (2001: 32) also found IT migrants to be relatively advantaged compared to other professionals. Female computer professionals had slightly less positive experiences, although the sample sizes are too small to be definitive.

### **Explaining the Employment Experiences of NESC Migrant Women in the ICT Sector: Qualitative Evidence**

Our interviews with migrant IT workers, including many from a major US-based multinational corporation, Isolutions (not its real name), illustrates and explains the key patterns documented above. The Isolutions research was part of a suite of PhD thesis case studies and took place between June and September 2003 (Alcorso 2006). In Isolutions, semi-structured interviews were conducted with 37 men and women from 21 birthplaces (including Australia) employed in several of the company's IT divisions.<sup>9</sup> Other qualitative data referred to below come from key informant interviews (part of the same project), or from 44 semi-structured interviews with Chinese and Hong Kong-born women, conducted by Ho between 2001 and 2003, also as PhD thesis research (see Ho 2004).

There appear to be three interrelated sets of factors shaping the work experience of IT migrants in Australia. These are:

- the overall economic health of the industry (prolonged conditions of IT boom);
- demand-side factors relating to the nature of labour markets in the industry and the labour process;

- supply-side factors relating to migrants' skills, gender, ethnicity and cultural characteristics.

*The economic health of the ICT sector*

As noted above, the Australian ICT sector has for two decades experienced persistent labour shortages unmet by local supplies of labour. Except for the manufacturing sub-sector, it experienced consistent growth from the mid-1980s until the second half of 2000. Not only have funding shortages limited the capacity of local institutions to train skilled workers, the gender structure of the Australian labour force has also shrunk the local labour pool, as girls and women shun IT careers (Newmarch, Taylor-Steele and Cumpston 2000; CIE 2001).

It is not surprising, therefore, that many of the migrant IT workers we interviewed had relatively positive experiences of gaining their first Australian job. For example, migrants at Isolutions (most of whom arrived in the early or mid-1990s) described it as a straightforward process of putting their name down with an employment agency and receiving a call within a few days. They reported finding jobs that were at a similar level to those they held overseas, even if in a different industry (such as mining rather than manufacturing). One described how in 1992 he had had several offers to consider even before he migrated: 'computer people were snapped up at that time,' he said. 'Employers were desperate for people who could do the work. Passable English was OK' (Polish-born PhD graduate and Isolutions engineer, interviewed 8 July 2003).

In contrast, IT professionals who arrived during the recent ICT downturn or the earlier 1990 to 1992 recession reported a different experience. Anita, a systems analyst from Hong Kong, arrived during the early 1990s and was unemployed for nine months. When she did find work, 'it was a bit of a setback because I had to work as a programmer once again' (interviewed 12 March 2003). Despite graduating with a degree in computer science from a UK university, and securing a skilled migration visa to Australia, it took Anita six years to regain a managerial level position. In interviews with computer professional migrants who had arrived in 2001 or 2002, we found many of the themes that emerge from other studies of migrant unemployment. People spoke of employers being overly 'picky' about issues of accent and conversational language ability; about the double bind of needing local experience but being unable to obtain it unless someone offers you a job; and about perceptions of cultural and ethnic discrimination.

Hawthorne (1994: 56) has documented how the 'provisional acceptance' afforded to engineers in times of labour market shortage evaporated during an economic downturn in the industry. Similarly, it is likely that during economic downturns, NESG IT migrants faced some of the same labour market barriers

as other NESC migrants in the Australian workforce, and questions of cultural difference were much more likely to come to the fore. However, the positive job outcomes experienced by the LSIA2 migrants outlined above suggest that there may be other specific features of ICT labour markets that curtail these tendencies. These are discussed in the next sections.

*Demand-side factors: labour markets and the labour process in the ICT sector*

There are some inherent aspects of the industry that generally facilitate worker mobility. These demand-side factors, including the IT labour process, industry structure and employer policies, are part of the specific 'context of reception' in the IT industry (Ellis 2001: 119) that assists in building 'bridges' for overseas professionals and consequently helps structure migrant employment outcomes.

First, transnational corporate certifications (competency-based credentials granted by companies like Cisco, Microsoft and Oracle) coexist with university and college educational qualifications. These certifications in specific programming languages, network management, telecommunications and so on create a 'borderless system of protocols' (Adelman 2000: 3) which is by definition non-national. Analysis of LSIA1 data showed that less than three percent (3 out of 123) of computer professional migrants had embarked on any post-arrival recognition process, compared with around half of other professionals and managers. No computer professionals interviewed mentioned a lack of recognition or undervaluing of their overseas qualifications as a problem. It seems that, as the Isolutions Human Resources (HR) manager argued, compared to other professions, 'in IT the boundaries between countries are ... much less. It makes the skills very transportable' (interviewed 30 June 2003).

This transnational organisation of the ICT sector is also evident in the nature of its internal labour markets. The industry is known for the high volume of personnel movements worldwide, and it has played a major role in getting the Australian government to introduce temporary business visas (Kinnaird 2002).

Interviews with Isolutions employees highlighted the importance of 'internal migration': migration within the company's internal corporate labour market. Around one-third of the men and women interviewed (13 out of 37) had worked for the company overseas and six of these had transferred from one Isolutions subsidiary to another as they migrated. One middle-aged senior IT services manager (interviewed 11 July 2003) had worked across the globe during her Isolutions career. She explained:

This has been my one and only job. I graduated to it and ... started in Colombia, and probably two years later was working in the US, and from

there on it's everywhere ... [F]or the last 20 years I have been working probably, in over 60 countries ... But then I decided to stay here. Australia is quite a nice place.

Others who migrated independently ended up being transferred to an internal company job after their migration applications had been successful. Yet others had migrated to Australia by transferring within another multinational subsidiary before getting a job with Isolutions.

Such employees often found work through the company once news of their decision to migrate circulated amongst colleagues and within the company. In one case, a husband and wife both secured jobs in Australia prior to emigrating, following telephone interviews. They also retained their seniority level within the company.

Internal migration also emerged as important to our non-Isolutions interviewees. For example, Alice (IT manager, interviewed 24 May 2003) transferred at a young age to Sydney by moving to the Australian office of the Hong Kong government trade office she worked for. Susan, a Hong Kong business analyst in her 30s (interviewed 22 April 2001), smoothly transferred her skills to Australia in another multinational telecommunications firm. With a commerce degree from a Canadian university and a solid work history in a large corporation, Susan secured a skilled migration visa and after three months gained a position with the same company in Australia. Susan described herself as 'lucky' because many of her colleagues had previously migrated to Australia, so she was able to use her contacts to hear about the opening. Otherwise, she said, 'applying for a job through the newspaper as a new migrant, it would be very hard'.

It was clear that where migration was accompanied by a transfer within the firm, the potential trauma of starting a new life, including the challenge of finding suitable employment in a culturally different labour market, was significantly alleviated. All of these corporate migrants described the easy settlement process they had experienced in relation to migrating for work within an internal labour market. The uniform nature of work processes and systems worldwide, together with the familiar culture of a large corporation and the universal nature of the computer systems on which they worked, also significantly reduced the experiences of cultural difference for these workers.

Internal corporate migration can be seen as a privileged migration path that smooths the way for one stream of IT migrants. The same factors that Doeringer and Piore (1971) identified as generating dualistic divisions between primary (internal) and secondary (external) labour markets in post-war United States prevail, with IT corporations such as Isolutions seeking to reward and retain their highly trained employees by offering preferential employment conditions and structured career paths. However, the company's internal labour market, while controlled from

the United States, is transnational. And it appears to offer secure employment opportunities to workers from (non-Anglophone) developing countries as it does to those born and trained in Western global centres.

We found that professional networking organisations also played a role in facilitating the global movement of IT professionals between jobs in different countries. Both Isolutions and a major Sydney university IT faculty used AIESEC, an international exchange organisation for young professionals, to recruit qualified and experienced IT workers from around the world for short-term 'IT traineeships'. In Isolutions, the scheme was utilised in a 'back office' financial services centre that serviced several regions of the globe. The aim was to recruit European trainees to complement the cultural influence of Australian and Asian background employees, and managers therefore sought to amplify the cross-cultural effects of the scheme by inviting visitors to present at popular informal lunchtime chats about their country and culture. At the university, where some 30 IT staff had been recruited from overseas in recent years, the scheme offered the advantage of cheap labour. As our respondent (a 30-year-old Mexican-born computer systems lecturer, interviewed 28 April 2005) noted: 'I don't know if ... the university could get local applicants for this position for that salary'.

The IT labour process is also a factor in the emergence of an NESC professional cluster in Australian IT. Respondents at Isolutions repeatedly alluded to the nature of the IT labour process in explaining what they saw as the multicultural and tolerant nature of the ICT sector. First, employees reported that IT managers placed a premium on skills and knowledge, as the source of productivity and growth. A senior Polish-born Isolutions engineer (interviewed 8 July 2003) argued:

It's because it is the brain that is in demand ... Discrimination in IT is low because there is a big market for people's skills ... skills in an industry like IT raise productivity to such a great degree that this overshadows all else ... Everyone who's capable gets drawn into it.

A Ugandan-born Isolutions consultant (interviewed 10 July 2003) echoed this view and also described the deterritorialised structure of production in the industry, facilitated by the growth of the Internet and advances in telecommunications.

IT's very, very much driven by skill sets. I think the growth in IT, being sort of science related type stuff and the fact that it grew really quickly and particularly with the Internet, the skills sets have developed in the most unusual places — it's not culture driven — whereas most other positions and institutions are ... But in IT for example, no one would have thought, out of Mumbai — a huge IT industry that would be feeding Australia but particularly the US, who have no compunction about shipping the jobs to India, because the people there are cheaper and prefer to work longer hours

and they're working overnight when the Americans are sleeping, so they get a 24-hour shift.

Other respondents stressed that, rather than being limited to English, people in IT used mathematical and computer languages to communicate. An Indonesian-born Isolutions data communications analyst (interviewed 26 July 2003) explained:

we don't care about your background I guess [laughs] or where you come from, 'X' country 'Y' country, it doesn't matter. So long as you talk in the same language, the same technical language, it's fine, as colleagues.

IT professionals working at Isolutions had technical languages in common, even if the languages they spoke outside work were different. Managers, too, commented on how the common language of programming allowed those with relatively low English to be accommodated. They distinguished between communicative and technical capacities to an extent unusual in Australian workplaces, and some showed a remarkable concern to avoid tainting the selection process for jobs with language or accent issues. One Isolutions manager (interviewed 10 July 2003) mentioned a recent selection where she matched interview panel members with the language backgrounds of respondents to 'provide a certain level of comfort and help if necessary

I said to [the interviewee], if you need the question in Russian, don't worry, we have somebody here that speaks Russian ... we are not going to limit your probabilities to get the job, just because of language. What you need to demonstrate is something different ... So you can remove that ... If you need to stop and do your translation, that is fine.

Another aspect of the labour process that contributed to the culture of the company was the way employees worked together across borders. The company's centralised organisation structure, the Internet and telecommunications technology made this possible. Greenbaum argues that since the 1980s, concern with communication in the post-industrial age has replaced the computer industry's previous industrial era concern with automation (1998: 169). The shape of contemporary information systems and web-based applications is 'intended to intensify work so that work can be done anywhere and at any time' (1998: 168). Although Greenbaum was referring to the software applications that IT companies produce for their clients, the role of technology in facilitating a globally dispersed work process was evident within Isolutions itself.

Only one of the company's divisions — the consulting arm — was focused on and based in Australia. Most were part of the international company, and directors reported on a daily basis to their superiors in the United States and elsewhere in Asia. The staff worked continuously with colleagues located elsewhere in the Asia

Pacific region, sharing a common global system for project management as well as HR reporting (for example, electronic timesheets, expense reimbursement forms, performance management, and so on). In the case of the Shared (financial) Services Centre, the 'front desk' function was located in Amsterdam while the 'back office' functions were in Sydney.

Both employees and managers reported that their work involved:

- 'working with people without ever seeing their face'
- daily phone calls and teleconferences with employees and clients outside Australia
- being selected for the job and supervised by managers based in other countries
- working in 'virtual teams' located across several countries
- travelling around the Asia-Pacific region many times a year (for managers)
- taking up opportunities to broaden their career experience in another country
- working with overseas-based Isolutions professionals who had come to Sydney to support local staff (for example, a team from India who had helped implement Oracle in Australia)

Managers argued that the company's global reach (there were branches in 100 countries) and the interconnectedness of the labour process contributed to the tolerance found within the organisation's culture. Research confirmed that there was a high degree of cultural open-mindedness and supportive inter-cultural relations among staff. This culture appeared to 'emerge from below' rather than being consciously produced, and was in marked contrast to the sexism evident regarding women's place in the masculine world of Australian IT.

However, multiculturalism also received official encouragement. It was a corporate selling point. One HR manager explained: 'when we're out selling to customers [we use] the line that we are able to leverage true global capability'. Indeed, at the time of the research (2003) the US head office had directed its overseas divisions to introduce a Diversity Policy, region by region. The policy statements and supporting information present diversity unambiguously as a strategy for improving business outcomes. The vision statement is framed as 'diversity as the fabric of our success' and the policy states:

We promote diversity aggressively because ours is a multinational, multicultural, multiethnic, global company whose client and markets are growing increasingly diverse. To sustain competitive advantage we want to be known as an employer and supplier of choice.

This was in marked contrast to the company's lack of explicit policies on gender equity, where HR managers noted 'we've got further to go' when asked about the effects of the company's diversity policies. Most interviewees responded with comments about the need to tackle women's issues in the firm, noting that ethnic diversity was pretty much a fact of life in the industry.

*Supply-side factors: migrants' skills, sex and culture*

This transnational culture is also evident in the outlook of many IT migrants themselves. The global mobility of IT workers reflects the existence of a large number of cosmopolitan, mobile, educated elites in developing countries for whom there exist what Sassen describes as 'subjective and objective bridges' (that is, ideological and material) to the West (1998: 43). Sassen notes that for such workers, already oriented toward Western practices and modes of thought in their daily experience on the job, the distance between a job in the off-shore plant or office and a comparable job in the industrialised country is itself subjectively reduced. Among our respondents, the most successful women were often those with high levels of 'cultural capital'. This includes English proficiency and general cultural competency and knowledge. These women often had a highly cosmopolitan outlook: they were well travelled and comfortable crossing borders, both literally and culturally.

Alice, 29, embodied the image of the ambitious and hyper-mobile IT worker, traversing the globe in search of better career opportunities. Born and educated in Hong Kong, Alice chose to study a Bachelor of Computer Science in Hong Kong because 'it was the hottest subject' which she knew would open up many career opportunities. She supplemented this with a Masters in Quantitative Analysis for Business. The combination landed her in a coveted high-level government position at a very young age. She was able to secure a transfer to Sydney, which she thought would be advantageous for her career and also open up her personal outlook.

Mexican-born Rosa, 30, and a university lecturer, displayed a similar orientation. She described how when she had finished her IT degree in 1997, she realised:

Wow, this is a big hit, all these big openings ... and I went, well this is it, also ... it was very helpful for doing two things because you can be a professional and also travel and work elsewhere ... the thing is, I always wanted to travel.  
(Interviewed 28 April 2005)

A young, single professional with marketable skills, Rosa was able to travel to North America and Europe without 'sacrificing her career'. Registering with AIESEC, she was able to secure a job in Australia, again combining work with discovering a new country: 'I'll see Australia then — a great plus!'



However, while many of our respondents were advantaged by their highly cosmopolitan outlook, at other times, being female was a distinct disadvantage. More than twenty years ago, Game and Pringle (1983: 80–94) noted that women were not as free as men to ‘roam around computerland’. They argued that in the emerging division of labour in the computer industry, ‘we have seen a fusion of the technological and the sexual’ (1983: 93). In Isolutions, all the women interviewed said that they had experienced direct sexism on some occasions, especially:

... with the older generation, not necessarily our employees, but even suppliers, contacts, consultants, executives, that sort of thing, who tend to have a perception that ‘she doesn’t really know much’, or ‘let’s not deal with her’, ‘let’s deal with her boss because she’s, you know, the assistant’ that sort of thing. (Malaysian-born network analyst, Isolutions, interviewed 26 July 2003)

Linda, a Vietnamese-born 30-year old Isolutions manager on a career ‘fast track’ (interviewed 19 August 2003) said she had experienced this kind of attitude from a former manager, something that ‘daunted me for a long time afterwards’.

Moreover, there was evidence that the lack of institutional support for mothers to access employment had led migrant women to assimilate over time to Australia’s sex-segregated division of labour. For example, by the time of the interview, Anita’s family responsibilities had caused her to leave the workforce entirely, despite her previous struggle to regain a high-status job. After her son was born, Anita decided to stay at home full-time to care for him. Although she had misgivings about giving up her job, Anita did express appreciation at the better quality of life in Australia. She said, ‘Even though I had my career and much more money before ... I was working up to 16 hours a day ... I hardly have any weekend. Nothing except work’ (interviewed 12 March 2003). In contrast, in Australia, she enjoyed ‘being a mum’ and having time for her family. She noted that in Hong Kong, working mothers were supported by the availability of cheap domestic help.

Similarly, Susan believed the main factor holding back her career was her family responsibilities, which in Hong Kong would have been shared with family and paid helpers. She explained that her husband was ‘traditional’ and was happy for her to work full-time, as long as she was able to ‘manage both sides’, and especially attend to the needs of their young daughter. This meant that she could not work the long hours that others did in her office, or travel interstate too frequently:

[S]ay, for example, even though sometimes my job requires me to go to other states, like go to Brisbane or Melbourne, if I have a choice not to go, I won’t go, you know. My husband doesn’t feel comfortable if I’m always flying away. So, this is a limitation on my career. (22 April 2001)

n Isolutions, May, an inventory analyst and mother of young children, was angry about the company's refusal to offer part-time work and said she was seriously considering leaving the company soon. Even the HR manager acknowledged that although the company globally had a strong work and family policy, 'we've got a lot to do here, locally'.

Some Isolutions respondents felt that it was the combination of being a woman and a migrant that was most challenging. This view was perhaps most forcefully put by Linda, who had reached a relatively senior position at the age of 30 (having migrated as a child). She explained:

I don't think it's so much being Asian — it's the looking young, which Asians somehow always do. I really work on looking old — I put my hair up and wear older clothes. So it's not so much the Asianness — it's the combination of things. (Interviewed 19 August 2003)

In other words, Linda believed people reacted to the gender-related infantilising effect of her 'Asianness' rather than to its more typically ethnic associations.

However, Rima, an Indian-born graphic and web designer who had been unemployed in Sydney for two-and-a-half years at the time of interview (6 October 2002), identified being 'non-Western' in appearance and background as a key issue. Although she wore Western-style clothes, she felt that recruiters were put off by Indian jewellery and her look generally. She said that the IT industry wanted to present itself as very modern and Western; it was 'fashion conscious ... they want trend setters'. They also wanted people who would make clients completely comfortable — and Rima felt that some employers associated being from India with being less developed. Rima said that she now presented herself quite differently to employers, with as few signs as possible of her 'Indianness' in clothes, jewellery, make up and hair pins. 'I'm a different person today,' she said.

Issues around the gender relations and cultural identity of migrant female IT professionals clearly have a significant impact on their career trajectories in Australia. Once again, these issues are especially heightened during times of economic downturn, but to some degree, they are always present in the daily functioning of the ICT sector. As Wajcman (1991) and others have long argued, because technological and scientific spheres are constructed as symbolically, culturally and organisationally male in advanced Western societies, women's place within them is inherently contested and difficult.

## Conclusion

On the whole, birthplace and cultural differences do not seem to be as closely associated with disadvantage in the IT labour market as they are elsewhere in the

Australian workforce (see also Salaff and Greve 2003). Rather, the interaction of IT demand-side characteristics with the supply-side factors noted above, in the context of an extended labour shortage, has resulted in the emergence of a NESC migrant niche in Australia's ICT sector. These are the particular circumstances which have facilitated the integration of IT migrants into the Australian industry. Any change to these circumstances — for example, an industry downturn — has the potential to significantly alter migrants' work experiences. Additionally, given that previous research has shown a division within NESC migrants' experiences, along the lines of Commonwealth/non-Commonwealth countries (Iredale and Niveson-Smith 1995; Jayasuriya and Kee 1999; O'Loughlin and Watson 1997), future research could usefully track how IT workers from particular regions, such as south and north-east Asia, fare in the workforce as it matures.

In the ICT sector, while employers like Isolutions are attentive to managing culturally diverse workplaces, there is less evidence of gender differences being so closely attended to. This means that migrant women, especially those with children, often confront the familiar segmenting processes which characterise many other areas of the workforce. Having already lost many of the family and community supports they enjoyed prior to migration, professional migrant women frequently find themselves having to make stark choices between career and family. So while ICT offers some valuable lessons in the creation of diverse, accommodating and outward-oriented Australian labour markets, the challenge is for the multicultural openness of the industry to be replicated in its openness to women workers. Our research suggests that multi-stranded interventions would be needed to achieve this result.

Contrary to the government's assumptions, which are informed by the human capital model, migrants cannot always automatically transfer their skills across national borders. Ever tightening migrant selection criteria (to exclude 'unskilled' and working-class applicants) will not automatically boost Australia's economic efficiency. Rather, as we have seen, successful transfer of human capital depends on a combination of supply- and demand-side factors. In many ways, the Australian ICT sector demonstrates how an industry can effectively facilitate the global transfer of knowledge and skills, but this openness to global mobility is also a product of the unusual circumstances it has faced in its short existence. And as in the workforce more generally, male migrants typically experience a much smoother workforce transition than their female counterparts. Thus our findings contextualise the conditions of the pertinence of the human capital model, and by so doing raise a fundamental critique of its claims to universality.

### Notes

1. These figures are calculated on the basis of all visitors who remain for more than one year and all settler migrants. Settlers who depart for a year or more (and departing visitors who have stayed for more than one year) are deducted from the total arriving to give the net figure. The next largest groups were school teachers and accountants.
2. Following the Organisation for Economic Co-operation and Development (OECD) practice, we use the term 'sector' rather than 'industry' because it signifies a more diverse range of businesses (both manufacturing and service) than are typically found in an industry. The ABS includes twelve sub-sectors in four industries (manufacturing, telecommunications and computer services, wholesale trade, and media).
3. The main IT occupations are electrical/electronic engineers and tradespeople, computer professionals, technical salespeople, keyboard operators and telemarketers, and ICT industry managers.
4. This is largely due to a decline in the number of communications tradespeople following the partial privatisation of Telstra.
5. While the representation of Australian-born people tends to be inversely related to that of NESM migrants, an interesting exception is management work, where Australian-born women are under-represented; it is English-speaking country migrants who are significantly over-represented at 1.7 times their overall presence in the IT workforce (20 compared to twelve percent). A similar picture prevails for men, with NESM migrant men represented by 1.8 times their overall workforce representation. The British/North American domination of management jobs, characteristic of Australian industry, is accentuated as a result of the degree of foreign ownership in the ICT sector. In 1998–1999 only 29 percent of the ICT workforce were found to be employed in identifiably Australian-owned businesses (although the survey returned many 'unknowns' that are probably Australian small businesses) (ABS 2002: 12).
6. Hawthorne (2001) has shown that, although there was a chronic shortage of nurses in Australia in the 1980s and early 1990s, NESM migrant women were not smoothly incorporated into the profession. Compared to the Australian-born and those from the UK and South Africa, NESM migrant nurses were much less likely to make the transition into nursing at all, and when they did so, were more likely to end up in sub-professional jobs and in the lower paid nursing home sector.
7. Principal applicants are the persons upon whom the Australian government approval to immigrate was based. It should be remembered that temporary migrants arriving on visitors' visas, and students applying on-shore for visas make up other growing components of the computer professional workforce.

8. Weighted data were used for all calculations involving the Wave 3 survey to compensate for attrition in the sample over the three-and-a-half years.
9. Like most large ICT sector firms, Isolutions has diversified from its earlier computer manufacturing days, and now undertakes outsourced business processing work as well as designing and selling ICT products and services.

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