

# Optimising Faculty Performance: Maximising the potential of academic women

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# Executive summary

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This research was designed to provide a detailed examination of the capacity of women to thrive within the Faculty of Engineering, Computing and Mathematics (FECM), thus optimising Faculty performance. In-depth research such as this, while informed by the large body of relevant gender and organisation research, strives to examine the particularities of the Faculty culture and practices in order to target recommendations more strategically.

The research was initiated in response to concerns expressed by a number of women in the Faculty, supported by The Equity and Diversity Office and sponsored by the Dean and Senior DVC. It has been conducted at arm's length from the Faculty, under normal ethics and research procedures, with Dr Jennifer de Vries (Consultant Researcher) and Professor Patricia Todd (UWA Business School) comprising the research team. Data gathering took place in 2011, through access to existing institutional data sources combined with interviews and a focus group.

## Numbers matter

The Faculty of Engineering, Computing and Mathematics comprises historically male dominated disciplines and professions. Academic women and men in the Faculty (39 women, 161 men) adhere to roughly 20:80 proportions overall and this proportion persists across a number of different breakdowns, for example within Teaching and Research positions (T & R), within Research Intensive (RI) positions, and within the subset of Engineering Schools. The proportion of women has grown from 14% in 2003 to 20% in 2011, with progress being made primarily in the period 2006-2009, and remaining flat prior to and since then. The increase in numbers of women is entirely due to an increase in female RI staff.

Women within FECM are compressed into more junior ranks, over-represented at level B where nearly half of all women are located and severely under-represented at level E, with 8% of women compared to 22% of men having reached the highest academic rank. Senior men at Levels D and E constitute 35% of Faculty academic staff compared with Level D and E women comprising 6%.

In FECM there are only 15 women in tenured teaching and research positions. These women are unevenly distributed across the faculty, with a solo woman in one school and women routinely finding themselves the only woman within research teams, meetings or discipline groupings.

Inter-institutional data is only available for T&R academics within Engineering. UWA compares favourably with WA universities and the Group of Eight universities, in terms of the proportion and number of academic women, indicating that the lack of progress, noted above, is a sector wide problem.

Finally, it should be noted that the composition of the student body is increasingly male dominated. Female undergraduate completions have declined from a high of 32% in 2001 to 21%. Similarly female postgraduate completions have declined from a high of 27% in 2007 to 15% in 2010.

The research literature examining workplace cultures and the status of women is clear concerning the importance of numbers. Both numbers and proportions of men and women matter. Difficulties often arise for women present in small numbers in numerically male dominated groups, where the men hold power and status and therefore set or perpetuate the culture of the workplace. Backlash against women can be most vigorous when women approach 20% of the

total, the current sticking point for the Faculty, while at 40% gender becomes much less of an issue for women and men.

Interviews were marked by widely divergent responses to the current Faculty gender profile with some viewing it as an issue needing to be addressed, others unaware and/or opposed to any action to address it. Following on from the divergent views regarding the current gender profile was an equally large gulf concerning the necessity for change; for the majority of those interviewed, particularly the male leadership, there is no gender problem. Resistance to change by both males and females was most often voiced as concerns about merit and quotas and the need to treat everyone the same.

## **Recruitment, Promotions and Career Profile**

The 20:80 female/male ratio, seen in the current Faculty profile applies equally to longitudinal data on appointments and separations, with men making up 83% of appointments between 2003 to 2011 but with a slightly higher rate of turnover over time. Women on only two occasions since 2003 passed 20% of appointments (2008 and 2011) with separations tending to be slightly lower than men's, and only twice above 20%. Since 2006 almost all of the appointment and separation activity has occurred at levels A and B.

A more detailed examination of recruitment and appointment processes was difficult to track across two HR systems, and produced inconclusive results. Advertised positions received large numbers of applicants, with women represented in three quarters of the applicant pools over the last five years. Men dominated the committee selection processes; the UWA policy requirement that selection committees contain at least one woman was not always adhered to. A large number of appointments were made for positions that were not advertised and while there were some legitimate reasons for this, such as contract renewal and externally (to the faculty or to UWA) competitive processes, it was not evident that all remaining successful applicants had gone through a competitive selection process. This was particularly critical in regard to the small number of tenured positions.

Senior men and women interviewed in this research were remarkably similar in their adoption of a linear academic career path and were equally well qualified with 90% holding PhDs. They were most likely to have UWA or international (prestigious UK or US) PhDs and postdoctoral experience, two thirds had spent their entire tenured careers at UWA and industry experience was rare. A number of women and men had experienced career disruptions, however more female interviewees had experienced disruptions, including difficulty in gaining tenured positions and had in some cases moved schools, disciplines or universities in order to make this transition.

Gender differences emerged in relation to several aspects of career progression. Firstly, the faculty data pointed to the clear lack of career paths for RI women (but not all RI men). The second difference was in attitudes to the attainment of Level E. While Level E had been attained by most men interviewed in this study, it was seen by some women in the study as unattainable, unattractive or needing to be delayed until family circumstances changed. Thirdly, differences were apparent in the approaches taken by women and men to applying for promotion. Men were adopting more pro-active strategies and feeling supported by their supervisors in this approach while, until recently, women had been less engaged in the promotion process and a number reported experiencing difficulty gaining support for their promotion applications. It was noted that women have been more active recently in the promotion process.

## **Leadership and Decision making**

Faculty leadership and decision making processes are heavily dominated by senior men who are successful researchers, with a concentration of the same people on Faculty Board, the Faculty Leadership Team and the Research Committee, offering little diversity and few checks and balances. Women were more present in committees with a teaching focus, which also included a greater diversity of staff in terms of employment levels.

The leadership of the faculty were acknowledged as a critical ingredient in setting the culture of the Faculty and Schools. Most commonly noted was the homogeneity of the leadership team, not solely in gender terms but also in the homogeneity of the experiences and perspectives they bring as 'high flying researchers'.

It was clear from the interviews that most faculty leaders were poorly informed about gender and that gender was not on the faculty agenda from their perspective. In a few cases leaders were clearly antagonistic and there was overall little impetus for improvement, either in female student or staff numbers.

## **Organisational Culture**

Women's experiences of working life within the faculty were widely divergent, from on the one hand 'comfortable and supportive' through to 'toxic', 'undermining' and 'hostile'. This was in part explainable by the presence of sub-cultures within the faculty where leaders had a large influence on creating cultures. For some women their more tangible connections to research groups or their partner relationships within their school or faculty appeared relevant. A number of men and women corroborated the toxic experiences they had observed for some women, citing discrimination, bullying and holding of longstanding grudges.

A number of interviewees described experiencing a gendered culture. Both men and women noted a 'boys club' culture within the faculty which 'happens naturally' and is also evident in staff student interactions which revolved around sport. Comment was made of the scrutiny and (sometimes extreme) criticism of senior women by senior male leaders. Some women also felt very strongly that gender influenced how dissenting voices were treated, with women quickly labelled as 'whingers'. One woman contrasted the culture of the faculty with that of the broader university, where on university committees she was listened to 'whereas in the faculty you get shut down'.

One aspect of organisational culture mentioned by interviewees was how success as an academic was defined. The commonly held view was that this required a selfish and single minded focus on research which then had consequences for people's choices and behaviours. Women interviewees expressed resentment that success, thus defined, ignored large chunks of work, rewarded individual stars and effectively rewarded poor citizen behaviour within the schools and faculty. Some women expressed disillusionment and anger at the skewing of rewards and recognition towards research at the exclusion of teaching, arguing that the university needed diversity of contributions and teams in order to thrive and deliver. A number were making clear choices to re-define success according to what they valued and, as a result, were making 'sub-optimal decisions for working through the ranks'.

## **Factors Contributing to Academic Career Success**

A number of important variables were identified by the interviewees as contributing to academic career success; these included sponsorship, mentoring and career guidance, support for promotion, belonging to a research group, obtaining ARC grants, supervising postgraduate



research students, having a reasonable workload and the capacity to work long hours and devote oneself to one's career. A number of these factors have a gender dimension.

Sponsorship and mentoring emerged as key career enablers. For example, sponsorship of a junior staff member through inclusion on an ARC grant was noted to have long lasting impact on a career. Sponsorship was more evident in the careers of senior men and was more frequently absent in the careers of women. Junior women reported struggling to have their career aspirations taken seriously and suffered from a lack of feedback, even something as basic as having a professional development review. Lack of success in securing ARC grants was a stumbling block in some women's careers, as was not belonging to a research group.

Workload levels and workload allocation, both of which determine the time left for research, were noted as problematic. A lack of transparent (and in some cases any) workload models makes it impossible to judge fairness, fostering a perception, evident in interviewees' comments, that allocation favours A-star researchers. Women themselves felt they were targeted for particular 'soft' less visible tasks and noted a tendency to want to be team players, while men commented on women's incapacity to say 'no'.

Work-life balance, while being viewed as a particular problem for women, was problematic for everyone to varying degrees, with the underlying assumption that working long hours was essential to success. Men were inclined to see career breaks and the demands of childrearing as the most problematic aspect of women's careers. However women were taking minimal child-rearing breaks (and in some cases had not had access to maternity leave in the past), those who worked part-time were working 0.7 or 0.8 fte with young children and seemed to be adhering to the linear career path as much as possible. For junior women the timing of motherhood and the attitudes towards parental leave were problematic.

Work-life balance was, however, primarily identified as an issue for women's careers and women experienced more conflict and difficulty in meeting the profile of the 'ideal academic', someone who is able to prioritise their work above all else. Difficulties included career progression being put on hold while caring responsibilities are still high, the compromise of going part-time to preserve sanity despite part-time work expanding well beyond part-time hours, the stress of working out when would childbearing be least career damaging, and the difficulties of doing fieldwork and attending conferences when children are young.

## **Need for Change**

The situation for women within the faculty is out of step with the changes that have occurred more broadly for women at UWA and is more analogous to the situation for women as a whole at UWA in the early 1990's with low participation rates, a lack of seniority and positional leadership and a lack of progress to improve the position of women.

In failing to recognize the current numerically and culturally male dominated norm as problematic, the Faculty is out of step with the community, the university, the employers of its students and professional bodies associated with its disciplines, and its international university peers.

Unfortunately it is not out of step with Australian universities and there is an opportunity to display leadership in the local context.

The existence of a gender equity problem is only evident to a minority. With so few recognising there is a problem there can be little impetus for change. Clearly without intervention, change will not of itself naturally occur.

Current leadership and decision-making processes within the Faculty are part of the problem and will need to be reviewed if the Faculty is to move forward in addressing gender issues. The current formally designated leadership positions such as HoS, Dean and Deputy Deans, are almost

exclusively occupied by men and the current committee structures further exacerbate the lack of diversity in decision-making. The role of HoS and Dean, (all men), in particular currently wield considerable distributive power individually and collectively and play a critical role in determining the sub cultures of the various schools and their climate for women. Given the antagonism of a number of male leaders and the general lack of awareness and conviction regarding gender equity and the need for change this is highly problematic.

Clearly changes to the composition of the leadership team will be required if the faculty is serious about addressing gender issues. Women must be included in Faculty leadership positions and decision-making structures in greater than token numbers. It is imperative that leaders are required to commit to improving the representation and participation of women and that commitment to gender equality is considered a core value and competency of Faculty and School leaders.

Thus the starting point has to be a Faculty-wide acknowledgement of, and commitment to, change.

# Recommendations

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## **1. Commitment to change**

*Distribute report and recommendations, with the full endorsement of the SDVC.*

*Negotiate University resourcing and support for a gender culture change initiative.*

*Present report and findings to FLT and Faculty Board.*

## **2. To build ownership and get gender on the agenda**

*Establish and resource a Gender Advisory Committee (GAC), based on the Advance program at Michigan (Burke 2007; LaVacque-Manty & Stewart 2008). Committee composition to be gender balanced, include various levels/categories of staff, include respected senior academic external to faculty, and scholar, equity practitioner or consultant with gender expertise, and member(s) from corporate partner organisations or donors. The Committee needs to be empowered to discuss and make recommendations to the Dean on policies and practices where there are concerns regarding gender implications for staff and be consulted where gender implications are apparent, such as the workload model. Committee representatives to hold positions on other key faculty committees and the FLT and be able to refer items of concern from, for example, the Research Committee, to the GAC for consideration. The GAC to be responsible for gender data monitoring and scrutinising of recruitment and selection processes on a yearly basis.*

*Sponsor further data extraction, research or inquiries to support the activities of the committee.*

*Benchmark against and partner with prestigious institutions who have committed to improving the position and status of women. Faculty leadership to discuss gender initiatives with overseas collaborators and at conferences to determine where there is activity to ensure meaningful benchmarking institutions are selected.*

*Engage men as mentors, sponsors, members of gender advisory committee and consider awareness raising specifically for men.*

## **3. Leadership and decision-making**

*Review leadership positions and institute a leadership development and succession plan for HoS. Ensure future leaders are selected who will support gender equity. Ensure training includes gender, diversity and inclusion issues.*

*Make immediate changes to the composition of the FLT to include more women as full members with input to decision-making. These women while not holding formal leadership positions now should be considered future leaders.*

*Increase diversity of committee composition, ensuring a minimum of 3 academic women on each committee (including FLT), and reduce multiple committee memberships, thus widening the pool of committee members across the faculty. Choose people on the basis of their expertise and interest rather than formal positions for committees, therefore reducing reliance on HoS being the automatic choice for committee positions (and reduce the informal deputising that occurs when HOS are unable to attend).*

*Review the functioning of Faculty Board to ensure it value adds to the work of the faculty and is not used merely to rubber stamp decisions already made. Make report from Gender Advisory Committee standing item at Faculty Board*

#### **4. Networking and visibility of academic and professional women in Faculty**

*Establish formal twice yearly meetings of senior women with Dean, with an agenda, and capacity to raise issues and discuss implications of current policies and practice on women in Faculty.*

*Establish a yearly Dean's Forum for all academic women, to discuss issues of concern and consult with women about progress on issues.*

*Establish regular networking opportunities for women, sponsored by the Dean and including prominent women alumni and women in the appropriate professions. Invite men to attend.*

*Ensure equitable coverage publicity sound-bites about women researchers in FECM (UniNews, EMI News, CampusNews, EAust News).*

*Host key female industry leaders (relevant to the faculty disciplines) to Centenary Lunch each year, combined with academic men and women.*

#### **5. Representation of women**

*Set the current representation of women (20%) as a minimum benchmark across all arenas and aim for 30% within 5 years. For example,*

*Ensure 20% of research seminars in FECM given by women.*

*Ensure women make up 20% of Visiting Professors, Dean's lectures, Gledden Visiting Professors.*

*Ensure a minimum of 20% representation of academic/professional women on internal and external committees, including Engineering Foundation and Industry Advisory Panels.*

#### **6. Modelling**

*Investigate modelling of various scenarios to see what recruitment decisions would need to be made to reach targets such as a 10 percentage point increase in the proportion of female academics within FECM in ten years (Marschke et al. 2007).*

#### **7. Recruitment and selection**

*Ensure compliance with University policies in all recruitment and selection processes. Dean to ensure Chairs of committee follow procedure and scrutinise gender bias in level of appointment.*

*Ensure all staff involved in selection processes have completed current recruitment and selection training.*

*Provide compulsory in-faculty refresher training that focuses on gender and diversity issues including unconscious bias, power, conflicts of interest, achievement relative to opportunity (AR2O), conducting search processes. This could be combined with gender issues in staff performance appraisals, the use of Research Opportunity and Performance Evidence (ROPE) in ARC assessments, assessing promotion applications, writing unbiased letters of support etc.*

*Review number of people on contracts and their renewal, and compliance with policy.*

*The Equity and Diversity Office together with the Faculty Office to conduct a yearly review of appointments in order to gain a systematic overview of appointments.*

*Build awareness of prominent women within academia. HoS to compile lists of female Professors in relevant areas. Circulate all future T & R vacancies to female Professors list for further circulation to their colleagues. Institute active search processes for female candidates for all tenured/tenurable positions and invite suitable candidates to apply.*

## **8. Support for junior women**

*Implement an external (to the Faculty) panel review of careers of all junior staff (levels A to C) women, including RI. Identify career aspirations, development gaps, and report back to Faculty on observed patterns and career development needs. Ensure recommendations from this process implemented and that any resulting strategies/programs are open to male and female junior staff.*

*Establish an individual or group mentoring program that has a culture change focus – based on a two way mentoring model. This can be viewed as a strategy for building gender awareness amongst senior men. Incorporate training for mentors and opportunities to reflect on the experiences of women and the gender practices of the Faculty (see de Vries 2010a; de Vries 2011).*

## **9. Address the gendered difference in promotion culture**

*Discourage the culture of active/aggressive approach of men towards the promotion process and recalibrate men's expectations regarding promotion.*

*Encourage women to apply.*

*Seek feedback from current Chair Promotions & Tenure regarding more realistic Faculty engagement with promotion process, and the role of HoS and Dean in creating promotion culture.*

## **10. Workload**

*Introduce transparent workload model as a matter of priority. Populate the model, refer to Gender Advisory Committee and review from a gender equity perspective.*

## **11. Sponsorship**

*Career review processes, such as the PDR and external review process for junior staff recommended above, must identify and address issues of sponsorship. The School management – i.e. HoS, Professors and grant holders within appropriate discipline areas - must be held accountable for the sponsorship of their junior staff.*

# Introduction

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A great deal of gender research has focussed on women within academia and women within traditionally male dominated workplaces and professions. Recently, the focus of this research has been examining the slow progress experienced in improving the participation of women, the continuing low representation of women in senior and decision making positions, and women's failure to thrive within these environments relative to men. So much research has in fact been done that gender scholars themselves become frustrated, calling for action rather than more research. There are several good reasons however for undertaking this research and adding to the body of available knowledge. Firstly, gender inequality is now understood as a process that is embedded within organisational cultures, manifesting itself in complex ways that are historically derived and particular to organisational contexts. These mechanisms and processes are not necessarily readily observable and often reside within the gaps between policies and practice. Secondly, gender research and knowledge has been rendered largely invisible within academia, and therefore will be unfamiliar to the majority of academics within the faculty. Finally, research undertaken elsewhere can be easily put aside as 'that doesn't happen here' and may lack the particularity required to effectively target the focus of change efforts.

All organisations struggle with building more gender equitable workplaces where men and women share rewards, power, status and success more equally and are able to make their best contribution (Schreiber et al. 2010). Change is often slow and resistance to change is expected. Equally clearly, positive change in the participation and status of women in the workplace has occurred over the last few decades and will continue to occur. The tension between these two opposing forces, the maintenance and the disruption of the status quo, form the backdrop to this study. This research provides a local and grounded understanding of the structures, culture and practices that maintain the gendered status quo and seeks to identify those that have supported change.

The research was sponsored by the Dean and Senior Deputy Vice-Chancellor in 2010 in response to lobbying by women from within the Faculty of Engineering, Computing and Mathematics (FECM) and in response to concern that women in the Faculty had become a disenfranchised group. The Equity and Diversity Office strongly supported the initiative and facilitated the provision of data from Human Resources.

This research project was initiated prior to what proved to be a controversial organisational change process, driven by financial imperative and designed to trim academic teaching and research staff by 20%. This target was subsequently lowered with the change process resulting in a dozen or so involuntary redundancies. The process included the use of an individual ranking system that allocated points to various aspects of an individual's workload, contribution and outcomes; this highlighted the differential valuing of staff's contributions to the work of the Schools and Faculty. While this project was delayed significantly in order to minimise the impact of the change process on the research (particularly on the interviews), the discussion and heightened awareness regarding what was valued serves as a backdrop to this research.

# Context

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The continuing low participation rates of women in science, engineering and technology (SET, sometimes referred to as STEM, including maths) has been highlighted as an issue requiring urgent attention both in the Australian and international contexts. The focus of concern encompasses education and workforce participation, including participation of girls/women at various stages in the education process from primary schooling through to postgraduate studies, women's participation in the professions both following graduation and continuing within the professions and their presence and contribution within academia/research.

There are a variety of motivators for action (Schiebinger & Schraudner 2011), including a human rights and social justice perspective, a more utilitarian perspective described by genSET (2010:3) as 'a major issue of a loss of talent, innovation, and intellectual capacity for science and society', as well as a more encompassing view of women's participation as a common good which creates social balance and economic benefit. It is this final argument which underpins the World Economic Forum's Global Gender Gap report (Hausmann, Tyson & Zahidi 2011) linking women's equitable participation in education and the workforce to improved economic prosperity (Australia is currently ranked 23<sup>rd</sup> in the world).

Increasingly the issue is being framed as larger than a gender equality issue, rather women's lack of participation is seen as a loss or limitation to growth and innovation. Commensurate with this change in focus is a movement away from thinking of women as the problem to be fixed (often little more than a focus on numbers of women) to a greater focus on organisations and the need to remove barriers and transform structures. Finally, a new focus on the gendered production of knowledge as problematic is emerging, placing the focus on research approaches and methods and the use of gender analysis to enhance scientific knowledge and technology design (Schiebinger & Schraudner 2011). This last approach is being pursued by a collaborative venture between the European Commission, Stanford University and the US National Science Foundation<sup>1</sup>.

## The situation in Australia

We, as a nation, are not successfully supporting their (women's) transition into independent researchers and science leaders. The loss of these highly trained smart women is economically and culturally damaging to Australia (Women in Science and Engineering Summit 2011)

The situation for women within SET has relatively recently re-emerged onto the political agenda. In April 2011, the Australian National Commission for UNESCO, UN Women Australia, and Science and Technology Australia ran a summit at Parliament House in Canberra on the issue of Women in Science and Engineering. The quote above was extracted from the media release for this event. The Women in Science and Engineering (WISE) Summit<sup>2</sup> 'brought together scientists, engineers, business leaders, research funders, policy makers and the media to discuss tangible solutions to the female brain drain in science and engineering'. While the national funding bodies were present at the summit and committed to changes in funding criteria, there was no particular mention of universities.

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<sup>1</sup> Gendered Innovations in Science, Health and Medicine, and Engineering  
<http://genderedinnovations.stanford.edu/>

<sup>2</sup> <http://www.scienceinpublic.com.au/category/wise>

The FASTS (now Science and Technology Australia) report (Bell 2009b) provided much of the basis for the discussion. The most telling aspect of the 2009 report, which benchmarked against the 1995 *Women in Science, Engineering and Technology* report, was that the issues identified earlier were yet to be addressed and that change had been minimal. The under-representation of women in SET and the persistent horizontal and vertical gender segregation of women academics and researchers remains. The report focussed on identifying career paths and barriers as well as the cost of attrition of women from SET for international competitiveness and return on investment. The FASTS report also provides a comprehensive overview of international and Australian initiatives and research, making it a valuable resource document.

Despite increasing participation rates for female students in higher education, this participation remains highly gender segregated by discipline. While women represent 55% of undergraduates and 52% of postgraduates, in Engineering this drops to 15.5% and Information Technology is 18.9% (Bell 2009b). Women's participation diminishes with level of education so that while female students make up the majority of undergraduate students this is reversed at PhD level. Female students in non traditional areas were an equity target group throughout the 90's but this was removed in the following decade and little monitoring or attention has since been paid to the continuing participation of women on a policy or practice level (Bell 2011).

The Carrick Institute report (King 2008) investigating the future supply and quality of engineering graduates paid particular attention to the issue of women's participation. The proportion of women commencing undergraduate engineering programs peaked in 2000 - 2001 and has since fallen to below 15% with the domestic student component of that around 13.4% (King 2008:61). The report noted that implementing best-practice engineering education would require embracing inclusivity and that universities faced particular challenges in increasing the attractiveness of engineering to women (King 2008:108).

The debate around women's participation in SET is taking place within a broader public debate surrounding dwindling numbers of students studying science and maths courses at high school, entering STEM courses in university and pursuing STEM based careers (Universities Australia 2012).

### **The professions**

The clearest picture of how women are faring within the male-dominated professions comes from bi-annual survey data collected by APESMA, the Association of Professional Engineers, Scientists and Managers Australia (APESMA 2011). The attrition of women engineers<sup>3</sup>, for example, becomes obvious when despite 18% of engineering graduates in 1996 being female, a decade later women comprise only 11% of engineers with between 7-10 years experience (Bell 2009b, based on 2007 APESMA data).

Women continue to face bullying, discrimination and sexual harassment, careers slowed by workplace cultures, lesser pay than male counterparts and less seniority. Striving for work/life balance and taking parental leave are both seen as detrimental to their careers. Almost half of women surveyed, and more than half of engineers, believed women had to prove themselves while men were assumed to be capable and a quarter intended to leave their profession within five years (APESMA 2011).

Engineers Australia increasingly recognises the low participation rates and difficulties retaining women engineers as problematic and is highlighting the broader ramifications this has for the

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<sup>3</sup> While mindful that there are schools and disciplines within FECM other than Engineering, because the Engineering schools map directly across to Engineering as a profession, comparable data is more easily available.



sector. At the recent Senate Inquiry into the Shortage of Engineers<sup>4</sup> the National Policy Director noted 'Engineers Australia has proposed a series of reforms to strengthen the profession – we are aiming to boost engineers' numbers and ensure we continue to attract the best minds to the profession by focusing on encouraging women to take up careers in engineering'. Their Women in Engineering National and State Committees are proactive in building a more inclusive profession 'which values, supports and celebrates the contributions of women in the engineering team'<sup>5</sup>.

## Higher Education

Gender disparities for academic women in Australian higher education are well documented (Carrington & Pratt 2003) and monitored and benchmarked by equity practitioners through the compilation of DEST data (QUT Equity Services 2010). Unfortunately while this shows women's continuing under-representation within academia and compression into the lower ranks, it is usually not disaggregated on the basis of discipline, thus failing to highlight the extreme segregation of academic women where women are over-represented in the teaching, nursing, arts, humanities and social sciences, whilst being under-represented in science related disciplines, including engineering and technology. A quick glance at the data shows men occupy 57% of academic positions rising to 73% of level D and above across the sector (QUT Equity Services 2010). Progress across the sector for senior women, according to Bell (2009a:3) based on a Universities Australia Report, is characterised as 'slow, role and portfolio specific and fragile'.

The UNSW report *Maximising Potential in Physics: Investigation of the Academic Profile of the School of Physics* (Stevens-Kalceff et al. 2007) set somewhat of a benchmark as a highly contextualised examination of the position of women. The research, a response to a University wide level review undertaken by Probert et al. (2002), was undertaken by the academic women in Physics themselves, who disagreed with Probert et al's conclusions (of no obvious inequitable practices at UNSW) and set out to explore their own situation in detail. The insider knowledge of the academic women, similar to that in the MIT case (discussed below), facilitated an in-depth inquiry, revealing for example that while Probert et al. discovered on average no gender differences in teaching workload across the university, for women in Physics, despite the use of an apparently transparent workload model, junior staff (where women were clustered) had at least 4 times more contact hours than senior men, severely hampering their research activity. In addition, women were almost exclusively teaching service courses rather than physics major courses. Women were in fact invisible and peripheral to the physics students, undermining their capacity to attract postgraduate students (Stevens-Kalceff et al. 2007:14). The insider perspective generated high ownership of the research on the part of the women and constructive engagement with the men in bringing about change (Stevens-Kalceff et al. 2007).

## Looking overseas

Australian universities are marked by a level of inactivity in relation to the participation of women in STEM in contrast to the significant levels of activity elsewhere (for a good overview see Burke & Mattis 2007). Perhaps the most well known example from the US was the 1999 MIT Study on the Status of Women in Science. The study was initiated by successful senior women scientists who complained of unequal treatment, marginalisation and exclusion from significant roles in their departments that increased as their career progressed and despite their success. Further investigation revealed 'differences in salary, space, awards, resources and response to outside offers<sup>6</sup> between men and women faculty with women receiving less despite professional accomplishments equal to those of their male colleagues' (MIT 1999:4). Importantly this pattern of

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<sup>4</sup> <http://www.engineersaustralia.org.au/news/senate-inquiry-shortage-engineers>

<sup>5</sup> <http://www.engineersaustralia.org.au/women-engineering/about-us>

<sup>6</sup> Seemingly used as leverage for salary increases

increasing marginalisation with increasing seniority repeated itself in successive generations of women faculty. The small numbers of women were also problematic and the percentage of women (8%) had not changed over the previous 10 or more years. The MIT experience in addressing gender discrimination, well publicised as it was, served as an important watershed bringing gender discrimination out in the open and serving as a catalyst for other MIT Schools and other (prestigious) universities to acknowledge and address similar issues.

The research was later replicated in MIT's School of Engineering (The Committee on Women Faculty in the School of Engineering at MIT 2002) and with similar findings of low numbers (10%), salary discrepancies, marginalisation and exclusion and difficulties in combining work and family responsibilities. A decade later MIT (2011:6) has reported 'remarkable progress for women faculty in Science and Engineering at MIT since the 1999 and 2002 studies, in terms of equity, status and numbers'. The number of women faculty in the School of Engineering has nearly doubled in 10 years, marginalisation has diminished and many more women have occupied leadership positions. Yet the report is also cautious concluding 'we aren't there yet' and that long-term sustained effort is required (MIT 2011:13).

In the US, the National Science Foundation's ADVANCE<sup>7</sup> program is at the vanguard of much of this work. Launched in 2001, ADVANCE assists institutions in implementing structural changes to improve the success of women and underrepresented minorities in science and engineering (Schiebinger 2008). The interventions, designed and implemented by individual institutions to suit their circumstances, have been widely documented and published and provide a rich resource (Rosser 2008).

Liang and Bilimori (2007: p.322, 327) outline the consistent findings about the difficulties that women experienced in their own institution and others in the ADVANCE programs:

- An overall chilly climate and unwelcoming community for women, described by some as exclusionary, marginalising, tough, isolated, silencing
- Limited support from leaders
- A climate where everything is negotiable resulting in side deals and unequal application of procedures
- Lack of transparency in application of rules, policies, procedures and practices
- Lack of transparency in performance review, promotion and tenure evaluations
- A pervasive lack of mentoring
- Disproportionate service and teaching pressures faced by women faculty
- Unfair or unequal access to/allocation of resources, including teaching assistance, services from support staff, graduates student assistance, travel money and protected research time
- A pervasive belief that leadership is naturally male

Together these may result in significant cumulative disadvantage, as identified by Valian (1998).

There is also an enormous amount of activity across the European Union addressing the low participation of women in STEM. In 1998 the European Technology Assessment Network (ETAN) set about collecting data on women in science (including Mathematics, Computer Science and Engineering) and the ETAN report (2000) formed the foundation for ongoing work. Rees (2004:52), a member of ETAN, stated the report concluded that 'gender remains a significant organizing principle in the education, training, recruitment, retention and promotion of people working within science in the EU'. Universities were heavily criticised for their 'medieval' policies and practices towards women. ETAN, using extensive data sets and utilising comparisons across countries, were able to demonstrate the 'leaky pipeline' for women at all career stages and at its

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<sup>7</sup> [www.nsf.gov/advance](http://www.nsf.gov/advance)

most marked between PhD and Assistant Professorship level. German data since replicated elsewhere demonstrated that 'men are appointed to academic posts in numbers disproportionate to those in the recruitment pool at each grade' (Rees 2004:62).

One outcome of the attention and funding devoted to this work is a multiplicity of books (Schiebinger 2008; Burke & Mattis 2007), reports such as the *Women in Science and Technology: Creating Sustainable Careers* report (European Commission 2009), the *Beyond Bias and Barriers* report (National Academy of Sciences 2007) and *Planning for Success: Good Practice in University Science Departments* (Dickinson, McWhinnie & Fox 2008), and websites useful in addressing institutional issues. These include, for example, the UK Resource Centre for Women in SET<sup>8</sup>, Royal Society of Chemistry<sup>9</sup> and the Athena SWAN Charter<sup>10</sup>.

## UWA

UWA prides itself on a strong commitment to gender equality and has received the 'National Employer of Choice' accolade from the Equal Opportunity for Women in the Workplace Agency (EOWA) continuously since 2002. From 1990 onwards, under Vice-Chancellors Gale, Schreuder and Robson, UWA's progress on the gender equality front has been marked by committed championing from the top and a proactive approach going beyond compliance to strive for excellence. This has however been a slow journey, starting from a low historical base. In the early 1990's UWA, as a comprehensive research intensive university with no history of mergers (for example with Teachers Colleges or Schools of Nursing), lingered at the bottom of the sector tables comparing the representation of academic women. Academic women at this time comprised just over 20% of positions, were extremely compressed into lower levels and female Professors could be counted on one hand. UWA's 2011 EOWA compliance report paints a different picture with women making up 39% of academic staff and there are 45 female Winthrop Professors.

Universities have over the last two decades shown leadership within the Australian context in addressing gender equality issues with a large number of universities (UWA amongst them) recognised by EOWA with the accolade of 'Employer of Choice for Women'. However increasingly it is corporate Australia that is setting trends and establishing best practice. This pro-activity has been driven by a number of factors: increasing public disquiet over the lack of senior corporate women and women on boards; growing research evidence of the higher corporate performance by those organisations with at least modest representation of senior women decision makers; increased competition for talent and the conviction that female talent is not being leveraged and is being lost; and the conviction that cultures that do not support the advancement of women will prove to be unattractive to the next generation of talent (Male Champions for Change 2011; Desvaux, Devillard & Sancier-Sultan 2010; Chief Executive Women 2009; Desvaux & Devillard 2008). These arguments are easily transferrable to, and remain compelling within, the university environment.

The university needs to compete with and benchmark itself against the activities in the corporate sector (which includes the mining and resources sector, of particular relevance to FECM) to remain desirable as an employer and to produce contemporary graduates for these environments.

This research takes place within a university that with concerted effort over two decades and steady improvement still sits below sector averages for representation and seniority of academic women (QUT Equity Services 2010). It is located in a sector and a country where, as Bell (2009b:9)

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<sup>8</sup> [www.theukrc.org](http://www.theukrc.org)

<sup>9</sup> [www.rsc.org](http://www.rsc.org)

<sup>10</sup> [www.athenaswan.org](http://www.athenaswan.org) Recognising and sharing good practice on gender equality in higher education employment

asks, '[w]hy then has the issue of women in science and technology fallen off the equity and productivity agenda in Australia just when other OECD countries have launched major initiatives?' While the imperative for increasing women's contribution to STEM remains compelling and relevant given the resources boom and talent shortages, the immediate context of related faculties in Australian universities may provide little inspiration and is a poor source for benchmarking purposes. This creates somewhat of a vacuum, where the Faculty may be able to provide sector leadership in tackling entrenched gendered disparities within STEM.

# Research scope & methodology

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The Faculty encompasses four schools of Engineering, (Civil & Resource, Electrical, Electronic and Computer, Environmental Systems Engineering, Mechanical & Chemical) the schools of Computer Science and Software Engineering, and Mathematics & Statistics, and several Research Centres, the Australian Centre for Geomechanics, Centre for Offshore Foundations and WA Super Computer. There are strong differences evident in their histories and cultures with engineering the dominant discipline/profession in the grouping. On occasion information is disaggregated to look at engineering separately and as has already been evident above, comparative data is more easily available for engineering than for the other Schools which have less obvious organisational and professional counterparts in other universities and organisations.

The research aims as stated in the proposal include:

1. To document (both quantitatively and qualitatively) the experience of academic women in the Faculty.
2. To identify and better understand any institutional and cultural barriers to academic women's recruitment, development, achievement, leadership and visibility within the Faculty of Engineering, Computer Science and Mathematics (ECM).
3. To identify enablers of women's recruitment, development, achievement, leadership and visibility within the Faculty of Engineering, Computer Science and Mathematics (ECM).
4. To produce specific recommendations, including measurable outcomes, that will enable the Faculty to engage in a focussed and targeted plan of action to address issues identified in the research.
5. To engage senior men and women in the Faculty in addressing any identified gender biases or problematic aspects of organisational culture, to ensure the Faculty maximises its potential performance.

Desired outcomes include a comprehensive report that:

- includes an Executive Summary
- draws on qualitative and quantitative data
- is situated within and referenced to the broader research literature
- includes specific recommendations for action including KPI's for Dean and Heads of School
- includes an implementation plan
- includes recommendations for further research, if appropriate
- developing a greater commitment and understanding of the need to build more gender equitable workplaces, during the process of the research
- contributes to the gender research community and the Equity Practitioner networks by disseminating results at conferences and in the published literature.

## Research methods

A mixed method approach combining qualitative and quantitative data was considered essential to understanding the complexities of gendering processes. Ethics approval for research with human subjects was sought and approval granted, with the research process taking place at arms length to the faculty. The Chief Investigator, Professor Patricia Todd, is located in the Business School and the researcher Dr Jen de Vries was employed as an external consultant.

Three main sets of data from two main data sources were used in this report. Detailed Human Resources (HR) data was provided in 2010 but became dated due to the project delay. It served to highlight certain shortcomings in the dataset for faculty profiling purposes and was not requested in the same format for 2011. HR data that was supplied for the Faculty Accreditation process has been reported here along with Employee Information System (EIS) snapshot data, produced yearly on the 31<sup>st</sup> of March. The HR data provides the most recent data inclusive of staff changes undertaken during the organisational change process, while the EIS data is more comprehensive, allowing deeper analysis. Both datasets are based on body count, not FTE (full time equivalents). Some small discrepancies will be observed between the two datasets, particularly in the number of women at various levels, this is due to the different time frames, where HR data is more recent (September 2011) than the EIS snapshot data (March 2011). There were a number of promotions for women that occurred during the life of the project including one promotion to C, three to level D and one to level E.

While these served as the primary source for the faculty profiling, the following additional data was examined:

#### **From HR**

- Promotion and tenure committee aggregated promotion data for the Faculty
- Applicant tracking data for advertised appointments 2006-2011
- Appointment data, for advertised and non-advertised appointments, 2006-2011
- Selection chair reports for positions identified through the applicant tracking process 2009 to 2011
- Working life survey 'voice project' data

#### **From EIS**

- 2008 Inter-institutional data for Engineering teaching and research staff
- Undergraduate and postgraduate course completions

#### **Qualitative Data**

Twenty-three interviews were conducted, comprising 12 women, levels C to E, and 11 men, all but two of whom were Level E. This included all men holding current leadership positions, including the Dean, Heads of School and Deputy Deans. In addition to those interviewed several staff responded by email and a number of interviewees sent emails with comments after their interviews. One focus group of six women at levels A and B was held, the majority of whom held research-intensive positions. All were on contracts, five of the six held PhDs and their age ranged from mid to late 20's through to 50's. The proposal to conduct a male focus group was abandoned due to difficulties in recruiting participants within the time frame.

In order to preserve the anonymity of interviewees, particularly women who are present in such small numbers, further breakdowns by level or school are not possible. Interviewees are identified as belonging to one of four groups: senior women (levels C to E), junior women (A and B), senior male leaders (men in formal leadership positions), senior men.

Where reference is made to Heads of School or the Dean, this does not necessarily refer to the current occupants.

Interviews and the focus group used a semi-structured format, where a proforma was used to guide the interview. Sufficient open-ended questions were included to allow unanticipated material to emerge and for the interviewee to shape the interview in parts.

The interview proforma explored interviewees' career to date; career enablers and obstacles and capacity to contribute, both past and present; work culture and work satisfaction; workload and work-life balance issues; reflections on Faculty data which showed the representation and levels

of women and men within the Faculty; canvassing of gender issues and the need for change; and their leadership perspective on gender issues, for those in leadership positions.

There was a great deal of more detailed examples and 'lively' material in the interview and focus group material that could not be included in this report for fear of identifying individuals, therefore providing less 'rich descriptive' text than is hoped for in qualitative reporting. Considerable care has been taken, however, to preserve the 'flavour' of what has been said, despite these limitations.

All but one of the male interviewees agreed to being recorded. Detailed notes were also taken during the interviews. On completion each interview was summarised and key points were noted. These formed the basis for a process of manual coding to identify themes. Interviews were not transcribed but were available as an audio record to check quote material. Where interviewees were uncomfortable with the potential for identifying material to be used in the report, the option to check the report draft was offered, and taken up by several of the senior women. The institutional (quantitative) data was presented to a group of women, internal and external to the Faculty, as a way of 'checking' with insiders the interpretation of the data and any avenues of further exploration that should be followed.

## Research difficulties

This research project was initially planned to take place prior to the Faculty organisational change process. It was decided subsequently to delay the process to allow the change process to be completed and for some further time to elapse so that the research did not become dominated by people's experience of this process.

Despite the aim of the research to build in-house capacity, there was very limited Faculty Office involvement with the project. In part this was due to extraordinary workload requirements, firstly with the organisational change process, closely followed by the accreditation process and all taking place against the backdrop of New Courses implementation as UWA moved to a new degree structure.

Disappointingly, data collected for the Faculty organisational change process was not made available for the research process. It was agreed that opportunity statements which were supplied by some individuals as part of the ranking exercise, whilst a rich source of relevant material, were provided by staff for a particular process and could not be used. However data compiled at Faculty level from existing institutional sources, such as HDR supervision, publications and grant information, along with teaching load, also remained inaccessible. Confidential and non-confidential data were included in a spreadsheet for each individual and it was deemed too time consuming to extract data or to de-identify spreadsheets. The way in which data was collected and managed for the Faculty change process reflects the culture of an exclusive focus on individuals and individual merit – which mitigates against identifying systemic patterns.

UWA collects an enormous amount of institutional data, however each new institutional data source presented challenges and limitations and this lack of 'straightforwardness' became a hallmark of the study. In almost no instances<sup>11</sup> was the data in an appropriate format readily available, gender aggregated by Faculty at institutional level and provided to the Faculty, or extracted and monitored by the Faculty themselves or others such as the Research Office. The only indicator provided to the faculties and included in their KPI's is the Equity Index (discussed below in more detail). It appears other faculties likewise do not use institutional data sources to monitor gender. There was also a disinclination on the part of the Faculty Office to keep or

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<sup>11</sup> Gender pay gap data was an exception to this, having been compiled on a Faculty basis and presented to Faculty previously. It is not included in the report.

monitor records that were seen as HR's responsibility. This was clearly the case in terms of appointment data, where all appointments are signed off at faculty level, but no records are maintained by the Faculty that would allow scrutiny to occur over time. Likewise HR processes each appointment separately, records are archived (eg Selection reports), with no review or monitoring of appointment processes over time.

This lack of monitoring of gender appears to be widespread, extending beyond the institution. For example the Working Life survey, undertaken by an external provider (Voices Project), does not provide a gender breakdown at faculty level as part of its standard package. Student enrolment data provided for the Engineering accreditation process was also not required to be disaggregated on the basis of gender, which appears an important oversight for engineering as a profession.

## **Missing data**

Workload data was supplied to the Faculty by each Head of School for individual T & R staff as part of the organisational change process but was not made available to this research. This data was compiled with some difficulty and several schools did not have functioning workload allocation models. The Faculty had been in the process of implementing a faculty wide workload allocation model for the duration of this research project (some 18 months). A committee, in consultation with staff, had finalised a workload model. It was intended that this model would be populated with current data as a first step towards implementation. At time of writing, this population had not yet occurred and the model was apparently going to the Faculty Leadership Team for further amendments. The proposed workload model, despite a number of requests, was also not made available for inclusion in this research.

The lack of workload data is a major gap in this research. The inequitable allocation of workload is often identified as a key factor impacting on women's careers and, as was demonstrated in the UNSW Physics research (Stevens-Kalceff et al. 2007), may favour senior established men at the expense of the research careers of junior men and women.

Sabbatical data provided by HR proved to be so infrequently recorded as to be unusable.

The working life survey is currently not analysed by gender or staff type at the Faculty level and is therefore not useful in its current format for this research. Raw data was obtained from HR for analysis but due to time and budget constraints, the survey being dated (2009) and with a new survey due next year, it was decided not to proceed. Liang and Bilimoria (2007) highlight the importance of campus climate surveys in US universities as indicators of systemic issues, so future disaggregation of data by gender and function at faculty level would be useful.

Detailed publication, grant and higher degree supervision load data was not obtained. It was either available in unmanageable raw data form, beyond the scope of this project to unravel, or aggregated individually specifically for the organisational change process.

## **The limitations of this research**

The research process reported here is clearly incomplete and should represent only the first stage in an ongoing process to further identify, understand, and monitor gendering processes within the Faculty.

Baseline data against which to measure progress is incomplete. The most striking limitation of this research is the complete absence of workload allocation data and data regarding research performance. It is impossible to comment on academic merit relative to opportunity (AR2O).

Junior staff, male and female, and particularly RI staff on contracts represent a pool of potential academics with long-term careers within the Faculty and have been identified in this study as a



vulnerable group of staff. Much more needs to be understood concerning the experiences of women and men at this stage. This has been identified as a major bottleneck for women and a critical career transition point.

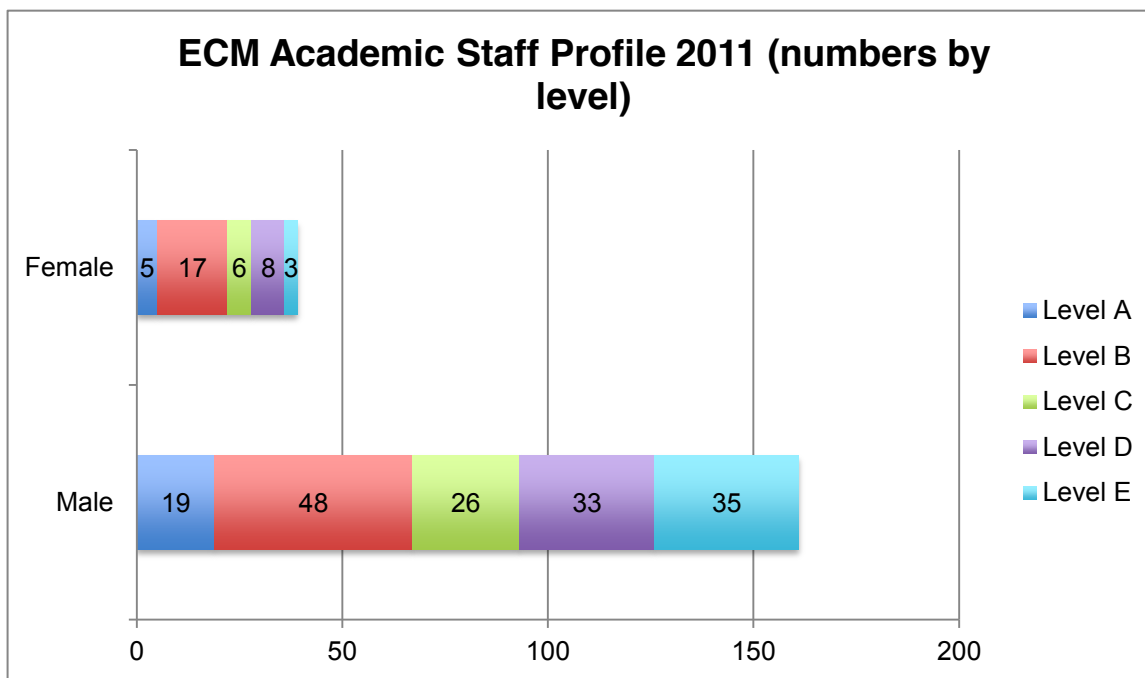
This research focuses on academic staff. Future research should explore the impact of such a male dominated academic staff on professional staff and the student body, both undergraduate and postgraduate. The experience of female students at all stages of their educational 'pipeline', most particularly PhDs, requires investigation.

# Institutional data<sup>12</sup>

## Faculty profile using HR data (August 2011)

The Faculty profile shows a numerically male dominated workforce with women compressed into lower levels relative to men. Men comprise 80% of the academic workforce, with 161 men and 39 women (Fig. 1). When research only appointments are excluded from these numbers, the percentages remain similar with 87 men and 20 women, men comprising 81.3% (Figs. 4,5). This pattern is again replicated when isolating the four engineering schools with 133 men and 32 women, men once again comprising 80.6% of all academic staff (see Appendix 1 Fig. 3,4).

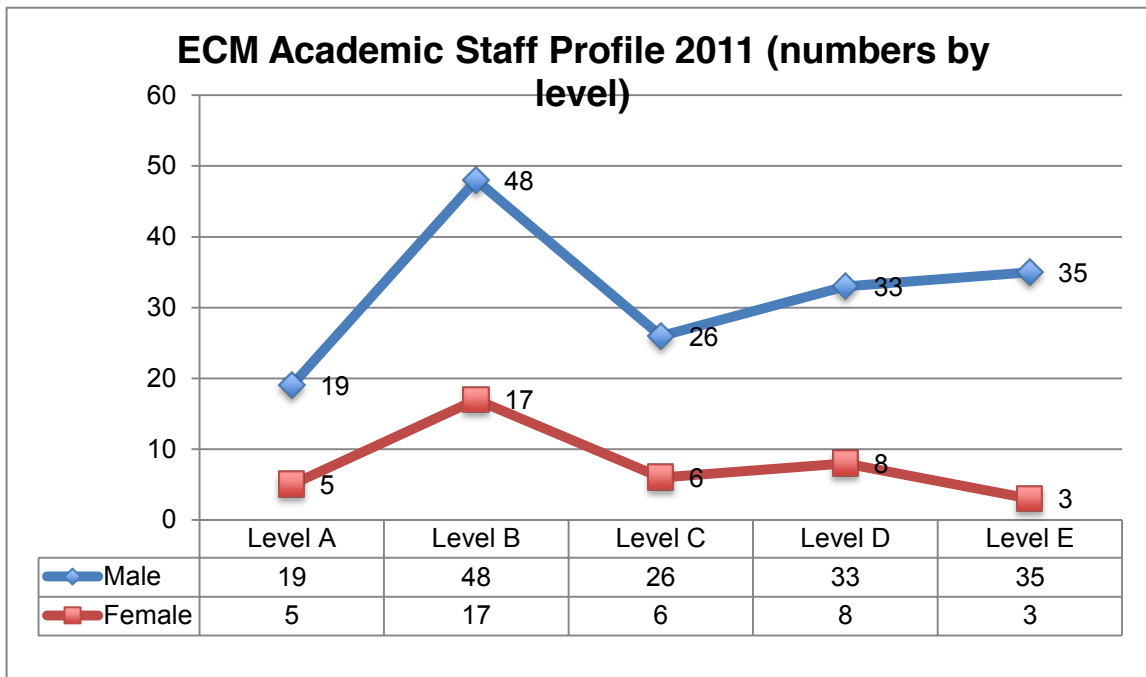
Figure 1 Faculty Academic Staff Profile: Numbers by level (HR Data)



The pattern of distribution of men and women across levels is distinctive (Fig. 2), with two main differences; women are substantially over-represented at level B and substantially under-represented at Level E (see Appendix 1 Fig. 1 for percentages). Despite the larger absolute number of male level B's, 44% of women are employed at level B whereas only 30% of men are employed at level B. Percentages of men and women employed at levels A, C and D are almost identical. At level E, 35 out of 38 Winthrop Professorships are held by men, meaning that while only 8% of women are employed at this level, 22% of men have reached the highest academic rank. For both men and women the highest percentage of employment is at level B and for the men the next highest percentage is E, while for women level E is the lowest. This is graphically illustrated in Fig. 2 below, where the roughly 80/20 proportions which hold for A, C and D are distorted at level B and diverge to their greatest disparity at level E.

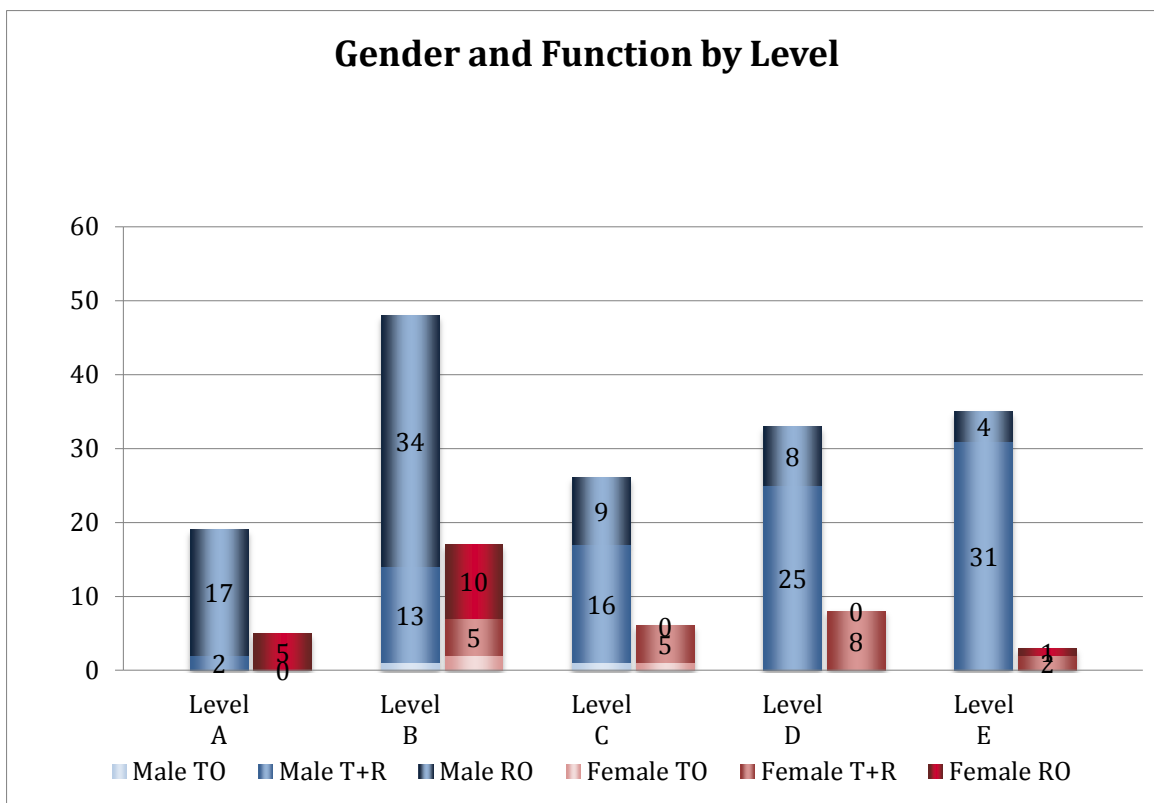
<sup>12</sup> Not all data analysed for this research report is included within the body of this report. See Appendix 1 for further analysis and in some cases alternative ways of representing the same data.

Figure 2 Faculty Academic Staff Profile: Numbers by level (HR Data)



The disparity in the positional power accorded men and women is most apparent when considering that female Winthrop Professors represent 2% of the Faculty while male Winthrop Professors constitute the second largest group of men and represent 18% of the faculty's academic staff. Level D and E men together represent 35% of staff while level D and E women represent 6% of staff (see Appendix 1 Fig. 2).

Figure 3 Faculty Academic Staff Profile: Gender and function by level (HR Data)



Note: Research intensive (RI) staff, the term in more recent usage, is used throughout the text. However in the Figures these staff are referred to as research only (RO), reflecting terminology used in the data source.

Figure 3 outlines academic staff by gender and function. While the 80/20 proportion of men to women remains constant, distribution across levels changes, with compression of Research Intensive (RI) positions into lower levels, concentrated at levels A and B, with 15 women (94% at Level A, B) and 51 men (71% at levels A, B). (See also Appendix 1 Fig. 5 for % by gender within level). There are no women at levels C and D and only one at Level E (Federation Fellow). Significantly there is an apparent lack of a career path through the levels for RI women, while RI men appear at all levels. Three women and two men hold Teaching Only (TO) positions, at levels B and C.

Figures 4 and 5 show the staff profiles for different staff groups separately, illustrating the changes in proportions and levels. Teaching and Research staff (T & R) are traditionally the group from which leaders and decision-makers are drawn. The Research Intensive (RI) profile is highly skewed towards more junior appointments. Teaching Only (TO) staff are not included in either graph.

Figure 4 Faculty Academic Staff Profile: Teaching and research (HR Data)

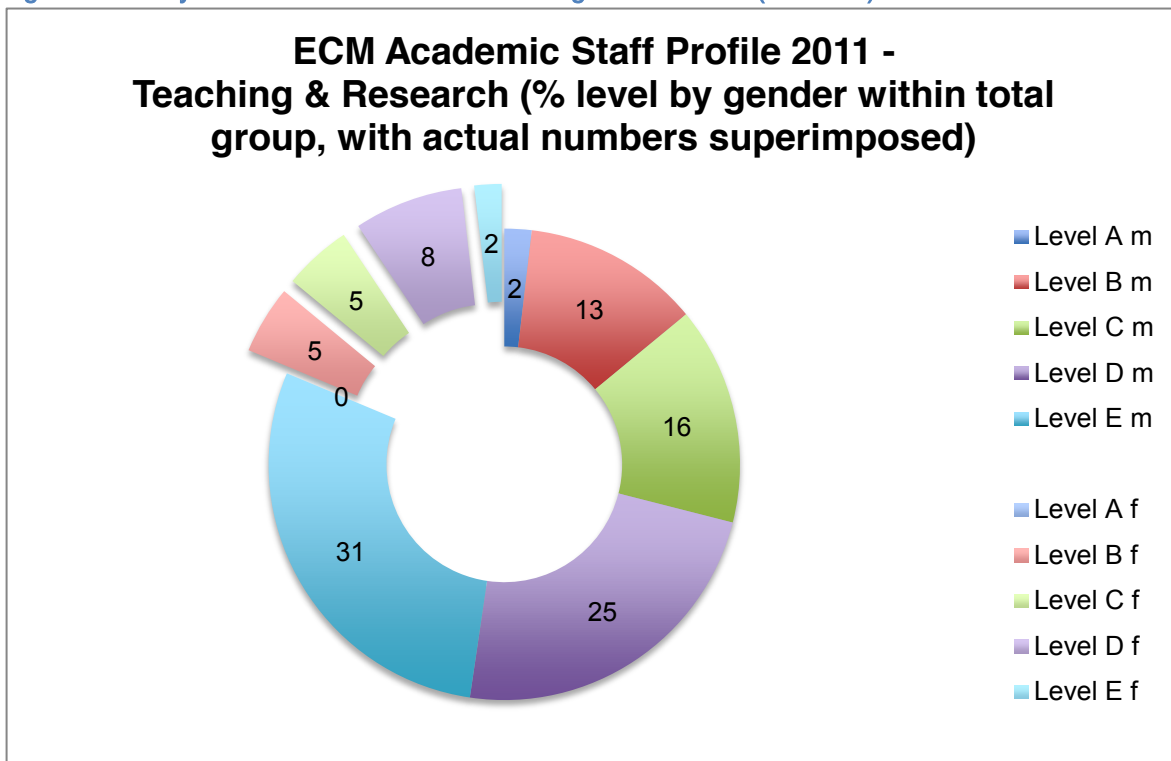


Figure 5 Faculty Academic Staff Profile: Research only (HR Data)

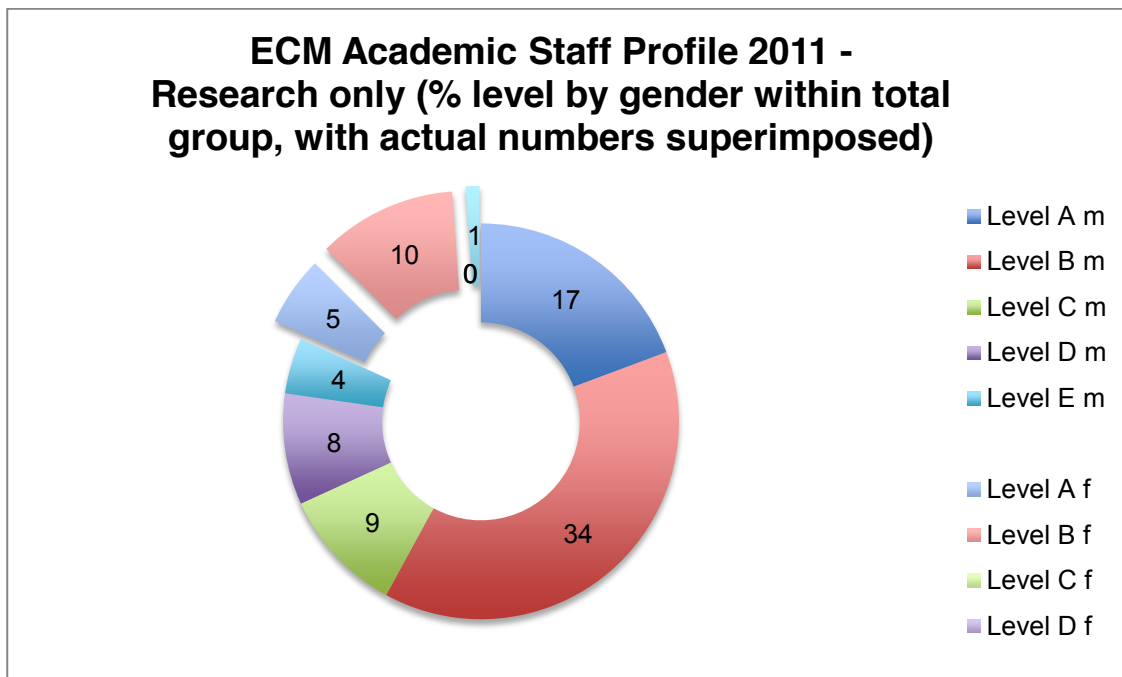
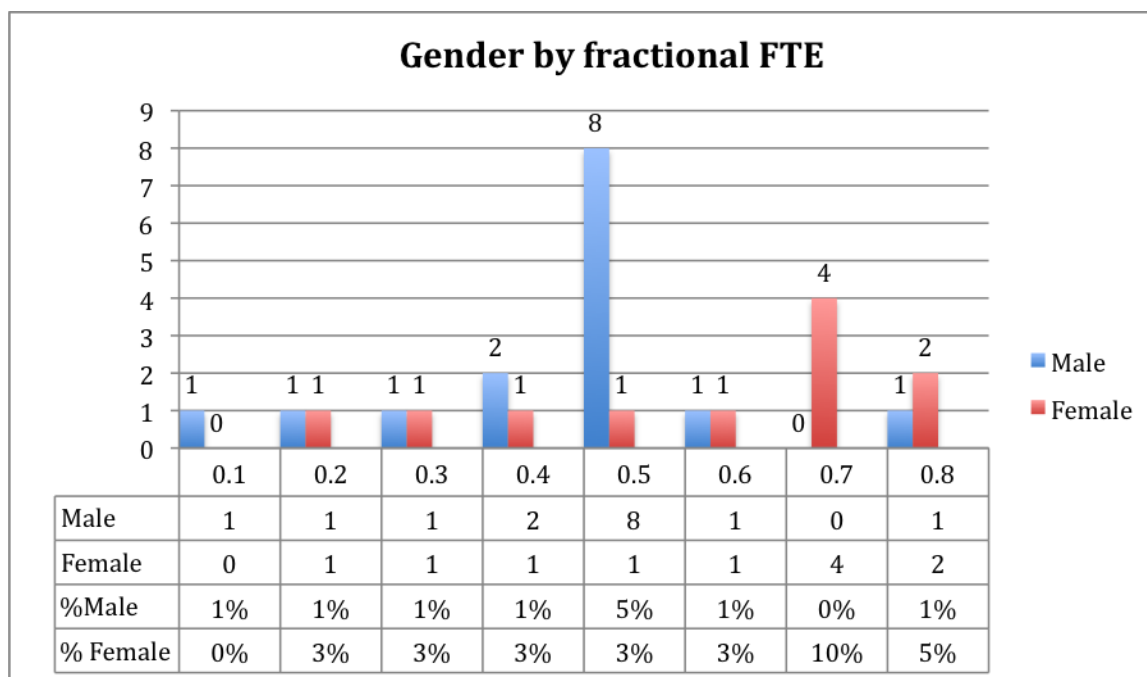


Figure 6 shows fractional FTE staff within the Faculty<sup>13</sup>. Fractional staff make-up 13 % of Faculty academic staff. Fulltime Staff are not shown. 146 of the 161 males (91%) and 28 of the 39 females (72%) work at the 1.0 FTE level. Women with young children who work part-time tend to have 0.7 or 0.8 FTE appointments, however it should be noted that some women are fractional due to funding restrictions on their position and not by choice<sup>14</sup>.

Figure 6 Faculty Academic Staff Profile: Gender by fractional FTE



<sup>13</sup> Individuals who held multiple fractional appointments equating to one FTE are not included here. A fractional appointment in another Faculty is not included, therefore staff who work full-time but with fractions split across faculties would show here as a fractional appointment.

<sup>14</sup> Based on interview and focus group data

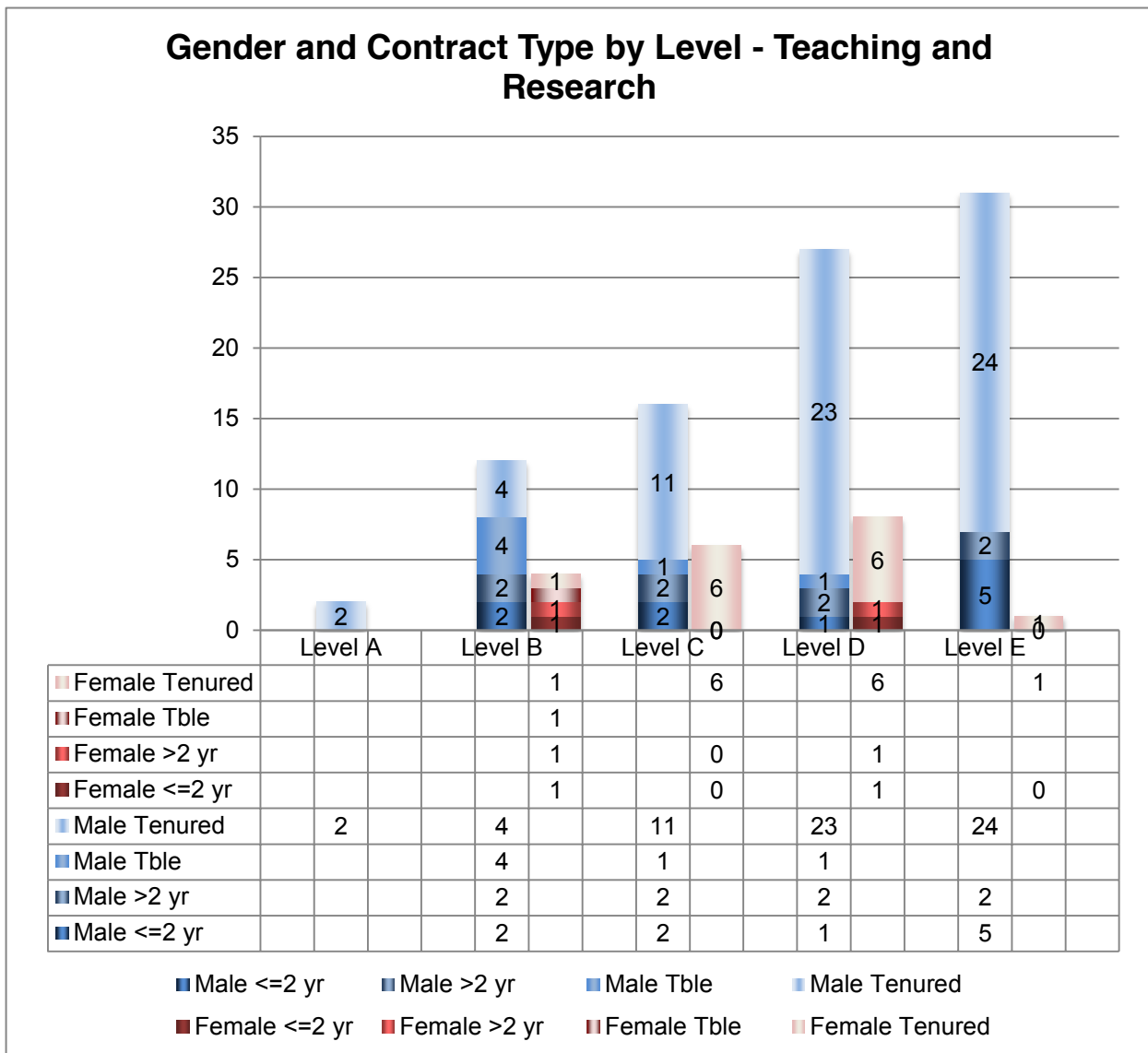
## Faculty profile using EIS staff data (March 2011)

The following profile data uses EIS data, captured March 31, 2011 in order to allow comparison with UWA data and longitudinal data. As previously noted there are some small differences in the Faculty profile data in comparison with the August 2011 HR data.

### Gender and contract type

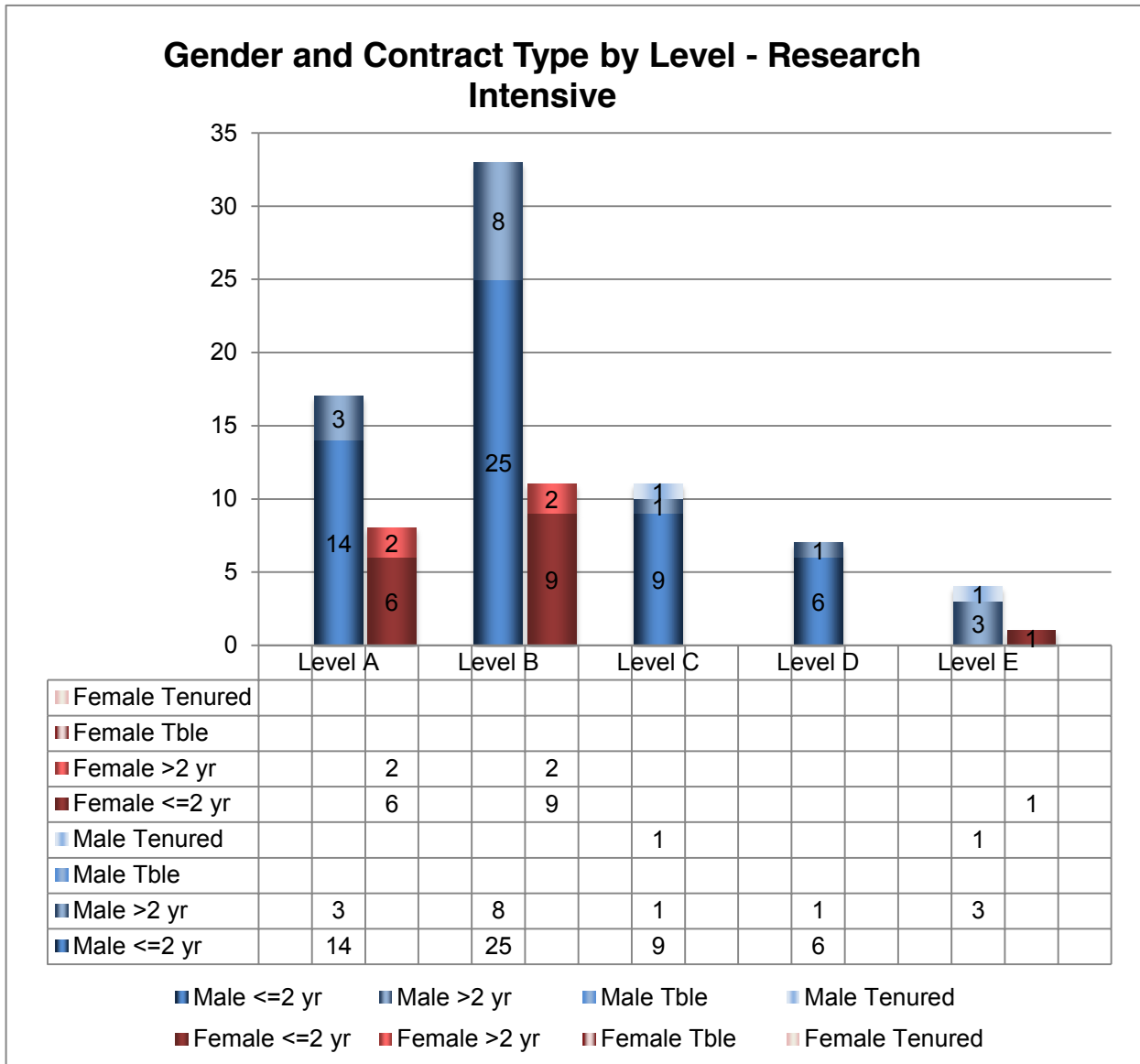
Figures 7 and 8 explore contract type by level separately for T & R staff and RI staff. For a combined graph see Appendix 1 Fig. 6. Figure 7 shows that while the majority of T & R staff are tenured or tenure track, a significant number of men and women are on contracts. Contract employment, due to the insecurity for those involved, is known to hamper people's capacity to plan ahead personally and professionally. An exception to this would be those on pre-retirement contracts, applicable to some senior men in T & R positions. There is no gender difference in the overall proportion of tenured positions. In terms of absolute numbers, this graph shows that only 15 academic women have tenured/tenurable positions within the faculty.

Figure 7 Faculty Academic Staff Teaching & Research: Gender and contract type by level (EIS)



RI staff are predictably largely employed on contracts, with 2 anomalies of tenured men in RI positions. Men and women are employed on greater than or less than 2 year contracts in roughly equal proportions, where around 20% hold longer contracts. As previously noted, while men are employed as RI staff at Levels C and D women are not.

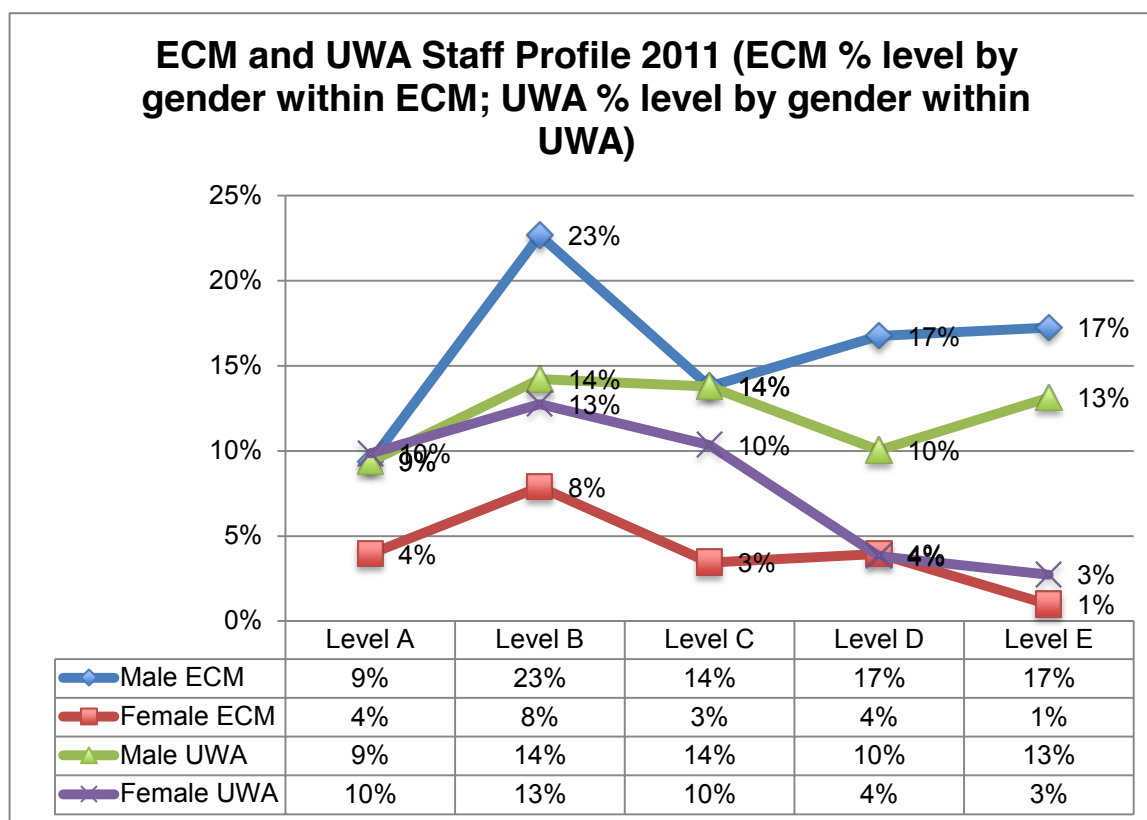
Figure 8 Faculty Academic Staff Research Intensive: Gender and contract type by level (EIS)



## Academic staff profile: Comparison with UWA

Figure 9 compares the distribution of women and men by level within the Faculty and within the University. In addition, see figures 7-9 in Appendix 1

Figure 9 ECM and UWA Academic Staff Profile 2011: % level by gender within group (EIS)



Note: add all ECM staff to obtain 100%; add all UWA to obtain 100%.

The distance between the pairs of lines is an indication of the gender gap in staff at that level. The green and purple lines for UWA overall show a narrow gap at lower levels with increasing disparity at senior levels. The Faculty picture, red and blue lines, demonstrates a much larger gap at all levels. The gap between the green and blue lines shows the distribution of men across levels within the Faculty relative to the distribution of men across levels averaged over the whole of UWA. The prominent gaps at D and E show the top heavy (by level) nature of the men within the Faculty. This over-representation of men is also extremely prominent at level B (mainly RI staff, see Fig. 8 above) but not present at level C or A. This suggests that it is T & R staff who have benefitted from promotions through the ranks, while RI male staff may be blocked at level B.

The gap between the distribution of Faculty women relative to UWA women is largest at the lower levels, A through to C. While there is little disparity between the Faculty and UWA at levels D and E, Table 1 shows that UWA and Faculty women fare poorly at levels C, D and E when benchmarked against inter-institutional data on the representation of women at senior levels (QUT Equity Services 2010). In each case UWA lags behind sector averages. Clearly the Faculty, lagging well below UWA averages, is a contributor to the low overall standing of UWA.

Table 1 Percentage of level C, and levels D & above positions held by women

	Level C	Levels D & above
FECM	20.0%	12.6%
UWA*	36.7%	20.9%
Australian Universities average*	42.8%	27.3%

\* 2010 Selected inter-institutional gender equity statistics, compiled by QUT Equity Services

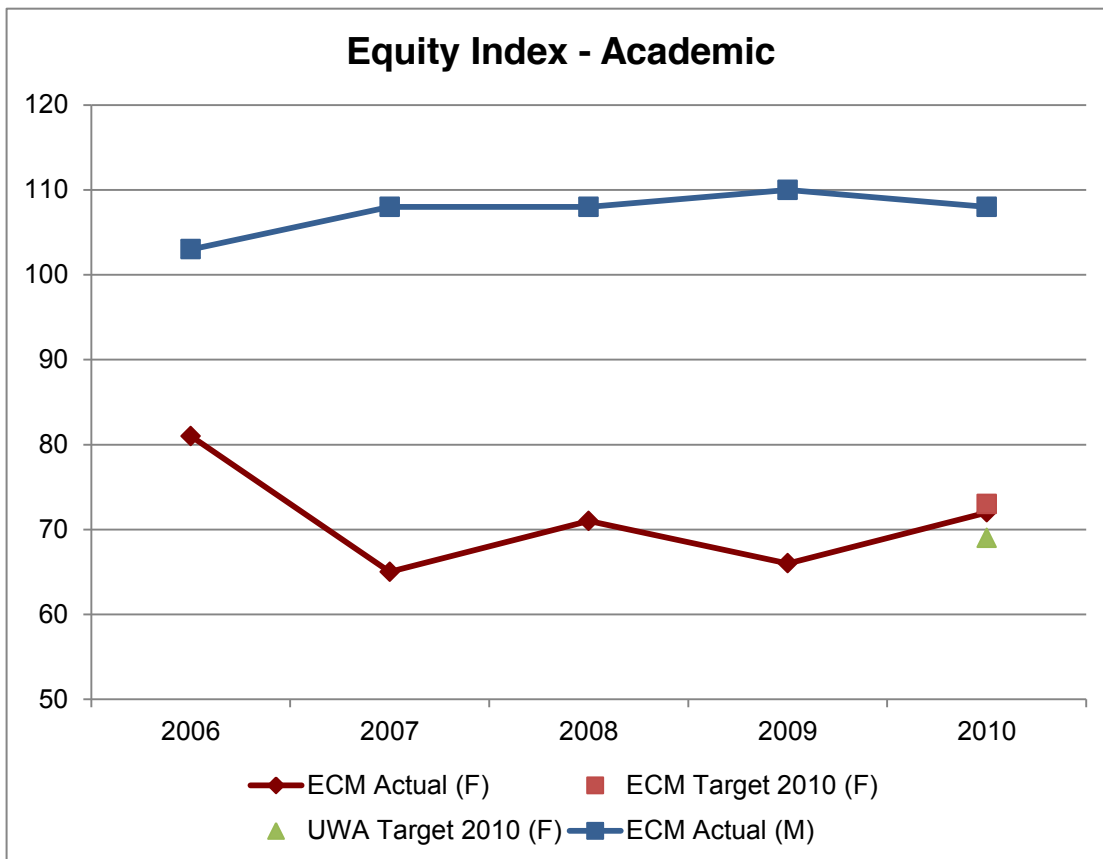


## Equity Index

The equity index has been developed as a measure of distribution of men and women across levels and is designed to be a measure that is independent of the numbers of men and women. An equity index of 100 indicates an equitable distribution across levels in relation to the overall distribution, more than 100 is a population distribution skewed towards seniority and below 100 is a skewing towards compression into lower levels. The Equity Index is provided as a performance indicator to Faculties as part of the Operational Priorities Plan. It is an incomplete measure however, as an improvement in the equity index for women would indicate a more equitable spread across levels compared to men but does not necessarily indicate an increase in the proportion or number of women, which is clearly also important in this context.

Figure 10 shows that neither the equity index for women or men have shown much improvement towards 100, and in each case were more equitable in 2006.

Figure 10 Equity Index - Academic (EIS)

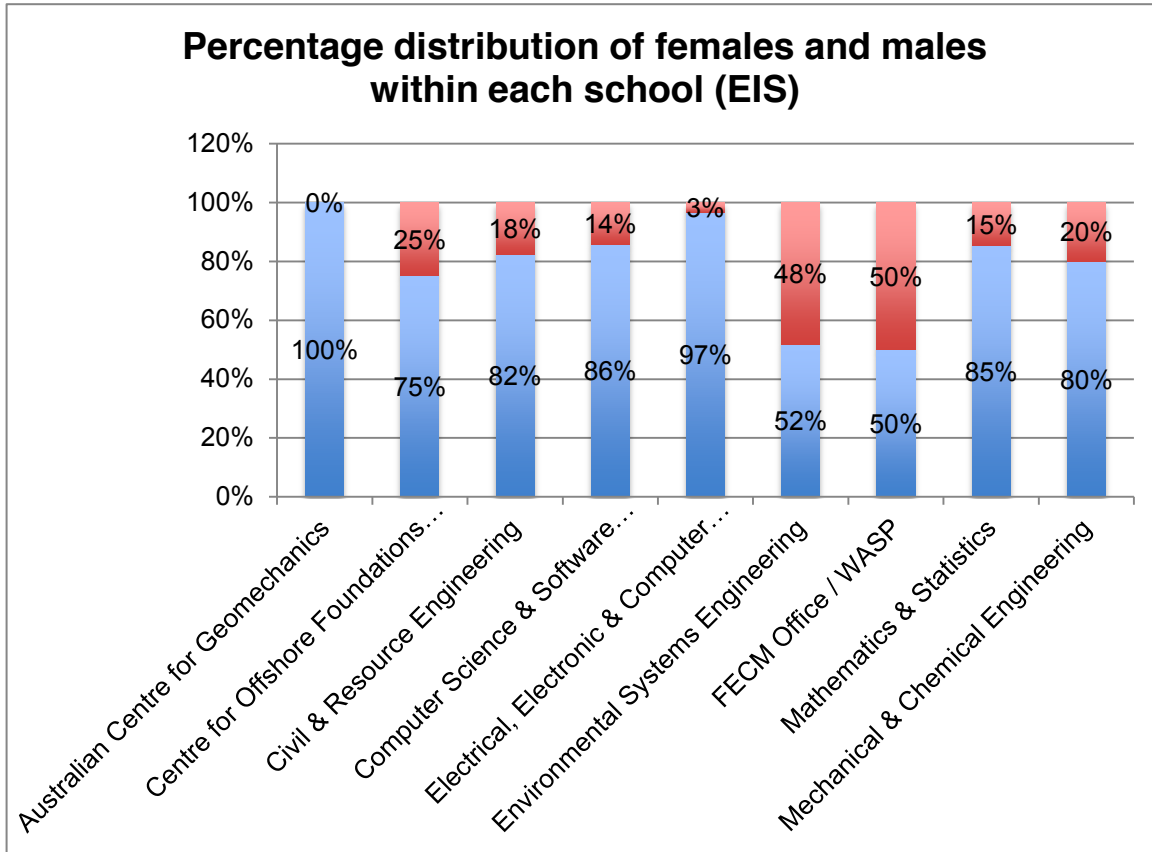


**Equity Index:** The Equity Index equals 100 when the two groups involved (i.e. females and males) are distributed relative to their representation across employment levels. A greater concentration of one group at lower levels is reflected in an Equity Index of less than 100 for that group.

### Gender distribution within the schools

Figure 11 shows the enormous differences in distribution of women relative to men within schools where one school has only one academic woman while in another school the ratio is almost equal with men. Ratios are only one part of the story and can be misleading as the level and function of the women will have a large impact on the power and visibility of women, to exercise leadership, be visible to students or to be influential in decision making processes at school level.

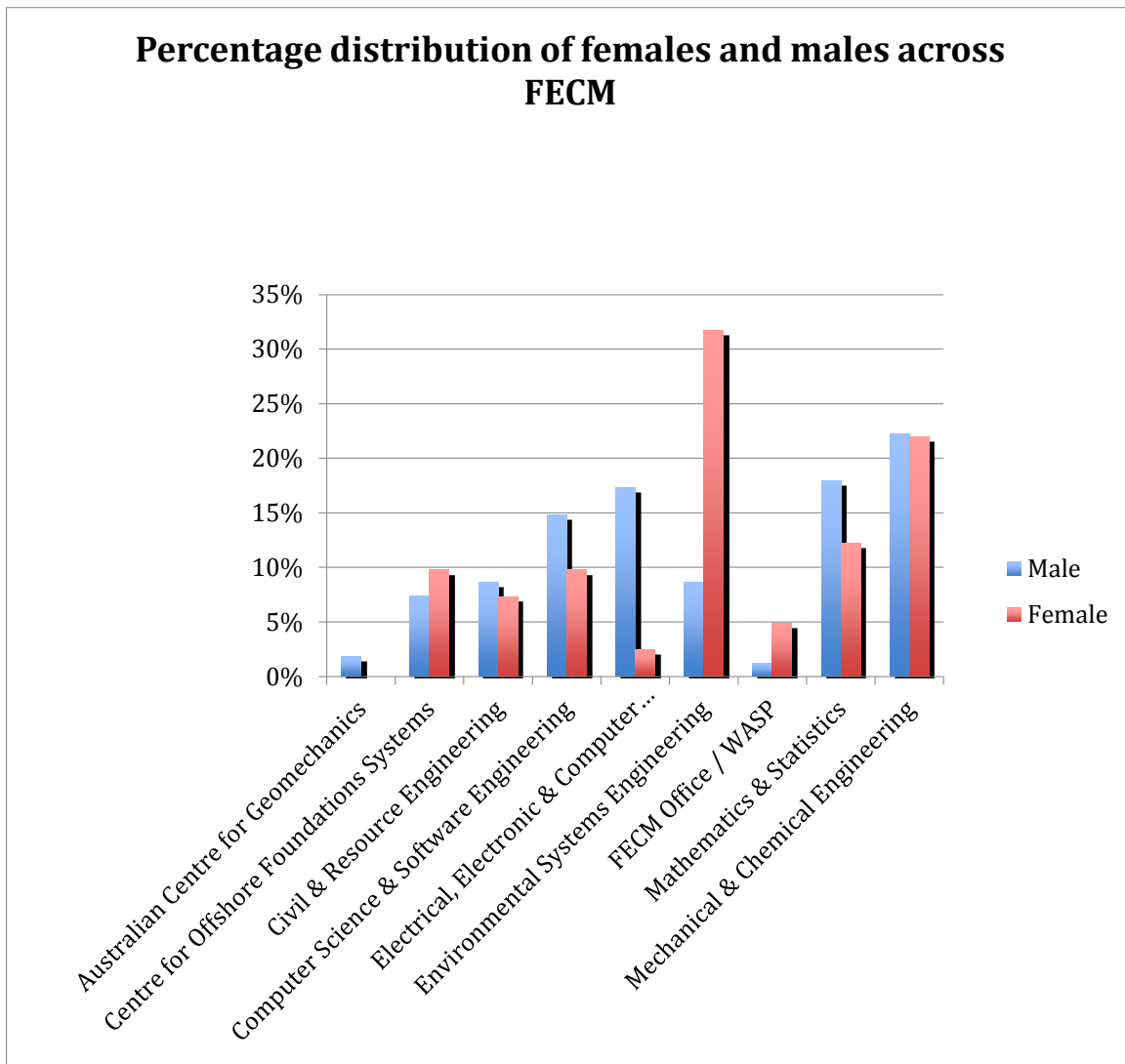
Figure 11 Percentage distribution of females and males within each school (EIS)



School	Australian Centre for Geomechanics	Centre for Offshore Foundations	Civil & Resource Engineering	Computer Science & Software Engineering	Electrical, Electronic & Computer	Environmental Systems Engineering	FECM Office / WASP	Mathematics & Statistics	Mechanical & Chemical Engineering
Male	3	12	14	24	28	14	2	29	36
Female		4	3	4	1	13	2	5	9

Figure 12 gives a sense of the overall distribution of the women and men across schools, demonstrating the disproportionate representation of women in Environmental Systems Engineering relative to other schools. It is important to note that equal percentages does not equate to equal numbers. Mechanical & Chemical Engineering for example has a little more than 20% of the total number of men and 20% of the total number of women, while men still outnumber women four to one.

Figure 12 Percentage distribution of females and males across FECM (EIS)



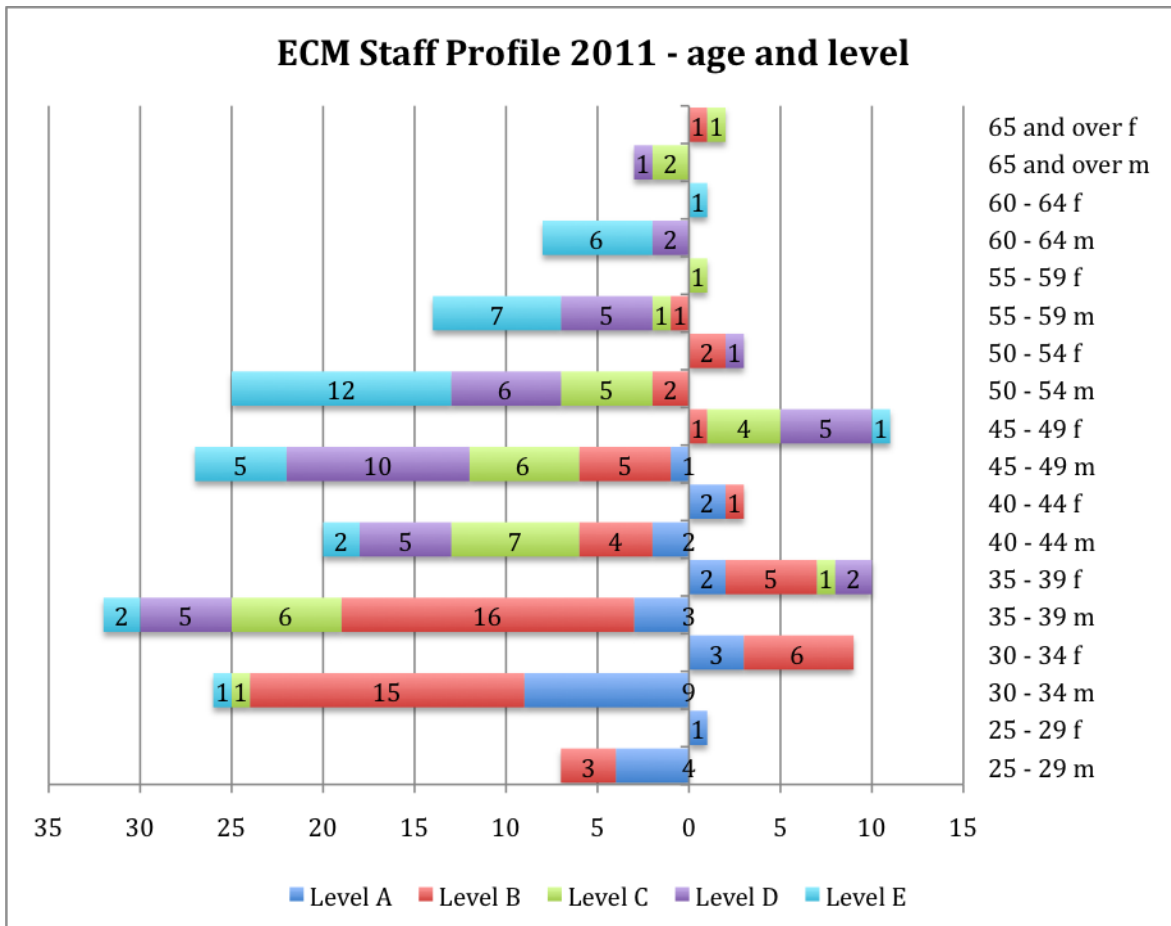
**Qualifications**

The large majority of Faculty academic staff hold doctorates, with no gender difference. (see Appendix 1, Table 1). Overall 182 out of 203 (89%) academic staff hold doctorates with 37 of 41 (90%) women and 145 out of 162 (89%) of men.

### Age profile

Given the concern about the ageing profile of university workforces, it is worth noting that the Faculty does not have a particularly aged workforce, with 14% of academic staff aged 55 and over, 65% in the 35-54 bracket and 21% under 35. Many of the male Winthrop Professors who numerically dominate the profile of the Faculty are relatively young, with the largest group of Level E's aged between 50 to 54. With regard to the focus of this project this suggests that there are unlikely to be opportunities to address the gender profile via workforce renewal due to retirements in the foreseeable future.

Figure 13 Faculty Academic Staff Profile: Age and level (EIS)



## Longitudinal Faculty data (EIS data)

Longitudinal data from 2003-2011 shows a small overall increase in the representation of women from 2003 through to 2011, from 14% to 20%. Change occurred between 2006-2008 with no improvement since then. This overall increase continues the slow rate of change evident in previous years where women's participation between 1992 and 2003 increased from 9% to 14% (not illustrated here). At this rate of change, of approximately 10 percentage points over 20 years, it will be 2032 before women reach 30% of academic staff.

Figure 14 Faculty Academic Staff Profile: Gender 2003 - 2011 (EIS)

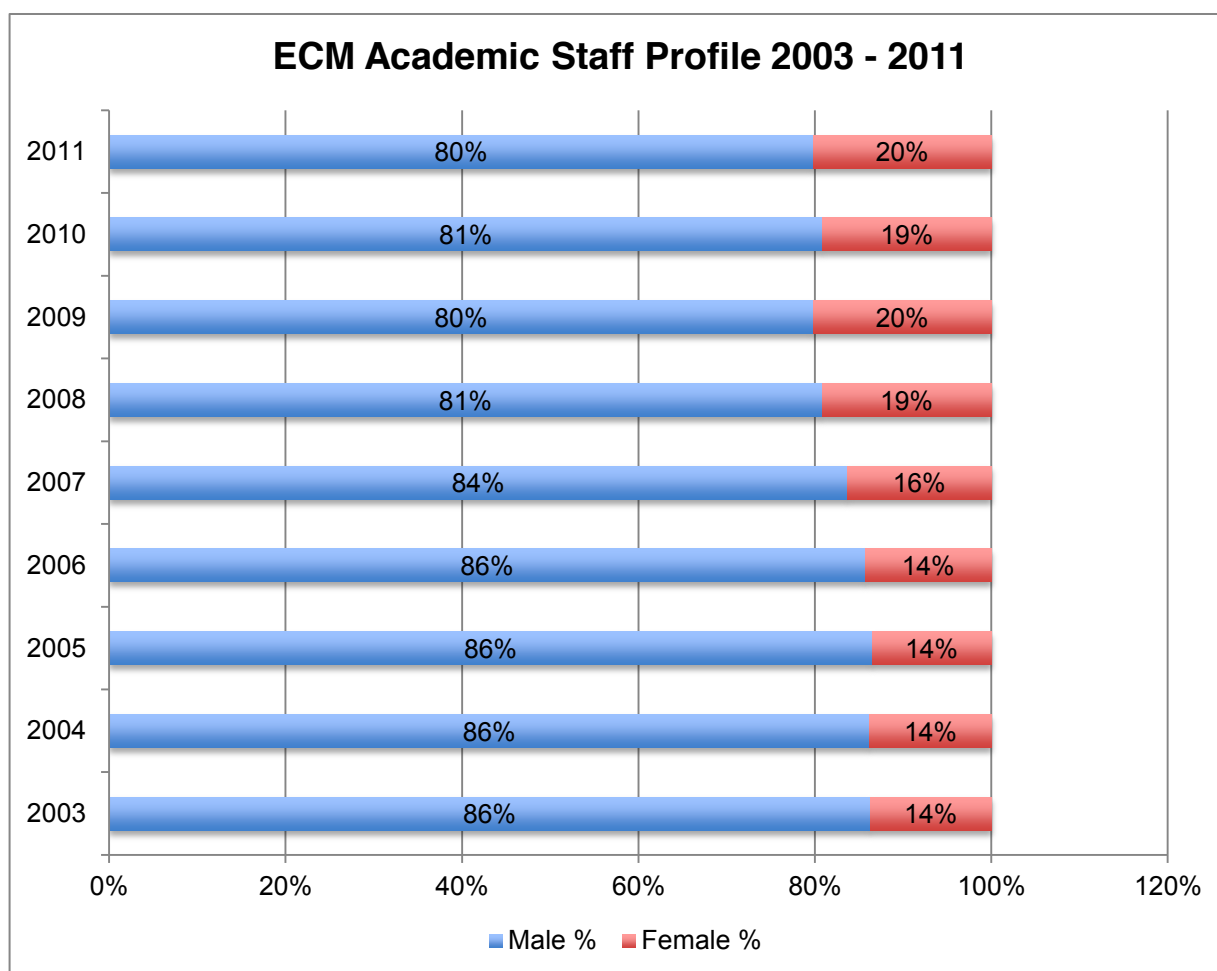
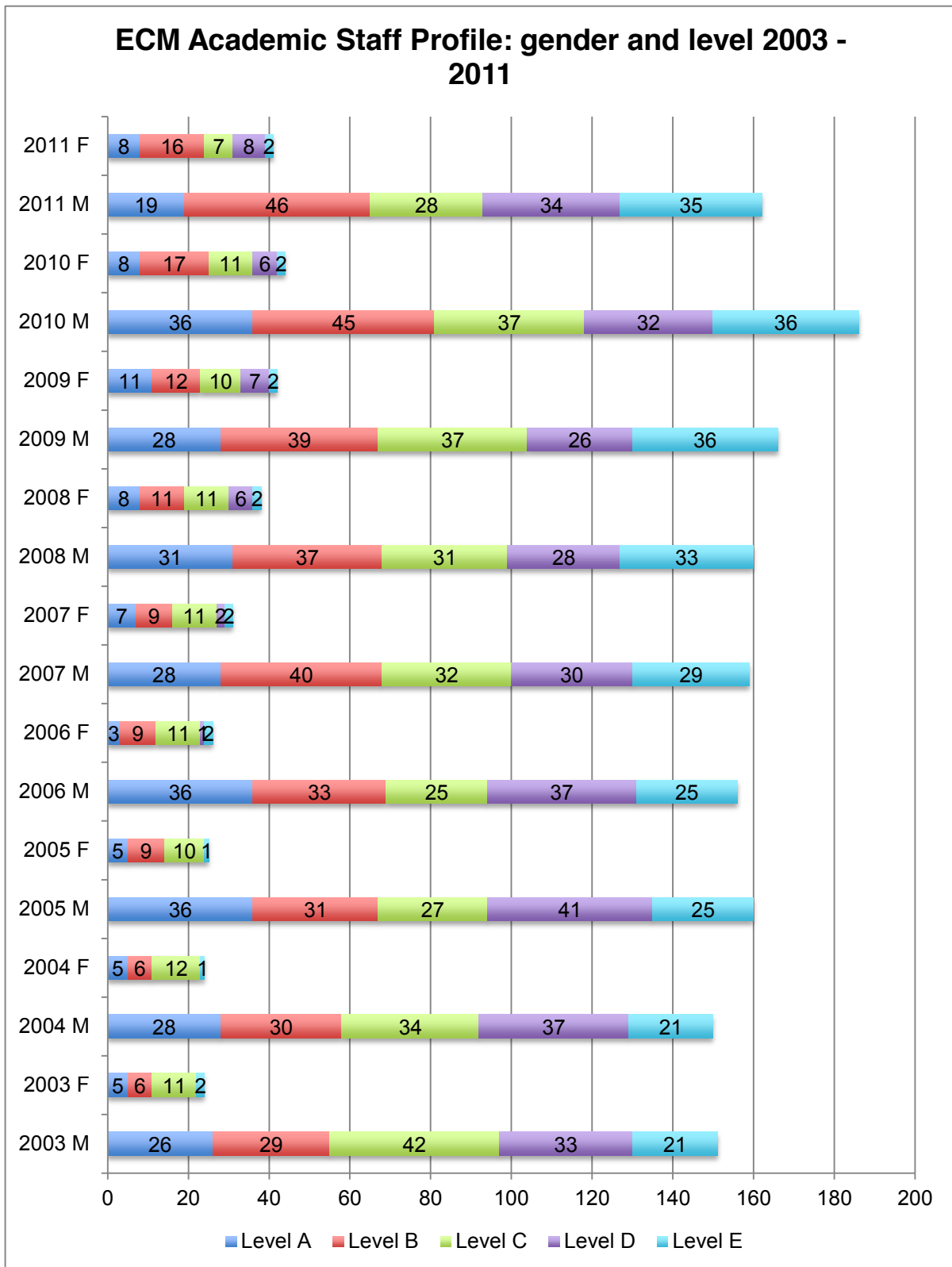


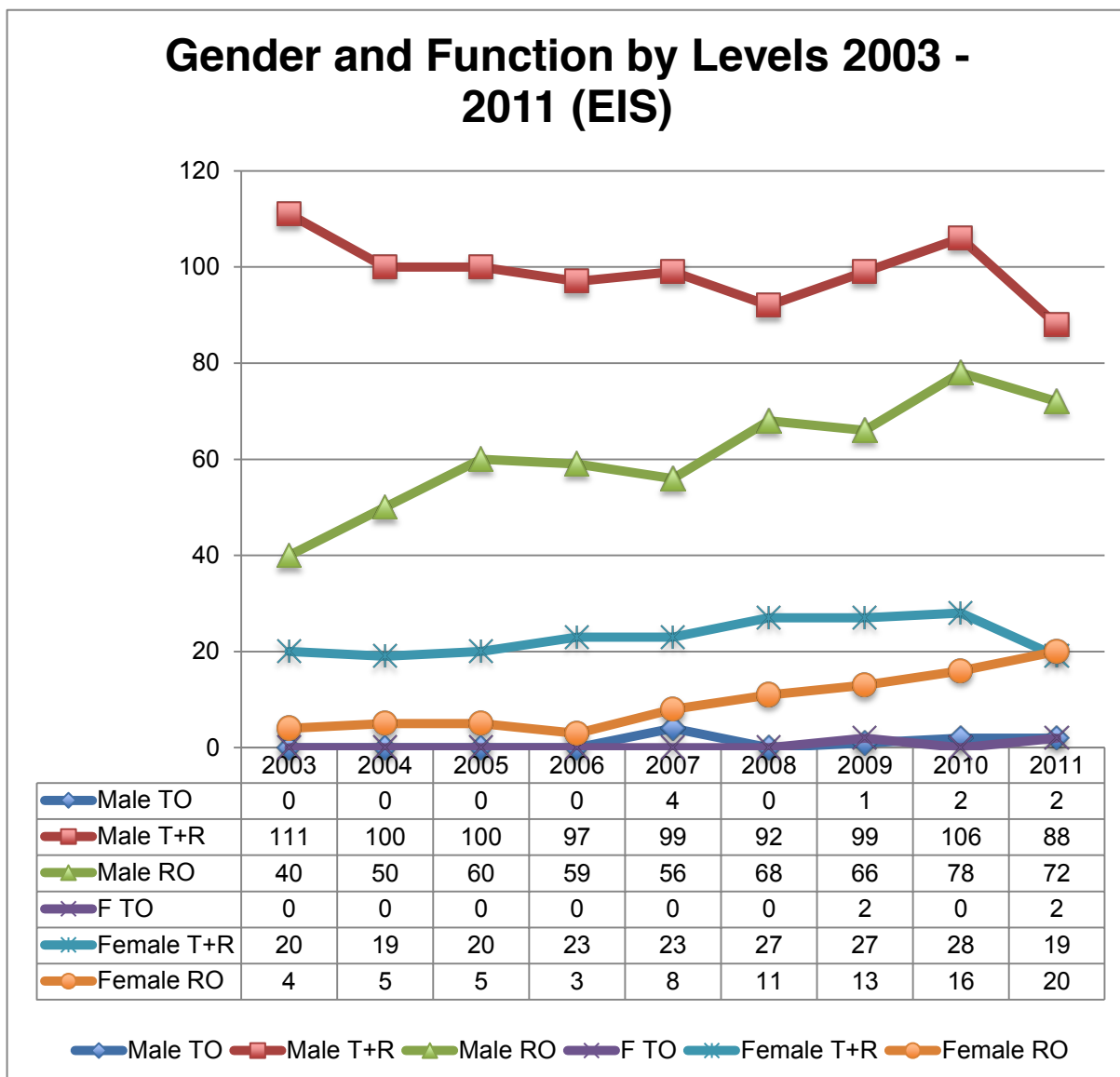
Figure 15 provides detail on the numbers and levels of staff changes. Faculty growth, most marked in 2010, took place through an increase in the number of men at levels A, B and D with virtually no change in numbers of women. Interestingly the profile of men and women post organisational change show virtually no change for women and a loss of men at levels A and C, while senior level men at levels D and E remain undisturbed. The organisational change process did not redress the over-representation of levels D and E (39% of academic staff) within the Faculty compared to UWA at 30% (See Fig. 9 above).

Figure 15 Faculty Academic Staff Profile: Gender and level 2003 - 2011 (EIS)



Examining the changes in staffing by function, see Figure 16, reveals that for men the overall number of T & R staff has declined since 2003, most markedly between 2010 and 2011, while the increase in overall numbers of men was driven by RI appointments. For women the small steady increase in T & R positions has now returned to 2003 levels. The small increase in numbers of RI positions held by women has remained, shifting the balance of women's positions to roughly half RI and half T & R. The percentage change noted above, from 14% to 20%, is a direct result of increases in RI positions. For men the proportion is slightly higher, with T & R staff now making up 55% of male positions, a marked decline from 2003 when the proportion was 73% T & R. Overall this represents a large shift in the make-up of staff across the faculty; in 2003 T & R staff made up 75% of staff, to 2011 when T & R (incl TO) make up 55% overall. UWA 2011 data shows a similar, but less dramatic, trend towards a greater percentage of RI staff, with RI staff making up 31.5% of academic staff in 2006 increasing to 37% in 2011 (EOWA Compliance report).

Figure 16 Faculty Academic Staff: Gender and functions by levels 2003 - 2011 (EIS)



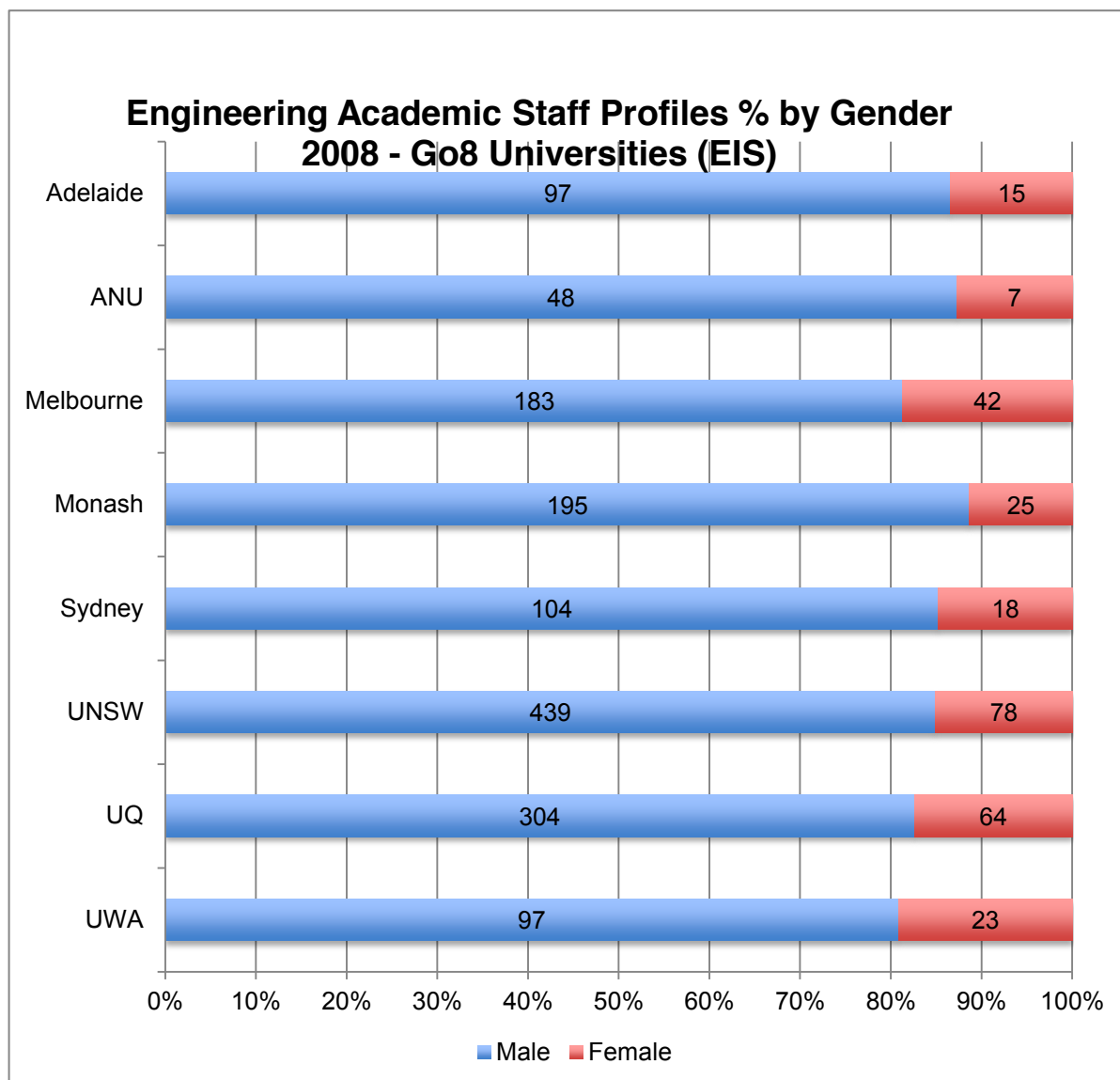
A look at data from 1992 onwards reinforces the slow rates of change which translates into very small numbers of women. In 1992 there were 11 academic T & R women, now two decades later there are 19.

## Inter-institutional data 2008<sup>15</sup>: Engineering T & R only (EIS)

Inter-institutional data allows comparison with Engineering only for WA universities and the Group of Eight universities, for T & R only. A comparison with other WA universities shows that in 2008 UWA had the highest number (23) and percentage (19%) of women, with all universities having very few senior women. (see Appendix 1 Fig. 11)

Figure 17 compares UWA with Group of Eight universities, which includes the top performing Engineering Schools in Australia. Given the large disparities in size, with two very large Engineering faculties at UQ and UNSW, this graph has been presented as percentages to allow comparison across universities. UWA and Melbourne show the highest percentage of women at just below 20%.

Figure 17 Engineering Academic Staff Profiles: Gender 2008 - Go8 Universities (EIS)



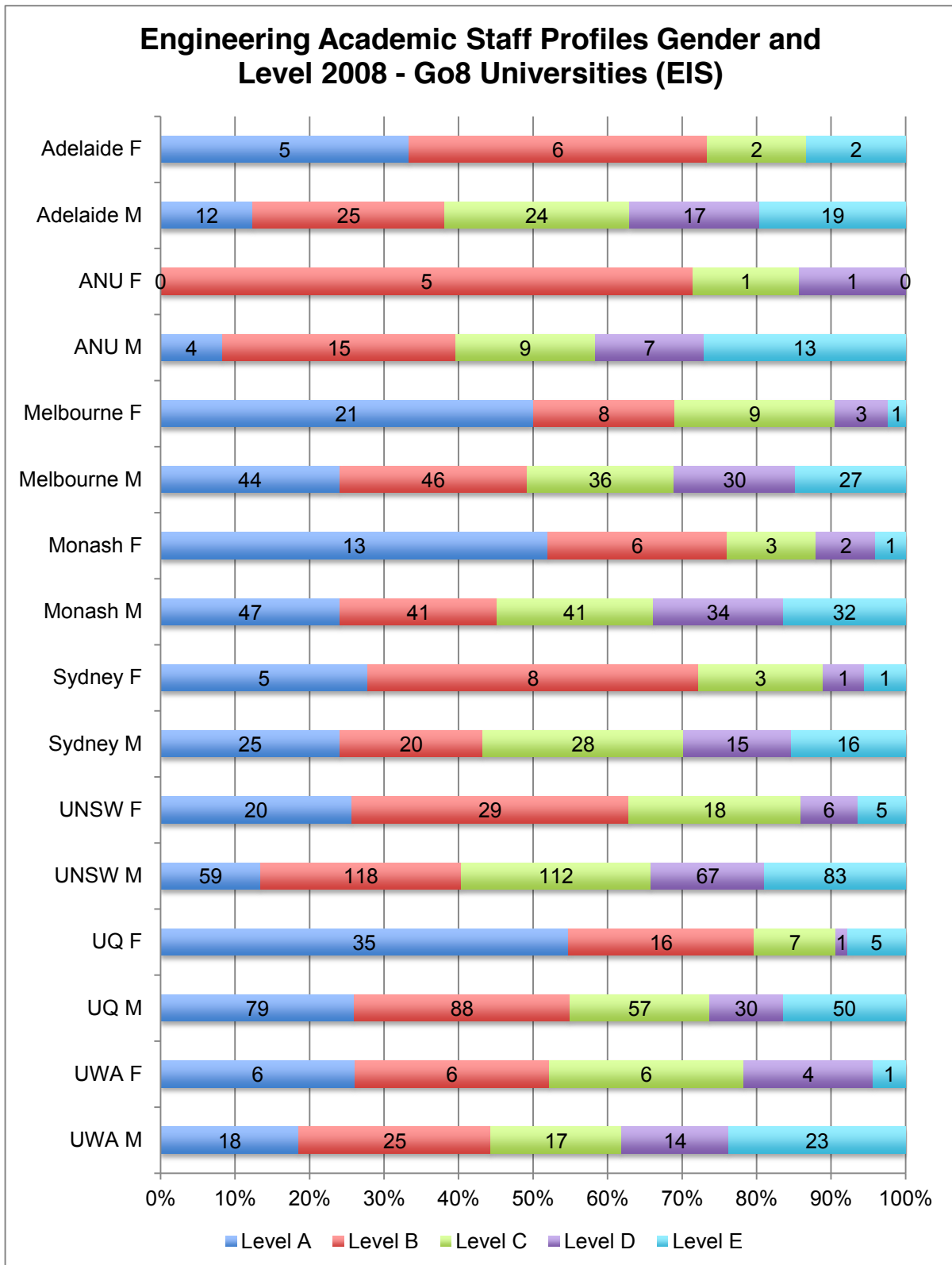
*This graph shows percentage representation of men and women, with numbers of staff super-imposed on the bars.*

<sup>15</sup> Note: After 2008, staff numbers were not reported by academic organisational unit group. Previously, a filter on organisation unit group of '03. Engineering and Related Techs.' allowed the number of engineering academic staff to be identified.



Figure 18 shows gender by level, again as percentages to facilitate comparison. (For a women only graph by level see Appendix 1 Fig. 12). Once again, all universities show both low percentages of women and the severe compression of women into junior positions, relative to men. For example, there are only 16 female Professors across the Go8 in comparison to 263 male Professors, i.e. 94% of all engineering professors in Australia are male. Seventy percent of academic women in engineering across the Go8 universities are employed at Levels A and B.

Figure 18 Engineering Academic Staff Profiles: Gender and level 2008 - Go8 Universities (EIS)

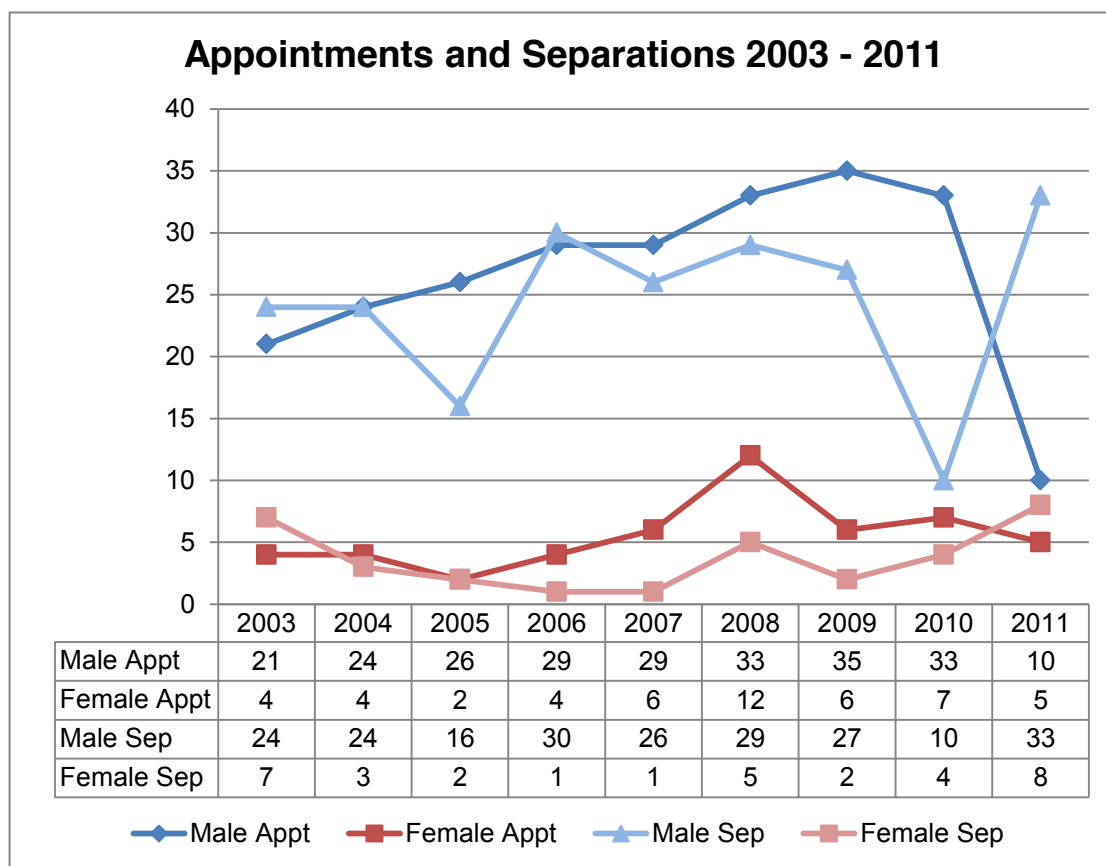


## Appointments and Separations (EIS)

EIS records are based on snapshot data and record changes between March 31 of each year, counting people not FTE's. For an extended definition of EIS appointments and separations refer to Appendix 1.

Longitudinal appointment and separations data provide a complementary picture to the data presented above, providing insight into the staff turnover that underlies the overall figures. Figure 19 shows the number of appointments and separations. From 2003 to 2011, a total of 290 appointments were made, 50 women and 240 men, with men representing 82.7% of new appointments (for appointment and separation tables see Appendix 1, Tables 2 & 3). Over the same period 256 separations occurred, comprised of 222 men and 34 women (men comprising 87%). Figure 19 shows the changes in appointments and separations over time, with most volatility seen in male appointments and separations (see Appendix 1, Fig. 14 for a graph of net gain/loss). Substantial numbers of men were recruited between 2007 to 2010, with low separation rates until 2011. This represents a substantial number of appointments and a lost opportunity to improve the gender profile of the Faculty.

Figure 19 Faculty Academic Staff : Appointments and separations 2003 - 2011 (EIS)



Figures 20 and 21 show the proportion of male and female appointments and separations over time. On only two occasions has the appointment of women represented more than 20% of appointments (2008 and 2011), This low appointment rate is offset to a degree by the low attrition rate for women, only passing 20 % on two occasions, in 2003 and 2010.

Figure 20 Percentage Breakdown of Academic Appointments: Gender 2003 - 2011 (EIS)

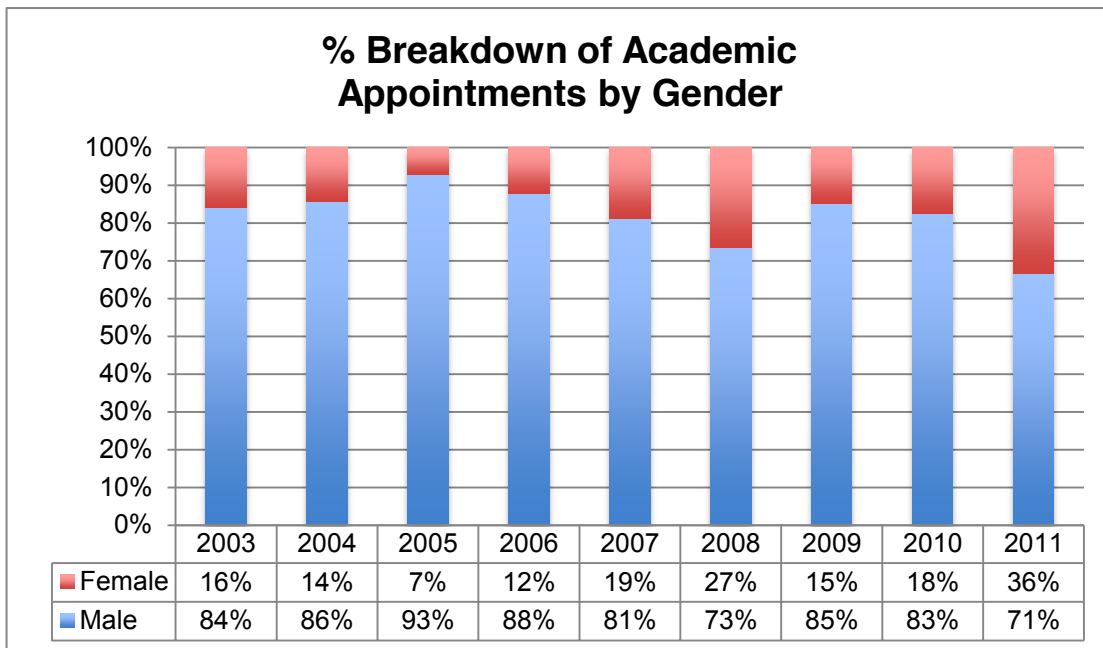


Figure 21 Percentage Breakdown of Academic Separations: Gender 2003 - 2011 (EIS)

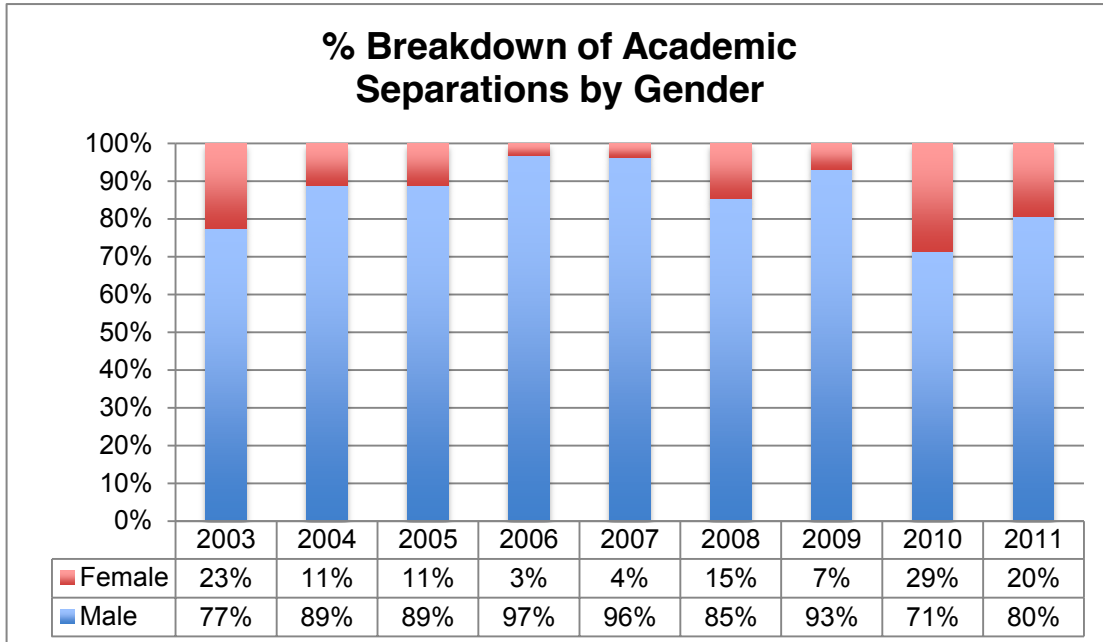
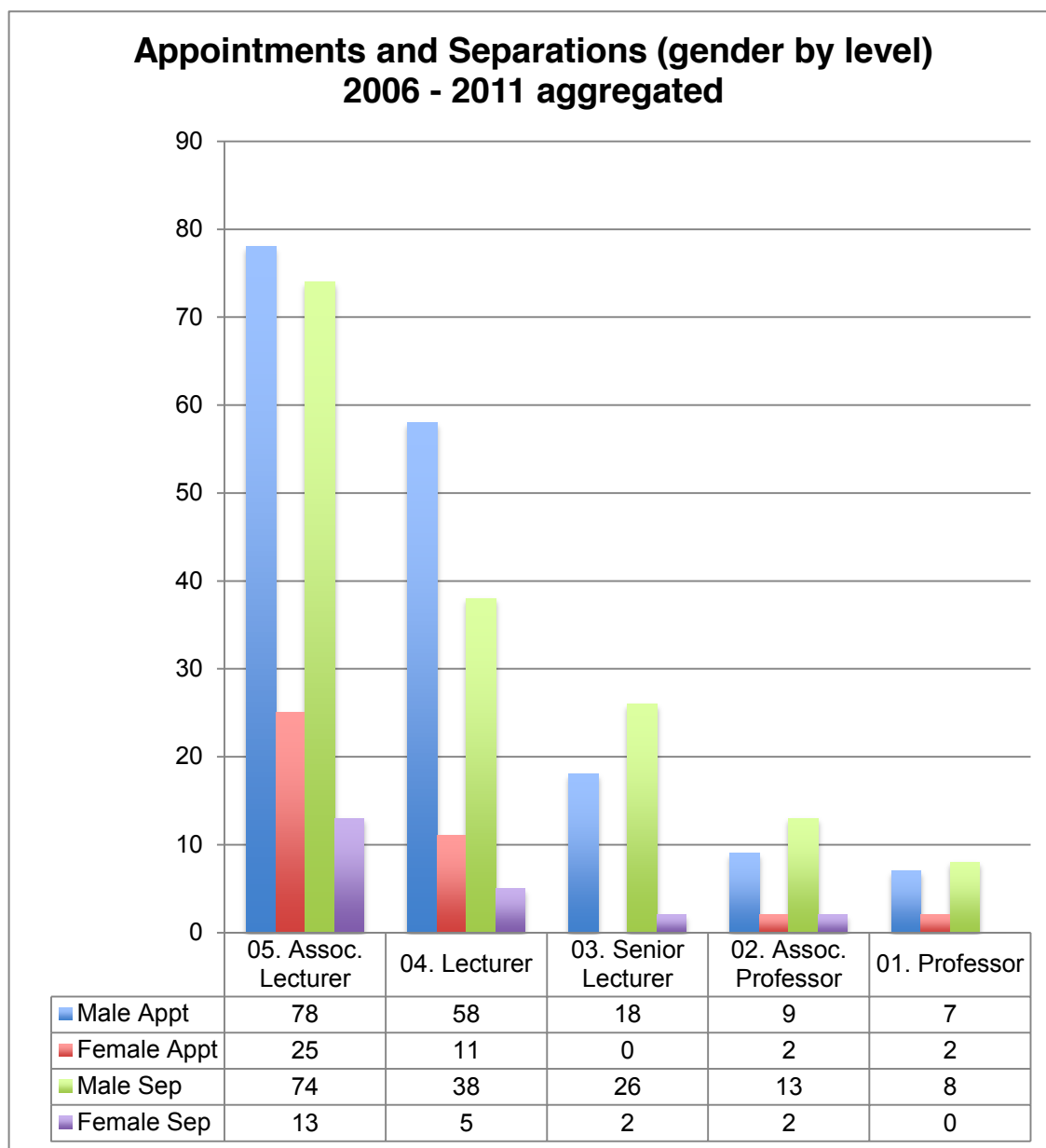


Figure 22 illustrates the level and function of appointments and separations aggregated over the last six years, 2006-2011. This indicates that the large majority of appointments and separations are occurring at levels A and B. Eighty percent of male and 91% of female appointments occur at levels A and B, while 71% of male and 82% of female separations occur at levels A and B (see Appendix 1 Table 4). The majority of these occur in the 30-34 age group for women and men, with the 35-39 the next largest group for men and 40-44 the next largest group for women (see Appendix 1 Fig. 15).

Figure 22 Appointments and Separations: Gender by level 2006 - 2011 aggregated (EIS)



As would be expected, further analysis shows that the majority of appointment and separation activity is research intensive staff. Appendix 1, Figs. 16 & 17 show a gender by function breakdown from 2003-2011. However, aggregating the data from 2006 onwards to make it a comparable time-frame with the data illustrated above, shows that a total of 51 T & R appointments were made, 42 (83%) of them male. In the same time period 71 T & R separations occurred, with 60 (86%) of them male.

Appointments from 2006-2011 are unevenly distributed across the schools, with the largest number of appointments in EECE, followed by Mechanical, Maths and Statistics and Civil for men. For women the largest number of appointments occurred in Environmental, followed by Mechanical, Civil and COFS. (see Appendix 1 Fig. 18). Of the Schools, Computer Science is the only School not to employ any women from 2006 till March 2011 (appointments have occurred since). Separations (Appendix 1 Fig. 19) follow a similar pattern.

## **Recruitment, selection and appointment data (HR extraction)**

Recruitment, selection and appointment data were extracted by HR for the period 2006-2011 through two distinct data sets, firstly through the applicant tracking process for advertised vacancies, and secondly by examining the appointment data for the Faculty, extracted according to whether the vacancy was recorded as advertised or not advertised. While all appointments are signed off at the Faculty Office, there were no records maintained there that would allow for monitoring of patterns of recruitment and appointment over time. While HR maintains recruitment and appointment records, it was a complex process to extract and make some sense of what the data meant, as will become apparent in the description of the data. Neither HR nor the Faculty monitor processes and patterns over time which is critical to examining appointments for potential systemic bias.

### **Applicant tracking**

Applicants for *advertised* vacancies, assigned a position number, are tracked through the selection process and in most instances it is possible to see who applied, was shortlisted for interview and appointed. Selection reports are also on record for the majority of these appointments and 24 out of the most recent 35 appointments, dating back to 2009, were easily located and made available for analysis.

Based on applicant tracking data a total of 88 positions were advertised and 71 appointments (59 men, 12 women) were made over the last 5 years. Of these, 15 advertised jobs did not appear to result in recruitment, four recent positions were not yet finalised and there were eight positions where two or three candidates were appointed. In three cases there did not appear to be interviews, including a level D position with 32 candidates, five of them women. Six positions were only advertised internally, with only one applicant per position, and appeared to be targeted specifically at that person (4 men, 2 women), with four of these tenured positions. Excluding these six positions women were present in the applicant pool for 77% of positions. Inconsistencies in this data set included a large number of Research Only positions, listed as tenure positions, which did not marry up with the selection reports which clearly indicated contract positions in the vast majority of cases.

### **Selection reports**

These were extracted based on position numbers identified by the applicant tracking data and covered 24 out of the most recent 35 listed vacancies during the period 2009-2011. Why the 'missing' 11 selection reports were not located in the same way is unclear. All bar one of the vacancies, according to the selection reports, was a RI appointment. Two selection processes resulted in multiple appointments for the same position number and four selection processes appeared to overlap for two or three distinct positions. Eighteen panels oversaw the appointment of 19 men and 5 women, plus three appointments not yet confirmed on the HR applicant tracking system. These positions included 17 at level A, eight at level B and two at level D.

Positions attracted quite large pools of candidates, ranging between five to 30, with 14 pools of 15 or more. Women were present in all bar four applicant pools, with a maximum of six female applicants in several pools. Gender breakdown of applicants was supplied in the HR applicant

tracking data however it was largely impossible to ascertain the gender of those interviewed on the basis of names or comments made in the selection reports.

Three panels (four positions), all chaired by the same Winthrop Professor, included no women on the panel, in contravention of policy. Another panel oversaw three appointments and included one woman on the shortlist committee but none on the interview panel. One panel (out of 18) was chaired by a woman and only twice was there more than one woman on the panel. Most women panel members were from the school where the appointment was taking place, although on a number of occasions the female panel member was both the only woman and the external member.

Many interviews took place by phone and to a lesser degree skype or videoconference and this was noted as problematic in a number of cases. Candidates were interviewed in person if available, leading to different treatment for local and non-local candidates competing for the same position. One panel (for the level D positions) used a presentation to the panel as part of the selection process. All panels referred to selection criteria in their reports.

Noted anomalies included:

- a non preferred applicant (ranked third) appointed, despite it being unclear in the report if he was considered suitable for the position,
- unclear panel affiliations with candidates being interviewed
- almost identical selection reports for two different positions but with a different appointment level recommended (Level A for woman and B for man),
- a T & R position offered without interview to an internal applicant; the only one of seven applicants considered to meet criteria,
- the second ranked candidate (male) on one position where a woman was successful and appointed at level A, was employed at level B on another position, with no reason given.

Data that could be usefully systematically included would be the gender of the applicant, internal or known (to committee) candidates, whether non-preferred applicants were considered appointable, rationale for different appointment levels and different recommended levels of financial assistance for relocation.

It was apparent that the applicant tracking dataset had not captured all appointments in the Faculty over the 5-year time period.

### **Appointment data: Advertised and non advertised**

Appointment data for the five-year period was extracted and differentiated according to a code that signifies whether the position has been advertised. There was however a very imperfect mapping between data captured through applicant tracking based on advertised vacancies and appointment data based on advertised vacancies. In addition a large number of appointments occurred that were not based on advertised vacancies. It should be noted there is no requirement to advertise contract positions of less than two years duration.

The HR data also does not map with the EIS appointment and separation data noted above. EIS data is based on 'snapshots' at yearly intervals, therefore if someone separates and returns, or is recruited and leaves between snapshots this will not be counted. With HR data all separations and appointments should be counted, including contract renewals.

The table below summarises the advertised and non-advertised appointments that took place (based on appointment data) in the Faculty by gender, level and employment status. A total of 51 people (8 women, 43 men, with 46 of these at level A & B, and all but 6 on contract) appointments were made on the basis of advertised vacancies, representing only 23 % of appointments over this

period. In contrast a total of 172 people (38 women and 134 men, with 137 of these level A & B), representing 77% of appointments were made on the basis of non-advertised positions. In contrast to advertised positions this included a larger number of tenured positions for men but not women, with 10% of all appointments tenured or tenurable appointments for men, with half of these at levels C to E.

While the advertisement or non-advertisement of vacancies serves as an important proxy indicator for whether a transparent and competitive appointment process took place, it is evident it does not tell the whole story. It is not possible to assume that advertised vacancies were competitive processes (as already noted some internally advertised vacancies appeared to be tailor-made for the sole applicant) or the converse that non-advertised appointments did not take place based on a competitive basis.

**Table 2 Appointment data: Advertised / Not Advertised positions ECM 2006 - 2011**

Adv ert?	M / F	Emp Status	Level A		Level B		Level C		Level D		Level E		Grand Total	
			#	(%)	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)
A	F	FXT1	1	0.4	1	0.4							2	1%
A	F	FXT2	2	1	2	1							4	2%
A	F	TEN									1	0.4	1	0%
A	F	TENB							1	0.4			1	0%
<b>A</b>	<b>F Tot</b>		<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>4%</b>
A	M	FXT1	6	3	5	2							11	5%
A	M	FXT2	11	5	15	7	1	0.4	1	0.4			28	13%
A	M	TEN									1	0.4	1	0%
A	M	TENB			3	1							3	1%
<b>A</b>	<b>M Tot</b>		<b>17</b>	<b>8</b>	<b>23</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>43</b>	<b>19%</b>
A	A Tot		20	9	26	12	1	0	2	1	2	1	51	23%
NA	F	FXT1	19	9	5	2							24	11%
NA	F	FXT2	6	3	4	2			1	0.4	1	0.4	12	5%
NA	F	TEN	1	0.4									1	0%
NA	F	TENB			1								1	0%
<b>NA</b>	<b>F Tot</b>		<b>26</b>	<b>12</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>38</b>	<b>17%</b>
NA	M	FXT1	47	21	9	4	5	2	3	1			64	29%
NA	M	FXT2	10	4	24	12	7	3	3	1	5	2	49	22%
NA	M	TEN	6	3	4	2	1				2	1	13	6%
NA	M	TENB			1		6	3	1				8	4%
<b>NA</b>	<b>M Tot</b>		<b>63</b>	<b>28</b>	<b>38</b>	<b>17</b>	<b>19</b>	<b>9</b>	<b>7</b>	<b>3</b>	<b>7</b>	<b>3</b>	<b>134</b>	<b>60%</b>
NA	NA Total		89	39	48	21	19	9	8	4	8	4	172	77%
	<b>Grand Total</b>		<b>109</b>	<b>50 %</b>	<b>74</b>	<b>33 %</b>	<b>20</b>	<b>9%</b>	<b>10</b>	<b>4%</b>	<b>10</b>	<b>4%</b>	<b>223</b>	<b>100 %</b>

**A: Advertised. NA: Not Advertised.**

Some non-advertised appointments can be accounted for by external competitive selection processes such as Federation Fellows, Whitfield Fellows, and Australian or UWA Postdoctoral Research Fellowships.

There is no requirement to advertise FXT1 appointments which are by definition less than two years duration with renewal to a maximum of 2 years, after which advertisement is required. Non-advertised FXT1 positions make up 40% of total appointments, with advertised FXT1 positions adding a further six percent.

Included in the non-advertised data are 18 multiple appointments (15 people had two appointments and one had three appointments). Of the 18, one gained tenure, one is classified as 'other' and the remainder are RO. Only one of these was their first UWA appointment. It is not possible to ascertain if the initial appointment was based on competitive selection which falls outside the period represented here, or if the two-year maximum had been exceeded. However given the number of tenured appointments resulting from non-advertised positions further scrutiny is warranted.

Table 3 below extracted those appointees who were first time appointments with UWA (reflected in a job 01 code) who therefore could not have been appointed to their current position on the basis of a previous faculty based competitive advertised position but may have been appointed through external competitive processes as noted above. Remembering that contracts of less than two years do not require advertisement, which represents 21 of 67 positions, a reasonably large number of appointments remain difficult to explain. In order to come to a more complete understanding of the appointment processes to date it would be necessary to track individuals through the HR system, a time consuming task. However the picture painted by this data clearly raises questions regarding recruitment and appointment processes. While women make up 18% of these appointments overall, these are disproportionately junior and contract positions, while more senior, longer term contracts (FXT2 which carry larger superannuation entitlements) and tenured/tenurable positions are skewed towards men.

**Table 3 Not Advertised positions ECM 2006 - 2011: Job = 01**

GENDER	EMP_STATUS	LVLA	LVLB	LVLC	LVL D	LVLE	Grand Total
F	FXT1	3	2				5
	FXT2	5					5
	TEN	1					1
	TENB		1				1
<b>F Total</b>		<b>9</b>	<b>3</b>				<b>12</b>
M	FXT1	15	1				16
	FXT2	9	13	4	1	1	28
	TEN		2	1		1	4
	TENB			6	1		7
<b>M Total</b>		<b>24</b>	<b>16</b>	<b>11</b>	<b>2</b>	<b>2</b>	<b>55</b>
<b>Job 01 Total</b>		<b>33</b>	<b>19</b>	<b>11</b>	<b>2</b>	<b>2</b>	<b>67</b>



## Promotion: (Promotion and Tenure Committee records)<sup>16</sup>

Table 4 outlines promotion and tenure applications across the university, aggregated into 5-year blocks, with 2010 shown individually. 2010 data needs to be interpreted with some caution in comparing with aggregated and averaged data over a 5-year period. Table 5 shows the same data for the Faculty.

Success and success rates refer to the number and percentage of successful applications relative to applications received. The application rate is a measure of application rates relative to the pool of candidates available that year, assuming that a promotion application for a level C comes from the pool of candidates in level B. Accelerated promotions, eg from B to D have not been included in the tables for the sake of clarity and are listed underneath each table. Application rates are a measure of activity, a way of checking whether women are applying for promotion in the same proportions as men in the pool. They give no indication of whether women apply after the same elapsed time as men.

University wide application and success rates show several interesting trends. The disparity between men and women in application rates appears to have narrowed over time, with the female application rate of 4.2% averaged over the five years of 2000-2004 rising to 5.2% in the following 5 year period. Men's application rates over the same time periods began at 6.6% and fell to 5.6%, with both rates falling below 5% in 2010. Application rates and failure rates for men are highest for application to level E, at 9.5% (2000-04) and 8.5% (2005-09) with the success rate in 2005-2009 of 64% across 70 applications the lowest across gender, level and time frames. This suggests that men and women have distinctly different attitudes to applying for Level E, with anecdotal evidence suggesting men apply early, take the feedback on board and tailor their efforts to suit re-applying. Women do not show an increased participation rate at higher levels with rates across levels B, C and D reasonably equal. Total average success rates are higher for women across all timeframes.

**Table 4 UWA Academic Staff Promotions 2000-2010**

year	promot ion	FEMALE					MALE				
		pool	app'n	succ ess	app'n rate	success rate	pool	app'n	succ ess	app'n rate	success rate
2010	D > E	58	3	2	5.2%	66.7%	164	9	8	5.5%	88.9%
	C > D	160	9	8	5.6%	88.9%	228	17	12	7.5%	70.6%
	B > C	213	10	9	4.7%	90.0%	229	8	7	3.5%	87.5%
	A > B	179	6	6	3.4%	100%	174	5	5	2.9%	100%
<b>Total</b>		<b>610</b>	<b>28</b>	<b>25</b>	<b>4.6%</b>	<b>89.3%</b>	<b>795</b>	<b>39</b>	<b>32</b>	<b>4.9%</b>	<b>82.1%</b>
2005- 2009	D > E	245	16	14	6.5%	87.5%	820	70	45	8.5%	64.3%
	C > D	588	43	31	7.3%	72.1%	1039	58	43	5.6%	74.1%
	B > C	989	59	50	6.0%	84.7%	957	53	48	5.5%	90.6%
	A > B	767	17	16	2.2%	94.1%	841	22	20	2.6%	90.9%
<b>Total</b>		<b>2589</b>	<b>135</b>	<b>111</b>	<b>5.2%</b>	<b>82.2%</b>	<b>3657</b>	<b>203</b>	<b>156</b>	<b>5.6%</b>	<b>76.8%</b>
2000- 2004	D > E	103	6	6	5.8%	100%	791	75	65	9.5%	86.7%
	C > D	401	24	23	6.0%	95.8%	1069	90	80	8.4%	88.9%
	B > C	715	38	36	5.3%	94.7%	800	45	44	5.6%	97.8%
	A > B	691	12	12	1.7%	100%	650	10	10	1.5%	100%
<b>Total</b>		<b>1910</b>	<b>80</b>	<b>77</b>	<b>4.2%</b>	<b>96.3%</b>	<b>3310</b>	<b>220</b>	<b>199</b>	<b>6.6%</b>	<b>90.4%</b>

*Accelerated promotions eg B to D are not included in the table for the sake of clarity.*

*In 2010 3 women (all successful) and 1 man (successful) applied.*

*In 2005-2009 4 women (2 successful) and 8 men (all successful) applied.*

<sup>16</sup> Data for this subsection was compiled by the Equity and Diversity Office

*In 2000-2004 4 women (all successful) and 5 men (all successful) applied*

Faculty data shows higher overall participation rates for men and women, with overall success rates in recent years lower than the university, with the exception of the 2000-2004 timeframe where it was equal to (for men) or greater than (for women) the university success rate. Notable in the faculty data is the increased participation of women in the promotion process in 2010, double the rates averaged over the previous time periods with 13% of women applying. This of course still represents small numbers (six) and it is unlikely this trend can continue over a 5-year period. Differences noted between men and women across the University are accentuated in the Faculty, for example with very high participation rates for men in applying to level E (between 2005-2009) at 13.2% and a success rate below 50%. In 2010 the high participation rate for men occurred at Level C, with a relatively low success rate of 62.5%.

There is some evidence of a cohort of women moving through the ranks, with higher participation rates in level B to C in 2000-2004, then in C to D in 2004-2009, and 2010 but little activity in D to E as yet.

Level A to B applications, although small in numbers, have a 100% success rate across timeframes and gender. There is a complete lack of A to B applications for women and a tiny percentage of 1.8% for men in the 2005-2009 period suggesting a lack of support, or even active discouragement for applications at this level. This is true university wide, and highlights the anomaly of level A positions as part of an academic career structure.

**Table 5 FECM Academic Staff Promotions 2000-2010**

year	promot ion	FEMALE					MALE				
		pool	app'n	succ ess	app'n rate	success rate	pool	app'n	suc ces s	app'n rate	success rate
2010	D > E	6	1	0	16.7%	0.0%	32	1	0	3.1%	0.0%
	C > D	11	3	3	27.3%	100%	37	8	5	21.6%	62.5%
	B > C	17	0	0	0.0%	0.0%	45	1	0	2.2%	0.0%
	A > B	8	2	2	25.0%	100%	36	3	3	8.3%	100%
<b>Total</b>		<b>42</b>	<b>6</b>	<b>5</b>	<b>13.0%</b>	<b>83.3%</b>	<b>150</b>	<b>13</b>	<b>8</b>	<b>8.7%</b>	<b>61.5%</b>
2005- 2009	D > E	16	0	0	0.0%	0.0%	159	21	10	13.2%	47.6%
	C > D	53	6	4	11.3%	66.7%	155	8	6	5.2%	75.0%
	B > C	52	5	4	9.6%	80.0%	186	21	17	11.3%	81.0%
	A > B	39	0	0	0.0%	0.0%	165	3	3	1.8%	100%
<b>Total</b>		<b>160</b>	<b>11</b>	<b>8</b>	<b>6.9%</b>	<b>72.8%</b>	<b>665</b>	<b>53</b>	<b>36</b>	<b>8.0%</b>	<b>76.9%</b>
2000- 2004	D > E	0	0	0	0.0%	0.0%	167	15	12	9.0%	80.0%
	C > D	41	0	0	0.0%	0.0%	216	18	17	8.3%	94.4%
	B > C	34	5	5	14.7%	100%	159	10	9	6.3%	90.0%
	A > B	37	2	2	5.4%	100%	134	2	2	1.5%	100%
<b>Total</b>		<b>112</b>	<b>7</b>	<b>7</b>	<b>6.2%</b>	<b>100%</b>	<b>676</b>	<b>45</b>	<b>40</b>	<b>6.3%</b>	<b>91.1%</b>

*Accelerated promotions eg B to D are not included in the table for the sake of clarity.*

*In 2005-2009 1 man (successful) applied.*

*In 2000-2004 1 man (successful) applied*

One woman and five men were successful in gaining fast track promotions between 2000-2009, with 4 men unsuccessful (Appendix 1 Table 5). Fast track promotions accelerate the usual promotion application process and are often initiated as a response to those who have been offered positions elsewhere and who seek to stay with the Faculty and the Faculty wishes to retain.

Participation rates in the promotion process are an important indicator, where women historically applied at levels below men. However it has long been hypothesised that women wait longer than

men before applying and may in fact be over-ready when they do apply. Success rates may be a useful indicator in this regard, and the low success rate for male candidates for promotion to level E certainly indicate they are 'under-cooked'. Another way of looking at the promotion process is by examining 'time to promotion' – that is how much time elapses between promotions and if there is a gender difference. This is a statistically sophisticated analysis that needs to be done with care and is made more difficult by the small sample size of women. The capacity to undertake this analysis was explored during the project and will now be undertaken on a University wide basis.

## **Faculty Leadership & Decision-Making – committee data**

The Faculty underwent a change in committee structures in 2011. This included changes to the composition of Faculty Board, a new Masters Working Party, and the reconstitution of the Future Frameworks Committee to be the New Courses Steering Committee. The Staff Consultative Committee did not meet in 2011 and the Planning and Resource Committee met once but is unlikely to meet again.

Committee memberships, agendas and minutes are posted on the Faculty website, along with the Faculty's governance structure. Memberships listed on the website did not always comply with Faculty governance or concur with memberships listed on agendas or minutes, and the comments below are based on the listings on the website.

The primary governing body of the Faculty is the Faculty Leadership Team (FLT) comprising the Dean, three Deputy Deans, six Heads of School and the Faculty Manager. One Deputy Dean and the Faculty Manager are female. The current Heads of School, acknowledged for their research (rather than teaching) strength also form a decision making group with the Dean. The Research Committee comprises two Deputy Deans and Research Theme leaders (five men, one women), plus two female professional staff. The Faculty Board is effectively a combination of the FLT plus the academic members of the Research Committee. Additional members include three women, the Manager Student Affairs and the UG and PG representatives. The large degree of overlap between the FLT, Research Committee and Faculty Board means all three decision making groups are more heavily weighted towards research, with few new faces or checks and balances in place at Faculty Board level. Fourteen men and two women hold all academic positions on these three bodies, representing 81% of all positions on these committees.

Heads of School also belong to the New Courses and Safety Committee, and the Dean and Deputy Deans belong to various other committees. Membership of Teaching and Learning and the Masters Working Party are more diverse and include more junior staff. Excluding the Graduate Research Committee, formalised as a Faculty Committee later in the year, 15 academic men and two academic women, the majority of them Winthrop Professors, held 60% of all committee positions.

The table below summarises committee membership with a focus on gender representation, particularly amongst the academic committee members. The seniority of members is also emphasised as this often indicates where the power resides. Women chaired teaching related committees. Academic women are under-represented relative to the proportion of academic women in the Faculty in all committees bar New Courses and the Graduate Research Committee. This under-representation was most marked at the research focussed and influential committees of Faculty Board and the FLT. Gender representation improves when professional staff and student representatives are included.

**Table 6 Faculty Committee representation by gender**

Faculty committee summaries 2011

Committee/working party	Total m'ship	Number female	Percent female	Gender chair	Academic m'ship	Number female	Percent female	W/Prof
Faculty Leadership team	11	2	18%	M	10	1	10%	7
Faculty Board	20	6	30%	M	16	2	12%	11
Research Committee	11	3	27%	M	8	1	12%	5
New Courses	12	3	25%	F	10	2	20%	7
Safety Committee	16	3	19%	M	9	0	0%	7
Teaching and Learning	12	3	25%	F	9	2	22%	3
Masters Working Party	12	3	25%	F	12	2	17%	3
Graduate Research Committee	11	4	36%	F	9	2	22%	1

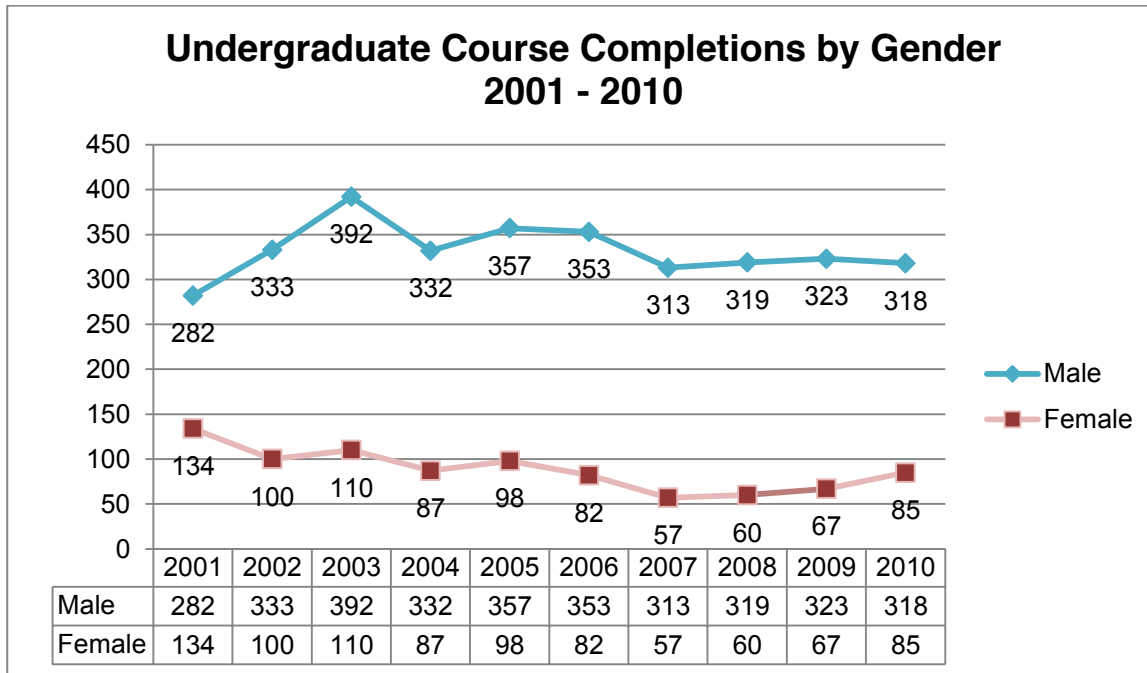
Note: Shaded area represents academic membership

From Faculty records it appears that Faculty Board met on one occasion, with the majority of Business for the year dealt with by circulation. Likewise it appears from the records that the Research Committee met three times and The Teaching and Learning Committee and New Courses Steering Committee met five or so times each, again using circulation of agendas to cover meeting business. The Masters Working Party met 13 times according to Minutes posted on the site, and the Safety Committee met seven times. Thus committees associated with teaching and safety are meeting regularly while others are not. This combined with the narrow composition of the membership of the main committees raises governance questions, in particular the openness of the Faculty to participation by staff in the decision making.

## Undergraduate and Postgraduate student profile (EIS)

Undergraduate student completions over the last decade show an overall decline in female completions from a high of 134 in 2001 to a low of 57 in 2007, and a somewhat higher 85 in 2010. This represents a high of 32% of completions compared to the current level of 21%. Male completions rose to a peak of almost 400 in 2003, flattening off to around 320 over the last four years. Female completions improved from 2007 to 2010 while male completions remained static.

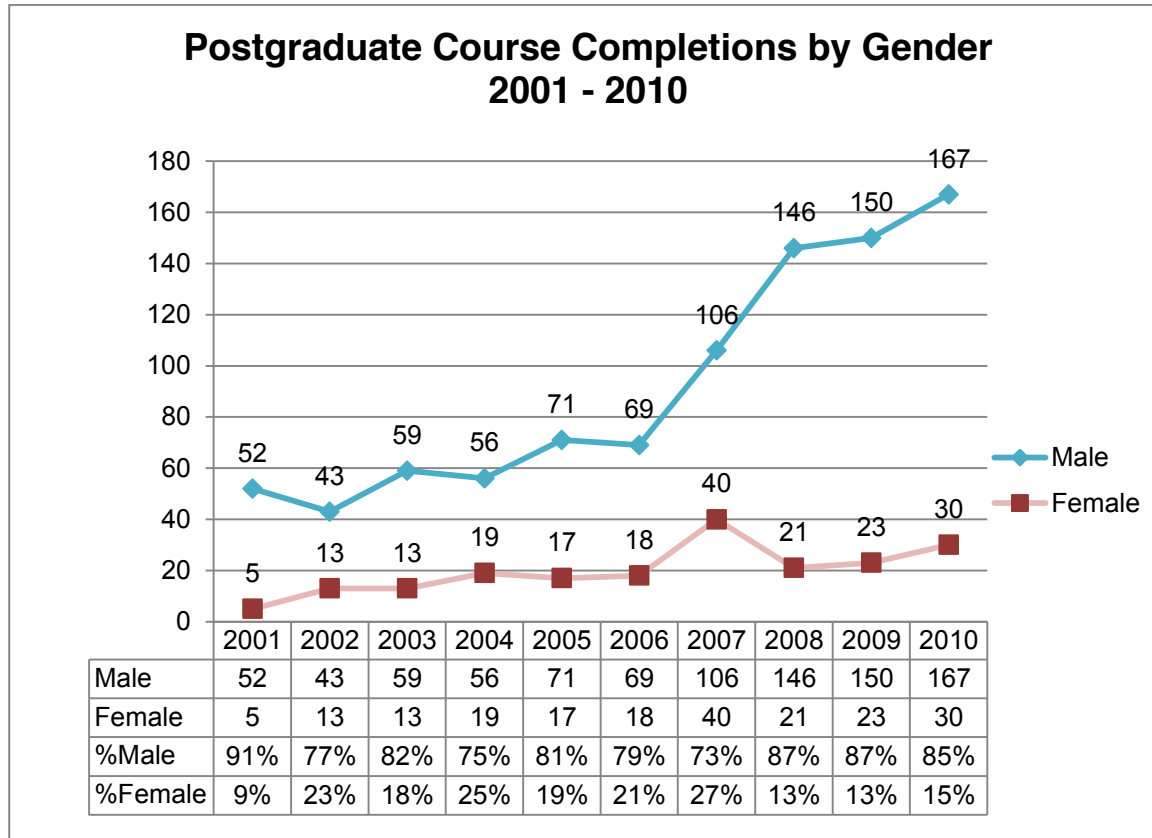
Figure 23 Undergraduate Course Completions: Gender 2001 - 2010



*Note. A 'course completion' in this graph is '1' for FECM regardless whether the student enrolled in a course across two or more Faculties. Computer Science figures from 2002 only.*

Postgraduate course completion numbers for men have risen dramatically over the period from 52 in 2001 to 167 in 2010. Female completions have risen from a low of five in 2001 to a peak of 40 in 2007 and now 30 in 2010, with percentages of women rising from 9% at the lowest point, through to a high of 27% in 2007 to the current level of 15%. Further examination of postgraduate numbers reveals that this pattern is dominated by engineering degrees (Appendix 1 Fig. 20).

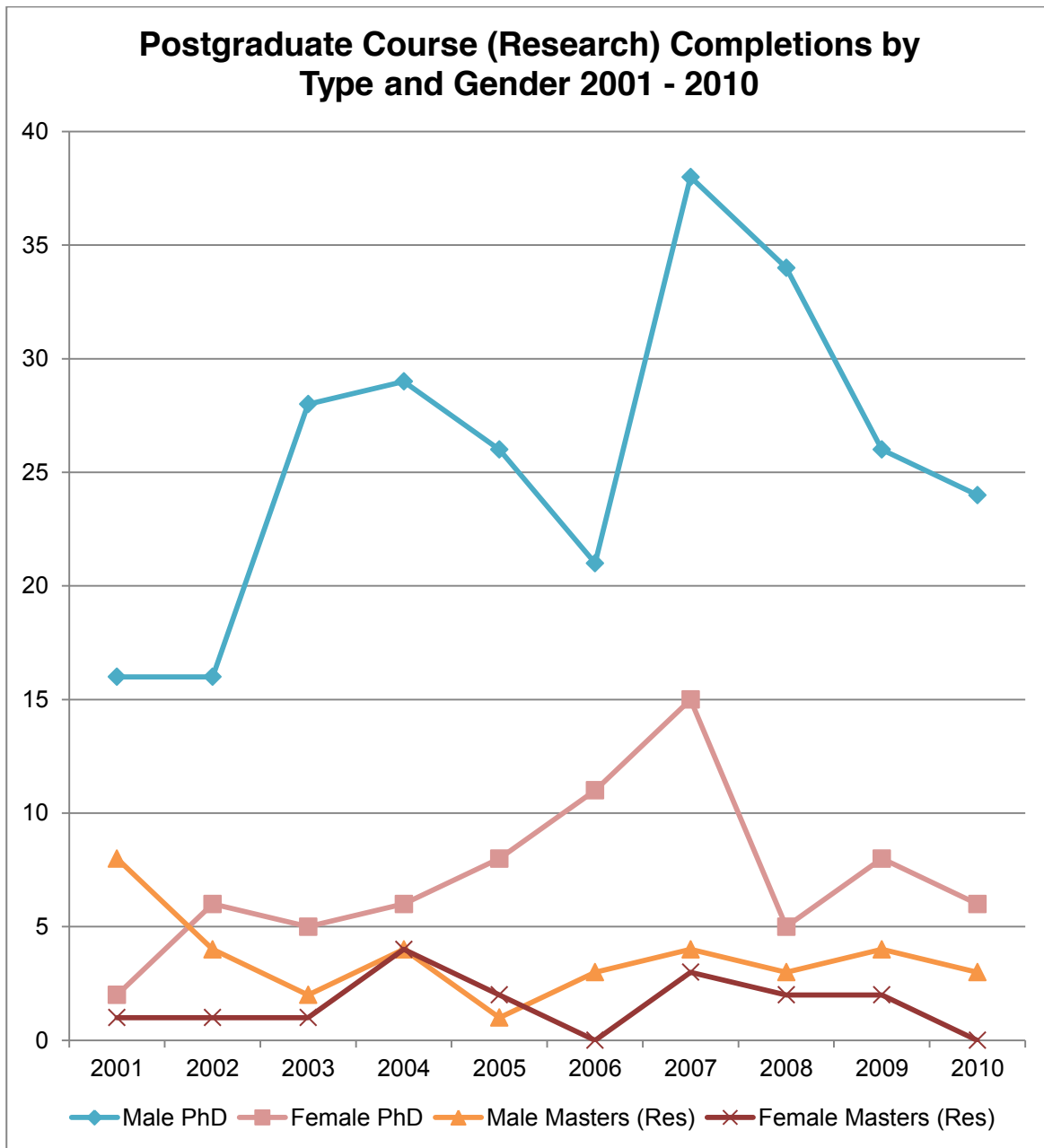
Figure 24 Postgraduate Course Completions: Gender 2001 - 2010



Note. Includes HD Research and PG Coursework students.

Further disaggregation of the data into postgraduate research degrees (PhD and Masters by research) show large differences in numbers graduating from year to year, however male PhD's dominate, with healthy spikes for men (38 completions) and women (15 completions, 28%) in 2007. This may result from the spike in undergraduate numbers in 2003, and for women active interventions in the 1990's to encourage women into Science and Engineering may have been a contributing factor. In 2010 women made up 20% of PhD completions. Male and female Masters by research completions remain below five in all years bar 2001 for men, and dropped to zero for women in 2010.

Figure 25 Postgraduate Course (Research) Completions by Type and Gender 2001 - 2010



Analysing PG research completion data by local and international students (Appendix 1 Fig. 21) shows that the largest numbers are male local students, followed by male international, then female local and female international. Male international student numbers have risen in the last few years to make-up a third of the PG research student body.

Data for coursework and 'other' PG programs (Appendix 1 Fig. 22) show consecutive increases in men completing coursework, coursework and dissertation combined, and 'other' PG programs in ever increasing numbers, particularly from 2005 onwards. Women's coursework completion rates remain modest, only rarely rising above ten women in any course in any year. Male international students, numbering around 100 in 2010, now comprise 60% of coursework students, a dramatic change in less than a decade.

# Interview and Focus group data

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A key aim of this research was to identify and better understand any institutional and cultural enablers and/or barriers to academic women's development, achievement, leadership and visibility within the Faculty. Qualitative data was obtained via interviews and a focus group. The aim was to obtain the perceptions of the faculty on their experience as employees in FECM and, in particular, their perceptions of any enablers and barriers they had experienced.

The intention was to interview individually senior men and women faculty staff and to conduct focus groups with more junior members of staff. Twenty-three interviews were conducted, using purposeful sampling; the interviewees included a mix of men (11) and women (12). All those holding leadership positions within the faculty were interviewed. Women are much less represented at level E and hold far fewer leadership positions than men, thus while both groups encompassed staff across levels C to E the male interviewees were predominantly at Level E. As mentioned earlier, one focus group of six women at Levels A and B was held but a comparable male focus group was unable to be held due to difficulties in recruiting participants in the time available.

## **Career Profile**

All but one interviewee began the interview by describing their career to date. From these career sketches it is possible to broadly describe the two groups of interviewees. Seven of the 12 women and five of the ten men had studied at UWA, with four men and four women holding UWA PhDs. Apart from one other PhD from an Australian university, the rest were from overseas universities. Several women and men held PhDs from prestigious universities such as Oxford and Cambridge, with seven out of 13 PhDs being from UK universities. Seven of the women and four of the men had completed postdocs.

Industry experience was rare with only three women and two men working in industry prior to PhD completion and only one man afterwards. Only one man and one woman had worked for a substantial period away from academia. There was only one mature age PhD in the group. Seven men and seven women had spent their entire academic careers at UWA, either following on from their postdoc or moving to UWA at entry level B and in one case beginning an academic career at level C. Seven of the women and eight of the men described a typically linear career path, moving from PhD to a postdoc or research position, making a relatively unproblematic transition to a tenured (almost exclusively) T&R position and moving through the promotion levels, albeit to somewhat different levels.

Three men and five women noted disruptions that impacted on this linear career pattern, however more women reported experiencing difficulty in gaining tenured positions and having to be more flexible, moving schools, disciplines and universities in order to make this transition. Moving countries mid-career, noted by two men and one woman was mentioned as impacting negatively specifically in relation to obtaining ARC and other grants.

What is notable in this sample are the strong similarities in career patterns between the men and women and the stable and rather parochial nature of the workforce with 55% graduates (undergraduate and/or postgraduate) from UWA, 36% PhDs and 64% having built their entire career at UWA. Staff who did not originate from UWA tended to be from overseas rather than other Australian universities. The women in this sample are clearly well qualified, if anything having an edge in qualifications from prestigious universities. They have modeled their careers on the linear pathway but, in some cases, with less obvious success and more obvious disruption.



## The gender profile – is it an issue?

There was enormous variation in responses from interviewees when asked to comment on the current faculty gender profile. While some acknowledged that the statistics were not good (e.g. 'half a Professor per school is not enough women') one HoS refused to comment and another commented 'Gender equity concerns – I don't think so'.

Awareness of the gender profile was low. Apart from the male Dean who initiated this Review, many of the male leaders interviewed had given little thought to gender as an issue. They were not convinced that it was a problem, had only a rough idea of the numbers and/or percentages in their schools and across the Faculty and had no useful benchmarks to use as a point of comparison. It was not on the Faculty Leadership Team radar according to a number of Heads: 'Most discussion takes place at FLT.... don't ever recall talking about gender and staff...maybe once a year at Faculty board but only in regard to students' and this issue 'not discussed at Faculty Board for more than five minutes'. Several HoS were openly antagonistic or defensive about the issue.

In considering the reasons for the lack of female academics in FECM, most attributed it to the nature of their discipline (particularly in reference to engineering) and the small proportion of female students in their disciplines. One commented 'I'd expect engineering to be male dominated but I'm not sure if it's better or worse than others' while another suggested 'Gender differences exist because some disciplines are not attractive to women'. The low percentage of female academics was attributed by some to the lack of female students available to progress into academic positions: 'twenty per cent reflects our student body'; 'I'm not surprised, it's similar to our student body'; 'It's the pipeline, undergraduate, postgraduate, staff - that's the reality'. For some the pipeline explanation was sufficient, there was no reason to consider the issue further.

Some interviewees expressed concern about the low proportion of female students in their faculty; for example a male leader described female student numbers as 'on the low side and a slippery slope'. A senior woman commented on the lack of 'discussion about the position of women even amongst the student body' in comparison with a decade or so ago. At one point student numbers had increased to 25% but was 'not anything like that now'. In general, however, there was little concern expressed by the leadership about the gender composition of the student population; one HoS was reported to have queried in a public forum why we needed more female students in engineering.

Some of the complacency for men and women concerning gender representation seemed to be an acceptance of the status quo as the norm. Women were used to being part of a very small minority, 'I've always been the only woman, from high school onwards', and men were not used to having women around, or only in very small numbers: 'When I was an undergrad only 3 out of 50 were women'.

The lack of women academics emerged as an issue directly in terms of women's isolation and lack of role models. During the interviews it became apparent that women academic staff in FECM are sometimes isolated within their schools and lack connection across the faculty: 'I don't come across other women in Faculty much'.

Men and women alike frequently cited the lack of role models for women as problematic. A senior woman noted 'We need more women in senior roles to inspire junior women and staff'. As one of the women noted in an email she sent after her interview, the result of a lack of role models is not always apparent:

I don't 'see myself' in the male leaders I am exposed to – I admire some of them tremendously and aspire to achieve some of their characteristics but I can't picture myself being in their role or 'being them'. I had not ever considered it to

be gender related but maybe if I had exposure to more Level D/E women they might prove to be role models that I would have more in common with or could more realistically see myself emulating. I might then have more far-reaching ambitions or see greater potential of my role at UWA.

Even the role models women nominated as important and inspirational, such as Winthrop Professors Cheryl Praeger and Robyn Owens, were women they mostly observed from a distance. Junior women wanted a greater diversity of role models, noting that 'when we have so few women, the expectation of similarity, role modelling ourselves on these few is not realistic'. They concluded in their discussion 'we have to be our own role models, our own path is not well trodden'. However, they observed this 'takes a lot of energy'.

Given the differing views on whether the gender profile in FECM was an issue, it was not surprising to find a large gulf in the responses to the question as to whether changes should be sought. For those who were more gender aware, the need to improve gender equity was clear. As one male put it, 'if we want to be in the top 50 it's a no brainer, women are a valuable resource'. 'Blokes', another suggested, 'all together, think in a similar way'. 'More diversity, broader thinking, better outcomes, better for the students, the university, the community' were seen as the advantages by another.

There were, however, clear signs of resistance to change on the part of male and female interviewees. Quotas were raised and rejected by quite a few interviewees and the idea of merit was deemed to be unproblematic: 'I don't see gender as a priority. When recruiting, it should be fair, everyone equal, go for quality, not targets.' Another remarked, 'we have policy. I don't see any intention to bias or discriminate'. Several male leaders advocated that equal treatment is about treating everyone the same. One expressed it as 'no practice is best practice. If one is supported this entails discriminating against the other...should treat all as equal'. This assumes a level playing field exists for all.

## **Organisational culture**

The question of the Faculty culture and its capacity to foster achievement was raised by both men and women during the interviews. As one woman noted in relation to women's careers, 'the question is when they (women) want to get there, can they get there? I am not sure if enough mechanisms are there or not'. A similar sentiment was expressed by a man; 'we need to create a culture to encourage women to achieve more, because it is male dominated, which can be daunting for women and may have an impact on their career. I don't think we have that in place'.

Contradictory images were presented by women interviewees of the Faculty's culture. While one woman described her school as 'comfortable and supportive... friendly, helpful, and collaborative' at the other extreme were a number of women (not all in the same location) who described their workplaces as toxic and where they felt actively undermined. The existence of sub-cultures appeared to explain in part the enormous differences between the accounts of women. Those who expressed little concern about the organisational culture generally had more tangible connections within the faculty; for example, some were firmly attached to research groups while others had partner relationships within their school or faculty.

A disturbing number of women interviewees viewed the workplace culture of FECM as very hostile. One woman stated 'this is not just a lack of support, this is about taking you down' and another commented 'you hear stuff behind your back, stories that go to the Dean'. The women reported having received confirmation from a number of sources, including some external to the university, of being undermined. Their views of a negative workplace culture were confirmed by others. A Winthrop Professor who had mentored several women noted that some were in crisis, being bullied by senior academics or Heads of School. A senior male noted that he estimated 'one

in ten or more men actively discriminate against women'. He observed men holding long-standing grudges against women, something he had not seen against men. In the interviews several leaders were extremely critical of women, while one engaged in 'bad-mouthing' behaviour. Senior women, following discussion with each other, noted a pattern of decreasing support and an escalation in undermining behaviour from men as women became more senior.

A number of interviewees described experiencing a gendered culture. Both men and women commented on the Faculty as a 'boys club', most often noting that this was unintentional but occurred nonetheless. There was a comfortable homosociality to this for the men. As one described, 'Yes, to a degree, relaxed, have a drink, lots of discussion, we understand each other. I wouldn't do that with female staff...it happens naturally, not deliberately'. Even the socialising between staff and students which revolved around things like five a side football, as one woman drily observed, 'works better for some than others'. Some women also felt very strongly that gender influenced how dissenting voices were treated, that there was less trust of women, that women expressing dissenting opinions were labelled by both male and female staff as 'whingers', 'have a chip on their shoulder', or 'complaining again'. 'Always the problem is with women'. One woman contrasted the culture of the faculty with that of the broader university: '[it was an] eye-opener when I started joining university committees. People listen whereas in the faculty you get shut down'.

Finally some interviewees remarked on the importance of leadership in creating culture through what leaders role model, what they allow, what they attend to and don't attend to. Attitudes and behaviour towards women changed under successive leaders. As one woman noted, depending on the leadership 'other men blow with the wind'.

### **The construction of success**

One aspect of organisational culture raised by interviewees was how successful performance by academics is viewed at UWA. Given that the faculty had recently undertaken an individual staff ranking process associated with organisational change, it was perhaps unsurprising that this topic arose. Two recurring themes arose in the interviews concerning the construction of success as an academic. The first theme of this discussion was the way in which success as an academic at UWA is constructed and what is rewarded or not rewarded due to this construction. The concomitant issue was the question of 'fit' for individual interviewees with this perceived 'ideal' academic career.

The commonly held view was that the only 'route to success was a single minded focus on research'. Not only was research seen to be the almost sole determinant of academic worth, the quantification of research inputs and outputs was narrowing what constituted valued research to particular grants and publications. Women interviewees expressed resentment that success, thus defined, ignored large chunks of work being performed by them to varying degrees: teaching, administration, pastoral care, project work, mentoring and various service-related activities. This lack of perceived value was not necessarily seen as the 'fault of particular people but rather the university system'.

Numerous interviewees pointed out that this focus on specifically-defined and measured research success was seen to reward individual stars rather than teams and to encourage very self-centred behaviour antithetical to being a good team player or good citizen within the Schools and Faculty. It was perceived to be advocating a monoculture which undermined organisational effectiveness by, for example, ignoring the educative function of the university. The failure to value diversity of contributions was lamented by some and seen by them to convey a clear message that educating students was not important. It was suggested by one interviewee that the focus on such a monoculture was resulting in a 'faculty of quarterbacks' rather than a team.

The Heads of Schools did not question the value placed on research as a measure of academic success but did make the point that highly successful researchers tended to establish 'fiefdoms' and skew the distribution of resources (discretionary funds, teaching loads, administrative loads or service requirements) in their favour. One Head of School described it as

Research barons are selfish stars, one powerful individual who will gladly swallow all the resources, and argue that you should invest in them because they are successful...These are staff who think the uni is here to serve them, not the other way around. They want you to leave them to get on with what they want to do.

Returning to the observation of gender difference amongst the interviewees (referring only to senior academic interviewees here), there was little evidence of this construction of success being an issue for the senior male interviewees. In contrast, many of the women interviewees expressed some degree of disjunction between themselves, their measures of success and their values and what was valued and rewarded by the Faculty. A significant number of women were making clear choices to re-define success 'valuing what doesn't fit' and therefore making what one described as 'sub-optimal decisions for working through the ranks.' There were numerous expressions of frustration that what they regarded as core business that someone needed to do, and do well, was not more valued by the faculty and university:

Remember numbers are imperfect, get over it, do things for their value.

If the university only wants 'A star' researchers, then there is no place for a person like me...who will look after students?

What business are they in?

Why don't they reward teaching better?

There is conflict between what the university says and what is actually rewarded, my service record counted for nothing, it's all about grants.

The university talks about valuing teaching and service...lots of people don't really buy that.

Really important roles don't get counted but we sink if we don't do it well.

The women interviewees presented differing career strategies in response to this challenge of maintaining work they valued, and the implications this had for the time available for research. They recognised that when they take on roles that don't count, this has implications for promotability. This did not mean that women were any less ambitious than men, or less interested in research; most were adapting to what was required to gain promotion within the current system although a few had discarded expectations of promotion.

Finally, it should be noted that these feelings of lack of fit, or disconnect between what they value and what the Faculty/University values were present for the majority of women interviewees but not for all. As one woman said 'I haven't felt thwarted or that the system is unfair' and another commented 'I could do it if I want to, I don't think there's a barrier'.

## **Leadership & decision-making**

The leadership of a School or Faculty is usually very influential on the culture of that School/Faculty. The main observation to emerge in relation to this was the homogeneity of the leadership.

Men and women commented on the male dominated nature of the leadership team and of the committees. Several women believed Engineering was still not ready to accept a female HoS, despite women serving as deputies. One interviewee summed it up as 'women are contributing to

faculty in supporting roles but the power resides with men'. These informal roles were not perceived to be valued in the same way, nor to have the distributive power attached to HoS positions and some committees.

The homogeneity of the FECM leadership was observed to extend beyond gender and was of concern to some interviewees. Critical comments included 'older men', 'lacks diversity', 'all come up the same way', the 'leadership team is all about high flying researchers', 'male, Level E and on all the other committees' and 'a while since these guys came up through the ranks'.

Interestingly, all HoS reported the job as onerous and detracting from their research careers and took it on for reasons other than a desire to be a leader, for example 'I didn't like the other options', 'it was my turn' and 'I needed it for promotion'. They could be termed 'reluctant leaders' who were all looking forward to the end of their terms.

## **Career enablers**

A number of important variables were identified by the interviewees as contributing to academic career success; these included sponsorship, mentoring and career guidance, support for promotion, belonging to a research group, obtaining ARC grants, supervising postgraduate research students, having a reasonable workload and the capacity to work long hours and devote oneself to one's career. Teaching, service and leadership were not mentioned as career enablers, with one exception being a HoS who viewed his leadership role as contributing to his promotion prospects.

## **Mentoring and career guidance**

Sponsorship and/or mentoring emerged in this study as a clear and frequently present enabler of careers. The 'right people at right time' (male leader) are critical to career success. The right people, as a senior woman put it, 'are enablers'. Most often these people were PhD supervisors or Heads of School and in the UWA context a small number of people were mentioned repeatedly by women and men as engaging in mentoring or sponsorship. Sponsors quite literally open doors, and for a number of interviewees, male and female, this included faculty staff enabling or creating opportunities for people to come to UWA from overseas.

Further sponsorship examples provided by male interviewees included: 'my supervisor's contacts opened doors, in Australia and overseas', 'twice approached by HoS to apply for promotion', teaching the 'ingredients for building strong research teams', giving 'good advice', 'advice re grants, topics for ARC'. For many, their PhD supervisors remained part of their academic landscape, as Visiting Professors, as part of ongoing collaborations, providing postdoc or PhD opportunities overseas for promising students or a source of PhD students for UWA. As one senior male put it 'I have been very well sponsored by a number of people inside and outside faculty.' Another male leader observed in relation to several junior men who were not thriving 'until now I assumed that happened for everyone. Now I can see that some are hired and left to sink or swim'.

Women seemed more inclined to mention 'mentoring' rather than 'sponsorship', a distinction which will be explored in the discussion. Several women noted they had been well mentored in their careers, within the Faculty and/or the broader institution and, for one woman, from a 'career mentor' at an earlier institution. One woman who came to UWA after her PhD considered herself lucky, noting that

'...without a mentor it can be quite hard. To find the right mentor is not straightforward, you need the right advice, the right directions. If you come here after study have to put in effort and some luck because you don't know people.'

In contrast to the positive examples there were also those who had not received any mentoring within their discipline and others who commented that it was 'easier for men than women to find good mentors', 'it is hard to find mentors of use, if you have different values' and 'I don't want a mentor who will mentor me back into the straight line'.

Several senior male interviewees suggested that more systematic support could be provided to develop the careers of junior staff (male and female). One stated

Programs to help develop younger staff (e.g. PDR) have been allowed to fade away and are poorly regarded if not opposed outright by senior staff. On several occasions I have seen senior staff members making disparaging comments when discussions on helping junior staff members develop were raised.

Junior women in the focus group, primarily RI staff, reported difficulty in being taken seriously, feeling that their career aspirations were dismissed. A number felt like they operated in a vacuum, with no feedback. On pushing for a PDR one was told, 'Oh if you really want one'. Heads of Schools largely failed to note the female RI staff within their schools during interview, and as one HoS noted 'research staff are out of my control, I don't supervise them'.

At the broader university level a number of women had participated in the Leadership Development for Women Program (LDW) and this was seen in a very positive light, assisting women with networking, learning to sell themselves and gaining confidence and assertiveness.

## **Promotion**

Varying experiences were reported by the interviewees with regard to the promotion process. Many had engaged successfully with it and two women reported that they had received feedback encouraging them to apply for the next level within 18 months. Neither had re-applied within the suggested timeframe, partly because of the 'difficulty in putting the application together'.

The promotion process provided feedback to several women that resulted in changes in their behaviour: As one woman commented 'After the problems I had with promotion to C, I said no to a lot of things'. Promotion to Level E was noted by a number as problematic. One woman had been told she had taken on 'too much administration and leadership too early in her career' and was encouraged to be single-minded about research until achieving Level E. Two women indicated that they had no expectation of ever being sufficiently competitive to gain a level E position due to lack of ARC grants and another indicated she was happy to take her time while children were still at school. Several noted that taking on leadership roles as part and parcel of level E was unattractive, primarily because of work/life balance issues.

Several men and women commented on examples where women in particular had lacked support or were undermined in their bid for promotion by Heads of School and/or the Dean at the time. Similarly several women commented on the contradiction that occurred between when they showed their promotion applications to people outside the School or Faculty and were considered ready, while at the same time they were discouraged from applying or their applications were not supported by the Heads and/or Dean. Another woman commented that she had only applied for promotion because of encouragement from an external expert on a School review panel. In contrast to this, a number of Heads of Schools described being encouraged to apply for promotion every couple of years during their careers and the role of the Dean at the time was described as the 'good guy' supporting their applications. One of the men noted that research-only staff, male and female, are discouraged from applying for promotion because there are no funds for it in the research funding.

## **ARC Grants and Research Groups**

Another defining career enabler present for the majority of the men and far fewer of the women in this sample had been success with ARC grants. ARC grants have the capacity to be career makers or career breakers. This career trajectory is set early, and as noted above, can be enabled through sponsorship. A male leader confirmed 'individuals need to get an ARC early' to establish a track record but as a senior woman noted 'the ARC is a difficult nut to crack' and for another 'I can't get back into the ARC loop'. The majority of men interviewed had been successful in gaining ARC grants over extended periods, reporting 'continuous funding over more than a decade', 'funding very good', 'at least one every few years'.

Several women noted problems with gaining funding from the ARC when operating across disciplinary boundaries or not being easy to pigeonhole as either basic or applied research. International collaborations were also perceived as unhelpful in targeting ARC funding. Feedback received by one applicant when occupying a Deputy Dean position, that the panel 'doubted she would have sufficient time to lead a research team', contrasts with the experience of men with similar leadership responsibility for whom it had not been a barrier to obtaining ARC grants.

Lack of success in ARC grants, given the enormous effort required and low success rates, can be enormously disheartening, as one woman described 'it knocked the stuffing out of me'. For those who have been unable to establish a grants track record early it can make sense to change tack and 'put effort where I see results', whether that be alternative sources of research funding or non-grant based research. Funds for research were considered less necessary in some disciplines, or could be obtained in other ways, however other grants did not have the same status and were perceived to not carry the same weight in promotion applications. One woman queried the primacy of ARC grants, wondering why outputs were not more important than inputs.

It is worth noting here comments made in the focus group of junior women academics. Firstly, they identified the critical need for sponsorship in the form of being included in ARC grant applications and most could not see how they could establish a track record without that. Secondly, for those who were not in tenured positions, their lack of security inhibited long term planning.

Belonging to a research group was another career enabler mentioned by men and women. Research groups can introduce a multiplier effect into people's research productivity, and ARC grants provide the critical ingredients to building a group, through funding for postdocs and additional PhD students. PhDs and postdocs are a valuable resource, increasing research capacity and outputs, and a number of the men mentioned they had large groups.

Not belonging to a group was mentioned by several women: 'I couldn't find a group, compared to a male colleague at the time I had broader interests, and lacked a single focus'. Another woman had moved countries for family reasons, noting that from a career perspective she should have stayed because she left a good group. Similarly, several interviewees observed that there was an uneven distribution of higher degree research supervision with most of the research students being supervised by a small number of staff.

## **Workload**

The allocation of workload was identified by the interviewees as a critical career enabler or barrier, leaving as it does either more or less time for research. A male leader commented that you need to be 'careful with workload allocation, it is possible to kill off research careers when juniors are overloaded'.

Workload issues were a problem for everyone interviewed, a reflection of the complex demands of academia and the ever-present pressure to do more, particularly more research. As one HoS remarked 'Expectations are growing, academia takes everything'.

Interviewees reported that due to a lack of a workload allocation model in a number of the Schools within FECM, there was a lack of transparency in the allocation of teaching, administrative and service loads, making it impossible to judge fairness or equity. Perceptions abounded of more influential staff being able to negotiate more favourable workloads and it was presumed that there was probably some imbalance in the distribution of work across the faculty. A senior woman commented that it is 'hard to gauge what others do', while another noted her 'teaching load is hard to judge relative to others'. According to a senior male, there is certainly a 'perception that there is some imbalance'.

In addition there was a gendered dimension to the perceptions about the allocation of work. One male leader stated that women take on too much and get exploited because they don't say no. In his view 'they need to be more selfish'. A senior woman's description of herself as a 'team player', and that this meant 'I do more than my fair share of teaching, and more than my fair share of admin', illustrated the senior male interviewee's perception. There was a perception on the part of some women that they are 'targeted more for soft tasks' with the following comments emanating from the junior women: they 'take advantage of you to develop new courses'; there are 'subtle differences in the tasks given to women, soft, invisible'; 'women also volunteer for softer stuff'; while tasks that are 'visible', that 'develop track record are given to men'. Male and female interviewees suggested that men preferred more strategic tasks, hiving off other tasks to women. The recent changes to the Research Committee were cited as an example of this, where the change from a female to male chair had been accompanied by the repositioning of the Research Committee as more strategic and with a budget and the scholarships component had been delegated to a new committee headed by a female.

## **Life balance**

Allied to the issue of workload is that of work/life balance (WLB). While almost all interviewees saw WLB as problematic, there was an underlying assumption that working long hours was essential to success. WLB was seen as a gendered issue, with men more clearly able to meet the long hours demands, albeit not without personal cost. However WLB was identified as problematic for women's careers and for some women the challenge became utilising WLB policies and maintaining some balance while minimising impact on their careers.

Men in their interviews described WLB as a critical issue for women, and one that explained why women were more compressed into lower levels. 'Family is a huge factor'. Their focus was primarily on career breaks for childbearing, women's capacity to juggle family duties and how these impact on women's careers. A number of the men felt that their own careers were only possible because of the support they received from their wives.

If I didn't have the support of my wife I wouldn't be able to do it. She does everything. Without her support I would have stayed at Level A or B.

Women, it was recognised, have to be able to take breaks and there is a need to support this and provide flexibility. Nevertheless it was considered inevitable that 'Time out of the workforce hurts a career, it takes extra time to catch up'; women will need to 'accept some delay'.

Some suggestions were made regarding how to ameliorate this, for example by recognising this 'when reviewing documents, that it is a time penalty but not career penalty'. Another HoS suggested:

'we should subconsciously provide more support if they have family duties. As HoS reduce non-research related duties to a degree because research is weighted heavily'.

Women for their part worked to minimise and manage career breaks. Parental leave had not been available for some at that time in their careers. Others had taken minimal parental leave or had



continued work doing some tasks such as supervision and emails but had not done things like write grant proposals, which did mean 'you don't necessarily get back on the same trajectory.'

Other difficulties clustered around managing work with small children.

Fieldwork had to be curtailed and I had to push PhD students to be more independent. This made research more challenging. Conferences were also hard.

Several women worked part-time in an attempt to balance family and work. However one described working part-time as 'a bit of a nonsense that only really works to reduce teaching load, but does not reduce the load in terms of research and students'. She struggled to maintain some balance, describing her current state as better than before. 'I'm working very hard but not losing my mind'.

While she 'has to be part-time to get some balance', at the same time she observes that for the guys in the group 'the ones who are successful don't have work life balance'. Thus the boundaryless nature of the workload associated with the 'ideal' academic is seen as antithetical to WLB.

Several women felt torn between the demands of work and family:

I am torn between work and home. I should be home more.

I could spend more time doing research and could spend more time with my child.

The discussion with junior women focussed more on the timing of having children and the way parental leave was viewed as a burden by colleagues. One woman had been advised 'you would want to wait a few more years and get your career established', while for her it was a case of 'if I want to have children I need to get a wriggle on'. Taking parental leave made them 'feel guilty, putting pressure on the entire school through their absence and the cost of their absence, plus their research was going nowhere'. As one said 'I feel I have to produce while on maternity leave'.

In summing up this sub-section, it can be seen that there's a diversity of views and experiences reported by those interviewed. The next sub-section draws together the institutional and interview/focus group data and provides analysis based on relevant prior academic research.

# Discussion & Recommendations

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## **PART A: Committing to a change process**

Gender is not on the Faculty agenda. This is despite low numbers of academic women, thinly spread across the Faculty apart from the School of Environmental Systems Engineering. Women are largely invisible and marginalised, almost completely absent from formal leadership positions and severely under-represented at the highest academic rank. The largest group of women are junior RI academics in insecure contract positions. The number of women available to contribute to leadership and decision-making within schools – traditionally drawn from T&R staff – has barely increased in the last two decades, from 11 in 1992 to 19 in 2012. This is also the number of academic women visible to students across 6 schools. Change in both proportions and numbers of women is painfully slow with a decrease in numbers in recent years and a currently static proportion of women. The data paints a picture of a stable gendered status quo with very little change occurring over time.

## **A gender problem?**

The most striking and critical issue to emerge from this research, given the data, is that for the majority of those interviewed, particularly the male leadership, there is no gender problem. The existence of a gender equity problem is only evident to a minority. With so few recognising there is a problem there can be little impetus for change. Clearly without intervention, change will not of itself naturally occur.

In failing to identify the current numerically and culturally male dominated norm as problematic, the majority of the Faculty remains out of step in four main arenas:

- The expectations and aspirations of the broader community, which the university serves,

- The sustained gender equity gains made by the university more broadly over the last two decades,

- The norms and expectations of the employers of students graduating from the engineering and other professions represented by the disciplines in the faculty, and

- The standards of the professional bodies associated with these professions.

Where the university has seen itself as a gender equity leader, moving far beyond compliance towards role-modelling best practice in the broader community, the Faculty, far from displaying leadership, is clearly behind the broader community, business community and professional associations in recognising the need for change. The lack of progress of comparative faculties in other Australian universities should not be seen as an excuse for inaction, but rather as an indictment on the sector as a whole. It does however point to the enormity of the task ahead.

Clearly the gap between the Faculty position and that of the University, employers, professional associations and community, all of whom acknowledge a gender equity problem, will continue to widen over time. Acknowledgement of a gender problem and increased understanding of the ramifications of non-action for the Faculty in the longer term is a critical first step.

Finally, the Faculty is out of step with its international cohort, where it is acknowledged that gender inequality undermines quality. Harvard, one of a group of nine premier research institutions brought together by MIT<sup>17</sup> commenced this journey almost a decade ago:

Excellent faculty are at the heart of any world class research university...an excellent faculty must reflect the diversity of our students and the world...Harvard pursues the benefits of diversity among its faculty not because they help women or people of colour, but because they help the University become more productive, more creative, more competitive and more successful. (Office of the Provost 2006)

The current complacency has no place in an institution striving to take its place in the top 50 universities in the world.

### **Recommendations: Commitment to change**

*Distribute report and recommendations, with the full endorsement of the SDVC.*

*Negotiate University resourcing and support for a gender culture change initiative.*

*Present report and findings to FLT and Faculty Board.*

## **A culture change process – vision, ownership and direction**

Creating more gender equitable workplaces is a culture change process that requires challenging and changing long-standing stereotypes, assumptions and everyday work practices. It also fundamentally challenges the way people think about themselves as men and women and the roles men and women play in the public and private domains.

Change of such a fundamental nature will require committed and strong university and faculty leadership, and the capacity to draw on expertise and resources located both within and external to the faculty. It will not be possible for one person, the Dean, to drive a gender change agenda on his own. The importance of the Faculty's leadership engaging positively with creating greater gender equality can not be over-stated (Rustad & Rodland 2010). Pincus observed that gender equity implementation strategies often failed because they 'lacked not only the resources needed to bring about change... but also the backing of those in leadership positions, most of whom have been men' (Pincus 2009:149).

Responsibility for gender equity cannot solely depend on individuals who are committed to doing the 'right thing' (Charlesworth, Hall & Probert 2005). For these individuals, building more equitable workplaces is based on personal human rights values and a number of FECM staff have exhibited this conviction over the years. Individuals may move on, become increasingly disenfranchised or burnt out, leaving equality measures or improvements vulnerable. Gains made, especially by those in leadership positions may quickly evaporate under successive leaders. However these individuals and other gender change allies, wherever they are located in the faculty, should be engaged and supported in the change process.

Gender equity cannot be optional, particularly for leaders. Dependence on a few people who do the right thing is often accompanied by a lack of integration of equity into the core business of the organisation. This allows others to 'opt out'. It appears that many of the senior academics within the Faculty have, over the years, exercised this 'right' to opt out, remaining ignorant, recalcitrant or openly opposed and unaccountable for their attitudes and behaviors towards women. *Male*

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<sup>17</sup> California Institute of Technology, Massachusetts Institute of Technology, Princeton University, Stanford University, University of California Berkeley, University of Michigan, University of Pennsylvania, and Yale University

*Champions for Change (2011)*, the newly formed group of corporate high flying CEO's brought together by the Sex Discrimination Commissioner, have highlighted the limitations of change processes that do not integrate gender equity into their core business. Why would lack of leadership or breaches in behaviour be tolerated in relation to gender equality, they ask, when this would not be sanctioned in regard to Occupational Health and Safety Standards for example.

Resistance to change and backlash is to be expected, particularly from those who are happy with the status quo, and see no need for change. The current gendered status quo is top heavy and numerically dominated by levels D and E men who are thriving within the current model of success, are well funded and well supported, and some of whom may not support change. These men are more likely to be what Pincus (2009) refers to as 'status quo keepers'. Pincus identified strategies used by status quo keepers, through direct and indirect uses of power including branding, discrediting and harassing directed against those working for change. These behaviours, directed against women who seek change, are already present within the Faculty.

Men, however, are critical to the change effort. The research has identified a small number of men who have gender awareness, have in the past supported change, and remain committed to doing so. Men, unlike women, cannot so easily be criticized on the basis of self interest and often are well placed because of their belonging to the majority group and their seniority to bring about change, particularly as role models for other men. Men, are better placed to be/become 'gender champions' or 'gender catalysts' (Prime & Moss-Racusin 2009; Male Champions for Change 2011) and their support and engagement must be sought.

Women, Pincus (2009) observed, were more likely to be 'change seekers', however it is important that this not be used as a rationale for expecting women to create the desired change. There is a tendency within organisations to entrust women with creating the desired culture change, however this effectively positions gender equity as women's business and women's work. In addition, women are particularly vulnerable to criticism, marginalisation and accusations of self interest if they take on this role (de Vries 2010b).

Culture change processes are strengthened when people at all levels of the organisation work for change. Models of successful change developed in the U.S ADVANCE programs include support and engagement from leaders together with 'collective organisational catalysts' such as committees (Burke; LaVacque-Manty & Stewart 2008). The inclusion of well-respected scholars from other parts of the University has in these cases been an important ingredient for success and in the FECM case should be augmented by the involvement of respected women and men from the professions.

Creating ownership of the need for gender change becomes the critical first step and will rely on building the gender awareness of Faculty leaders and staff, both academic and professional. For this reason, a detailed list of recommendations imposed as an outcome of this research is unlikely to succeed. With this in mind, the report aims to keep recommendations to a minimum whilst providing some exemplars of bigger picture and more detailed recommendations. The onus needs to be on Faculty members, drawing on the assistance of gender aware 'outsiders', developing and implementing plans themselves (see also Meyerson & Tompkins 2007).

### **Recommendations: To build ownership and get gender on the agenda**

*Establish and resource a Gender Advisory Committee (GAC), based on the Advance program at Michigan (Burke; LaVacque-Manty & Stewart 2008). Committee composition to be gender balanced, include various levels/categories of staff, include respected senior academic external to faculty, and scholar, equity practitioner or consultant with gender expertise, and member(s) from corporate partner organisations or donors. The Committee needs to be empowered to discuss and make recommendations to the Dean on policies and practices where there are concerns regarding gender implications for staff and be consulted where gender implications are apparent, such as the*

*workload model. Committee representatives to hold positions on other key faculty committees and the FLT and be able to refer items of concern from, for example the Research Committee, to the GAC for consideration. The GAC to be responsible for gender data monitoring and scrutinising of recruitment and selection processes on a yearly basis.*

*Sponsor further data extraction, research or inquiries to support the activities of the committee.*

*Benchmark against and partner with prestigious institutions who have committed to improving the position and status of women. Faculty leadership to discuss gender initiatives with overseas collaborators and at conferences to determine where there is activity to ensure meaningful benchmarking institutions are selected.*

*Engage men as mentors, sponsors, member of Gender Advisory Committee and consider awareness raising specifically for men.*

## **Leadership and decision-making**

Current leadership and decision-making processes within the Faculty are part of the problem and will need to be reviewed if the Faculty is to move forward in addressing gender issues. The current formally designated leadership positions such as HoS, Dean and Deputy Deans, are almost exclusively occupied by men and the current committee structures further exacerbate the lack of diversity in decision-making. The role of HoS and Dean, (all men), in particular currently wield considerable distributive power individually and collectively and play a critical role in determining the sub cultures of the various schools and their climate for women. Given the antagonism of a number of male leaders and the general lack of awareness and conviction regarding gender equity and the need for change it appears probable that a number of men will resist any change process.

Clearly changes to the composition of the leadership team will be required if the faculty is serious about addressing gender issues. It is imperative that leaders are required to commit to improving the representation and participation of women and that commitment to gender equality is considered a core value and competency of Faculty and School leaders. This can be assessed based on previous track record combined with measures of accountability, such as the progress of junior scholars, particularly women.

Women must be included in Faculty leadership positions and decision-making structures in greater than token numbers. Academic women are currently largely invisible in School and Faculty leadership and decision making roles despite greater participation in the past, including as HoS in Computing and Maths (but never in Engineering) as deputy HoS, and in various deputy Dean roles and as interim Dean. Some suggested that women were over-used in under-recognised deputy roles and simultaneously overlooked for leadership roles with more power, status and career potential. Research indicates that diversity is not increased through the presence of solo women (as is currently the case on the FLT) and that the Faculty Leadership Team for example would need at least three academic women in a group of ten.

Increasing the presence of women in leadership positions in the Faculty can be problematic when drawing from a small pool and often requires drawing on women not yet at level E. This in turn can compromise women's career progression, (as it also does for more junior men), and measures need to be put in place to offset this career disadvantage. The Faculty is drawing from an ever-shrinking pool if it continues to draw leaders only from T&R staff and it may need to reconsider the leadership contribution of RI staff.

Women's low visibility is also problematic in terms of role modeling and isolation. It is not until women are included on faculty committees and in leadership roles that they meet each other and are exposed to women outside the faculty and to other cultures outside of their own school.

## **Recommendations: Leadership and decision-making**

*Review leadership positions and institute a leadership development and succession plan for HoS. Ensure future leaders are selected who will support gender equity. Ensure training includes gender, diversity and inclusion issues.*

*Make immediate changes to the composition of the FLT to include more women as full members with input to decision-making. These women while not holding formal leadership positions now should be considered future leaders.*

*Increase diversity of committee composition, ensuring a minimum of 3 academic women on each committee (including FLT), and reduce multiple committee memberships, thus widening the pool of committee members across the faculty. Choose people on the basis of their expertise and interest rather than formal positions for committees, therefore reducing reliance on HoS being the automatic choice for committee positions (and reduce the informal deputising that occurs when HOS are unable to attend).*

*Review the functioning of Faculty Board to ensure it value adds to the work of the faculty and is not used merely to rubber stamp decisions already made. Make report from Gender Advisory Committee standing item at Faculty Board*

## **PART B: Getting down to detail**

### **Numbers matter**

The research literature examining workplace cultures and the status of women is clear concerning the importance of numbers. Both numbers and proportions of men and women matter.

Rosabeth Moss Kanter's (1977a; 1977b) work on majority and minority groups in the workplace highlighted the gender difficulties that occur for women present in small numbers in numerically male dominated groups, where the men hold power and status and therefore set or perpetuate the culture of the workplace. Where women are less than 15% of the group they experience 'token status' and tend to become representative of their gender category rather than being treated as individuals. 'Token status' often brings with it extreme visibility, scrutiny, a lack of belonging and pressure to assimilate to the majority culture (Kram & McCollom Hampton 2003). Women present in small numbers often find managing and negotiating their extreme visibility and resultant scrutiny a time-and energy-consuming task. In addition they may also be burdened by the invisible or shadow job of representing their gender. These issues are exacerbated where women are the only 'solo' female in a group of men.

This may result in many 'double bind' (damned if you do, damned if you don't) dilemmas for women who may be criticised for being too much like men or for being different. In effect they are criticised for joining the majority 'masculine' culture or for resisting it (Catalyst 2007). Watts (2010:190) describes the difficulties of this in an engineering environment, noting that where women do not succeed in negotiating this double bind, they become...'marginalized and deprived of access to the arenas wherein organisational power resides'. Their work goes some way to explain some of the experiences of women in the Faculty, who are currently present in 'token numbers' and on occasion are still 'solo' women (in their discipline area, research team, committee etc). These include the scrutiny and (sometimes extreme) criticism of senior women by senior male leaders; the undermining and marginalization experienced by some; the almost complete lack of women in leadership positions and with access to decision-making power; the invisible 'domestic work' noted by a number; the extra duties that come with being a woman, for example being on selection panels, extra pastoral care load, acting as a role model and mentor,

and additional public speaking and representational duties for particular audiences (ie female high school students) or where it is seen as advantageous to have women present. Being a woman within the Faculty required a great deal of adaptive energy for a number of the women.

What Martin and Meyerson (1998) also observed in male dominated cultures is a lack of solidarity amongst women, where there is disapproval of coping strategies employed by others, isolation from each other and a failure to acknowledge the similarity of experiences that underpin their approaches. This explains some of the divergence of views amongst the women, where some clearly attributed their experiences to being women, while others did not wish gender to be seen as relevant or problematic.

Martin described tipping points where the dynamic between men and women, and the organisational culture change. Backlash against women can be most vigorous when women approach 20% of the total, the current sticking point for the Faculty, while at 40% gender becomes much less of an issue for women and men. However percentages can also be deceiving; power and status must also be proportionately balanced. Within academia this is a mix of factors including security of employment, level and seniority, and inclusion in decision-making and leadership roles. An increase of women in lower level research-only contract positions, no matter how many, will not disrupt the male-dominated culture of the faculty.

Recent research in the corporate world has underlined the importance of numbers, particularly in relation to leadership positions. While one woman on a board does not make a difference, the presence of 3 or more women on the board was associated with companies who were higher performers (Chief Executive Women 2009; Desvaux, Devillard & Sancier-Sultan 2010). The percentage of senior women likewise needs to reach a tipping point before diversity benefits kick in (Chief Executive Women 2009:7).

For the Faculty to build a more gender equitable culture then substantially improving both the numbers and percentage of academic women must be an important consideration in the change process.

## **The pipeline**

The pipeline argument, whilst long disproven, was clearly in evidence within the faculty and was typically used to explain and excuse the low numbers of academic women. For many, low numbers of female students justified low numbers of female staff and the complacency noted in regard to staff numbers was matched by a complacency surrounding student numbers.

The problem of low staff and student numbers is circular and requires multiple points of intervention. Ideally increasing the participation of women in academia would be underpinned by an increase in female undergraduate and postgraduate students and postdoctoral appointments, however this flow on effect was not evident when student numbers were at their peak. Successful female academic role models has been acknowledged as critical for women at all stages of their careers and is critically lacking within the Faculty. In addition, aspects of a masculine culture that impact on academic women will also be manifest in the undergraduate and postgraduate culture of the school, potentially acting as a deterrent for female students.

Clearly waiting for student numbers to improve, given the corresponding lack of impetus in this area, becomes synonymous with taking no action. Simultaneous proactive strategies to improve schoolgirls' and women's participation at all levels is required to breakdown the male dominated nature of the disciplines and professions represented in the Faculty.

This report does not address the recruitment of female students or the location of leaks in the pipeline through various educational phases. Clearly it would be beneficial for the Faculty to monitor and scrutinise female participation and to research the experience of female students and their perceptions of the professions and academia as potential career options. This is particularly

critical given the increasingly male dominated nature of the student body, reflected in both undergraduate and postgraduate male student numbers and proportions. At postgraduate level this is driven by increases in male coursework numbers, particularly of international students, which also raises questions about the intersecting effects of students' culture and gender on the culture of the study environment.

**Recommendation: Networking and visibility of academic and professional women in Faculty**

*Establish formal twice yearly meetings of senior women with Dean, with an agenda, and capacity to raise issues and discuss implications of current policies and practice on women in Faculty.*

*Establish a yearly Dean's Forum for all academic women, to discuss issues of concern and consult with women about progress on issues.*

*Establish regular networking opportunities for women, sponsored by the Dean and including prominent women alumni and women in the appropriate professions. Invite men to attend.*

*Ensure equitable coverage publicity sound-bites about women researchers in FECM (UniNews, EMI News, CampusNews, EAust News).*

*Host key female industry leaders (relevant to the faculty disciplines) to Centenary Lunch each year, combined with academic men and women.*

**Recommendation: Representation of women**

Set the current representation of women (20%) as a minimum benchmark across all arenas and aim for 30% within 5 years. For example,

*Ensure 20% of research seminars in FECM given by women.*

*Ensure women make up 20% of Visiting Professors, Dean's lectures, Gledden Visiting Professors.*

*Ensure a minimum of 20% representation of academic/professional women on internal and external committees, including Engineering Foundation and Industry Advisory Panels.*

**Recommendation: Modelling**

*Investigate modelling of various scenarios to see what recruitment decisions would need to be made to reach targets such as a 10 percentage point increase in ten years (Marschke et al. 2007).*

**Recommendation: Recruitment and selection**

*Ensure compliance with University policies in all recruitment and selection processes. Dean to ensure Chairs of committee follow procedure and scrutinise gender bias in level of appointment.*

*Ensure all staff involved in selection processes have completed current recruitment and selection training.*

*Provide compulsory in-faculty refresher training that focuses on gender and diversity issues including unconscious bias, power, conflicts of interest, achievement relative to opportunity (AR2O), conducting search processes. This could be combined with gender issues in staff performance appraisals, the use of Research Opportunity and Performance Evidence (ROPE) in ARC assessments, assessing promotion applications, writing unbiased letters of support etc.*

*Review number of people on contracts and their renewal, and compliance with policy.*

*The Equity and Diversity Office together with the Faculty Office to conduct a yearly review of appointments in order to gain a systematic overview of appointments.*

*Build awareness of prominent women within academia. HoS to compile lists of female Professors in relevant areas. Circulate all future T & R vacancies to female Professors list for further circulation to their colleagues. Institute active search processes for female candidates for all tenured/tenurable positions and invite suitable candidates to apply.*



## **Critical intervention points**

There are two points of career difficulty immediately evident in the Faculty data; the over-representation of women at level B and the clear lack of career path for RI women (but not all RI men), and the lack of women at Level E and the difficulties women express in regard to promotion to Level E.

### **The first steps in building an academic career**

Recent Australian research has highlighted that the problems for women in building an academic career start early, in fact during their doctoral studies. Dever et al. (2008:ii) found that

...female graduates reported significantly less encouragement than males in those areas relevant to building academic careers: publishing their own work; preparing funding proposals; giving conference papers; and developing professional relationships. In general, assistance in gaining employment was significantly more likely to be available to male rather than female PhD candidates.

This is linked to less favourable employment outcomes (lower levels, less secure, lower pay) for women, underlining the importance 'of social relationships and academic and professional connections in securing good employment outcomes' (Dever et al. 2008:iii).

There are several signs pointing towards less advantageous employment for women and greater difficulty in building careers relative to men. These include the larger proportion of women employed at levels A and B on primarily RI contract positions and the selection reports recommending level A appointments for women and B for comparative men. Junior women also commented on the lack of job security undermining their capacity to build careers, the difficulty in timing parental leave and the lack of a diversity of role models to draw on in finding a path forward. The junior RI staff – many of whom are women – should be viewed as the pool of potential applicants for future tenurable positions and as such developmental opportunities should be afforded to them proactively rather than leaving them solely in the isolation of the research group to which they are attached. The current supervisory arrangements of RI staff means that each individual is dependent on the grant holder who has employed them and may remain outside of the purview of HoS and the Faculty.

The transition from postdoc or research contracts to independent researcher, most often marked by gaining a tenured position, usually as a T&R academic, is a key point in the academic career pipeline and one that more women than men identified as problematic during the interviews. Early career researchers become key to the faculty optimising its talent and identification of those at risk (of lack of sponsorship) and assistance provided at this time will be both timely and pivotal in building successful careers. Berman et al. (2008:76) recommend a review of progress, 'undertaken by tenured professors who are not directly involved in or benefitting from the postdoc's research efforts.'

Symonds et al. (2006) show an initial drop in publication output between men and women, following PhD completion, perhaps directly attributable to the lack of sponsorship and mentoring women receive in building their academic career. Several women interviewees commented on how long it took them to work out how to build an academic career on their own (indicating a lack of sponsorship), while the junior women observed how men were being taught to be more strategic and were given more strategic tasks. While Symonds et al. (2006) observed that women's publication rates increase after this initial drop, and track similarly to men's, women were always playing catch-up. They conclude that programs for women in universities should be targeted at this junior group of women, rather than senior women as is often the case.

On the positive side, the number of junior RI women in the faculty has increased and there is a ready pool of women seeking to establish more secure academic careers. Female candidates were in the applicant pool for 75% of positions advertised. The Faculty has a culture of 'grow your own' staff rather than a culture of importing senior staff and a large proportion of senior male staff now in leadership positions have come up through the ranks, suggesting this should also be possible for women if appropriate action is taken to address other cultural and career issues identified in this report.

There is a significant overlap between research exploring women's careers and the broader literature exploring good practice for optimising the potential of early career researchers, see for example similar findings contained in the Harvard COACHE (Trower & Gallagher 2008) report. The UNSW Physics research (Stevens-Kalceff et al. 2007) clearly demonstrated that the Faculty was oriented towards supporting senior men's careers, and that many of the practices that disadvantaged women also disadvantaged junior men. Addressing the career vulnerability of junior staff will benefit women, men and the faculty. As the *Good Practice in University Science Departments* report notes, 'Both men and women benefit from good practice; however, women in particular are adversely affected by bad practice' (Dickinson, McWhinnie & Fox 2008).

### **Recommendation: Support for junior women**

*Implement an external (to the Faculty) panel review of careers of all junior staff (levels A to C) women, including RI. Identify career aspirations, development gaps, and report back to Faculty on observed patterns and career development needs. Ensure recommendations from this process are implemented, and that any resulting strategies/programs are open to male and female junior staff.*

*Establish an individual or group mentoring program that has a culture change focus – based on a two way mentoring model. This can be viewed as a strategy for building gender awareness amongst senior men. Incorporate training for mentors and opportunities to reflect on the experiences of women and the gender practices of the Faculty (see de Vries 2010a; de Vries 2011).*

### **Moving through to senior ranks**

The second area of most apparent career inequality for men and women is in the senior ranks, particularly at level E. Level E had been attained by most men interviewed in this study, however it was seen by some women in the study as unattainable, unattractive or needing to be delayed until family circumstances changed. Others were progressing towards this goal.

The approaches taken by women and men to applying for promotion couldn't be more different. Men, as noted in the promotion data, apply often and early, adopting an extremely proactive approach to promotion, with the highest failure rate amongst the faculties. Women adopted a more conservative approach and often delayed applying, even when advised by the panel following successful applications, to apply for the next level within a short period of time. A number of women had difficulty gaining support for their applications while men described being encouraged to apply. This perception of an apparent willingness to support men's applications but less so women's needs to be investigated further.

An important finding of the MIT study mentioned earlier was the increasing difficulty experienced by successful women in the faculty as they rose higher in the ranks, evident in for example, being overlooked, ignored or excluded, increasingly inequitable distribution of resources and increasing pay gaps. Women who had felt supported as junior colleagues found that difficulties arose as they became competitors for resources. The increased criticism of senior women was certainly evident in this study and the increasing difficulties experienced by a number of women mirror this pattern.

## **Recommendations: Address the gendered difference in promotion culture**

*Discourage the culture of active/aggressive approach of men towards the promotion process and recalibrate men's expectations regarding promotion.*

*Encourage women to apply.*

*Seek feedback from current Chair Promotion and Tenure about more realistic Faculty engagement with promotion process, and the role of HoS and Dean in creating promotion culture.*

## **Thriving in the Academy**

A considerable amount of research has been done examining gender differences in building academic careers in Australian Higher Education, and these have been summarised by Sharon Bell (2010:2,3) from the LH Martin Institute for Higher Education Leadership and Management, Melbourne University. While many have been supported by the findings of this research, a number have not been supported, underlining the importance of the examination of local context.

The most obvious difference is in regard to career paths. Stevens-Kalceff et al. (2007) in their study of the UNSW Physics Department found women had more non-traditional careers characterised by a lack of postdoc positions, no international experience, and career breaks or late entry in comparison to men's more linear careers of PhDs at a relatively early age, closely followed by an overseas postdoc and with minimal career breaks. This difference is not evident for women in this study who have primarily followed the linear career path more typical of males. This may suggest that only women who pursued a linear career had any possibility of success within the Faculty. This research supports findings that women are as well qualified as men, similar to the UNSW study. This adherence to male career structures and well regarded qualifications from top universities eliminates some of the potential causes of women's failure to thrive as found in other contexts, throwing the spotlight back on to aspects of organisational culture.

Other aspects of women's approaches to career were supported. For example, women were found to pursue their careers less aggressively (Probert 2005) and be motivated by intrinsic rather than extrinsic factors (Dever 2008); apply for promotion less frequently than men (Probert 2005; Winchester et al 2006), and fail to participate at levels comparable to men in the national competitive grant and fellowship processes that are critical to success and esteem (Bell & Bentley 2005; Bell 2009b).

It is not possible to ascertain with the data available to this research if women publish less whilst undertaking a PhD (Dever 2008); publish less quantity but higher quality (Symonds et al 2006); have higher undergraduate teaching loads and lower post-graduate teaching loads (Probert 2005); or spend more time on student welfare and pastoral care (including mentoring) (Probert 2005) although anecdotes supported this latter one.

The research does support gender differences in work-life balance issues. Women are more likely than their male colleagues to: have greater difficulty finding time for research when they are juggling carer responsibilities throughout their careers (caring for infants, teenagers, spouses and aging parents) (Probert 2005) and perform the majority of household duties (Diezmann & Grieshaber 2009); and are, compared to men, differentially and negatively impacted by the 'culture of long hours' characteristic of the academic environment (Coates et al 2009). Work-life balance was identified as a women's issue indicating a major gendered difference in how the majority of staff are leading their lives.

## **The 'ideal academic'**

Women more than men have difficulty in meeting the profile of the 'ideal academic' (Bailyn 2003:139), someone who gives total priority to work and has no outside interests and responsibilities'. As Bailyn argued in reference to the MIT case, this construction of the 'ideal academic' precludes genuine equity 'if there exists one group of people (for example, people with care responsibilities) who are systematically unable to meet the requirements of the ideal academic...' (Bailyn 2003). Career paths and criteria for success that have been defined by men and represent their life experiences will continue to disadvantage women while provision for flexibility continues to have serious career consequences for those who access them (European Commission 2009).

The careers of most men interviewed had primacy within their family arrangements and the careers of most women were equal or secondary within their family arrangements. This gender difference did not hold true for all men and all women at each stage of their careers but remained a distinctive pattern, and one that was increasingly evident as men's careers progressed and the gap between theirs and their partner's career success widened. The conflicts experienced by women with caring responsibilities in striving to meet the notion of the ideal academic are clearly visible in their interviews, ranging from career progression being put on hold while caring responsibilities are still high, the constant tension between feeling they should be working harder and spending more time with children, the compromise of going part-time to preserve sanity despite part-time work expanding well beyond part-time hours, the stress of working out when would childbearing be least career damaging, the guilt about taking parental leave and how this is perceived, the damage done to career prospects when no grant writing takes place during parental leave, and the difficulties of doing fieldwork and attending conferences when children are young.

Not all academics interviewed, however, had partners and/or children and yet excessive workload and performance expectations were cited by both men and women as problematic. What is important to note is that the manifestation of the 'greedy institution' or perhaps more aptly 'the greedy sector' differed widely, with varying impacts on the building and sustaining of academic careers.

## **Workload**

Career success is largely defined by the capacity to prioritise research above all else, as a senior university leader described, the 'need to pay selfish attention to one's CV in order to get to level E'. However the capacity to prioritise research in an academic career depends on many factors. An important factor under the control of the school/faculty is the allocation of workloads. Workload models rarely cover all roles and tasks, however equitable and transparent workload allocation can go some way towards ensuring equitable access to time for research. Equally they can, depending on the underlying assumptions, be used to support strong researchers careers at the expense of the development of more junior academics. As some schools have not had a transparent workload allocation model and there is a lack of consistency across the Faculty it is difficult to ascertain if the allocation of teaching and other workloads may have systematically impacted women's capacity (or in fact junior staff's capacity) to engage in research, as occurred at UNSW.

Recent research has suggested that the assumption that women prefer teaching while men prefer research is flawed. Diezmann and Grieshaber (2009:3) found that while 30% more academics in their study of new professors were more interested in research (than teaching), there was no statistical difference between men and women. Despite this, it is clear that in FECM, formal leadership and research are gendered male, whilst teaching is gendered female. Men are over-represented in roles where decisions about research are made and have all the power regarding

decision-making and distribution of rewards for research, including workload allocation. Women are over-represented in the substantial work of teaching leadership. This has been particularly onerous given the move to New Courses and the associated curriculum design.

A number of people commented that the ranking system devised for the organisational change process, through attaching relative merit to different aspects of an academic career, defined and rewarded a narrow model for the 'ideal academic', undermining teaching, collegiality and good citizenship, leadership and mentoring, pastoral care of students and so on. While no-one disputes the importance of research performance, the highly skewed valuing of research above teaching and other tasks has the potential to create a class system. The work of those who carry any additional teaching, leadership or 'good citizenship' tasks is clearly freeing up or supporting the capacity of others to spend more time researching.

The introduction of a faculty wide workload model is a key opportunity to consider and incorporate gender equity principles into Faculty practices. These include ensuring that the model does not favour senior staff over more junior staff thus indirectly disproportionately favouring senior men, does not indirectly overload women (Stevens-Kalceff et al. 2007), positions teaching and teaching related tasks (curriculum development etc) visibly and equitably within the model, values tasks that are important to Faculty wellbeing that are more typically picked up by women, and does not favour well established or prolific researchers to the extent that less active researchers are effectively cut out of research activity. These principles will benefit men and women.

#### **Recommendation: Workload**

*Introduce workload model as a matter of priority. Populate the model, refer to Gender Advisory Committee and review from a gender equity perspective.*

#### **Mentoring and sponsorship**

Sponsorship and/or mentorship emerged as key enablers in the successful building of academic careers. It is interesting to note that women more often spoke of mentorship while men spoke more of sponsorship. Sponsorship can be seen as a subset of the broader cluster of mentoring behaviours, however the mentoring literature is increasingly making a clear distinction between mentoring and sponsorship (de Vries 2011). Recent research has clearly shown that sponsorship has been identified as *the missing ingredient* in formal mentoring programs that are failing to deliver outcomes for women (Ibarra, Carter & Silva 2010).

As Liisa Husu observed in her well known work in Finnish universities, sponsorship can often be lacking for women:

What happens for women in their career may in fact be described as that "nothing happens" or that something that should happen during the course of one's career fails to happen: one is not seen, heard, read, referred to or cited, invited, encouraged, offered support, one is denied validity.

Sponsorship is not necessarily of itself problematic and indeed it is hard to imagine academia without it. Sponsorship becomes problematic when it is made invisible, is exclusive of some and inclusive of others based on factors such as gender, age or race, or where sponsorship is used to circumvent proper processes, such as appointment procedures (as seems likely based on the appointment data presented earlier). The irony is that for those with best fit within academia, and where good sponsorship occurs, it can become quite unremarkable and unnoticed, while equally those who lack sponsorship may also be oblivious to its absence, blaming themselves for their incapacity to thrive. Sponsorship can be seen as a powerful enabler and one that can provide or contribute to building the foundations of an academic career. This is perhaps best demonstrated through the ARC grant process where good sponsorship that helps to establish a track record may

lay the foundation for a well funded career while the absence of timely sponsorship and the subsequent difficulty in gaining the first grant has the opposite effect.

Unfortunately unconscious bias and homosociality, where men form more comfortable collegial relationships with men, often play a part. As one HoS noted, he was not used to dealing with women. Ibarra et al. (2010) found that men feel more comfortable sponsoring a man and sponsorship of women was often perceived or seen as more risky. Mentoring, which often incorporates broader career advice and support can occur at a distance, with an effective mentor located in another Faculty, or university or even outside academia. However most sponsorship occurs closer to home, with the people who have the right connections and know how, and often are discipline specific. A lack of sponsorship often needs to be remedied closer to home.

Previous research into academic careers has failed to clarify the difference between mentoring and sponsorship, with resulting confusion in suggested remedies. Formal mentoring programs do not necessarily remedy a lack of sponsorship.

**Recommendation: Sponsorship**

*Career review processes, such as the PDR and external review process for junior staff recommended above must identify and address issues of sponsorship The School management – i.e. HoS, Professors and grant holders within appropriate discipline areas - must be held accountable for the sponsorship of their junior staff.*

# Conclusion

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The University and the Dean are to be commended for commissioning and supporting this research. Building more gender equitable organisations and professions remains an ongoing challenge shared by all organisations. It is particularly difficult within historically heavily male dominated disciplines, industries and professions – as found within FECM. The task ahead of the University and Faculty if they choose to take proactive action should not be under-estimated.

This research is timely. This is a sector wide issue, and there is currently a vacuum of leadership for gender change across the Group of Eight and more broadly. UWA has the opportunity to provide leadership across the sector, emulating MIT in its national and international influence.

There are significant issues that have arisen during the research process and in the research findings that have broader relevance for UWA. It is of particular concern that despite concerted effort, best practice initiatives, ten Employer of Choice for Women accolades and sustained gender equity championing on the part of the institution, the cultures, practices and attitudes at the Faculty level can remain so out of step. The degree to which this is the case is demonstrated by the lack of a broad based recognition of gender equity as a legitimate concern and as a problem requiring action for the faculty and its leadership. Questions need to be asked concerning the implementation of policies, the dissemination of good practices, and the accountability of leadership. The under-utilization of available institutional data, where Faculty level gender data is not extracted or reported needs to be addressed as a first step. Building awareness, identifying issues, and monitoring trends based on data are key to developing accountability.

Many of the recommendations that are pertinent to building more gender equitable workplaces are simply good practice in terms of workforce planning and regeneration; facing up to the challenges of an ageing academic workforce, ongoing competition from overseas for talented graduates, competition for top graduates from the booming resources sector within Australia, and the declining interest in academia as a career associated with declining tenure possibilities and the increase in the 'postdoc treadmill' noted in Australia and overseas. Within this context, Edwards and Smith (2010:30) argue in relation to the sciences that female participation can be one of the 'key contributors to the potential regeneration' of the academic workforce.

The university has considerable relevant knowledge and expertise, most particularly, mature gender equity frameworks and policies, well respected practitioners within Equity and Diversity Office, OSDS (with the LDW program) and HR more broadly, gender scholars, a history of committed leadership and championing of gender equity, strong role models, and a critical mass of senior women across campus. The Faculty therefore, given the support of the senior Executive, should not consider the challenges involved in addressing the issues highlighted here as a solitary endeavour, or one that can be addressed in isolation. It must draw on the full range of resources and expertise available to it.

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