



**Challenges of the Academic Journey:
A Symposium on Women in the Sciences and Engineering
at UWO**

**May 4-5, 2004
at the
University of Western Ontario**

Summary of Papers and Recommendations

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PARTICIPANTS

The symposium attracted the following registrants, broken down by gender and position within the University, when known.

Category	Female	Male	Total
Graduate Student	30	5	35
Post-doctoral Fellow	13	1	14
Faculty	45	9	54
Administration	2	3	5
Dean	2	5	7
Other	6	1	7
TOTAL	98	24	122

The numbers above include the organizing committee and participants from UWO. There were several on-site registrants, which are not included in the above statistics.

SUMMARY OF PAPERS

Tuesday, May 4, 2004

Keynote Address

Dr. Alison Wylie, Dept. of Women's Studies, Barnard College.

The Face of Gender Discrimination in the Post-Civil Rights Era: Workplace Environment Issues for Women in Science

Key points:

- The 1999 study of women in science at MIT as reported in *Science* concluded that “compared to their male peers, the women were getting less money, office space and access to research resources and positions carrying greater responsibility”.
- “Gender discrimination in the 1990s is subtle but pervasive. It isn't a matter of intentional exclusion or explicitly discriminatory policy but of innumerable small differences in treatment i.e. a pattern of powerful but unrecognized attitudes and assumptions that work systematically against women despite good will”.
- The above was referred to as *micro inequities*. “As minor as particular instances of gender difference may be, together they can have substantial cumulative effect on the quality of women's work-life and their effectiveness in the workplace”
- “There is a clear difference in women's experience by cohort/over time; the younger women scientists generally felt well supported and equitably treated relative to their male counterparts, but virtually every senior woman in the Faculty of Science at MIT reported substantial frustration about the inequalities they confronted in their working conditions”.
- A review of the literature about the conditions of women in academe reveals that there are three types of practices which create and perpetuate a chilly climate for women in science, including
 - *Gender stereotyping*: women perceived as having roles related to housekeeping, nurturing (i.e. asking women to take charge of student affairs but not allowing them to play a role in key decisions re distribution of resources)
 - *Devaluation*: when women do occupy roles typical for male counterparts, their contributions are valued very differently (i.e. women referred to publicly by first name, men by their titles; women's success attributed to luck or circumstance rather than talent and discipline)

- *Exclusion*: “women who work in predominantly male departments confront patterns of behavior that effectively keep them on the periphery of crucial networks of communication and social interaction”. (i.e. lonely lunch syndrome)
- The Pipeline hypothesis: the number of women in the training pipeline has doubled and trebled since the mid-1960s but this is not translating into comparable gains in their representation among faculty and research in academic, especially at senior ranks.
- The accumulation of difference through micro-inequities means that women are typically one rank behind their male peers at the same career stages, even though they have the same patterns of niche specialization, rates of collaboration and levels of productivity
- “Why does the gender of science matter?” Obvious issues of justice and equality of opportunity but also growing concern that the pool of trained science talent is shrinking and science cannot afford to be losing a large number of trained and talented women.

Wednesday, May 5, 2004

Paper No. 1

Dr. Marc Sher, Department of Physics, College of William and Mary
Dual Career Academic Couples

Key points:

- Dual science career problem disproportionately affects women (e.g. 68% of married female physicists are married to scientists, while only 16% of married male physicists are married to scientists)
- Women tend to marry men who are somewhat older and therefore further along in their careers and less likely to make career sacrifices
- Very difficult for dual-career couples to find positions for both spouses
- Institutions can make things worse by
 - reduced consideration for members of dual-career couples
 - ignoring the problem
 - resistance to hiring the spouse
 - insulting offers for the captive spouse
 - inappropriate remarks at interviews etc.
- Some solutions include
 - shared or split positions

- spousal hiring program
- alternative positions such as soft-money research positions, adjunct professorships
- commuting
- **Recommendations:**
 - 1) **recognize the existence of the dual-career couples problem in science and prepare to deal with it**
 - 2) **before searches begin, establish policies regarding split/shared positions and spousal hiring programs**
 - 3) **establish an office with someone dedicated to finding positions for spouses/partners**
 - 4) **inform short-list candidates about this office and other possibilities**
 - 5) **watch carefully for inappropriate questions at interviews and take disciplinary action against repeat violators**
 - 6) **something comparable to the NSF Fellows program should be started in Canada**

Paper No. 2

Dr. Valerie Davidson, NSERC/HP Chair for Women in Science and Engineering, School of Engineering, University of Guelph

Changes in Science and Engineering: Academic Initiatives in Canada and the US

Key points:

- Goals of the NSERC Chairs for Women in Science and Engineering (CWSE) are:
 - to increase the participation of women in science and engineering
 - to provide role models for women considering careers in these areas
- In Ontario, the CWSE Chair is attempting to achieve the following:
 - encourage women to study science and engineering and to consider careers in related areas
 - improve retention of women in undergraduate programs and early careers related to sciences and engineering
- Engineering still lagging behind other fields in science in terms of the number of women in Master's and PhD programs (e.g. 26% in Master's and 17% in PhD in Eng. compared to 43% and 31% in Chemistry)
- Some areas of engineering (such as mechanical) are worse than others for attracting women
- Need to attract women to engineering since 52% of faculty in engineering departments are 50 years old or higher, compared to 33% in other areas of the academy

- Surveyed 389 female scientists and engineers on issues facing women in science and engineering
- Top 4 responses were:
 - i) balancing work with family
 - ii) low numbers of women means isolation and lack of camaraderie/mentoring
 - iii) gaining credibility/respectability from peers and administrators
 - iv) affirmative action backlash and discrimination
- **Recommendations to facilitate change of university culture**
 - 1) **create a network of faculty and academic units in Ontario universities – share ideas for workshops and meetings about women in science and engineering, open to faculty and graduate students**
 - 2) **more activities to support career planning and development for women**
 - 3) **work with administrators to ensure that university faculties and departments are positive environments for female students and faculty**
 - 4) **change the academic culture to be more family-friendly (stop tenure clock if need be, access to day care, more dual career hires)**
 - 5) **mentoring/coaching in areas of securing grants, tenure, developing collegial relationships and career development**
 - 6) **change service expectations and recognize the work that female faculty often have to do (e.g. only woman on multiple committees etc.)**
 - 7) **provide academic leadership training, mentoring and networking opportunities for female engineering faculty**

Paper No. 3

Dr. Francis Chan, Assistant Dean, Gender and Equity, Faculty of Medicine and Dentistry, UWO

Changing the Culture at UWO

Key points:

- Paper explores two questions:
 - What are the gender benchmarks in the science and engineering faculties?
 - What is the faculty/departmental culture on retention and recruitment of women faculty?
- Statistics show:
 - The proportion of probationary and tenured women faculty at Western has increased from about 15% in 1991/92 to about 23% in 2003-04
 - Western has the lowest proportion of probationary and tenured women faculty of all the universities in Ontario as of 2000-01
 - Western has one of the lowest proportions of probationary and tenured women faculty in Canada
 - Women faculty at Western are disproportionately clustered in Instructor/Lecturer positions (59%-61% since 2000)

- The proportion of probationary and tenured women faculty in Science and Engineering varies depending on the Faculty and Department, but is consistently lower at Western as a whole (e.g. Medicine and Dentistry does the best, followed by Science and Engineering is the worst at less than 10% women)
 - Within Engineering, only Industrial Engineering has anywhere near the UWO average of female faculty.
 - Female faculty also are clustered in the Assistant and Associate ranks in Science and Engineering with only a small percentage (less than 5%) being Full Professors
- The Leaky Pipeline – drastic reductions in proportion of female undergraduate students pursuing Master’s degree and then a PhD, with further declines through the professorial ranks
 - Numbers decline greatly through the pipeline (e.g. from 50% in Science at undergraduate to 40% at Master’s level and 30% for Ph.D., then 22% for Assistant Professor, 8% for Associate and less than 5% for Full)
 - Reasons for female faculty leaving Western (in descending order of importance):
 - family and career development
 - probationary withdrawal
 - geography
 - better salary
 - opportunities for administrative post
- **Recommendations for recruitment/retention of female faculty:**
 - 1) **flexible work environment without negative consequences for women with young children**
 - 2) **a 3 month sabbatical from clinical and administrative duties especially pre-tenure**
 - 3) **departmental mentoring for academic career development**
 - 4) **create and maintain a special recruitment and retention fund for female faculty**
 - 5) **on campus child care facility**
 - 6) **provide information on family care issues**
 - 7) **more university faculty awards**
 - 8) **more attention to spousal employment needs**
 - 9) **conduct focus groups with new faculty**
 - 10) **exit interviews with departing faculty and their chairs and deans**

Panelist No. 1

Dr. Penny King,

Assistant Professor, Department of Earth Sciences, UWO

Key points:

- Early years in an Assistant Professor's career are spent learning the rules. There are few mentors to help with this transition
- Level of responsibility as one of very few women in the department leads to feelings of being an impostor – impostor syndrome
- Have to do a lot of pastoral care as the token woman in the department
- Expected to take on graduate student responsibilities immediately and this means you are indispensable to the graduate program, which is a problem
- Required to start up a lab but have minimal experience in doing this. Lab suppliers don't take female academics seriously.
- Mistakes and rejection are hard to handle at this stage
- A major concern are family issues i.e. culture of silence regarding pregnancy, family, extra-curricular activities that are seen to interfere with work
- Worry that pregnancy will interfere with tenure, research progress, lab and grad student responsibilities. Perceived need to make a choice between family and work. As a result, pregnancy is delayed often into the period of life when the occurrence of miscarriage and birth problems have a much higher probability
- Children/aged relations – guilt about needing to attend to family matters; difficulty covering sick days, school holidays and child pick-up
- Other life issues include
 - relocating
 - isolation and lack of friends
 - too busy to make new friends
 - financial concerns such as loans, housing
 - living apart from partner
- **Recommendations to ease pressure on Assistant Professors:**
 - 1) Continue hiring highly qualified women**
 - 2) Make allowances for partners**
 - 3) Adjust the tenure clock / allow time for personal development (e.g. early sabbatical) / modify teaching schedules & pressure for graduate students / change deadlines for major grants**

- 4) Hire a faculty health care/career professional
- 5) Provide easier to access childcare
- 6) Limit requirements for out-of-hours work
- 7) Educate new & senior faculty & grad. students on what the job involves (labs, safety, prof. service etc.)
- 8) Coping strategies for rejection/mistakes & “imposter syndrome”
- 9) Responsibility vs. indispensability
- 10) Work and “life” conflicts (choices)
- 11) Begin informal young faculty lunches

Panelist No. 2

Dr. Michelle Mottola, Associate Professor, Departments of Kinesiology and Anatomy, UWO

Key points:

- Dual career couple
- No lab, no seed money – hard to get established as a researcher
- No mentors to help her
- Joint position meant having to please two bosses
- Pay equity also an issue
- Delayed having children until tenured
- As Associate Professor – myriad responsibilities for lab, teaching, grad students and a lot of committee work
- Challenge to fit family time in with work life
- Associate Professor is a balancing act between family and work
- Promotion to full professor? No financial or reward incentive and having family late means no time to prepare dossier for consideration

SUMMARY OF FINDINGS AND RECOMMENDATIONS FROM BREAK-OUT GROUPS

Most of the concerns and recommendations that arose during the afternoon break-out sessions fell into the following categories, which are not presented in any rank-order. None of these issues are female-specific, though some impact women more than men. Many of these issues were discussed in the presentations earlier in the day.

- Dual career couples
- Impact of children on career advancement
- Service obligations
- Importance of mentoring and role models
- Pay equity
- Balancing the demands/needs of work and home life
- Creating an academic life attractive to female graduate students
- The post-doctoral years

This list is not meant to be exhaustive and not all recommendations fall neatly into a single category. There needs to be central coordination to address the issues and implement the recommendations of this symposium.

Recommendation:

- 1. Create, within the science and engineering faculties, a position of Assistant Dean for Gender and Equity, similar to that existing in the Faculty of Medicine and Dentistry.** This position could serve to facilitate networking, mentoring, education, and coordinate efforts at the undergraduate, graduate and faculty level.

Dual Career Couples

This is an issue that is becoming increasingly important to recruitment and retention of both women and men at UWO. As was discussed in the presentation by Dr. Marc Sher, College of William and Mary, there is a pressing need to find creative ways to accommodate two scientists in the family. While the models presented by Dr. Sher may not be readily transferable to the Canadian system, a number of recommendations arose that could be implemented at UWO.

Recommendations

- 2. Conduct a survey to assess the prevalence of this situation at UWO.** Anecdotal evidence from one department who were recruiting for four positions suggests that spousal hiring was an issue for ~50% of the short-listed candidates, all of whom were male.
- 3. Survey the Deans to assess what the current practices are for spousal appointments.** The approaches and solutions are likely varied and sharing such information may help in developing creative solutions at UWO.

- 4. Investigate the possibility and desirability of shared appointments**
- 5. Develop a mechanism to increase the attractiveness of Adjunct appointments.**
For example, setting aside a pool of money to which adjuncts can apply for small travel awards that will allow them to attend conferences, thus keep in touch with their scientific community, can make the position of Adjunct more appealing.
- 6. Increase the profile of the Office of Faculty Recruitment and Retention among the University Community.** In particular, the existence and role of this office should be made known to all candidates for faculty appointments.

Impact of family on career advancement

More than any other issue discussed, it was felt that having children and an academic science/engineering career was much more challenging for women than men. There is a growing body of literature on the impact of children on the career progress of academics. Recently, a large study carried out in the U.S. by Mary Ann Mason and Marc Goulden, UC, Berkeley, entitled "Do Babies Matter? The Effect of Family Formation on the Life Long Careers of Men and Women" (www.grad.berkeley.edu/deans/mason/BabiesMatter1.pdf), found that having children early in their careers had a negative impact on promotion and tenure prospects for women, but not for men. This is the crux of the matter. How do we at UWO create a workplace that can minimize this impact?

In the group discussions, it was felt that with some creativity and a few extra dollars here and there, changes could be made to the UWO workplace that could lessen the negative impact of having children on career development, for both mothers and fathers. Needless to say, the issues are intensified for single parents. Despite a generous parental leave policy currently in place at UWO, few women and fewer men take full advantage of the leave, for economic as well as science-related reasons (though there are no data to indicate which is more important). However, the comments made during the discussion sessions, such as "science is not a job you can take a leave from; you can't just close your door for 6 or 12 months; you will get left behind; there is no way I could have taken a year off, because to be in science, I have to stay on top of it to stay in it.", suggest the major issue facing women scientists and motherhood is the culture of science. While changing the culture of Science is, perhaps, beyond the scope of these recommendations, there are some things that can change at UWO that may go some way to making parenthood and academic science a better mix.

Recommendations:

- 7. Include on-site, flexible care for school-aged children as part of the child-care program at UWO.** This is important as child-care needs do not cease when children start school, in fact, they can become more challenging. In particular, arranging care for Professional Development days during the school year is problematic; perhaps, UWO can offer on-site PD day programs, in partnership with an organization such as the Y.

- 8. Develop a policy on "stopping the tenure clock" to take into account parental leave.** Take steps to make it clear to those on leave that there is no penalty for gaps in publications and research due to leave taking. Faculty should also be made aware of the parental leave policies of the various granting agencies; for example, NSERC routinely defers grant renewals if the applicant is on parental leave (though it is not easy to find this information on the NSERC web site).
- 9. Educate Department Chairs, Deans, and members of Promotion and Tenure, well as Annual Performance Review committees about the "stop-the-clock policy" and its implications.** A follow-up to recommendation 8
- 10. In recognition that the challenges of parenting young children do not end after parental leave, facilitate "re-entry" into academic life by allowing those parents returning from leave the opportunity to have an alternative workload (20% teaching, 20% service, 60% research) for a year. Since falling behind in research is a major issue and barrier to taking extended leave, a 're-entry' policy will allow returning parents time to get the research back on track.** One of the other major stresses associated with "re-entry" surrounds child-care and the fact that in the first 6 months or so of being in a day care setting, children are often sick, thus requiring one parent to be home. Increasing work-place flexibility by offering an alternative workload could go a long way to help reduce some of the stresses associated with returning to work after a parental leave (see Sleepless in Academia, Gender & Education, March, 2004).
The Imperial College of London has such a "re-entry" program in the form of a fellowship (The Elsie Widdowson Fellowships; http://www.imperial.ac.uk/spectrum/hr/hr_info/procedures/family/elsiewiddowson.htm). The purpose of the Fellowship is to allow a returning member of academic staff to concentrate on consolidating their research activity. The Fellowships provide this opportunity through part funding (met centrally) of the salary costs for up to six months immediately following the member of staff's return from maternity or adoption leave. This means that the department/division can relieve the member of staff of teaching and administrative duties during the agreed period of the research program. The remaining half of the salary costs will be met by the department/division.
- 11. Develop coherent leave policies for graduate students, who, if suitably supported and encouraged, will become the new generation of faculty. Graduate studies should seriously look into developing a fellowship for new mothers that allows them to take off 6 months with pay as way to stop the "leaking pipeline".** Apparently, The Université de Montréal implemented such a fellowship 5 years ago with a return rate of 100%.
- 12. It is not enough to simply have family-support policies in place. There is a need for visible leadership and communication in support of these policies across the University community. See recommendation 1.**

Elder and sick relative care

In addition to meeting the needs of young children, women are often faced with the challenges of caring for elderly and sick parents. The federal government has recognized the toll this can take on the work/life balance and has implemented a leave scheme to support people who need to take leave for the purpose of caring for sick family members.

Recommendation

- 13. Institute a leave policy for the care of elder or sick relatives, in conjunction with the Compassionate Care Benefits program. Consider salary-top up for a Compassionate Care Leave, akin to that in place for parental leave.**

Service

Since women faculty are in the minority and senior women more so, women faculty find themselves taking on considerable service commitments and feel they are not recognized accordingly.

Recommendations

- 14. If women are taking on a substantial amount of service or leadership roles, ways should be found to support research activity, perhaps through a reduction in teaching commitments via an alternative workload.**
- 15. As a follow-up to recommendation 14, the service component should be taken more seriously in P&T decisions as well as annual performance evaluations.** For this to be accomplished, it will be necessary to educate Department Chairs and Members of the Performance Evaluation Committee.
- 16. Service related to gender issues (such as service on Women's Caucus, UWOFA Status of Women Committee, involvement in WISDOM or other mentoring groups) should be recognized as service in annual performance evaluations.**

Mentoring & Role Models

With more women entering traditionally male-dominated faculties, it is important to recognize the importance of mentoring and the influence of role models. Mentoring can take on many forms, and it is not necessary for women to mentor women, or men to mentor men. However many women, particularly those that are the only woman faculty in a given department, often feel isolated, thus are less likely to be mentored. A mentor is a person with experience and information in a particular area that is willing to provide advice and support. In the academe, there are many strong traditions with associated constraints, to which the mentor can provide insights. Since good mentoring is a career success factor, women without some type of mentoring are at a disadvantage.

The success of mentoring is dependent upon the individuals involved, so recommending "mandatory mentoring" is neither practical nor desirable. It is also recognized that mentors and those being mentored do not necessarily have to be in the same department. The following recommendations are made to facilitate mentoring and role model opportunities.

Recommendations

17. Create and support networking opportunities for women faculty.

Mentors are part of a network and it is through such a network that new female faculty may find an appropriate mentors. Information and support are the reasons for networking and high quality information and support are the benefits of mentoring. Social events are one way to facilitate networking opportunities and for women faculty to meet each other .

18. Provide a focal point for existing mentoring groups (e.g. WISDOM) and a building point for others (see recommendation 1). The importance of role models, particularly for undergraduate and graduate students, cannot be emphasized enough, thus particular attention should be paid to mentoring and networking at these levels.

19. Share best practices for success in mentoring, perhaps by establishing an annual "Mentoring in the Sciences and Engineering" half-day workshop.

Social Aspects of Faculty Life at UWO

A faculty member's satisfaction with their career at UWO cannot be divorced from other aspects of their lives living in London, Ontario. Unfortunately, during the pre-tenure years, individuals who move to London as a new community may find that they are too busy within the UWO environment to make friends and develop the social networks that makes life in any community worthwhile and viable. Accordingly, to retain faculty, more should and could be done to facilitate social connections.

Recommendations:

20. UWO should plan occasional social opportunities/activities for new faculty members, such as Singles Night or other events.

21. Deans should be more proactive in assisting female faculty members from across their Faculty to meet each other and form a network (see recommendation 1).

Deans should be prepared to take steps to help organize an initial lunch or some other events for female faculty to meet one another. In this way, new faculty can meet some of the established female faculty, which may be helpful in terms of mentoring and role models.

Work/Life Balance

This is an issue that affects all faculty, though women and some men with children find the balancing act that much more challenging. The first major challenge is "greedy academic science" that demands a 60+-hour work-week. A second and related challenge in finding balance is the definition of "success"; are there alternatives to the "traditional male career path?" It is here that role models and mentors can make a huge impact.

Recommendation

22. Be proactive in demonstrating that there is more than one path to success. Hold up to example those that have achieved balance. Make it clear that success is not simply about publishing 100's of papers and bringing in millions of dollars in grant money, but that success can be on the smaller scale as well.

Pay Equity

At least two of our colleagues stated that they had pay equity hikes so their salary was at least 90% of that paid to their male colleagues at a comparable career stage.

Recommendations:

23. Question whether the 90% marker is an appropriate indicator of "a salary anomaly"

24. Adopt a more activist policy to ensure pay equity at all career stages, particularly when negotiating a first contract. Again, this is an area where mentoring can play a vital role.

Graduate Students and Post-doctoral fellows

Some of the recommendations made above can positively impact graduate students and, to a lesser extent, PDFs. The situation with PDFs is fuzzy because they have no official status within the University and therefore, they tend to fall between the cracks.

Recommendation

25. Take measures to improve the status of PDFs within the Sciences and Engineering. A first step would be to welcome them into the community of engineering and sciences at UWO, either at the departmental or Faculty level. The latter is preferable because the population of PDFs in any given department is often small. This would be a first step for PDFs to meet and facilitate the creation of a network (see recommendation 1).

CONCLUSIONS

This symposium was a great success and should be seen as part of an ongoing process to facilitate the integration of women fully into the academic sciences and engineering. Implementation of these recommendations will go a long way towards making a career in academic science and engineering more appealing to both women and men. For this goal to be achieved, policies and procedures that have been implemented must be effectively communicated and supported by leaders within the University community.

Recommendation

26. A follow-up symposium should be held within the next 2 years to assess the progress made at UWO.

Recommended Reading

Williams, M.F. and C.J. Emerson (2002) *Becoming Leaders: A handbook for Women in Science, Engineering and Technology*. Published by NSERC/Petro-Canada Chair for Women in Science and Engineering and Women in Science and Engineering (WISE), Newfoundland and Labrador.

<http://www3.nf.sympatico.ca/carolyn.emerson/>