

Under-represented Groups in Surveying

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ON UNDER-REPRESENTED GROUPS IN SURVEYING**

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Geomatics Student Awards at University of Cape Town

Ms Jenny Whittal, Programme Convenor of the BSc Geomatics in the Division of Geomatics at University of Cape Town (UCT) presented the student awards for 2003 and 2004 at the inaugural SAGI meeting in Saldanha in April 2005. Congratulations go to the prizewinners! Here is some feedback from the top-performers

**Prize Winners at the Handout of Awards
for Bsc Geomatics for 2003 and 2004 in Saldanha**



Left: Christine Marais, Mellissa Loudon, Julie Lovesay
Centre: Lecturer Ms J Whittal
Right: Tracy Timmins, Mira Kirova, Katherine Maughan-Brown

Christine Marais: Class Medal - Best student in Geomatics I in 2003; student in Geomatics overall in 2004

“When I was looking at career options I went for aptitude and personality tests. The first adviser said I should do surveying, but I didn't have a clue what it was and the word landmeter, which is Afrikaans for Land Surveyor, put me off quite a bit! The second advisor told me about Geomatics. I didn't know that it was Surveying until the end of my first year! I'm really glad things worked out this way because I'm really enjoying the course, especially the mathematics side. The course makes me think

and I enjoy the field work as well. I like the fact that the programme is so small and personal. I enjoy reading, going out with friends, and jogging.”

Melissa Loudon: Class Medals – Best 2nd Year Student of Geomatics in 2003, Best 3rd Year Student of Geomatics in 2004, Ivor West Memorial Prize for the Best 3rd Year Student in Geomatics in 2004, SA Photogrammetry and Geo-Information Book Prize awarded to the Best Student in Photogrammetry and GIS, 2004.

“I was introduced to Geomatics by a hydrographic surveyor friend of my parents', and also by a school career adviser who recommended the programme at UCT. I still arrived with only a vague idea of what the degree I had chosen entailed, and in this respect the way the degree is structured (with mostly general courses in mathematics, physics etc in first year and introducing more specific courses in later years) was very helpful. I enjoyed Computer Science and therefore chose it as my major within the Geoinformatics stream, and am drawing on the skills I learnt for my undergraduate thesis on the development of an open-source GIS for water demand management projects. This combination (of a challenging engineering degree, but with flexibility that allows students to pursue individual interests) is a great advantage, as is having a small, supportive department.”

Julie Lovesay: Class Medal - Best student in Geomatics I in 2004

“I first learnt about Geomatics at the UCT engineering winter school, and it sounded ideal, as it combined maths and geography, my two strongest subjects. The idea of working part time in the field also appealed to me. I am currently in my second year of study, and still believe it is the career for me. I enjoy survey work, and find the modern equipment interesting. GIS and remote sensing is also very fascinating. I enjoy travelling, and hope to have the chance to tour the country in the course of my career.”

Tracy Timmins: Class Medal for the Best Final Year Student in 2003, SA Photogrammetry and Geo-Information Book Prize awarded to the Best Student in Photogrammetry and GIS, 2003.

“I graduated with a BSc (with honours) for Geomatics at the University of Cape Town in 2003. I also received The University Student Award for Excellence in the Discipline of Surveying/Geomatics from The Society of Architects, Planners, Engineers and Surveyors in 2002. From 2004 I have been working at the Chief Directorate Surveys & Mapping (CDSM), the national mapping agency of South Africa. At CDSM I am involved in a number of projects and training of staff. My main research interest is using satellite imagery for natural resource management and monitoring. This interest feeds directly into my main project at CDSM in researching and designing a methodology for a national land cover-mapping programme at CDSM. This is the subject of an MSc degree at UCT for which I have registered this year. I intend to register as a Geoinformatics Practitioner with PLATO, the national registration body for Geomaticians in South Africa, and have begun my period of articles in order to register within the next year.”

Tvetomira Kirova: Class Medal for the Best 3rd Year Student in 2003

I completed a B.Sc. in Geomatics at UCT in 2004, with a focus on GIS and Environmental Science within the Geoinformatics stream. The diversity of the skills which I acquired during my undergraduate career has given me a sound background to my current field of study: Masters in City and Regional Planning. The Geomatics

Programme at UCT has provided me not only with extensive support and a wide choice in terms of specialisation, but also with the confidence that I am well prepared to face the corporate world. I feel privileged to have been exposed to the expertise of the knowledgeable and inspirational staff of the Geomatics Department

Katherine Maughan-Brown: Class Medal - Best 4th Year Student of Geomatics in 2004, George Menzies Prize for the Best Final Year Student of Geomatics in 2004.

"I first heard about geomatics when a geomatics professional came to talk about the degree in a career guidance class in my final year of school. It sounded fascinating, a mixture of outdoor and indoor work with a combination of using state of the art technology as well as more conventional techniques. I thoroughly enjoyed both geography and mathematics and with all the other careers that we were hearing about, this one sounded the most interesting. The diversity of the course has been highly advantageous since we are briefly introduced to a number of varying subjects as well as specializing in a few areas of study. I enjoyed the mixture of practical experience and the more theoretical studies that occurred throughout the degree. I am currently completing a master's degree in geomatics focusing on the subject of close range photogrammetry for the application of cultural heritage documentation. I enjoy the outdoors and doing activities such as hiking, running, camping etc. I love travelling and seeing new places and am an avid reader."

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Memoirs:

Geodesy? What's That? My Personal Involvement in the Age-Old Quest for the Size and Shape of the Earth
By Irene K. Fischer



Geodesy (the measurement of the size and shape of the earth), fascinating since the time of Erathosenes, became a basic science for the space program. Irene Fischer was a leader in the construction of the World Geodetic System (has an Earth

reference ellipsoid named in her honor) when it was still being done by surveyors, piecing together terrestrial, gravitational and astronomical data. By the 1970s, satellite geodesy and marine geodesy were just coming into their own. Using her career, Fischer revels in explaining how the science unfolded, and how misunderstandings occur across scientific fields, e.g., why the “standard ocean” and the geoid do not easily translate across the fields of oceanography and geodesy.

Her account should appeal to those writing the history of women in science.

Government science, too, is less well studied than academic science even though some fields, such as geodesy, were always government led. Fischer provides food for thought, as well, to those who claim to study the management of science in bureaucratic settings different from those of industry or academia.

Peppered among these themes are Fischer’s solutions to historical mysteries such as why Columbus’ used a figure for the size of the earth’s circumference that was so much smaller than Erasthenes’ or Posidonius’ (with the added benefit of making it easier to persuade his patrons).



Irene Fischer is an internationally renowned geodesist and member of the National Academy of Engineering.

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Gender & Culture in Surveying Education: a UK / Australian View **By Pat Turrell, UK, and Sara J Wilkinson, Australia**

Introduction

Culture has a number of meanings and uses within organisation theory and is a “slippery and elusive” concept. It is used to try and indicate the “climate and practices” developed within an organisation to handle people, together with the values of the organisation. The concept of culture is drawn from organisation theory, sociology, anthropology and political science and can be complex and interpreted in different ways. One of the familiar definitions comes as “the way we do things round here.” Handy (1985) in explaining culture, talks about “different atmospheres in organisations, different levels of energy, of individual freedom, of kinds of personality.” Strati (1992) explains how culture is expressed through symbols, beliefs and patterns of behaviour, its ceremonies and quality and conditions of working life, as well as jargon and lifestyle and physical appearance of an organisation’s members. To examine and unpick a culture is difficult. Organisations are complex and may consist of a number of subcultures. How gender impacts on culture will depend on many other indicators such as age, race, and occupation.

Comparative studies of education can throw a new light onto pedagogical practice offering new solutions to common issues. However Broadfoot (2001) warns, it can be dangerous to borrow successful practice without considering the impact of the local and complex factors at work influencing the outcome of actions. The local factors include the students, the learning situation, the institutional ethos (or culture) and the regional and national policies that influence a culture. As long as these factors are considered a comparative study can help to understand issues that cross national boundaries and are important for education.

It is this context that this small study attempts to provide an insight into. The researchers intend to examine the similarities and differences that occur within built environment higher education culture and the impact of that culture on the women participating. The research within the UK has been undertaken as part of an ongoing doctorate in education, whilst the research in Australia has been undertaken by an academic newly arrived from the UK. The methodology was qualitative, and data collection consisted of interview, together with the examination of secondary data sources which could add to the over all picture. The researchers within the study do not hold the position of objective outsiders. Both researchers are female academics working within a male dominated working environment. Objectivity is maintained by critical questioning of results, and the investigation of the relation between subject and object rather than by denying the existence of it (Harding, 1991, p152).

What is the Culture in Surveying Higher Education?

The built environment professions have been an example of a segregated area of study and work in the UK and in Australia as well as other countries. Research on the culture of construction has been limited, but research on the culture of the SET (science, engineering and technology) professions in general has received attention in UK and Australia (Greenfield, 2002; George, 2005) and the difficulties that construction faces in trying to change its white male dominated profile have been analysed (Greed, 1991 & 1999, Turrell, Wilkinson, Astle and Yeo, 2002). The shortage of women (and others) entering built environment careers has been identified as a concern in UK and Australia (OST, 2003; DEST, 2002). Measures to increase numbers and promote the careers and professions may not be sufficient.

The reasons why occupations remain predominantly male and female are complex and the arguments about gender roles are culturally bound (Paechter, 1998). The experience of education can have a crucial impact on the life choices of any child. As Pilcher (1999) says, whilst the education system is not the only influence on gender inequality, it has been identified as a key institution. Choice of subject at school can differ by gender and as such limit vocational choice from 14, and subjects studied in higher education continue to exhibit clear gender differences in certain subjects e.g. social studies being dominated by women and physics being dominated by men. Less than 10% of students in construction disciplines in the UK is female, yet one third of female school leavers are going to university each year (Smith, 1999). The Greenfield Report (2003) was commissioned by the UK government to examine the participation of women in SET. Her findings included a list of negative aspects of SET higher education for female students:

- Low self confidence and low skills awareness
- Pedagogy and gender bias in examples used in class
- Few role models in lecturers

- Modifying behaviour to fit in with male expectations
- Work experience off putting.



Becher (1989) studied academic cultures and the relationship between the social aspects of “knowledge communities and the epistemological properties of knowledge forms” (p1). Becher concludes that groups of academics representing a discipline are closely linked to the characteristics and culture of the professional knowledge domain with which they belong. In Becher’s research he asked different disciplines about their perception of each other, drawing out stereotypical images of different tribes. Engineers were seen as pragmatic, in touch with reality, but also dull, conservative, conformist, mercenary and unintellectual or hearty, likeable and enthusiastic. In Becher and Trowler (2001) it is acknowledged that gender was not identified in the earlier version, and they go some way to bring this factor into the culture of the disciplines. They refer to gender blindness that ignores the aspects of culture that can discriminate against women, and they highlight issues that affect women academics in general such as the lack of career progression and being accorded the caring low status roles. They highlight the dual identity that a woman in a traditionally male discipline experiences. Greed (1999, p186) described the built environment professions as a range from the “so-called soft end...; through the middle territory where the more glamorous areas of commercial property development, architecture and elite engineering specialisms are located out to the furthest outposts of rough hard techno-macho building professionals, where men are men and only a handful of women are found.”



Some initial Conclusions

The reasons occupations remain gender segregated is complex and concerns have been expressed in both the UK and Australia. Both countries are experiencing shortages of women entering this sector and existing initiatives are not considered sufficient to redress the imbalance. Academic culture is thought to closely mirror the professional and industrial culture within disciplines and the attribute, when previously measured were overwhelmingly masculine in the built environment.

The initial research reveals cultural differences exist between the two institutions based on age, size and mission. The UK institution is a former polytechnic with its history rooted in vocational provision whereas the Australian institution is a research intensive body and the second oldest university in Australia. These characteristics clearly affect culture. Higher than average numbers of female students and higher numbers of international students are enrolled on the UM ABP courses and this affects the culture significantly too.

However similarities exist also and this relates primarily to the position of females within the institutions and their levels of seniority. Similar perceptions exist around culture of the Faculty's in each university and the perceptions of students of female staff and work-life balance issues.

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