EUROPEAN WOMEN IN MATHEMATICS

Newsletter 15

2009

Edited by
Aasa Feragen and Lorna Gregory

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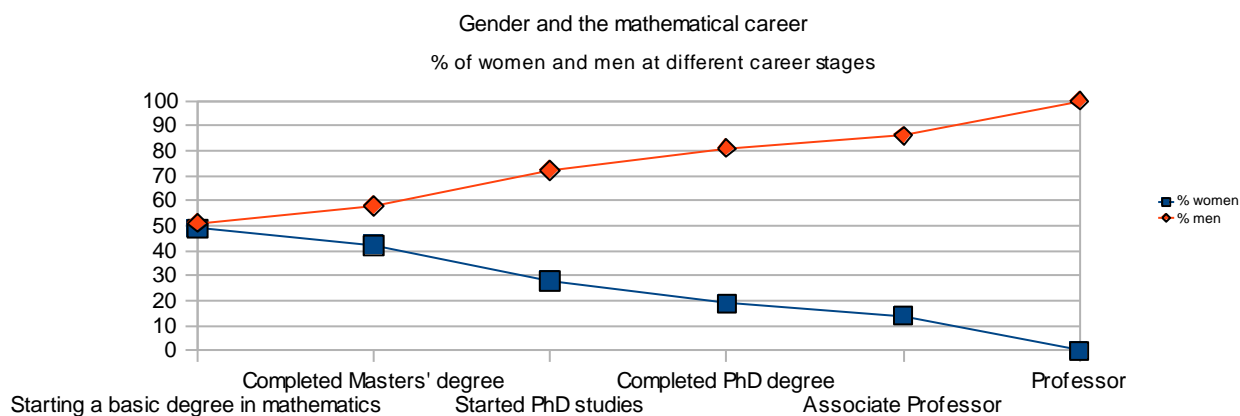## Women and Men in the Mathematical Sciences

by Aasa Feragen and K. Severi Hämäri

Today, as opposed to in the past, women and men have equal opportunities to study. But do we have equal opportunities to *want,* to *enjoy* and to *succeed with* those studies?

In August 2008 the report *Naiset ja miehet matemaattisissä tieteissä (Women and men in the mathematical sciences)* was published, based on statistics and questionnaires from the Department of Mathematics and Statistics at the University of Helsinki. The report provides fresh statistics and an update on the current situation regarding equality in mathematics research and higher education, as well as some insight into the mechanisms that cause inequality to persist. The report also shows that there has been some change, especially on the lower levels of university education – which provides hope for the future.

Old trends are hard to change

The new set of statistics reveals that old problems such as high drop-out rates at critical stages of the research career have not disappeared. As an extreme consequence of this, we see that the department still has not appointed a single female professor.

Gender and the mathematical career
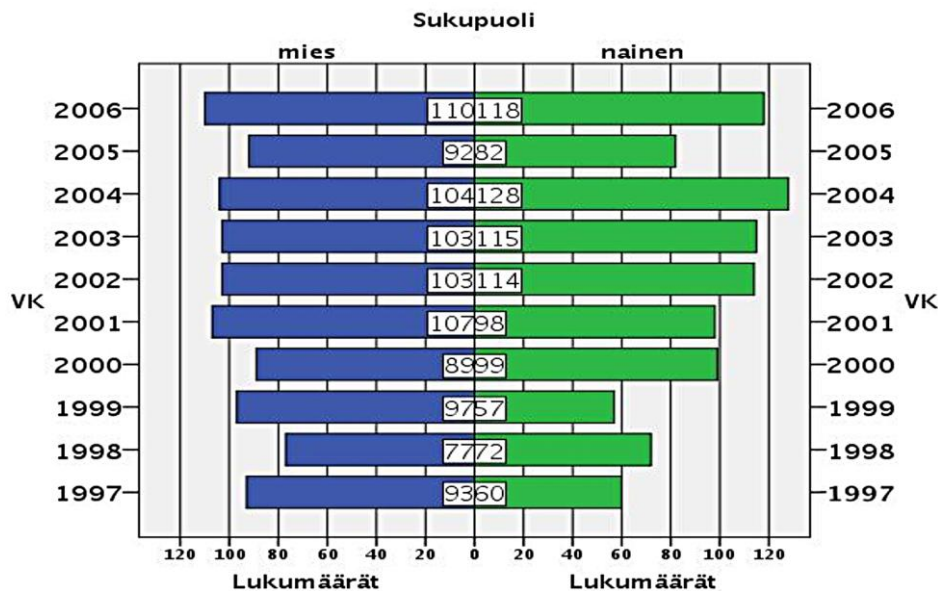
% of women and men at different career stages

Through the answers to the questionnaire quoted in the report, it is also evident that the reasons why women drop out, are much the same as found in earlier studies: employment and salary are insecure compared to alternative careers; there is a significant difference in mathematical self esteem among men and women; teachers approach male and female students differently; women have a harder time networking, and as a result are more isolated; there is a lack of female role models; and there is a lack of understanding of non-traditional needs, in particular with respect to family life.

One important finding was that among women who were successful in academic life, most reported having had good experiences with mathematics in school, and having had someone who encouraged their mathematical studies. In contrast to results from some international studies, this was not typically their father.

New trends

Some trends documented in the report are surprising, and some even encouraging. For instance, half

of the first year mathematics students in 2006-2007 were women. This shows that there *is* an interest in mathematics among young women, even if we are not yet able to maintain it. Another promising result is that the number of women starting a mathematics degree made a significant jump around 2000, when the teaching of bachelor-level mathematics at the department was reformed, with an emphasis on improving the students' general well-being, for instance by use of mentors and group learning. There was also an increase in the number of male students at the same time, but this was smaller.

Illustration 1: Number of men (blue) and women (green) starting a basic mathematics or statistics degree, 1997-2006

Other trends are less encouraging. The report reveals that there are differences in the funding of male and female PhD students, where the percentages of PhD students financed by grants or hired by the university are higher among men than among women. This means that female PhD students are more often than men forced to do research part time and/or without being paid.

Another surprising result – surprising at least for those not involved in such decisions – considers hiring, and in particular the low number of women among professors and associate professors. In the years 2003-2008, more than half of the professorships were filled by invitation, and all of the currently appointed positions (eight in total) have been filled by men. Associate professorships have not been filled by invitation, but the number of eligible applicants has been limited by restricting the positions to a very narrow research area. Out of the appointed associate professors of mathematics and statistics (ten in total), only one was female.

Aftermath

Recently there has been an increased focus on equality issues at the departments of mathematics/statistics and physics in Helsinki; in particular there have been two seminar series on gender and science, which have attracted quite some interest, and there has also been some mentoring activity for students.

It is important to keep in mind that many of the changes that could make a career in mathematics more attractive to women, would also make the same life easier for men -- we have seen that the number of students grew for both sexes as a result of increased mentoring at an early stage.

The problem is not that women experience problems that men magically avoid – the problem is that some of these problems hit women harder.

Literature:

K. Severi Hämäri, *Naiset ja miehet matemaattisissa tieteissä, Matematiikan ja tilastotieteen laitoksen tasa-arvoraportti 2007-2008*, Yliopistopaino (2008), web: http://wiki.helsinki.fi/display/mathstat/Tasa-arvotoimintaa

Cathrine Fox Maule, *Is Physics Gendered,* Arkhimedes 3/2008.

Marjatta Näätänen, *Matematiikka, naiset ja osaamisyhteiskunta,* WSOY, Helsinki, 2000 (also published in part in the mathematics journal Solmu, web: http://solmu.math.helsinki.fi/1999/2/)

Juha Oikkonen, *Good Experiences in Teaching Beginning Math Students in Helsinki*, Bulletin of the International Commission on Mathematical Instruction, No. 62 (2008) p. 74-81, web: http://www.mathunion.org/ICMI/bulletin/62.pdf.

CIMPA elects its first female president

On January 10th 2009, CIMPA (Centre International de Mathematiques pures et appliques), elected its first female president. I am much honored to head this UNESCO centre for research in the developing world, supported mainly by the French Ministry of Higher Education and Research, and based at Nice in France.

I would like to take this opportunity to say a few words about CIMPA and perhaps interest some of you in our work. The main activity of CIMPA is to organize Research Schools in developing countries. We welcome applications from mathematicians all over the world. Together with the IMU we are running Masters programmes in Cambodia and Paraguay. We also work in close collaboration with other similar institutions in Europe, particularly through the Committee for Developing Countries of the European Mathematical Society (of which I am the chair).   For more details, please see http://www.cimpa-icpam.org

In its medium-term strategy, UNESCO lays special emphasis on two themes: equality for women and aid for Africa. These are also the themes we shall reinforce in our policies in the months and years to come.

I think we in EWM should be proud that in recent years there have been many female presidents of mathematical societies, on a much higher level I would say. For example, our own Convenor Frances Kirwan was President of the London Mathematical Society. Marie-Francoise Roy, and before her Mireille Martin-Deschamps, were Presidents of the French Mathematical Society. And I am sure there are more.

Tsou Sheung Tsun, Oxford, 02.02.2009.

2.Future EWM activities
14th General meeting of European Women in Mathematics

January 2008

Dear All,

The time has come to remind you again of the *14thGeneral Meeting of European Women in Mathematics (EWM)* which will be held in NOVI SAD, SERBIA during August 25-28, 2009, at the Department of Mathematics and Informatics, University of Novi Sad Faculty of Sciences.

Invited speakers:

Ingrid Daubechies *(Princeton University, USA ; 2009 EMS lecturer)*
Nalini Anantharaman *(Centre de Mathématiques Laurent Schwartz, France)*
Barbara Lee Keyfitz *(The Ohio State University, USA)*
Jelena Kovacevic *(Carnegie Mellon University, USA)*
Marta Sanz-Solé *(University of Barcelona, Spain)*
Tatyana Suslina *(St. Petersburg State University, Russia)*
Reidun Twarock *(University of York, UK)*
Brigitte Vallée *(CNRS, France)*

Ingrid Daubechies, the 2009 European Mathematical Society lecturer, will deliver three of her EMS lectures at the 14th General Meeting of EWM.

We are very pleased to acknowledge the support of

The Swiss Agency for Development and cooperation

The Board of the Foundation Compositio Mathematica

  University of Novi Sad, Faculty of Sciences

University of Fribourg

Australian Embassy in Belgrade

for this meeting.

Considerable progress has been made with regard to the organisation of the meeting since the first announcement, and we are now much closer to the full picture. Please visit http://ewm2009.wordpress.com/ for all relevant information regarding the conference. Please note that registration ends 1st April.

Please return your registration form to us as soon as possible to the postal address given (on the website) or by email to ewm2009@im.ns.ac.yu.

Looking forward to hearing from you,

Frances Kirwan
EWM Convenor

Dušanka Perišić
On behalf of the Organizing Committee

3. Meeting announcements

KM8
Kvinnor och matematik 8=Women and mathematics 8

Göteborg
14-16 August 2009

Contact: Catarina Rudälv – email: Catrina.Rudalv@math.umu.se

Meeting in Hyderabad

A few months ago EWM made a suggestion to the ICM Executive Organizing Committee for a meeting of one or two days, to take place in Hyderabad immediately before the International Congress in 2010. The meeting will be aimed principally at women mathematicians attending the ICM (though men will also be very welcome to attend), and in particular at women from India and from developing countries, as well as young women mathematicians. The talks will be colloquium style talks aimed at a general mathematical audience. The aim will be to provide participants with an opportunity to meet other women mathematicians about to take part in the ICM and to find out about some of the areas of research to be covered at the ICM.

The ICM committee has welcomed the proposal and a local organising committee and a scientific committee have been set up:

Local organising committee:
Shobha Madan (Chair)   (Indian Institute of Technology, Kanpur)
Mahuya Datta   (Indian Statistical Institute, Kolkata)
Jaya N. Iyer   (Institute of Mathematical Sciences, Chennai)
B. Sri Padmavathy   (University of Hyderabad, Hyderabad)
Geetha Venkataraman   (St. Stephen's College, Delhi)
S.G. Dani   (Tata Institute of Fundamental Research, Mumbai)
Rahul Roy   (Indian Statistical Institute, Delhi)

Scientific committee (an expansion of the EMS/EWM Scientific Committee):
Viviane Baladi (ENS, Paris, France)
Eva Bayer (Lausanne, Switzerland)
Christine Bernardi (Paris VI, France)
Christine Bessenrodt (Hannover, Germany)
Antonella Grassi (U Penn, USA)
Ursula Hamenstaedt (Bonn, Germany)
Dusa McDuff (Stony Brook, USA)
Ragni Piene (Oslo, Norway)
Mythily Ramaswami (TIFR, Mumbai, India)
Sujatha Ramadorai (TIFR, Bangalore, India)
Vera Sos (Renyi Institute, Budapest, Hungary)
Ulrike Tillmann (Oxford, UK), chair
Nina Uraltseva (St Petersburg, Russia)
Michele Vergne (Ecole Polytechnique, Paris, France).

The London Mathematical Society

MARY CARTWRIGHT MEETING

Friday 27 February 2009

Clore Lecture Theatre, Department of Mathematics, Huxley Building, Imperial College London
(location map: www3.imperial.ac.uk/pls/portallive/docs/1/48903696.PDF)

3.30   Opening of the Meeting

Simon Donaldson, FRS (Imperial College London)
A spectator's commentary on symplectic topology

The talk will survey some of the developments of modern symplectic topology over the past 30 years, aimed at non-specialists. We will discuss the developments of pseudoholomorphic curve techniques, Floer homology, connections with geometric topology in 3 and 4 dimensions and the theory of complex algebraic surfaces.

4.30   Tea

5.00   Mary Cartwright Lecture
Dusa McDuff, FRS (Barnard College, Columbia University)
Symplectic embeddings of 4-dimensional ellipsoids

Gromov's celebrated nonsqueezing theorem of 1985 says that it is impossible to embed symplectically a large ball into a thin cylinder. One of the foundational results of modern symplectic topology, this led to a more or less complete solution of the 4-dimensional symplectic packing problem (which asks when a given disjoint union of balls can be symplectically embedded into another ball).   However, there are many other packing problems. In this talk we discuss recent joint work with Schlenk about the constraints on embedding a symplectic ellipsoid into a ball. This leads to some intriguing elementary questions in number theory. The result has applications to constructing 6-dimensional manifolds with symplectic circle action.

The talk does not use much symplectic topology and will be accessible to graduate students and nonspecialists.

The meeting is free to attend and open to all (no registration required). A reception and dinner (payment required) will be held after the meeting, contact Susan Oakes (susan.oakes@lms.ac.uk) for further information. There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) for further information.

The Women in Mathematics Committee of the London Mathematical Society organises the lecture - a talk given by an eminent woman as part of an LMS Society Meeting. The annual event started in 2000 and the previous lecturers have been: Caroline Series, Cathleen Synge Morawetz , Frances Kirwan, Jennifer Chayes, Mary Rees, Elizabeth Thompson, Ulrike Tillman, Angela Stevena and Valeri

3rd Nordic EWM Summer School

for PhD Students in Mathematics

University of Turku on June 22-27, 2009

http://www.math.utu.fi/projects/ewm/

Invited Speakers

Eva Bayer-Fluckiger
John Coates
Kaisa Nyberg
Sujatha Ramdorai
} Number Theory, Algebra, and Applications

Sirkka-Liisa Eriksson
Ritva Hurri-Syrjänen
Maarit Järvenpää
Lisa Lorentzen
Stefanie Petermichl
} Analysis

Barbara Boldin
Gabriela Gomes
Patsy Haccou
Michael Pedersen
David Sumpter
} Biomathematics

Andrea Blunck
Colette Guillopé
Markku Hannula
Riitta Soro
} Gender and Mathematics

See the webpage for registration and contribution deadlines.

TUCS

Google

NOKIA

European Mathematical Society

Finnish Centre of Excellence in Analysis and Dynamics Research

Oskar Öflund Foundation
Otto A. Malm Foundation
Finnish Cultural Foundation

4. Useful email addresses and links

EWM webpage   www.math.helsinki.fi/ewm
EWM webpage administrators Elizabeth Baldwin (UK), baldwin@maths.ox.ac.uk
                                                   Marjo Lipponen (Finland), marlip@utu.fi

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