

Olov Viirman – Summary of academic activity, August 2014 – August 2015

What follows is an attempt at summarizing my first year as a postdoctoral researcher within MatRIC. Starting with publications, I have published one journal paper¹:

Viirman, O. (2015). Explanation, motivation and question posing routines in university mathematics teachers' pedagogical discourse: a commognitive analysis. *International Journal of Mathematical Education in Science and Technology*.

Additionally, I have one peer-reviewed conference paper due to appear in the proceedings of CERME 9:

Viirman, O. (in press). The constitution of the nature of mathematics in the lecturing practices of three university mathematics teachers. In *Proceedings of the 9th Congress of the European Society for Research in Mathematics Education, Prague, Czech Republic*.

At CERME 9, I was also part of the co-leader team of Topic Working Group 14: University Mathematics Education, under the leadership of Elena Nardi:

Nardi, E., Biza, I., González-Martín, A., Gueudet, G., Iannone, P., Viirman, O., & Winsløw, C. (in press). University mathematics education. In *Proceedings of the 9th Congress of the European Society for Research in Mathematics Education, Prague, Czech Republic*.

As for other conferences, I presented a paper at the Mathematical Education of Engineers (MEE 8) conference in Loughborough, UK, in April 2015, and attended ICTMA 17 (The International Community of Teachers of Mathematical Modelling and Applications) in Nottingham, UK, in July 2015.

I have also participated in all major MatRIC events during the last year:

- MEC-MatRIC conference, Loughborough, UK, Sep 2014
- Video-tutorial workshop, Bergen, Oct 2014 – presentation
- Annual MatRIC conference, Trondheim, Nov 2014 – presentation
- Mathematical visualization and simulation workshop, UiA, May 2015
- Mathematical modelling colloquium, UiA, May 2015 – presentation
- Computer aided assessment in mathematics colloquium, Bergen, Jun 2015

Elena Nardi, University of East Anglia, UK, has agreed to serve as my academic mentor, and during the first half of 2015 I made two academic visits to UEA, one in January and one in April, which also included a visit to Loughborough University. During the April trip I gave seminars both at Loughborough and UEA.

In addition to the presentations mentioned above, I have presented my work on some other occasions, including the annual meeting of the Swedish network of doctoral students in mathematics education at Dalarna University in October 2014, and the Mathematics education PhD symposium at UiA in March 2015.

Other academic writing includes a review of the book “Approaches to Qualitative Research in Mathematics Education: Examples of Methodology and Methods”, which is due to appear in

¹ So far only published online. Publication in the printed journal is forthcoming.

Research in Mathematics Education, and reviews of papers for Education Inquiry and International Journal of Research in Undergraduate Mathematics Education.

I have also participated in the regular activities of the department at UiA, for instance attending several of the Monday mathematics education research seminars, and teaching a session on discourse analysis for the methodology course in the mathematics education doctoral program.

Other research activity, not yet resulting in tangible product, includes:

Work on a systematic review of research on the use of video in university mathematics teaching – a presentation was given at the MatRIC video-tutorial workshop and a paper is under preparation, to be submitted to International Journal of Research in Undergraduate Mathematics Education.

A final paper based on my doctoral thesis is planned for submission before the end of 2015 – perhaps to ESM?

A pilot for a project on using mathematical modelling to teach mathematics to university biology students was conducted in April 2015, and a first brief report was presented at the Mathematical modelling colloquium. The project, involving Yuriy Rogovchenko, myself, Simon Goodchild and John Liakos, will continue during autumn 2015. Data collected for this project will also be used for a study of my own on university mathematics students' development of mathematical discourse.

Also concerning mathematical modelling, I'm involved in a collaborative project with Yuriy Rogovchenko and two researchers at Loughborough University, Paul Hernandez-Martinez and Stephanie Thomas, on university mathematics teachers' conceptions of mathematical modelling and their use, or non-use, of mathematical modelling in their teaching. As a first step, a questionnaire is under preparation for distribution to university mathematics teachers in Norway and England. The questionnaire will be presented at the joint MEC-MatRIC conference in Loughborough in September 2015, and the plan is to be able to conduct the survey in October-November 2015.

A project focusing on university engineering education from an institutional perspective, looking at two engineering programs at UiA and two at Mälardalen University, Sweden using various curricular and steering documents as well as assessment documents as data, and focusing on the role of mathematics in the programs. In relation to this project I visited Mälardalen University in March 2015. I have had an abstract based on the outline of this project accepted for poster presentation at the khdm 15 conference in Hannover, Germany, in December 2015.

Together with Elena Nardi, I'm also planning a project focusing on university mathematics teachers' reflections on the practice of teaching mathematics to non-specialists such as future engineers, using the methodology she developed for her Amongst Mathematicians project, conducting focus group interviews using an example-centered and mathematically focused approach. A presentation of the first tentative ideas for this project will be given at the MEC-MatRIC conference.

Recently I have also been peripherally involved in the writing of a research proposal for FINNUT on the use of video in mathematics teaching at a number of Norwegian universities, under the leadership of John Monaghan.