BRITISH SOCIETY FOR THE HISTORY OF MATHEMATICS

Research in Progress

Saturday 17 February 2018 in the Shulman Auditorium, The Queen's College, Oxford

Programme

10.30	Registration and coffee	
11.00	Welcome	
11.10	BRIGITTE STENHOUSE Open University	Mary Somerville's *On the Theory of Differences*: A case study of researching an unpublished manuscript
11.45	TROY ASTARTE Newcastle University	Towards an interconnected history of semantics
12.20	XI LIU Northwest University, Xi'an, China, and Oxford University	A comparison of Euler and Monge on developable surfaces
12.55	Lunch in Magrath Room	Posters in Shulman foyer :
	ALISON MAIDMENT Open University	Edmund Taylor Whittaker: an investigation into the influence of his work as mathematician and teacher [Presented by Professor June Barrow-Green]
	MICHAEL CHALMERS Paris-Sorbonne University	The mathematical and philosophical works of Georges Bouligand
14.05	JOHANN GAEBLER Oxford University	Mathematics, reason, and the courtroom: George Boole and *The Laws of Thought*
14.40	KEVIN BAKER Oxford University	'The Ulysses who produced that Achilles': Edmond Halley's editorship of the *Principia*
15.15	Refreshment break	
15.45	Professor CATHERINE GOLDSTEIN CNRS, Institut de mathématiques de Jussieu-Paris Rive Gauche, Paris	*Invited lecture*: Chessboards and numbers: the case of Henri Delannoy
16.45	Close of meeting	

Abstracts

Brigitte Stenhouse   (The Open University)

Mary Somerville's *On the Theory of Differences*: A case study of researching an unpublished manuscript

In the 1830s Mary Somerville was known throughout the UK and continental Europe as an expert in analysis, and its applications to astronomy. In 1834 she completed a manuscript entitled *On the Theory of Differences*, which she later described as a work on the Differential Calculus and its applications to points, curved lines and solids, with diagrams. This work was never published, but plays a vital role in the story of her mathematics, and provides a fascinating snapshot of the state of mathematics in Great Britain at the time. In my talk I will outline and contextualise the content of the paper, and address some of the obstacles specific to studying an unpublished work.

Troy Astarte   (Newcastle University)

Towards an interconnected history of semantics

Formal semantics is often discussed in terms of disparate approaches: operational, denotational, axiomatic, and by equivalence. Divisions are also made in terms of locations: the IBM group in Vienna and the Programming Research Group in Oxford are examples. These are often useful distinctions to make when discussing the technicalities of semantics. To present a historical account in this siloed way, however, could be problematic. In fact there were a number of important points of interaction between the people and groups of people involved in working with formal semantics. Furthermore, these and other interactions led to the sharing and adoption of ideas between groups. Some important interactions include the Formal Language Description Languages conference in Baden-bei-Wien in 1964; Mervyn Pragnell's unofficial reading groups in London in the early 1960s; and the IFIP Working Group 2.2 meeting in Vienna in 1969. This talk will describe some of these interactions and attempt to explore their importance for the history and development of formal semantics.

Xi Liu   (Northwest University, Xi'an, China, and Oxford University)

A comparison of Euler and Monge on developable surfaces

The study of developable surfaces is one of the branches of differential geometry; research on developable surfaces has been closely connected with the methods of making maps and the theory of optics. In 1772, Euler published an article on the method of determining whether a surface is developable, and on the formation of shadows. Eight years later, Monge published another article on the same topic with the same structure as Euler's. Although they started their research from the same properties of developable surfaces, they obtained different results. Therefore, our aim is to find the differences in their ways of thinking by explaining and comparing their solutions in detail: these differences not only led to different results, but also promoted the development of differential geometry and descriptive geometry.

Johann Gaebler   (Oxford University)

Mathematics, reason, and the courtroom: George Boole and *The Laws of Thought*

George Boole (1815–1864) was an innovative mathematician, making fundamental contributions in differential equations, probability theory, and invariant theory, which his work inspired. By far the best remembered of his contributions, however, is to logic. His 1854 treatise, *An Investigation of the Laws of Thought*, spurred the mathematical treatment of the subject that would come to dominate in the late nineteenth century and beyond. Though published in the nineteenth century, *The Laws of Thought* participates in some of the characteristic goals and rhetoric of early modern science. Boole contrasts his methods with one of the last bastions of scholasticism, Aristotelian logic, which he derides as "not a science." The substance of his contribution—bringing thought itself within the bounds of mathematical science—is likewise patterned on the likes of Galileo and Newton. Nevertheless, Boole's treatment of a key problem in the theory of probability—determining the likelihood of justice in jury trials—reveals a less optimistic champion of the project he has inherited. Through these and other examples, this talk investigates Boole's complex relationship to the shifting borders of knowledge through *The Laws of Thought*.

Kevin Baker   (Oxford University)

'The Ulysses who produced that Achilles': Edmond Halley's editorship of the *Principia*

The story of Halley's role as midwife to Newton's *Principia* has often been told. He prompted the book's composition, funded its printing, broadcast its importance among his network of correspondents, and managed the mood-swings of its famously truculent author – simultaneously acting as instigator, agent, underwriter and publicist. Yet Halley's role as the Principia's first reader has received very little attention from historians. His response to the content of the text, and his acceptance of Newton's arguments, has been uncritically taken for granted. This talk will evaluate that assumption, by examining the pre-publication feedback notes Halley sent to Newton during the editorial process. These show him checking the proofs, correcting errors, and re-phrasing certain key passages – and also, I will argue, reveal signs of latent unease about Newton's geometrical limit methods. Halley was not merely a passive transmitter of Newton's masterpiece, but engaged more actively with the text than historians have previously acknowledged.

Catherine Goldstein   (CNRS, Institut de mathématiques de Jussieu-Paris Rive Gauche, France)

Chessboards and numbers: the case of Henri Delannoy.

The nineteenth century marks the moment when mathematical research became professional in almost the current sense of the word. However, as historians of mathematics have recently made clear, not all original research was done in the framework of academia, and it is sometimes difficult to situate the achievements of the more marginal figures within the general development of mathematics. The talk will discuss the case of Henri Delannoy (1833–1915), his contributions to combinatorics and probability theory as well as the network of his collaborators and opponents.