$\mathbb{E}\,\mathrm{i}\,\mathbb{M}$ 1

THE FIRST WORKSHOP ON ETHICS IN MATHEMATICS
20–21 APRIL 2018
PROGRAMME

Hosted by Maurice Chiodo and Piers Bursill-Hall, as part of the
Cambridge University Ethics in Mathematics Project.
http://www.ethics.maths.cam.ac.uk/
Email: mcc56@cam.ac.uk , piers@maths.cam.ac.uk

Contents

April 20, 2018

1. Schedule

All talks will be held in room MR4 in the Centre for Mathematical Sciences, Wilberforce Rd, Cambridge, CB3 0WA.

1.1. **Friday 20 April.**

09:00 Arrival/coffee
09:30 Maurice Chiodo (opening address)
09:45 James Franklin (via videolink)
10:15 Fabio Grigenti (via videolink)
10:45 Anna Alexandrova
11:00 Coffee break
11:30 Ross Anderson
12:00 James Wright
12:30 David Pritchard
13:00 Vint Cerf (pre-recorded video)
13:05 Lunch
14:00 Paul-Olivier Dehaye (via videolink)
14:30 Michael Harris (via videolink)
15:00 Bonnie Shulman (via videolink)
15:30 Coffee break
16:00 Whitfield Diffie (via videolink)
16:30 Bill Binney (via videolink)
17:00 Owen Cotton-Barratt
17:15 Open-ended discussion
19:30 Dinner in town; venue TBC

1.2. **Saturday 21 April.**

09:00 Coffee
09:30 Maurice Chiodo (summary of previous day)
09:45 Alain Valette (via videolink)
10:15 Varun Warrier
10:45 Martin Hellman (pre-recorded video)
11:00 Coffee break
11:30 Jane Hutton
12:00 Catherine Buell
12:30 Tom Leinster
13:00 Martin Hyland (pre-recorded video)
13:05 Lunch
14:00 Judy Goldsmith (via videolink)
14:30 Paul Ernest
15:00 Reuben Hersh (via videolink)
15:30 Coffee break
16:00 Ann-Kristin Glenster
16:30 Victor Piercy
17:00 Maurice Chiodo (closing address)
17:15 Open-ended discussion
19:30 Dinner in town; venue TBC

2. Titles and abstracts (alphabetical by surname)

2.1. **Anna Alexandrova.**
Title: How to build an ethics: lessons for mathematics from other fields.
Abstract: no abstract.

2.2. **Ross Anderson.**
Title: Teaching Ethics to Computer Science Students.
Abstract: no abstract.

2.3. **Bill Binney.**
Title: With all good intentions.
Abstract: no abstract.

2.4. **Catherine Buell.**
Title: Meaningful Mathematics: Social Justice and Ethnical Discussions in College Mathematics.
Abstract:
Mathematics is not a value-free subject. There are two major conversations concerning equity in mathematics: social justice pedagogy and a social justice curriculum. Briefly stated: how we teach, who we value, and what we teach. This talk will touch on how we teach mathematics and assess its value through a social justice lens with the main focus on intertwining social justice into curriculum from introductory quantitative reasoning courses, through calculus, and into graduate study to inform STEM students on the active role mathematics has in a democratic society.

2.5. **Vint Cerf.**
Title: An ethical imperative.
Abstract:
no abstract.

2.6. **Maurice Chiodo.**
Title: Ethics in Mathematics: from humble beginnings.
Abstract:
I'll talk about the work I've been doing in Cambridge over the past 2 years teaching ethics to mathematicians, what I found hard about it, and possible steps to take to carry this initiative forward on a larger scale and to other institutions. I'll also include some anecdotes of the sort of responses that I've seen mathematicians give when confronted with the question "Is there ethics in mathematics?"

2.7. **Owen Cotton-Barratt.**
Title: Ethical research for consequentialists.
Abstract:
From a consequentialist perspective, the most ethical research to pursue is that which, conditioned upon its pursuit, leads to the best outcomes. Identifying which that is, unfortunately, an extremely difficult task. However we do have

a variety of tools for acting under uncertainty, and we can try to apply them. I think people with mathematical training and intuitions are unusually well-placed to do so.
I'll talk about the strengths and weaknesses of this approach, and highlight some of the results of applications of it by myself and colleagues.

2.8. **Paul-Olivier Dehaye.**
Title: Chasing ethical failures: how I made sure the Cambridge Analytica story became a global scandal.
Abstract:
Since December 2015, I have been investigating the Cambridge Analytica scandal. Working with a succession of journalists spread over countless countries, we made sure since to chase all the responsibilities in this story, and eventually lay the proper blame in front of each actor. I will first quickly provide a recollection of the chronology of the scandal and the chronology of the journalistic investigation, then compare the two, and, if time allows, explain my motivations.

2.9. **Whit Diffie.**
Title: Ethics, Does Mathematics Need Them?
Abstract:
A skeptical historical look at the function of ethics in professions, the impacts of mathematics that might demand ethical considerations, and whether the decisions mathematicians make will have any effect.

2.10. **Paul Ernest.**
Title: An investigation of Ethics and Pure and Applied Mathematics.
Abstract:
Ethical issues arise in many ways concerning mathematics.
1. Professional ethics of mathematicians – Do mathematicians behave well (and honestly) to each other in research and towards other persons in society?
2. Ethics of mathematics education and teaching - Do mathematics teachers treat their students well? Do they do what is best for them? Is the teaching of mathematics beneficial or harmful or both?
3. Ethics of mathematical applications What are or should be the ethical limits of mathematical applications to ensure the good for society?
4. Ethics of pure mathematics What ethical values does pure mathematics incorporate or embody, if any? It should be acknowledged that to some mathematicians and philosophers claiming that pure mathematics is ethics- or value-laden is problematic ab initio.
In this brief talk I shall just focus on some of these issues. The ethics of pure mathematics and mathematics in society are quite different, flowing from insider versus outsider concerns. I claim that pure mathematics is ethical and I shall suggest some values implicit in it. However I have more to say on the ethics of mathematics in society. This is more problematic because of the ubiquity of mathematics which sustains the rich material basis for modern life, an undoubted good. However, mathematics and the mathematical outlook are grossly overvalued in modern society. This causes harm to school mathematics

failures and underpins the instrumentalism of neoliberalism and exploitative corporativism. I shall expand on these controversial elements.

2.11. **James Franklin.**
Title: How I Taught the World's Only Ethics in Mathematics Course.
Abstract:
By fiat from on high, the University of New South Wales taught a compulsory 'Professional Issues and Ethics in Mathematics' course to its mathematics students from 1998 to 2012. I was volunteered to teach it. I share my experiences. I emphasise the need for visiting speakers such as recent graduates who can the truth about life in mathematical industry; the desirability of some objective axioms for ethics; and the opportunities for student involvement and initiative.

2.12. **Ann-Kristin Glenster.**
Title: Ethics, Algorithms and the Law: Legal Certainty or Mathematical Precision?
Abstract:
This talk will explore parts of the thorny terrain between the concept of legal certainty and mathematical precision. Specifically, in discussing some of the broad legal issues that may concern mathematicians in the aftermath of Cambridge Analytica, the aim is to suggest that mathematical precision cannot offer a fool-proof shield against future legal liability. Thus, as wider ethical implications of algorithmic processing increasingly dominate public debate, there is a pressing need for greater dialogue between mathematicians and the legal community in relation to the design and interpretation of legal rules.

2.13. **Judy Goldsmith.**
Title: Using Fiction to Teach Ethics.
Abstract:
I will be talking about why and how we use science fiction to teach computer ethics, with some discussion on how to adapt this for use by mathematicians. We will briefly discuss the short story, The Here-and-Now, by Ken Liu, and how it can be used in this context. Participants are encouraged to read the story prior to the talk. It can be found at
`http://www.kasmamagazine.com/here-and-now.cfm`

2.14. **Fabio Grigenti.**
Title: TBC
Abstract: TBC

2.15. **Michael Harris.**
Title: Mathematicians as beneficiaries, and their patrons.
Abstract:
Mathematicians hold a privileged position in society, derived from their expertise in mathematics. However, they make decisions about where to work, what to work on, and who to work with, in part based on their sources of funding. How does this influence the way in which their work and their output shapes

society? Whether we see mathematics as an art form, or as an applied science, whoever is paying for it is doing so for a reason. Given the impact mathematics has on society now, we can no longer ignore those reasons.

2.16. **Martin Hellman.**
Title: Making More Ethical Decisions by Facing Our Dark Sides.
Abstract:
This talk explains how I came to see that most people, myself included, first decide what they want to do and then come up with the rationalization for why that's ethical and right. To make more ethical decisions, it is imperative that we face our dark sides, rather than pretending they don't exist. This is true at both a personal and national level.

2.17. **Reuben Hersh.**
Title: Which Code of Ethics are You Following in Your Classroom?
Abstract:
For a shocking pair of opposing ethical codes in mathematics instruction, see "the Moore method" (Robert Lee Moore, Austin Texas) and "the Potsdam Model" (Clarence Stephens, Potsdam, New York), both in Chapter 9 of "Loving + Hating Mathematics" (R. Hersh & V. John-Steiner, Princeton University Press, 2011)
For a current scandal of contrasting ethical codes in mathematics instruction, see chapter 10 , op. cit., on "developmental math" in prestige-seeking university math departments.
For an honest, humane ethics of mathematics instruction, see Nel Noddings, 2003, "Happiness and Education," Cambridge University Press, and 2007, "The Challenge to Care in Schools," Teachers College Press, pp. 151-159

2.18. **Jane Hutton.**
Title: Talking and writing about ethics in statistics: success or failure.
Abstract:
I have written several articles arguing that statistics is essential for professional ethics, and the interpretation and implementation of code of professional conduct. I will comment on areas in which I have had a little influence, as well as discussing my failures .

2.19. **Martin Hyland.**
Title: TBC
Abstract: no abstract.

2.20. **Tom Leinster.**
Title: The Snowden revelations, five years on.
Abstract:
Five years ago, Edward Snowden leaked a huge set of internal documents from and about two of the world's largest employers of mathematicians, the NSA in America and GCHQ in Britain. This caused hundreds of headlines around the world but a curiously muted response from the mathematical establishment. I

will recap some of what we learned from Snowden and discuss what has changed as a result, both inside and outside the mathematical community.

2.21. **Victor Piercy.**
Title: Quantitative Ethics for Business Students: From Perceptive Consumers to Ethical Producers.
Abstract:
While important for professional mathematicians, the ethical use of mathematical and quantitative information extends to other quantitative professionals. As such, incorporating ethics into general mathematics courses can serve the specific quantitative needs of the student while also communicating the message that ethics is part of everything a professional does.
In typical quantitative literacy courses for non-mathematicians, we typically address ethical questions from the point of view of students who will consume mathematical information. This means that they will have to be aware of potential misleading statements that they read or hear. Quantitative ethics turns this on its head. Instead of treating students to be perceptive consumers of quantitative information, we strive to teach students to be ethical producers of quantitative information. In this talk, I will share how I have incorporated this perspective into a quantitative reasoning course for business students.

2.22. **David Pritchard.**
Title: Ethics for ECRs: pros and cons of a “professionalism” framing.
Abstract:
In 2015 we introduced an ethics-education component into a module for PhD students in mathematical sciences at the University of Strathclyde. This module is situated within a credit-bearing "researcher professional development" programme, itself strongly tied to an institutional ethos of "useful learning". A key element of our approach is to run workshops during which the participants discuss ethically ambiguous scenarios while the session leaders try to make consensus difficult. I will describe the rationale for this approach and some of the advantages and disadvantages that we have so far identified.

2.23. **Bonnie Shulman.**
Title: Ethical Weight-Lifting: Using Infusion Tips and Case Studies to Build and Strengthen Ethical Muscles.
Abstract:
Discussions of what constitutes ethical behaviour often stall out when students give a "whatever" shrug and say "it's just a matter of opinion, yours or mine." One way to counter this view is to provide students with Case Studies and guided questions to help them develop their ethical muscles. Another technique is to introduce Infusion Tips – short, thought-provoking topics, often based on a brief article, that lead to oral and written discussions. I will give a couple examples of each and how they can be integrated into mathematics classes, and solicit other examples from the audience.

2.24. **Alain Valette.**
Title: Angels or demons.
Abstract:
This is a modest testimony on living in a small city where the main employer is a tobacco company. As a pure mathematician and non-smoker, I just ignored it for a long while. I started worrying when I realised that they hire mathematicians for their Research and Development department. Later, as a Head of school, I had to handle their kind offer of a few internships to math students. This prompted my interest in ethical issues in mathematics.
I will close with a few speculations on why mathematicians have difficulty in feeling concerned by ethics in maths?.

2.25. **Varun Warrier.**
Title: Autism and mathematical ability: is there a biological link?
Abstract:
Epidemiological evidence suggests that scientists and mathematicians have higher autistic traits than the general population, and are more likely to receive or have a family member who has received an autism diagnosis. Is this due to an increased awareness, or is this biological? In other words, does a common set of genes contribute to how autistic individuals, on average, and mathematicians, on average, process information? Genetic work from our lab aims to tease apart these differences.

2.26. **James Wright.**
Title: Discussing security ethics.
Abstract: no abstract.