What we will cover in this session

- What are your options?
- What other Cambridge Maths Part III/ MMaths graduates have done in the past
- Finding postgrad study and work opportunities
- How the Careers Service can help you
What do people do after Cambridge?

- Further study: 35%
- Travelling etc.: 6%
- Unemployed: 3%
- Permanent employment: 40%
- Temporary employment: 14%
- Voluntary/unpaid work: 2%

2013 graduates
Comparing Part III Mathematicians

All Graduates 2015
- Further study: 34%
- Employment: 58%
- Travelling/unavailable: 5%
- Unemployed: 3%

Maths Pt III Graduates 2015
- Further study: 67%
- Employment: 29%
- Travelling/unavailable: 3%
- Unemployed: 1%
## Destinations of previous Maths Pt III & Master of Advanced Study students – 6 months after leaving Cambridge

<table>
<thead>
<tr>
<th>Category</th>
<th>14/15</th>
<th>13/14</th>
<th>12/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL GRADUATING</td>
<td>242</td>
<td>239</td>
<td>227</td>
</tr>
<tr>
<td>Responded to survey</td>
<td>172</td>
<td>179</td>
<td>155</td>
</tr>
<tr>
<td>Further study - Research</td>
<td>103</td>
<td>122</td>
<td>103</td>
</tr>
<tr>
<td>Further study - Taught</td>
<td>13</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Employment</td>
<td>48</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td>Travel/unavailable</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Job searching</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>
Further study – 62% of Part III class from 2015

**CAMBRIDGE (x22)**
PhD in Pure Maths
PhD in Applied Maths and TP
PhD in Mathematical Analysis
PhD in High Energy Physics
PhD in Biostatistics
PhD in Physics
PhD in Fluid Dynamics
PhD in Applied Maths / Oceanography
PhD in Theoretical Physics
PhD in Earth Sciences

**BATH**
PhD in Computer Science

**LEEDS**
PhD in Computer Science
PhD in Mathematics

**OXFORD**
DPhil in Computer Science
DPhil in Partial Differential Equations

**SHEFFIELD**
PhD in Algebraic Number Theory
PhD in Mathematical Biology

**WARWICK**
PhD in Mathematics

**STRATHCLYDE**
PhD in Computer Science

**IMPERIAL**
PhD in Pure Maths
PhD in Mathematical Physics

**BERKELEY**
PhD in Physics

**MIT**
PhD in Applied Mathematics

**COLUMBIA**
PhD in Statistics

**PRINCETON**
PhD in Quantitative and Computational Biology

**DUSSELDORF**

**GOETTINGEN**

**LAUSANNE**

**MUNICH**

**STUTTGART**
Employment – 34% of Pt III class in 2015

**ACCOUNTING / ACTUARIAL**
- Actuarial Associate, PwC
- Trainee Actuary, Willis Towers Watson
- Actuary, Rothesay Llife

**BANKING / FINANCE**
- Equities Trader, Jane Street
- Software Developer, IMC Trading
- Financial Analyst, Real Estate Investment

**TECH**
- Software Engineer, Ensoft
- Software Developer, Softwire
- Software Engineer, Metaswitch
- Software Engineer, Cambridge Consultants

**CONSULTING**
- IT Consultant, d-fine
- Junior Consultant, 2020 Delivery

**TEACHING**
- Maths Teacher, Brighton College
- Maths Teacher, North London Collegiate

**ENGINEERING**
- Graduate Engineer, Renishaw

**OTHER**
- Strategy Consultant, City Football Group
- Quant Analyst, Sports Betting
Starting your masters year...questions you might have

• Postgraduate study/research – how, where, when?
• Overall career direction?
• Understanding job search – deadlines, selection processes, what employers look for?
• How and when to progress your next steps...alongside this year’s course.
What do you want to do?

http://www.careers.cam.ac.uk/sectors/maths/fds.asp

What Have Other Mathematicians Done?

Cambridge First Degree Mathematicians

The following link shows employment data for Cambridge mathematicians going straight into employment after graduating. The data is divided up according to how much or how little the work draws upon mathematics. However, this classification should be treated with caution as the mathematical content of a job is often not very obvious from the limited destination data collected. In terms of employment sectors, the most popular areas continue to be the financial and, to a lesser extent, IT sectors.

Unemployment among Cambridge mathematicians remains low. The first destination statistics provide a snapshot of who is doing what in early January after their June graduation. In 2007 there was 1 graduate unemployed and looking for work at this point.

- Employment data for Cambridge Mathematicians after Part II

Below is information about destinations of Cambridge Mathematicians going on to further study or research.

- Further Study data for Cambridge Mathematicians after Part II

Cambridge Part III Mathematicians

The University has not been systematically collecting and recording this information until recently.

- Sample destinations

National information about destinations for maths graduates

- This information is from the Graduate Prospects Site
Why consider a postgraduate degree?

• Planning for a career in academia
• Doing the degree to then move into a specific career
• For the love of the subject. You just aren’t finished studying yet but you think you’ll go on to an unconnected career
• Elaborate and very expensive procrastination – not the best reason but it can benefit you
Science PhDs – where do they go?

PhD Career Destinations

Figure 1.6 Careers in and outside science

Careers outside science

Non-university Research (industry, government etc.)

53% Early Career Research

47% Permanent Research Staff

30% Professor

The Scientific Century: securing our future prosperity
Royal Society Policy document 02/10
The academic route is bumpy

<table>
<thead>
<tr>
<th>Career</th>
<th>The problem</th>
<th>What you can do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic careers</td>
<td>Not enough positions</td>
<td>Have a plan B</td>
</tr>
<tr>
<td>Non-academic careers</td>
<td>Don’t know about them</td>
<td>Start reading/talking</td>
</tr>
<tr>
<td></td>
<td>Not enough experience</td>
<td>Do an internship, work experience, or shadowing</td>
</tr>
</tbody>
</table>
Moving onto further Study or Research after Part III Maths

Having just arrived on your Part III course it is important that you start to plan your next move as soon as possible, especially if that move is onto a PhD. Deadlines are looming. You will have a lot to pack into the coming months if you are to find your ideal PhD.

Finding your ideal PhD place will be difficult because:

- You are probably still wrestling with the topics you want to do this year, without a clear idea where next.
- You may not at this stage know the top universities, top research groups and researchers in the topic or topics of your eventual choice.
- You may have to pack in some preliminary activities; for example, taking the GRE if you intend to apply to US universities.
- Funding opportunities often have very early deadlines.
- You will need the active support of academics here at Cambridge to move on, and in many cases they don’t yet know you or have a clear idea of your interests and capabilities.

So - there is a lot to do - how to do it?

First, you need to appreciate that now, more than ever before, you are responsible for your own learning - you have got to do your research, make your choices, and drive forward to a successful conclusion. Nobody else is responsible for this - yes you will need some help along the way - but don’t expect that help to be spoon-fed to you. And that is how Part III and certainly how your PhD will be. Research is a very different activity to undertaking a first degree. There is no timetable or syllabus and there are no lectures and supervisor you should attend. You plan and execute your own activities, with limited professional help from a supervisor. So - start to practice those skills now and draw up your own plan for moving onto your PhD, maximising the use of those resources available to you.

Here are some resources to consider and possible activities you need to build into your plan.

- Attend the Part III briefing session on moving onto a PhD in week 2 of Michaelmas - led by academic staff - and start to act on what you learn there.
- Think about the subjects that could sustain your interest through a PhD; hopefully there is some close alignment with your Part III topics; if not then do something about it.
- Research where in the world you will find the leading edge expertise in these subject areas. Who is publishing leading papers on the subject?
- Find out where the expertise in the subject lies at Cambridge and ask questions to find the graduate students here at Cambridge who are closest to the subjects that interest you. Go and introduce yourself to them and solicit their support. See below for hints and tips on how to do this.
- Express appropriate interest to your subject supervisor, ask for help in selecting where to do your PhD and in planning your next move. See below for hints and tips on how to do this.
- Start to search for PhD opportunities in the topics / locations that interest you. See below for resources. Do those locations hold open days for prospective graduate students - if so then get these into your diary and attend.
Postgraduate study

• Your most valuable resource – academic staff in your department
• Read about research interests in the CMS
• http://www.maths.cam.ac.uk/research/
• See the material we have collected on the mathematics sector site as a reminder of what goes on in the Faculty
• Use CMS/Faculty of Mathematics information pages
Postgraduate Study in the USA


Welcome to the section of our site about graduate study in the US.

These pages have been compiled by specialist advisers at the Careers Service, with advice from Cambridge academics, and with material taken from the website of the main public source of information on US study in the UK, the Fulbright Commission.

Listen to our most recent podcasts: Thouron Award (Michaelmas 2012) and Postgraduate Study and Research in the USA - Lent 2011 (February 2011)

Latest Funding and GRE News

Regular alerts about postgraduate funding for study and research in the USA are sent via CamCareers Email that you can opt into here.

The Society of St Andrew’s of New York has announced that it will fund two scholarships (at $30,000 each) for the 2015-16 academic session. Two eligibility criteria apply: 1) you must be Scottish, or demonstrably Scottish by birth and 2) you must have a place at a US graduate school, either within a 250 mile radius of New York City, or in the Washington DC area. Further particulars and application forms are available from Rosella@careers.cam.ac.uk. Please note that the deadline for receipt of completed applications and all related paperwork is 26th February 2015, 5pm. This paperwork should be sent to Dr Andrew Bottomley, ab545@cam.ac.uk, and NOT the Carnegie Trust.

Thouron Awards for study and research at the University of Pennsylvania: applications are now open (mid-August) for the 2015-16 academic year. Applications will close at 17:00 on 3 November 2014. These awards, for up to 10 UK citizens, are among the most generous (90K USD) for postgraduate study and research in the USA. The Award is usually available for the first two years at UPENN, subsequent support then being covered by the academic department.

A presentation about the Thouron Awards will take place in Cambridge on 15th October 2014, 6pm at Peterhouse.

Fulbright Scholarship applications for academic year 2015-16 are now open (14th August 2014) for applications. Applications will close at 17:00 on 31 October 2014. More information is available at the Fulbright website

The inevitable withdrawal of hardcopy GRE information has now been confirmed. Please use the GRE website and related features for test preparation. Register for GRE testing on line and read the information under GRE on this site.

Kennedy Memorial Trust Scholarships (graduate study or research at Harvard or MIT) applications for awards for 2015-16 opened on 18th August 2014 and will close at 23:59 on Wednesday 29th October 2014. Applications for Frank Knox Fellowships (graduate study at Harvard) for academic session 2015-16 have the same opening and closing dates as the Kennedy awards. Both awards applications should be made via the above linked websites. Graduate candidates should note that eligibility criteria have widened to permit applications from those graduating in 2010 onwards.
Advice from a former Part III mathematician

Feedback - Applying for a PhD in the USA: a maths student perspective

Introduction

From 2008 to 2012 I studied mathematics at Pembroke College, Cambridge. In my final year, I decided to apply for a PhD in the USA, and in September 2012 I started a doctoral program at the Massachusetts Institute of Technology in Boston.

Like most students, I started looking into a PhD at the start of my final year, and because most applications to the USA must be submitted by early January, this did not leave much very much time at all. I found it very difficult to obtain practical information about the applications procedure, and with academic study to do at the same time, it was very hard work.

I have therefore written this document to provide any students interested in applying to the USA this year with some basic facts, which will hopefully make their time easier than mine was in my final year. Because I am a mathematics student, this document may be more relevant to those in the sciences. However I hope that students of any discipline will find it useful.

Why apply to the USA?

PhDs in the USA are of a very different composition to those in the UK, and whether this style is better for you depends very much on your background. In the first year an American doctorate, students are expected to take more courses (which may involve more exams), and only start work on a thesis in their second year. More often than not, PhD students will be required to teach for at least some period of their studies.

Because of this, the typical length of a PhD in the USA is about five years, so it may not suit those who wish to get started on research straight away. However, for those who are unclear about what specifically to do a thesis on this is ideal, as one gets to spend a year picking out precisely what field to research. Also, for those who are considering a career in academia, the extra time can be thought of as two more years of funding and security, when one does not have to worry about applying for a postdoctoral position.

Of course, there are numerous other reasons why PhDs in the USA are an excellent opportunity. Research in the USA is extremely well-funded and the top institutions have excellent international reputations. I was also very motivated by the desire to study and live in a different environment, which I felt would be beneficial both academically and socially.

As well as the shortage of time, applying to the USA is hard work. I found that the application forms were more involved than those for UK places, and had more requirements, including the taking of the Graduate Record Exam (GRE), which I describe in detail below.

However, the applications process does have several benefits. Firstly, the system is much more standardised than in the UK, which cuts down the workload when applying to several institutions. Also, most places have the same deadline for acceptance of their offers (around April 15th), which means that you are sure to have heard back from everywhere before having to make a final decision. Also, many offers are unconditional, which takes the pressure off final-year exams, and provides much more security.

Where to apply

When deciding where to apply, the Internet is an excellent resource. I found that all the universities I was interested in had very detailed and useful information about their academic programs available online. I was able to email faculty members and students, and in general I
Postgraduate Study in the US – main differences

US longer period of study & research

US part-taught, i.e. MS+PhD

US – you teach

US – requires ‘proof of competence….GRE

Revised GRE and Subject GRE

Apply direct to appropriate University

Costly without award of scholarship
Make sure you know of any staff members in your own college and the Faculty of Mathematics who have had experiences in the US graduate school system.

Talk to them!

Find out more about what they expected, how it turned out, what they learnt and were able to bring to Cambridge.

Use GradLink to identify alumni with US graduate school experience.
Use the Fulbright Commission web pages as a source of pdf downloads about all aspects of related paperwork, incl GRE, for applications to US graduate schools.

Apply in good time to the US graduate schools you’re interested in.

Try to broaden your interests beyond the higher profile ‘Ivy League’ schools - see the comprehensive Peterson’s Guide.

Satisfy yourself about the reputation and standing of mathematical studies and research, as well as the university itself.
US PG study – things to be aware of

Fulbright awards – global, for mutual exchange all subjects all US

GRE, GMAT, TOEFL

Academic transcripts

References (letters of recommendation)

Statement of purpose (critical, but NOT a research proposal)

Visa (proof of funding)

Funding...
If not a PhD, what are your options?

Scientists and mathematicians are lucky – you can access roles that use your degree directly or indirectly… or general roles for any degree discipline.
Finding jobs and other opportunities

http://www.careers.cam.ac.uk/CamCareers/Vacancies.aspx

We currently have 1369 vacancies and vacation opportunities from organisations targeting Cambridge students. Get new matching vacancies emailed to you daily or weekly.

Search for specific job titles, organisations, locations etc - you can enter all or part of a word
Use quotes around phrases, e.g. "any discipline", "any class", "risk analyst"
2.2 or 2i2 will find all jobs that refer to 2.2, 2i2, 2i1 and 2ii

and/or type of work:
- Accountancy & finance [168]
- Advertising, marketing & PR [210]
- Arts & heritage [44]
- Banking & investment [287]
- Charities & social enterprise [77]
- Consultancy [229]
- Data science & analytics [93]
- Education [49]
- Engineering, chemical [35]
- Engineering, civil/structural [32]
- Engineering, electrical/electronic [131]
- Engineering, mechanical/manufacturing [85]
- Environment [31]
- Health & social care [48]
- Human resources [91]
- Human rights [14]
- International development [20]
- IT [350]
- Legal [31]
- Media [29]
- Policy & politics [28]
- Postgraduate study [17]
- Procurement & purchasing [39]
- Property [23]
- Public sector [43]
- Publishing [25]
- Research for PhDs, arts/humanities [16]
- Research for PhDs, science/engineering [50]
- Research for PhDs, social science [21]
- Retail [79]
- Science, hands off [114]
- Science, life [47]
- Science, physical & mathematics [135]
- Start-ups [52]
- Supply chain & logistics [70]
- Other [74]
Your degree is only part of the story…

Across all sectors recruiters look for **evidence and proof** that:

- you can do the job/course; that you know what it involves; that you want to do it and that you want to do it for/with them

- You have the core **skills and experience** they require to do the job effectively and the potential to gain more.

- You have the **commitment and motivation** for the sector, organisation and job
<table>
<thead>
<tr>
<th>Competencies employers look for</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal and written communication</td>
<td>Influencing</td>
</tr>
<tr>
<td>Willingness and ability to learn</td>
<td>Negotiation</td>
</tr>
<tr>
<td>Adaptability and flexibility</td>
<td>Self direction</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Organising/project management</td>
</tr>
<tr>
<td>Results driven</td>
<td>Customer service/relations skills</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Presentation skills</td>
</tr>
<tr>
<td>Analytical ability</td>
<td>Research skills</td>
</tr>
<tr>
<td>Initiative</td>
<td>IT skills</td>
</tr>
<tr>
<td>Commercial awareness</td>
<td>Quantitative skills</td>
</tr>
<tr>
<td>Innovation</td>
<td>Languages</td>
</tr>
</tbody>
</table>
Evidence of competencies & motivation

- **Academic work**: grades, awards, scholarships; content; multiple deadlines; analysis; research skills; quantitative skills; IT skills; languages........

- **Extracurricular activities**: student societies; organising concerts, student politics; student media; volunteering; arts; sport; issue campaigning. In roles like: positions of responsibility; finance management; fundraising; event organisation; publicity; representation &/or advocacy; getting published or broadcast; performing ........

- **Work experience**: internships; vacation work; volunteering; shadowing; gap year

- **Competitions** (individual or team based), e.g. entrepreneurship, business, marketing, debating, mooting, writing......

- **Memberships**, e.g. think tanks, political parties, campaigning organisations, professional organisations

- **Going to** employer presentations, open days, information events
Cambridge University doesn’t do “careers in the curriculum” – Careers support is on an opt-in basis

Best advice we give is for you to concentrate on your discipline

We’re here to help you decide what you want to do next, and then help you make it happen
What we offer

Website: register for Sectors, Disciplines, Vacancies, Diary, podcasts, Gradlink, CamCareers

Career Fairs – include vac work/internship options

Briefing sessions/careers panels

Skill Sessions

One to one discussions and CV reviews

Interview practice

Library and free publications, incl. CV Guide (download here)
A few of the big events this term...

Weds 26 Oct
4.30-9.00pm
CMS

Weds/Thurs
9 & 10 Nov
1.00-6.00pm
Univ Centre
At the Maths Event on Weds 26 Oct:

Careers in Quantitative Finance

Barclays Banking
BlackRock
BNP Paribas
Cantab Capital Partners LLP
Centrica plc
Citadel
Citi
G-Research
GSA Capital Partners LLP
IMC Financial Markets
J.P. Morgan
Morgan Stanley & Co International plc
Optiver Holding BV
Oxford Asset Management
Royal Bank of Canada
Winton Capital Management

Room MR5
Some tips if you need them:

1. Map out some options and then think backwards

2. Use the Careers Service – we’ve been there!

3. Go to some Careers events or briefings

4. Get on a few CamCareers mailing lists and keep a watching brief of our Vacancies

5. Keep doing things outside your course to develop your skills and increase your exposure to new things