Athena SWAN Silver department award application

Name of university: University College London (UCL)
Department: Computer Science

Date of application: 7 December, 2015 (upgrade)
Athena SWAN process: pre-May 2015
Date of university Bronze and Silver Athena SWAN awards: Bronze - 2006, 2009,
2012; Silver – 2015.

Date of departmental Bronze Athena SWAN award: 2012

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Athena SWAN **Silver Department** awards recognise that in addition to university-wide policies the department is working to promote gender equality and to address challenges particular to the discipline.

Please note:

1. *ECU has approved the following changes to the maximum word counts in Sections 3 and 4; the overall word count remains the same:*

   Section 3 changed from 2,000 to 2,700

   Section 4 changed from 5000 to 4,300.

2. *UCL data reporting runs from 1st. October to 30th. September each year and the central data are not published in time for the November submission. Therefore in our application, we have presented data up to 2014/15. The SAT will be analysing and acting on the 2015/16 data when they are available.*

List of abbreviations:

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AS	Athena SWAN
BCS	British Computer Society
CAS	Computing at School
CS	Computer Science
EAB	External Advisory Board
FES	Faculty of Engineering Sciences
HoD	Head of Department
HoG	Heads of Research Group
HR	Human Resource
IEP	Integrated Engineering Programme
PG, PGR, PGT	Postgraduate, Post graduate Research, Post graduate Taught
STEMM	Science, technology, Engineering, Mathematics and Medicine
UCLWE	UCL Student Society of Women Engineers
UG	Undergraduate

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1. Letter of endorsement from the head of department: maximum 500 words (484)

An accompanying letter of endorsement from the head of department should explain how the SWAN action plan and activities in the department contribute to the overall department strategy and academic mission.

The letter is an opportunity for the head of department to confirm their support for the application and to endorse and commend any women and STEMM activities that have made a significant contribution to the achievement of the departmental mission.

UCL DEPARTMENT OF COMPUTER SCIENCE
John Shawe-Taylor
Professor of Computational Statistics and Machine Learning
HEAD OF DEPARTMENT
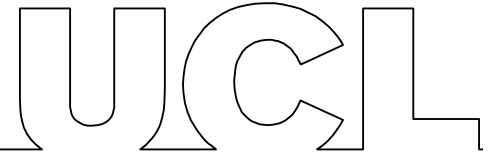
Athena SWAN manager,
Equality Challenge Unit, 7th. Floor,
Queens House 55/56,
Lincoln's Inn Fields,
London,
WC2A 3LJ

7 December, 2015

Dear Sir/Madam:

I offer my wholehearted support for the UCL Computer Science submission for an Athena SWAN Silver Award. CS as a discipline has struggled with gender inequality in many parts of the world not least in the UK. This is the result of quite complex associations and messages that are sometimes difficult to unravel, but the result has been an enormous loss of talent to the subject. Our goals in the SAT have been to better understand and provide solutions to these problems. My personal involvement in the process has been extremely gratifying and I am proud of the progress we have made as outlined in the main part of our submission.

We have organised ourselves around four sets of activities: ARRIVE – attracting girls aged 9-18 to CS, ASPIRE – supporting our female students throughout their academic experience, ACHIEVE - encouraging our female undergraduates to get top degrees, and ADVANCE – increasing numbers of CS female academics.

Our ARRIVE efforts have been extensive through engagement with schools. Of 15 CS outreach events held at UCL this past year, 71% of the attendees were female. The long-term goals of our efforts are to promote CS as an attractive subject and career prospect for women, and as a consequence to increase female application numbers significantly.

Our female undergraduates have started to play much more prominent roles in project teams that form part of our undergraduate degree. We see this as evidence that ASPIRE is bearing fruit. As a result of this greater engagement and confidence, and the curriculum changes we have made, the proportion of women obtaining firsts

has been completely transformed, from a low point of 0% 5 years ago to 45% this past year, showing our progress with ACHIEVE.

Our efforts under the ADVANCE initiative have been directed towards increasing the number of female lecturers and to achieve promotions through the ranks. I have personally taken steps to encourage special appointments for Fellows from which a number of women have moved into lecturer positions. I also took the initiative to make a Post-Break Award of £10,000 a permanent feature of the department's funding strategy and so far 3 female staff have benefitted.

I am very happy to report that this year's promotion round has been outstanding. Of five newly promoted professors, two are female. Furthermore, two of our seven new senior lecturers are female.

While there is without doubt a long way to go before we can truly say we are realising the potential of female CS talent, I believe that the last three years have seen us take very significant steps towards achieving this. I look forward to carrying forward our new plans and actions and reaping the benefits of the hard work that you will find reported below.

I am happy to confirm that the information presented in this application, including quantitative and qualitative data, is an honest, accurate and true representation of the department.

Yours,

John Shawe-Taylor
Professor of Computational Statistics and Machine Learning & Head of Department

The SAT was formed in 2011 and currently has 15 members, 8 female and 7 male. It includes undergraduates and postgraduates; academic, teaching, research and professional services staff.

Name	Position	SAT Role	Background and work-life balance
Earl Barr	Senior Lecturer.	Senior lecturer representative.	Has 2 sons who live with him in the summers
Jane Butler	Vice Dean Enterprise, Engineering Sciences.	Athena SWAN Champion.	Has 2 adult daughters. Worked at home freelancing while children were in pre-school. Career has been in the IT and telecommunications industry.
Ivana Drobnjak	Lecturer.	Co-leader ADVANCE* activities.	Married with toddler and twin babies. Took 6-month maternity leaves for both pregnancies, otherwise worked full-time. Children attend nursery school with childcare responsibility shared between parents
JJ Giwa-Majekodunmi	Facilities and Operations Manager, CS Equal Opportunity Liaison Officer.	Budget manager, HR support.	Married with 2 children. Took 6 months maternity leave in 2004, returned on 3-day week basis for 4 months.
Stephen Hailes	Professor, Deputy Head of Department. Heads department's outreach programme.	Leader ARRIVE* activities.	Married with 2 adult children. Governor at girls' secondary school overseeing Computing, Mathematics and Technology curriculum areas, with additional responsibility for high achievers.
Rae Harbird	Teaching Fellow with special responsibility for Outreach.	Organiser ARRIVE activities.	Married with 2 adult children.
Guy Lever	Postdoctoral researcher.	PG representative. Organises postdoc focus groups.	Has worked at UCL for 5 years.
Nuray Muzaffarova	Undergraduate.	UG representative. Helps with UG surveys.	Aiming to become Artificial Intelligence researcher and to provide better life for society.

Name	Position	SAT Role	Background and work-life balance
Graham Roberts	Senior Teaching Fellow, Departmental Tutor for student welfare, Director of Studies responsible for organising teaching in department.	Leader ACHIEVE* activities.	Acted as carer for five years for late mother during long illness; currently looking after elderly father. Made significant change in job responsibilities to better match these caring responsibilities.
John Shawe-Taylor	Professor, Head of Department.	Co-leader ADVANCE* activities. Allocates SAT budget.	Married with 1 child. Director of charity that promotes use of technology in broadening access to education in developed and developing worlds.
Dave Twisleton	Technical IT Support Officer, Department Safety Officer. Involved with teaching support and outreach activities in Department.	Technical support.	He and partner work full-time, childcare organised between them, childminder and grandparents. Governor of daughter's primary school with focus on teaching curriculum.
Caroline Wardle	Visiting Professor.	Athena SWAN Champion.	Single parent of adult daughter adopted as baby. Worked at National Science Foundation in USA, heading national effort to increase opportunities for women in computing.
Tim Weyrich	Professor.	Senior academic representative.	Married with 2 children. Wife works part-time. Childcare managed between nursery school and parents.
Manisha Verma	PhD student.	Leader ASPIRE* activities.	Passionate about teaching and reading.
Anna Zaremba	PhD student.	Data analyst.	Dancing is huge part of her life.

* ARRIVE, ASPIRE, ACHIEVE and ADVANCE are four initiatives for action, see next section for details.

> b) An account of the self assessment process: details of the self assessment team meetings, including any consultation with staff or individuals outside of the university, and how these have fed into the submission.

After we applied for a Silver award in 2012 and were awarded a Bronze, the SAT met to reflect on its activities. We invited two new people to join us as Athena SWAN Champions, one from industry (Butler) and one from academia (Wardle). The two champions have brought new perspectives to our activities that have led us to design a strategic framework that encompasses our activities and that provides us with a tool for communicating our goals both within the team and to the department. We identified four broad initiatives, **ARRIVE, ACHIEVE, ASPIRE** and **ADVANCE,** each headed by SAT members.

ARRIVE – Low numbers of schoolgirls are interested in CS. We want to see equality in the male to female ratio.

Action goals:

1. Change attitudes to CS amongst girls aged 9-18.
2. Provide thought leadership and education to school educators.
3. Ensure that all our outreach events become, on average, 50% female.

ASPIRE - Undergraduate CS women are a small minority. We will provide multiple avenues for peer support and industry interaction for their academic, professional and personal development.

Action goals:

1. Develop a supportive community of female CS students at all levels.
2. Provide female CS students opportunities for networking, professional development, mentoring, and outreach activities.

ACHIEVE – There are lower than expected numbers of female CS undergraduates attaining the highest levels of degrees. Our aim is to see equality in degree classification attainment.

Action goals:

1. Design interventions to produce more undergraduate women gaining 1st and 2:1 degrees
2. Imbed real-world use and interaction into the undergraduate programme

ADVANCE – The ratio of women to men gets worse as you climb the academic ranks. Our aim is to obtain equality in female and male progression.

Action goals:

1. Put in place Proleptic appointments for progression from Fellowship to Lectureship.
2. Provide support and training to help postdocs and PhD students in applying for Fellowships.
3. Promotion at all grades to have gender equality.

We have chosen to focus a significant proportion of our effort on students, through our ARRIVE, ASPIRE and ACHIEVE activities. We believe that one of the most difficult problems to solve in CS is how to increase the pool of females in the academic pipeline from schools to undergraduates to postgraduates.

In response to panel feedback, we have consulted with three UCL Engineering Sciences departments that have received Silver awards.

The SAT meets every month during term time to discuss and monitor progress. Since there are SAT members on every departmental committee, information on AS activities is channelled through these committees. The HoD (Taylor) and AS Champion (Butler) brief the Senior Management team once a month, and the HoD communicates SWAN activities to the whole department through departmental meetings and email, and with the CS student body via email and social media.

> c) Plans for the future of the self assessment team, such as how often the team will continue to meet, any reporting mechanisms and in particular how the self assessment team intends to monitor implementation of the action plan.

After submission of our Silver application, the SAT will continue meeting monthly to monitor progress, adapting our actions as needed.

Athena SWAN is a standing item on the Senior Management team agenda.

We will continue to conduct annual focus groups and surveys of staff and students to obtain data on progress.

> 3. **A picture of the department: maximum 2700 word**   (2672)
>   *(Revised word count approved by ECU)*
> a) Provide a pen-picture of the department to set the context for the application, outlining in particular any significant and relevant features.

UCL Computer Science (CS) is one of the leading UK departments in research and teaching in CS, and is part of the Faculty of Engineering Sciences (FES). In the 2014 Research Excellence Framework (REF) evaluation UCL was ranked in first place for CS, out of 89 Universities assessed; 96% of its research submission was rated as internationally excellent.

We take pride in the quality and breadth of our teaching portfolio. We run undergraduate programmes and a wide variety of postgraduate programmes, most of which are linked directly into our research base. We use a variety of practical problem- and project-based tasks to extend the students technically and develop their collaboration, teamwork and leadership skills. This past year, there were about 120 entering undergraduates and 335 taught (Masters) postgraduates. Over the next 3-4 years, we plan to increase progressively the undergraduate intake to around 150 and the taught (Masters) postgraduate to 400.

Six years ago the department embarked on a significant revision to the way that undergraduate courses were taught, moving from a primarily lecture-based approach to problem-based learning with lab and project-based work. This strategy in CS acted as a beacon for the development of the Integrated Engineering Programme (IEP) now in place in FES. Offering a balance of theoretical and practical specialisms, student teams come together to tackle ambitious real world problems such as deploying renewable energy resources and global connectivity. Alongside their fundamental CS studies, students follow interests in other subject areas

including management science, biomedical engineering and industrial design. As part of FES at UCL, students work collaboratively with engineers and scientists from all other disciplines. This is providing us with an opportunity for innovation in the way we encourage female CS students to pursue a career in research, science and engineering. We are already seeing significant positive impact of this change in our female students.

The CS department has 68 Academic, 8 Teaching and 90 Research staff, as well as 32 Professional Services staff and 7 technicians. We have 11 research groups together with 8 associated large-scale interdisciplinary research centres. The department is now spread over 3 different buildings in central London.

Links between industry and education are important to us so that our teaching is relevant and informed by problems currently facing industry. An External Advisory Board (EAB) offers advice on our current and proposed activities, provides us with the opportunity to consider plans for re-invigorating and restructuring our degrees, and helps shape our Research Impact. The 22-member Board meets bi-annually and its membership is divided evenly between highly experienced industry partners, leading technologists and entrepreneurs, and senior members of the department.

Currently 3/11 external members of the EAB are senior women executives drawn from our industrial partners, and 3/11 internal members are female senior academic and professional staff in the department. The topic of gender and diversity is discussed at every meeting and at the board meeting in March 2015, the main topic of discussion was the execution of the Athena SWAN plan.

The department has long recognised that the underrepresentation of women in CS extends back to interest in computing in schools. As part of our ARRIVE activities, we have extended our existing programme of engagement with primary and secondary schools to include project workshops for schoolchildren, and industry-funded multidisciplinary summer schools for A-level students that tackle real world problems. The school workshops are designed to be equally attractive to girls and boys. And the summer schools have equal attendance by male and female students.

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b) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

Student data

(i) **Numbers of males and females on access or foundation courses** – comment on the data and describe any initiatives taken to attract women to the courses.

UCL CS does not offer foundation courses.

Undergraduate male and female numbers – full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the impact to date. Comment upon any plans for the future.
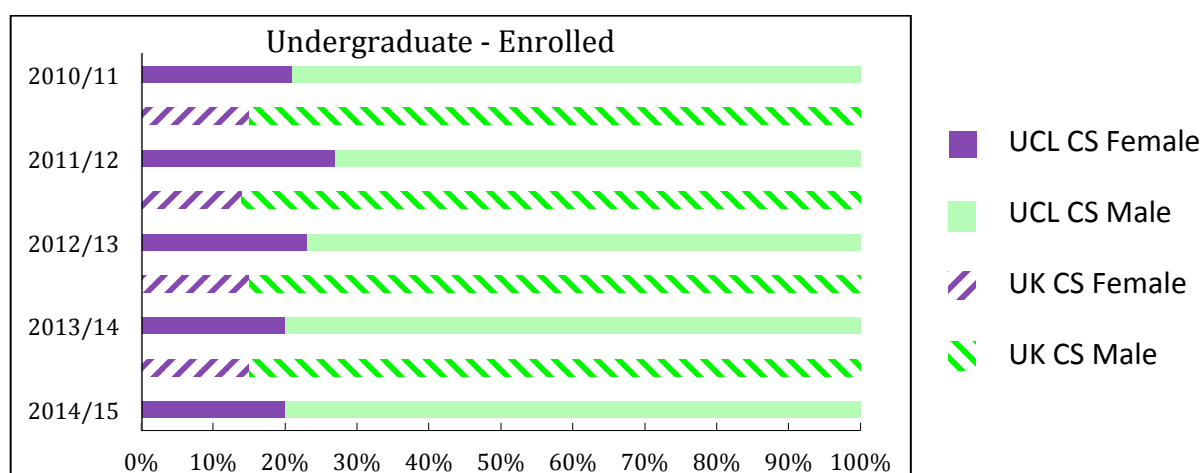
	UCL CS			UK CS	(HESA)	
Year	**Female**	**Female**	**Male**	**Female**	**Female**	**Male**
2010/11	44	(21%)	168	6850	(15%)	39865
2011/12	53	(27%)	141	6740	(14%)	40010
2012/13	54	(23%)	181	6340	(15%)	36375
2013/14	56	(20%)	228	6705	(15%)	38695
2014/15	71	(20%)	276			

Figure 1: Numbers of female and male undergraduates enrolled in CS programmes, comparison of UCL versus UK, 2010/11 – 2014/15. UK data source: HESA.

All our undergraduate students are full-time. The number of enrolled women undergraduates has been stable over the past 5 years and our % figures are consistently above the national average. The student-focused initiatives of our strategy, ARRIVE, ASPIRE AND ACHIEVE, are starting to open up our pipeline of females studying CS.

We have seen a significant increase in girls and their parents attending our CS Open Days and we strongly suspect this is a direct result of the impact of our ARRIVE work. We will be investigating this further in our Action Plan.

ACTION 1.4 Collect and analyse the Open Day attendance data and their links to our ARRIVE strategy.

A body of research and experience in the U.S. has demonstrated that an approach called service learning (engineering-based projects in local community service and educational organizations) attracts women to study Engineering disciplines (Reference: EPICS programme, Purdue University, started in 1995 and widely adopted by other universities). Our ACHIEVE initiative has adopted a similar technique where our students have to engage in several major software development projects undertaken outside UCL with industry partners, charities and hospitals, enabling students to make a real contribution to society and in industry.

We are now using a mobile platform called 'Placed' to allow a broader range of these partners to offer our students project work. This mobile platform will be deployed across UCL and then offered to other UK universities. We expect this to make a further significant positive impact on the number of girls attracted to and successful in CS.

ACTIONS 2.1 and 2.2 *Scale up the mobile platform 'Placed' to increase the number of service and industry based real world projects for students. Expand the use of the platform to other UK universities.*

As part of the project work we ensure that all students take a turn at group leadership and managing client interaction. This creates a positive gender neutral atmosphere. We regularly invite project clients to events such as project presentations, enabling students to meet and interact with them. This has proved to be an effective way for students to meet women in industry, especially at senior levels. Many of these organisations have provided student prizes, donated equipment and provided access to advanced and experimental services giving our students strong reinforcement that they are undertaking high impact project work.

(iii) **Postgraduate male and female numbers completing taught courses** – full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.
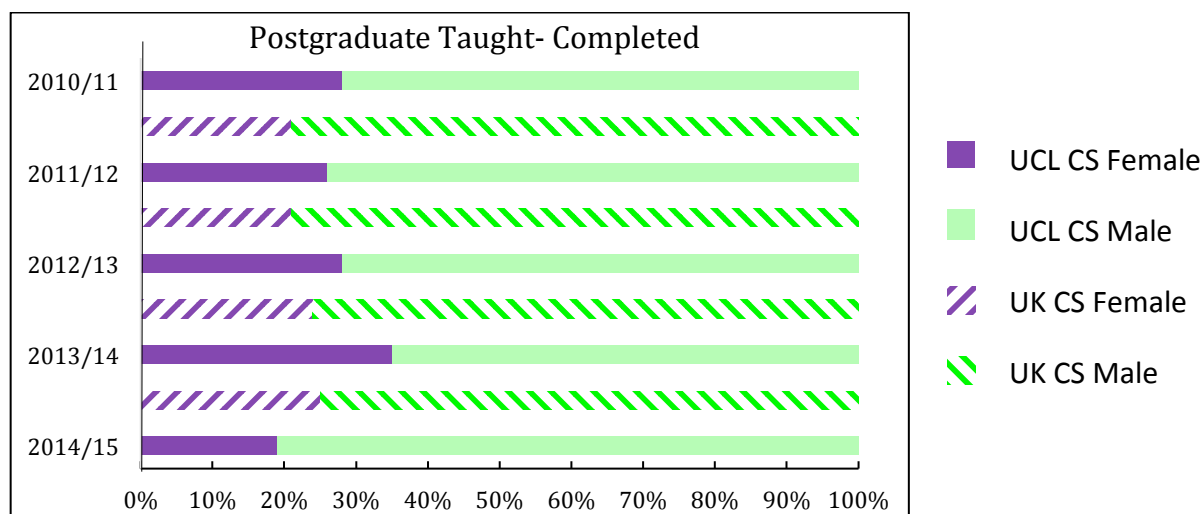
	UCL CS		Male	UK CS	(HESA)	Male
Year	Female		Male	Female		Male
2010/11	54	(28%)	136	2135	(21%)	8275
2011/12	47	(26%)	133	2025	(21%)	7420
2012/13	58	(28%)	146	1790	(24%)	5575
2013/14	105	(35%)	194	1675	(25%)	4920
2014/15	59	(19%)	192			

Figure 2: Numbers of female and male students completing postgraduate taught programmes, comparison of UCL versus UK, 2010/11 – 2014/15. UK data source: HESA.

All our students are full-time. The proportion of female students has consistently exceeded the national figures from 2010/11 – 2013/14. We noticed a considerable increase in the actual number of females completing PGT taught programmes in 2013/2014 followed by a drop of numbers and a percentage drop in 2014/15. We have not yet had time to investigate these swings in numbers and percentages but we are working with our PGT administration and admissions team to get a better picture in order that we can address the issues correctly.

ACTION 2.3 Examine reasons for changes in PGT completion and take any necessary corrective action.

Our initial ASPIRE and ACHIEVE actions focused on female undergraduates since these women are earlier in the pipeline than female postgraduates. Now we have met these initiatives' goals, we will expand their scope to include actions for female postgraduates. The programme will begin with focus groups and surveys across our PGT student cohort to get a clear picture of how to have a positive impact on the experience of our PGT females, followed by a set of actions arising from this understanding.

ACTION 2.4 Widen the scope of ASPIRE and ACHIEVE to include female postgraduate students.

A Graduate Support scheme supported by HEFCE was put in place in 2014 offering £10,000 plus full childcare costs and industry mentoring. CS offered 7 places to women to study a general CS Masters course in advance of returning to the workplace. All 7 female students successfully completed their MSc course in 2014.

In UCL CS we run this general CS Masters course for those completing a first degree in another subject to augment their qualifications by combining CS with another subject such as Business Studies, Mathematics or a Science. We have found over many years that this particular Masters course is very attractive to women, either immediately following their first degree, after a few years in industry or more importantly when returning to work after having a family. As CS becomes a core part of many industrial careers in all sectors, both men and women are finding that augmenting their degree with a postgraduate CS qualification opens up many new exciting work opportunities. And for young women who did not choose to study CS at undergraduate level, this option gives them a route into CS at the Masters level. We will leverage this with our industrial partners to put in place an industry-funded Graduate Support Scheme.

ACTION 2.6 Work with our industrial partners to grow our Graduate Support scheme for female PGT students.

(iv) **Postgraduate male and female numbers on research degrees** – full and part-time – comment on the female:male ratio compared with the national picture for the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.
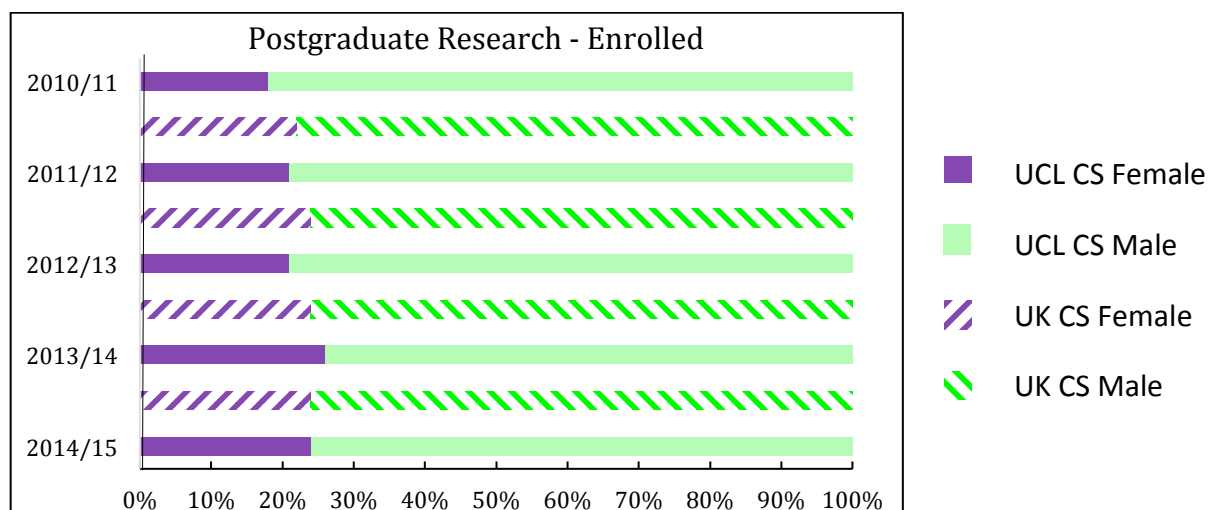

Postgraduate Research - Enrolled						
	UCL CS			UK CS	(HESA)	
Year	**Female**		**Male**	**Female**		**Male**
2010/11	24	(18%)	113	760	(22%)	2735
2011/12	30	(21%)	111	920	(24%)	2875
2012/13	31	(21%)	115	905	(24%)	2895
2013/14	42	(26%)	119	945	(24%)	2965
2014/15	43	(24%)	135			

Figure 3: Numbers of female and male students enrolled in postgraduate research programmes, comparison of UCL versus UK, 2010/11 – 2014/15. UK data source: HESA.

Over the past 5 years the number of women enrolled in postgraduate research degrees has been slowly increasing and last year there were 80% more women enrolled than 5 years ago. This contrasts with a 19% increase for men over the same 5 year period. We are now more in line with the national average for CS (24%). Encouragingly, there isn't a clear drop in the pipeline from UG to PGR within CS – from 20% at UG to 24% at PGR.

In concert with broadening the ASPIRE and ACHIEVE programmes to encompass PGT students, we will also include female PGR students in these initiatives. We will first gain insights into how to have a positive impact on the experience of our PGR females, followed by a programme of actions. (reference: *ACTION 2.4*).
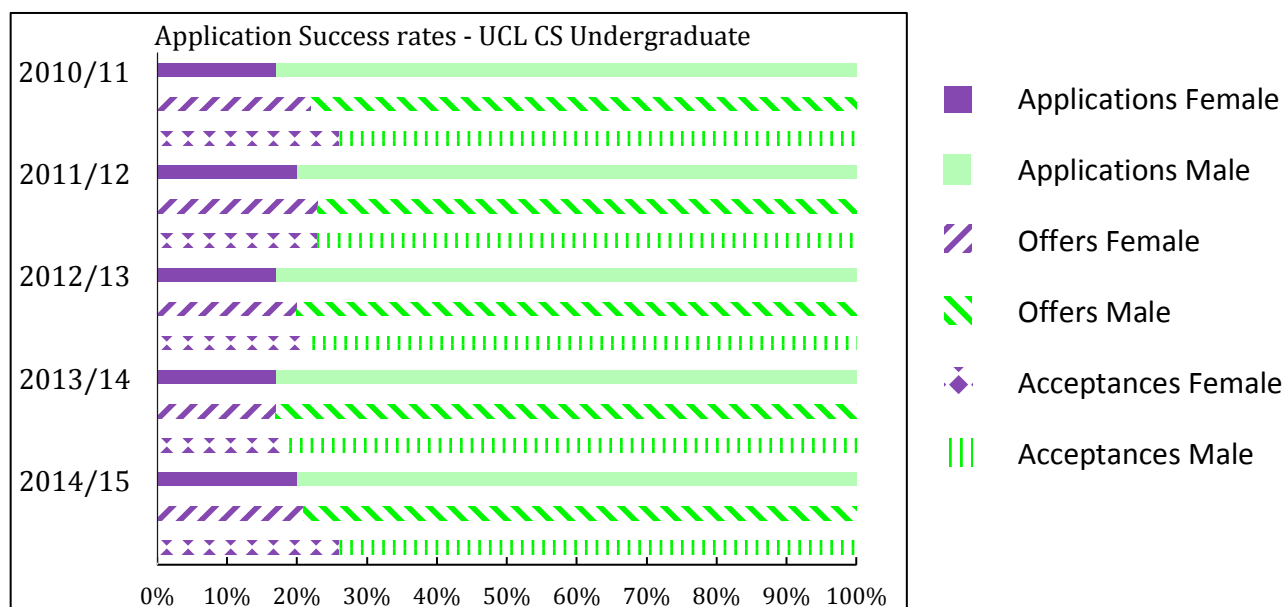
Application Success Rates for Undergraduate UCL CS					
	Applications		Offers		Acceptances
Year	Female	Male	Female	Male	Female	Male
2010/11	112 (17%)	531	66 (22%)	237	35 (26%)	100
2011/12	153 (20%)	629	65 (23%)	217	24 (23%)	82
2012/13	121 (17%)	599	82 (20%)	335	40 (22%)	146
2013/14	153 (17%)	731	83 (17%)	410	40 (19%)	167
2014/15	226 (20%)	917	136 (21%)	509	75 (26%)	218

Figure 4a: Application Success rates for female and male UCL CS undergraduates, showing applications, offers and acceptances, 2010/11 – 2014/15.

Application Success Rates for Undergraduate UK CS (UCAS)					
	Applications			Acceptances	
Year	Female		Male	Female		Male
2010/11	13230	(15%)	77030	3100	(15%)	17400
2011/12	13810	(14%)	83295	2970	(15%)	17450
2012/13	12475	(14%)	77455	2715	(14%)	16640
2013/14	13355	(13%)	86345	2925	(13%)	18785
2014/15	14990	(13%)	97310	3125	(13%)	20460

Figure 4b: Application Success rates for female and male UK CS undergraduates, showing applications and acceptances, 2010/11 – 2014/15. UK data source: UCAS.
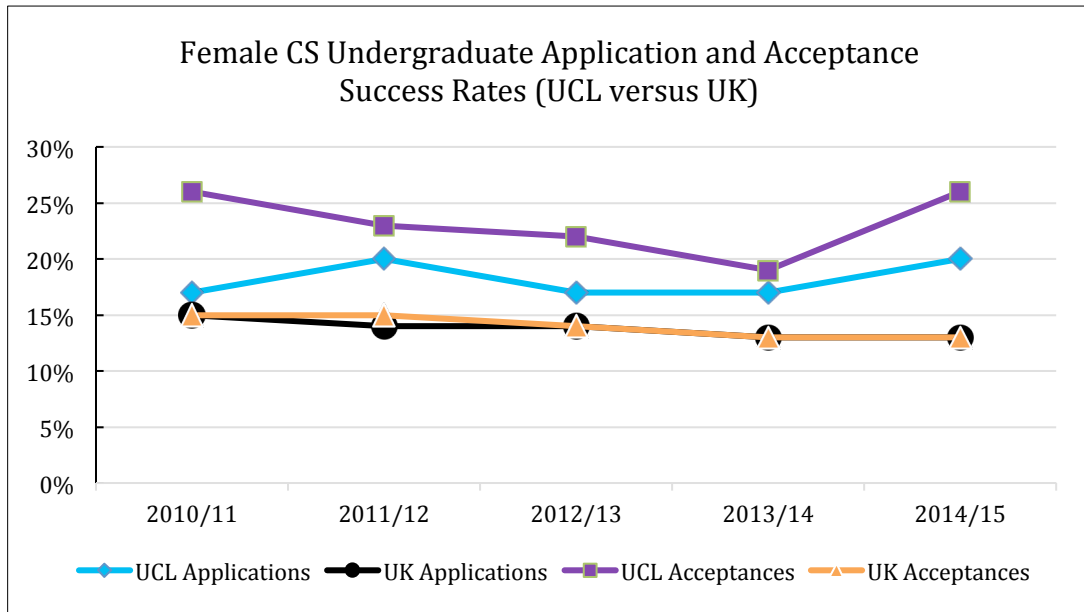
Figure 4c: Application and Acceptance Success rates for female CS undergraduates, showing applications and acceptances, comparison of UCL versus UK, 2010/11 – 2014/15. UK data source: UCAS.

The percentage of applications from women varies between 17% and 20%, but in every year it has exceeded the national average. The percentage of acceptances exceeds the percentage of applications and offers.
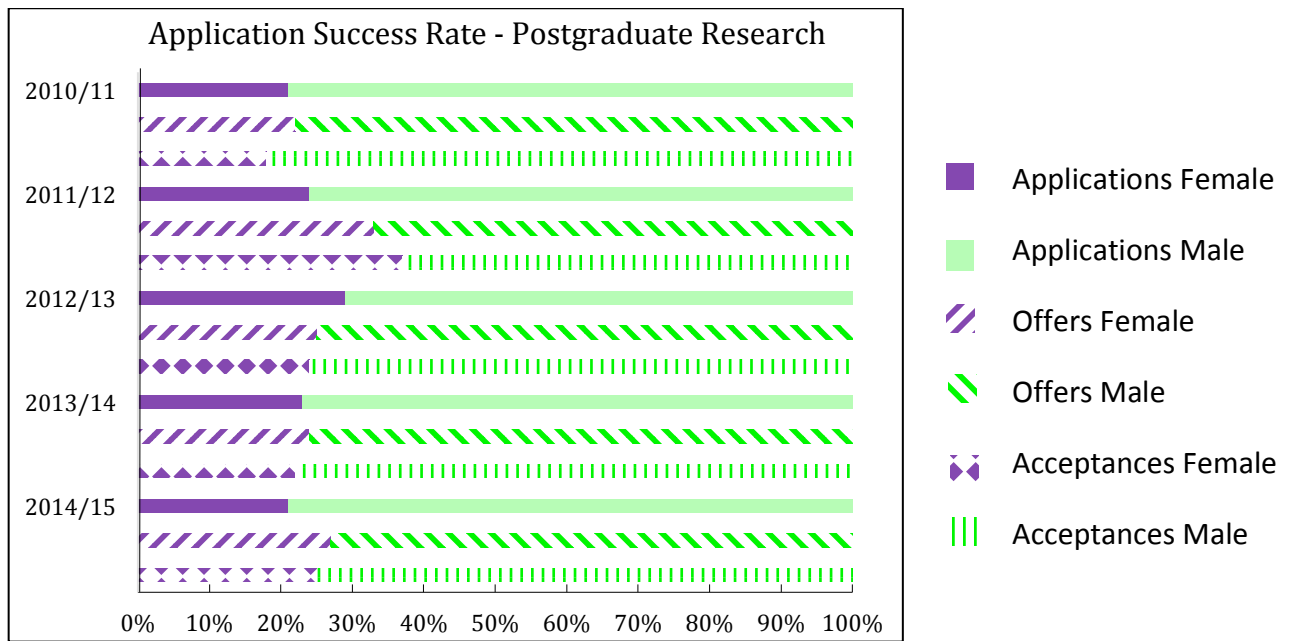
Application Success Rate - Postgraduate Taught
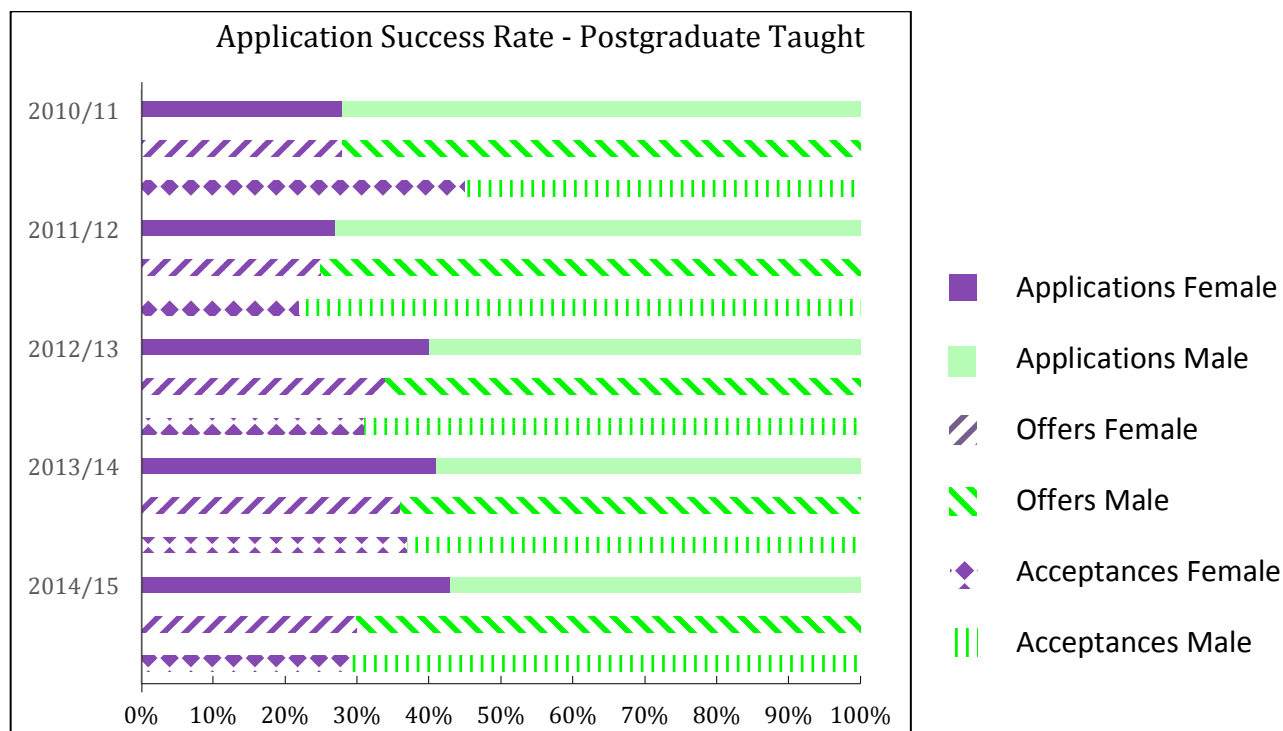
	Applications			Offers			Acceptances		
Year	**Female**		**Male**	**Female**		**Male**	**Female**		**Male**
2010/11	427	(28%)	1084	180	(28%)	452	88	(27%)	236
2011/12	443	(27%)	1173	144	(25%)	442	71	(22%)	254
2012/13	756	(40%)	1122	198	(34%)	392	115	(31%)	251
2013/14	881	(41%)	1260	266	(36%)	472	161	(37%)	280
2014/15	1038	(43%)	1354	208	(30%)	496	138	(29%)	336

Figure 5: Application Success rates for female and male postgraduates in taught CS programmes, showing applications, offers and acceptances, 2010/11 – 2014/15.

The numbers of PGT applications, offers and acceptances for women have been rising steadily since 2011/12. We saw a slight drop in offers and acceptances to women in 2014/2015. We are examining our 15 masters degree programmes and the selection process to see if we can identify the reasons behind this drop-off.

ACTION 2.5 Examine all PGT degree programmes and their selection processes to understand why there was a drop in offers to and acceptances from female PGT students in 2014/15.

Application Success Rate - Postgraduate Research

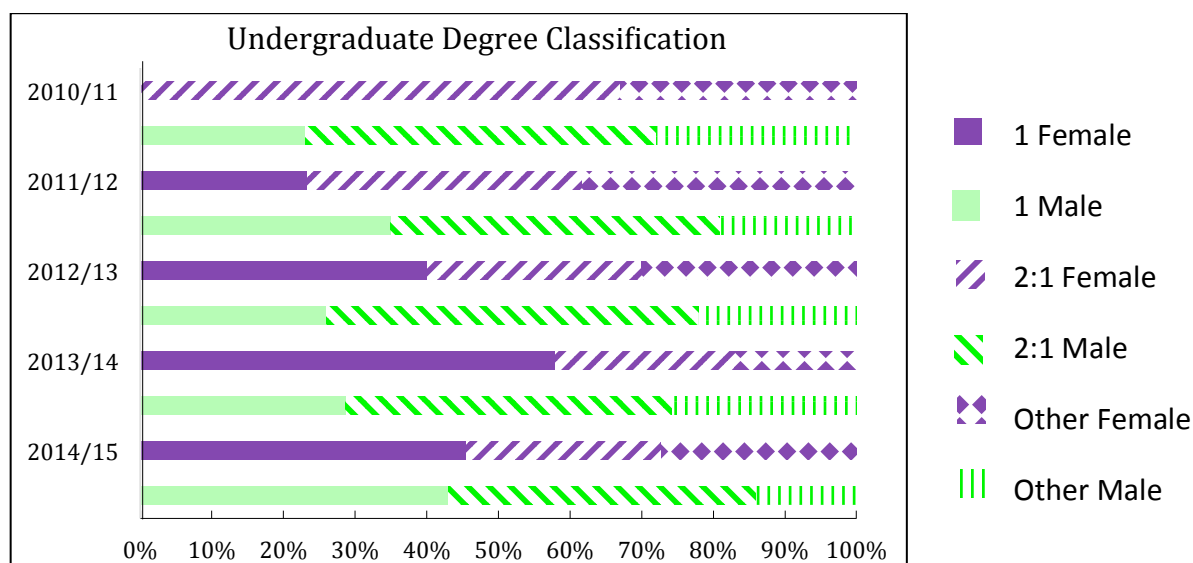|	Applications			Offers			Acceptances		
Year	Female		Male	Female		Male	Female		Male
2010/11	62	(21%)	235	21	(22%)	76	14	(18%)	63
2011/12	83	(24%)	257	28	(33%)	57	25	(37%)	43
2012/13	119	(29%)	293	27	(25%)	79	20	(24%)	62
2013/14	82	(23%)	282	24	(24%)	75	16	(22%)	56
2014/15	113	(21%)	438	28	(27%)	75	20	(25%)	61

Figure 6: Application Success rates for female and male postgraduates in CS research programmes, showing applications, offers and acceptances, 2010/11 – 2014/15.

The data indicates no bias against women in the PGR application process. However we would like to see more women apply in the first place.

To support our current PGR students, the department has expanded the PGR networking and social programme stimulating a greater peer network. There is a pizza party for PGR's held at the beginning of each academic year that was started in 2015/2016. A conference has been established to take place in December 2015 where PhD students will present their work, this is organised by the PGR students themselves with support from the department, and will be an annual event. Both events are funded by the CS HoD from departmental funds.

ACTION 2.9 Expand the networking and social programme for PGR students to ensure a strong peer group offering mutual support.

Figure 7: Undergraduate Degree Classification for female and male undergraduates, 2010/11 – 2014/15. Other consists of 2:2, 3rd and pass degrees. Percentages represent the number of females (males) with each degree classification divided by total number of females (males)

Undergraduate Degree			Classification					
	Total		Female			Male		
Year	Female	Male	1	2:1	Other	1	2:1	Other
2010/11	3	43	0%	67%	33%	23%	49%	28%
2011/12	13	26	23%	38%	38%	35%	46%	19%
2012/13	10	27	40%	30%	30%	26%	52%	22%
2013/14	12	35	58%	25%	17%	29%	46%	26%
2014/15	11	56	45%	27%	27%	43%	43%	14%

In 2010/11 we noted that there were no female recipients of first class degrees. We addressed this in our previous Athena SWAN submission action plan. The SAT, in conjunction with the Teaching Committee, agreed to put in place a number of measures to address the problem. Perhaps the most significant decision taken, as part of our ACHIEVE strategy, was to change the way that CS is taught and presented to students, in particular, the focus on using CS to solve real-world problems. We believe that making CS more applicable to society and to industry created much higher impact of our teaching, lab and project work for all students regardless of gender.

A second SAT initiative was to examine the student experience. In 2013 our first ASPIRE leader established the UCL Student Society of Women Engineers (UCLWE) to support the professional, academic and personal development of FES students. She surveyed the membership and found that over 80% complained about social

isolation and lack of friendship within UCL. Most of them acknowledged a lack of confidence in speaking up during lectures and in conducting interviews.

In response to this survey, UCLWE organised workshops on presentation and leadership, as well as a student-run mentoring scheme named BigEng Sister. Attendees of the workshops reported they found them of great value and subsequently felt more confident attending interviews and leading group projects. The BigEng Sister programme holds regular peer-mentoring sessions where female students can obtain help from one another on topics they are having difficulties with.

In 2013-2014, UCLWE organised 6 events with an average of 25 participants per event, and 1 external outreach event – the Big Bang Fair. in 2014-2015, it organised 15 events with on average of 34 participants per event.
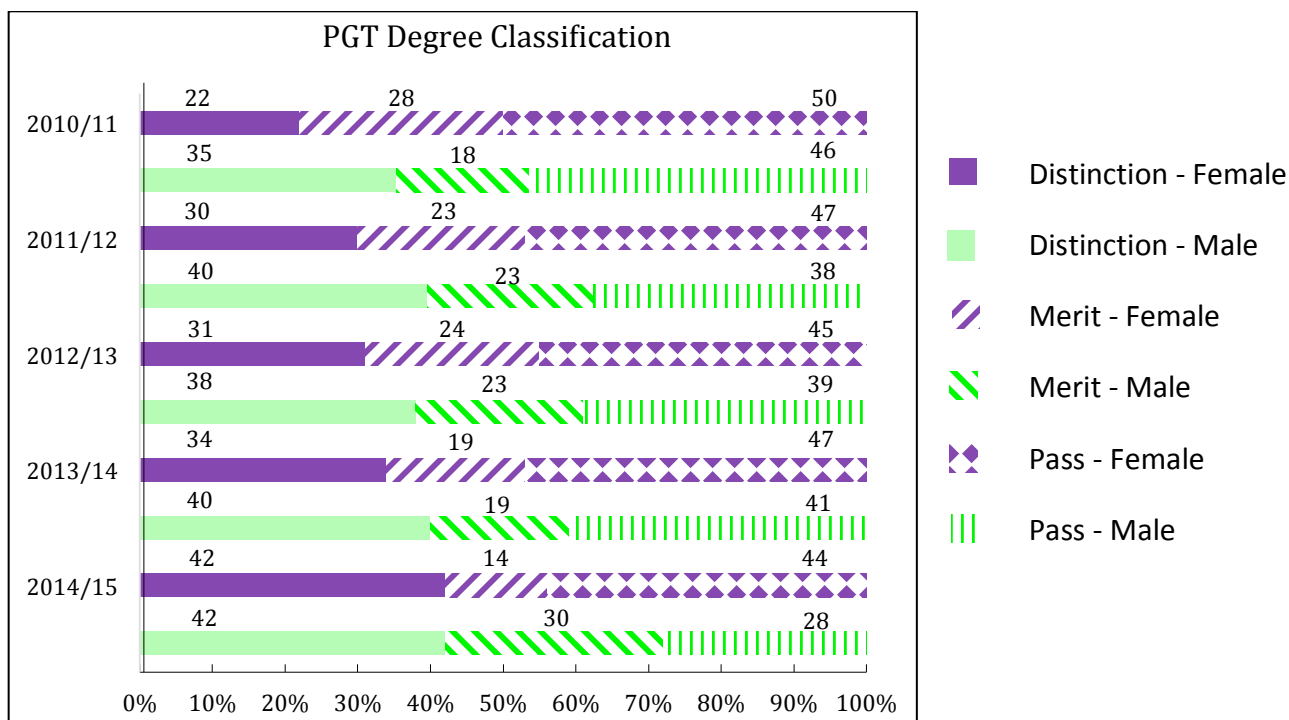

Figure 8. UCLWE activity at the Big Bang Fair 2014 – A Celebration of Science and Engineering for Young People

To meet an increased demand for specialised CS events, our ASPIRE leader created a UCLWE/CS Chapter in 2013 to organise activities relevant to CS students. Two popular events were a presentation by a Google engineer who talked about digital content creation from blogs to YouTube to mobile applications, and a workshop hosted by Facebook engineers who gave tips on preparing for a coding interview.

As a result of these successful interventions, over the past 3 years, the proportion of first class CS degrees awarded to women increased significantly and now exceeds the proportion awarded to men.

ACTION 2.7 SAT to raise funds to sponsor female CS students to attend conferences and workshops.

ACTION 2.8 ASPIRE to organise UCLWE activities for women in FES, and organise UCLWE/CS career events for women in CS.

PGT Degree Classification

| Year | 2010/11 | | | 2011/12 | | | 2012/13 | | | 2013/14 | | | 2014/15 | | |

Chart data (Female row / Male row per year):

- 2010/11: Female 22, 28, 50; Male 35, 18, 46
- 2011/12: Female 30, 23, 47; Male 40, 23, 38
- 2012/13: Female 31, 24, 45; Male 38, 23, 39
- 2013/14: Female 34, 19, 47; Male 40, 19, 41
- 2014/15: Female 42, 14, 44; Male 42, 30, 28

Legend:
- Distinction - Female
- Distinction - Male
- Merit - Female
- Merit - Male
- Pass - Female
- Pass - Male

	Total		Female			Male		
Year	Female	Male	Distinction	Merit	Pass	Distinction	Merit	Pass
2010/11	54	136	22%	28%	50%	35%	18%	46%
2011/12	47	133	30%	23%	47%	40%	23%	38%
2012/13	58	146	31%	24%	45%	38%	23%	39%
2013/14	105	194	34%	19%	47%	40%	19%	41%
2014/15	59	192	42%	14%	44%	42%	30%	28%

Figure 8: Degree Classification for female and male postgraduates in taught CS programmes, 2010/11 - 2014/15. Percentages represent number of females (males) with each degree classification divided by total number of females (males)

The % of women receiving PGT degree distinctions has increased steadily over the past 5 years. With our planned increased focus on female PGT students (reference: *ACTIONS 2.3 - 2.6*) we expect this growth to be sustained or increased.

(vii) **Female:male ratio of academic staff and research staff** – researcher, lecturer, senior lecturer, reader, professor (or equivalent). Comment on any differences in numbers between males and females and say what action is being taken to address any underrepresentation at particular grades/levels.
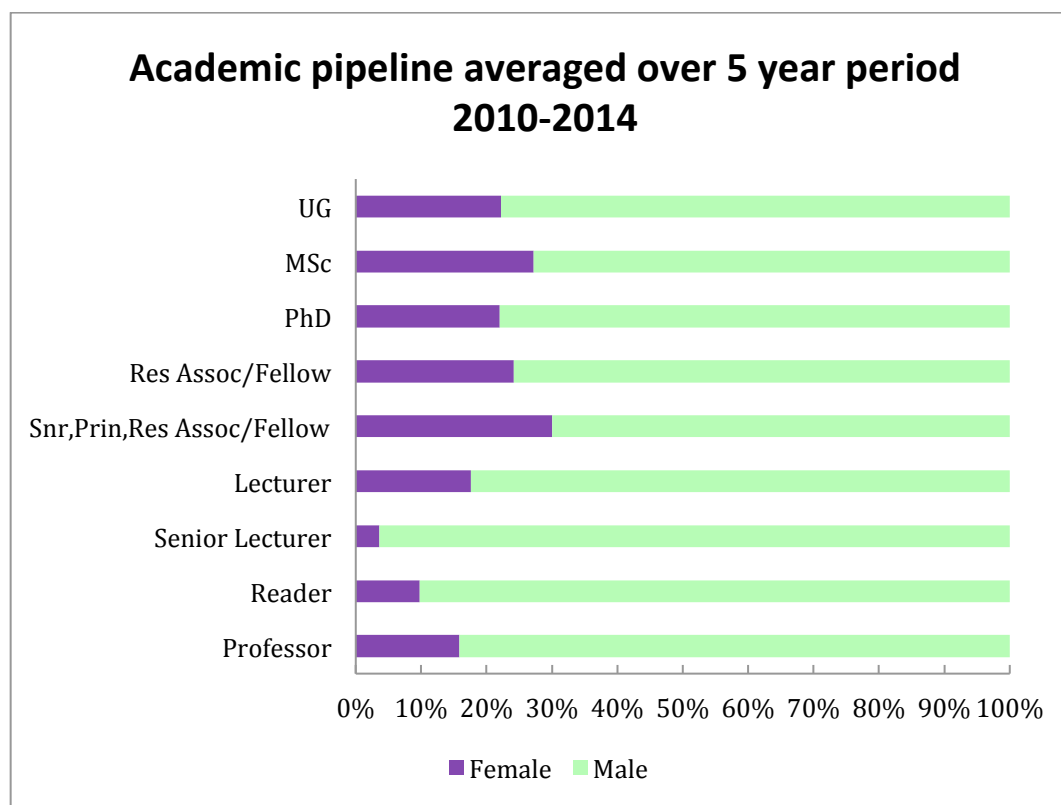

Figure 9a. CS academic pipeline averaged over the five-year period, 2010-2014. Note that Research Assistants are excluded, as they are predominantly part time PhD students. The Principal Research Associate/Fellow category is presented together with Senior Research Associate/Fellow.

The chart in Figure 9a illustrates our CS pipeline from undergraduate through research staff to academic staff; the teaching staff career ladder is addressed later.

	Lecturer		Senior Lecturer		Reader		Professor		Total	
CS Academic Staff										
Oct 1	Lecturer		Senior Lecturer		Reader		Professor		Total	
Year	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
2010	1 (9%)	10	1 (10%)	9	0 (0%)	4	3 (15%)	17	5 (11%)	40
2011	1 (13%)	7	1 (8%)	12	0 (0%)	5	4 (18%)	18	6 (13%)	42
2012	2 (17%)	10	0 (0%)	11	1 (11%)	8	4 (17%)	20	7 (13%)	49
2013	3 (20%)	12	0 (0%)	15	2 (20%)	8	4 (15%)	22	9 (14%)	57
2014	4 (29%)	10	0 (0%)	15	2 (18%)	9	4 (14%)	25	10 (14%)	59

Figure 9b. Numbers of female and male CS academic staff, 2010-2014.

	Research Assistant		Research Associate/Fellow		Senior Research Associate/Fellow		Principle Research Associate/Fellow		Total	
CS Research Staff										
Oct 1	Research Assistant		Research Associate/Fellow		Senior Research Associate/Fellow		Principle Research Associate/Fellow		Total	
Year	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
2010	0 (0%)	3	10 (19%)	42	3 (30%)	7	0 (0%)	0	13 (20%)	52
2011	0 (0%)	3	11 (31%)	25	4 (27%)	11	0 (0%)	0	15 (28%)	39
2012	1 (20%)	4	13 (29%)	32	4 (27%)	11	0 (0%)	0	18 (28%)	47
2013	1 (33%)	2	12 (24%)	39	6 (35%)	11	1 (100%)	0	20 (28%)	52
2014	2 (100%)	0	12 (18%)	53	4 (25%)	12	2 (40%)	3	20 (23%)	68

Figure 9c. Numbers of female and male CS research staff, 2010-2014.

Figure 9a shows that the average proportion of females in the student and research staff levels varies from 22%- 29% in contrast to the academic levels varying from 4% - 18%. This lower proportion in academic staff is a key attrition point driving our ADVANCE initiatives.

Academic:

The total number and proportion of female academic staff has increased slowly over the past 5 years, although the numbers are small. At the Lecturer level, the increase in proportion from 9% to 29% has been strongly influenced by the Proleptic Lectureship Scheme (discussed in 4.b.ii) that we introduced in 2012 together with active recruitment by the department.

The lack of female senior lecturers has been a concern but in 2015 (so not shown in Figure 9b), two female Lecturers were promoted to Senior Lecturer and the department recruited 1 additional female Senior Lecturer. We will continue our ADVANCE focus on increasing the number of incoming female Lecturers to give us a greater pool of female talent for promotion through the ranks. Alongside this we will continue our recruitment of female academics at all levels from outside UCL.

Research:

Overall, the percentages of females in research staff are close to or higher than those of students (see Figure 9a), which suggests that our recruitment and support for research staff are working.

But returning to Figures 9a and 9b, the research staff data shows a higher average proportion of females (25%) than our academic staff data (13%), averaged over the past five years. We believe that this is due to the challenging nature of securing a permanent academic post, which often falls around the time women are ready to start families. We found that moving from a non-permanent research post to a permanent academic post is the biggest point of attrition for our female staff pipeline. In response we implemented the Proleptic Lectureship Scheme as described in Section 4.b.ii.

Teaching:

CS Teaching Staff							
Oct 1	Teaching Fellow		Senior Teaching Fellow		Total		
	Female	**Male**	**Female**	**Male**	**Female**		**Male**
2010	1 (14%)	6	1 (50%)	1	2 (22%)		7
2011	1 (20%)	4	1 (33%)	2	2 (25%)		6
2012	1 (20%)	4	1 (33%)	2	2 (25%)		6
2013	2 (40%)	3	1 (33%)	2	3 (38%)		5
2014	2 (40%)	3	1 (33%)	2	3 (38%)		5

Figure 10. Numbers of female and male CS teaching staff, 2010-2014.

In addition to academic and research staff, CS has teaching staff, who have a different career progression to that of academic and research staff. UCL recognises a teaching career path in the form of Teaching Fellow and Senior Teaching Fellow (equivalent to Lecturer) and Principal Teaching Fellow (equivalent to Senior Lecturer) and is putting into place a final promotion step to Professor. The CS teaching staff are currently at the Teaching and Senior Teaching Fellow levels. When the new UCL process is in place, we will develop activities to support the promotion opportunities for our teaching staff.

All CS Teaching staff are part of the Advanced Teaching Group, with equivalent status to the departmental research groups, but focused solely on leading the teaching strategy of the department alongside advanced pedagogical research. Although the numbers are small, women are well represented.

Turnover				
Year	Leaving reason	Female	Male	Total
2009/10	End of funding	2 (14%)	12	14
	Resignation	0 (0%)	3	3
	Retirement	0 (0%)	2	2
2010/11	End of funding	2 (15%)	11	13
	Resignation	0 (0%)	13	13
2011/12	End of funding	0 (0%)	5	5
	Resignation	2 (40%)	3	5
2012/13	End of funding	3 (33%)	6	9
	Resignation	2 (33%)	4	6
2013/14	End of funding	3 (37%)	5	8
	Resignation	4 (25%)	12	16

Figure 11. Turnover, 2010-2014.

In our 2012 application, we did not include leavers whose grants had ended. Here we have included this data and see that from 2010-2014, 10 women left because of end of funding compared to 39 men. Over the 5 year period the proportion of female leavers averaged 20%. The table on research staff in the previous section shows that over this same 5-year period, the proportion of female research staff ranged from 20% to 28% with an average of 25%. Thus the turnover data does not seem out of line with our staff profile.

All staff whose funding is ending are interviewed by their supervisor 3 months prior to the end, onward career opportunities are discussed and actions put in place to ensure new opportunities are secured. Openings for continuing a research path at UCL are prioritised.

Application Success rates for female and male Academics staff							
	Applications		Interviews		Appointments		
Year	Female	Male	Female	Male	Female	Male	
2010	8 (19%)	35	0 (0%)	5	0 (0%)	1	
2011	17 (24%)	53	1 (14%)	6	0 (0%)	2	
2012	18 (11%)	147	5 (22%)	18	2 (33%)	4	
2013	33 (12%)	241	5 (17%)	24	1 (10%)	9	
2014	14 (11%)	114	2 (10%)	19	1 (25%)	3	

Figure 12: Application Success Rates for female and male academic staff, showing applications, interviews held and appointments. Data refers to whole calendar year.

The numbers for female academic staff applications are small, but in the past 3 years women do not appear to have been disadvantaged in the application process. We would like to see more women apply in the first place and the ADVANCE initiative is addressing this.

Application Success rates for female and male Research staff							
Oct 1	Applications		Interviews		Appointments		
Year	Female	Male	Female	Male	Female	Male	
2010	122 (45%)	150	11 (34%)	21	6 (33%)	12	
2011	30 (19%)	127	8 (28%)	21	6 (40%)	9	
2012	49 (21%)	190	13 (27%)	36	4 (25%)	12	
2013	128 (25%)	382	19 (27%)	51	11 (31%)	24	
2014	88 (23%)	299	11 (21%)	41	5 (20%)	20	

Figure 13. Application Success Rates for female and male research staff, showing applications interviews held and appointments. Data refers to whole calendar year.

The data in Figure 13 show that for the past 4 years the proportion of women receiving interviews and appointments either exceeds or is very close to the proportion in the applicant pool. So women do not appear to have been disadvantaged in the application process.

Application Success rates for female and male teaching staff								
Oct 1	Applications			Interviews			Appointments	
Year	Female		Male	Female		Male	Female		Male
2010	5	(42%)	7	1	(50%)	1	1	(100%)	0
2011	16	(24%)	52	2	(29%)	5	0	(0%)	1
2012	0	(0%)	4	0	(0%)	2	0	(0%)	1
2013	2	(100%)	0	1	(100%)	0	1	(100%)	0
2014	15	(28%)	38	2	(50%)	2	1	(50%)	1

Figure 14: Application Success Rates for female and male teaching staff, showing applications interviews held and appointments. Data refers to whole calendar year.

Teaching staff recruitment is for both Teaching Fellows, and for short-term teachers to cover the unavailability of other staff (e.g., maternity leave cover). The recruitment of teaching staff follows the same process as that for academic staff. We see a good number of female applicants so the pool of available talent to join is high. The interviews and appointments numbers above show that females are well represented, accounting on average for half of the appointments made.

To ensure the recruitment process remains free from bias, in 2014 the SAT suggested that an unconscious bias training workshop should be offered in the CS department. In early 2015 UCL's Head of Equalities and Diversity conducted the workshop which covered unconscious bias in student recruitment, academic staff recruitment and academic staff promotion. This first workshop was open to SAT members, and senior academic and administrative staff. Of the 11 attendees (4 female, 7 male) 7 were Professors, 5 were HoG and 4 were SAT members.

Action 3.5 Offer annual unconscious bias workshops to the CS department with goal of all HoG's having attended a workshop.

 (ii) **Applications for promotion and success rates by gender and grade** – comment on whether these differ for men and women and if they do explain what action may be taken. Where the number of women is small applicants may comment on specific examples of where women have been through the promotion process. Explain how potential candidates are identified.

From October 2010 to October 2014, 25 applications for promotion of Academic Staff were submitted (24 male and 1 female). They were all successful except one male applicant. The female promotion was from Senior Lecturer to Reader. The difference in male vs. female promotions (24:1) is large but the pool of females available for promotion has been historically small, see Figure 15.
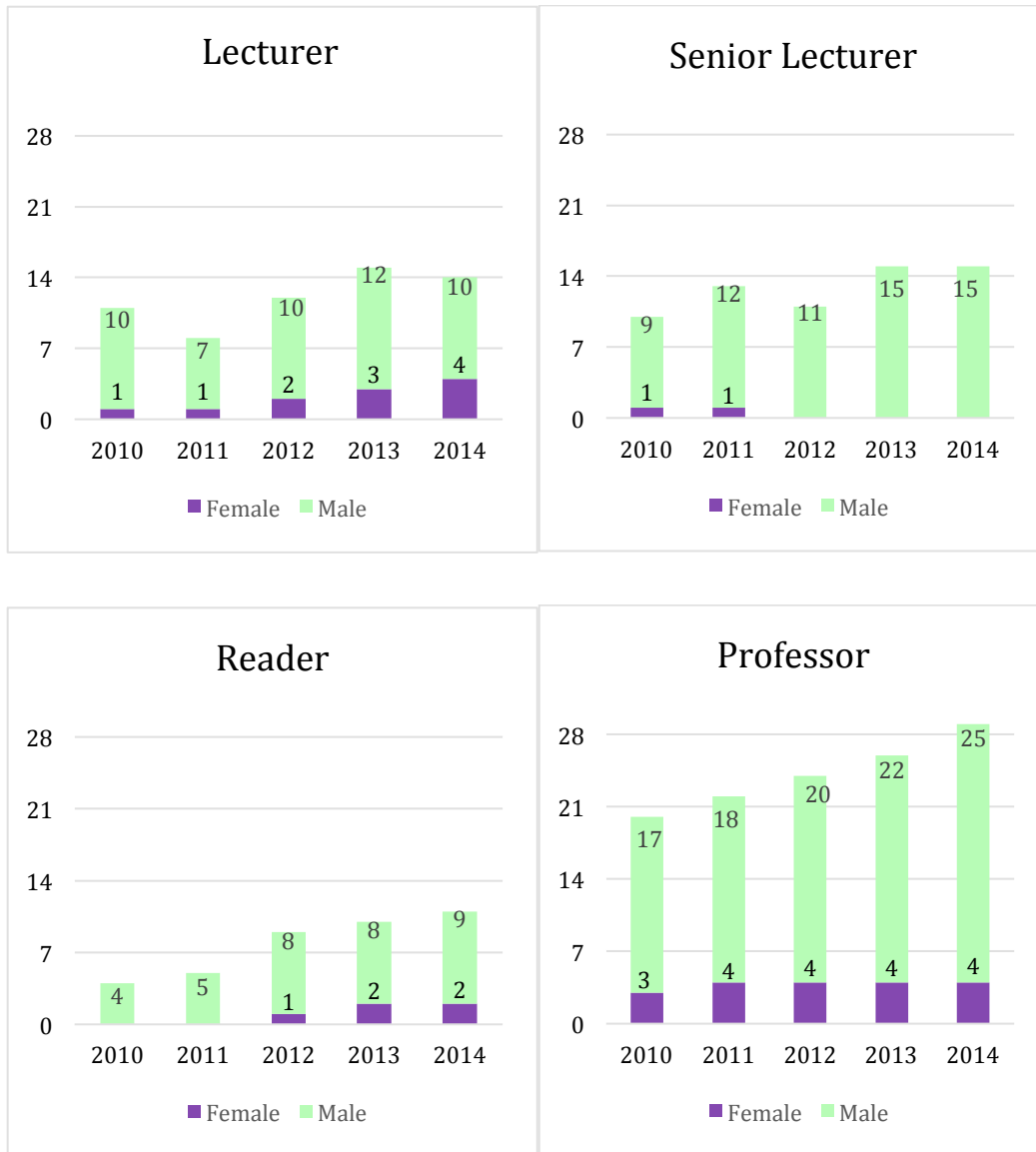
Academic Staff

Figure 15: Numbers of female and male CS academic staff, 2010-2014. Chart source data are from table in Figure 9b.

In 2013 a survey of the department staff on the promotion process indicated that only 51% males and 45% females thought the process was fair. This prompted the department to change its promotion procedures. Up to 2013, potential non-professorial candidates were left to self-initiate the submission of their CVs to the HoD's professorial advisory group who would then review them and invite those considered worthy to apply for promotion.

Under the new procedure, all non-Professorial members of staff are now required to submit their CVs to the HoD every year. All submissions are invited in the first week of the academic year and departmental HR staff ensure all staff submit. The HoD

solicits advice from an advisory group of all Professors (4 female, 25 male) and Heads of Group (HoG). This larger advisory group was chosen to ensure that there is no bias created through differences in propensity for self-promotion. Potential candidates for promotion are identified by this group through a rigorous review. Those identified are then invited to apply with appropriate letters of support.

After the changes were made there was an increase in female promotions from 1 in 2010-2014 to 3 in 2015. We believe that the change in promotion procedures has been a strong factor in the increase. Overall we have received extremely positive feedback about the changes. Case Study 2 highlights the experience of one of our female staff.

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b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) **Recruitment of staff** – comment on how the department's recruitment processes ensure that female candidates are attracted to apply, and how the department ensures its short listing, selection processes and criteria comply with the university's equal opportunities policies.

The department ensures its advertising and short listing adhere to UCL's equality policies. The training of staff involved in interview panels is mandatory in CS – this 'fair recruitment briefing' is run by UCL and includes information on the Equality Act, positive action and unconscious bias. Our shortlisting and interview panels always contain female members of staff. (UCL policy is that there should be no 100% male or 100% female interview panels.)

At the interview stage all candidates have a tour of CS and meet both male and female staff. One female candidate said:

> "Everyone I met was very friendly and open, and the whole atmosphere is inclusive and female friendly. What is especially important is the presence of senior female academics who have won prestigious awards and are in leadership roles. I think UCL's Computer Science is the friendliest place for female academics that I have seen so far."

(ii) **Support for staff at key career transition points** – having identified key areas of attrition of female staff in the department, comment on any interventions, programmes and activities that support women at the crucial stages, such as personal development training, opportunities for networking, mentoring programmes and leadership training. Identify which have been found to work best at the different career stages.

A key point of attrition of female staff in the department is the transition from research staff (open ended with a funding end date) to academic staff (permanent),

typically around the time women are likely to start a family. Our ADVANCE strategy addresses this transition and has initially focused on using the Proleptic Lectureship (PL) Scheme to increase the number of female academic staff.

When a Research Fellow holding an independent external Fellowship is appointed as a PL, the department guarantees moving them to a permanent academic post at the end of their Fellowship. Typically this is a Lecturer position but it can be more senior if the Fellow is suitably qualified. The scheme is open to all female and male researchers.

We started the scheme 3 years ago, and found it to be equally successful for males and females.

- In 2012 we had 1 female and 2 male PL's;
- In 2013 we had 2 female and 2 male PL's;
- In 2014, One female PL and one male PL finished their fellowships and were moved to permanent academic posts (Lecturer and Reader respectively). 1 new female and 2 new males were awarded PL's leaving a balance of 2 female and 3 male PL's on the scheme.

Action 3.1 *Continue the Proleptic Lectureship scheme along with departmental recruitment.*

Figure 16 shows how the PL scheme has increased the number of female lecturers (solid line) over the past 5 years.
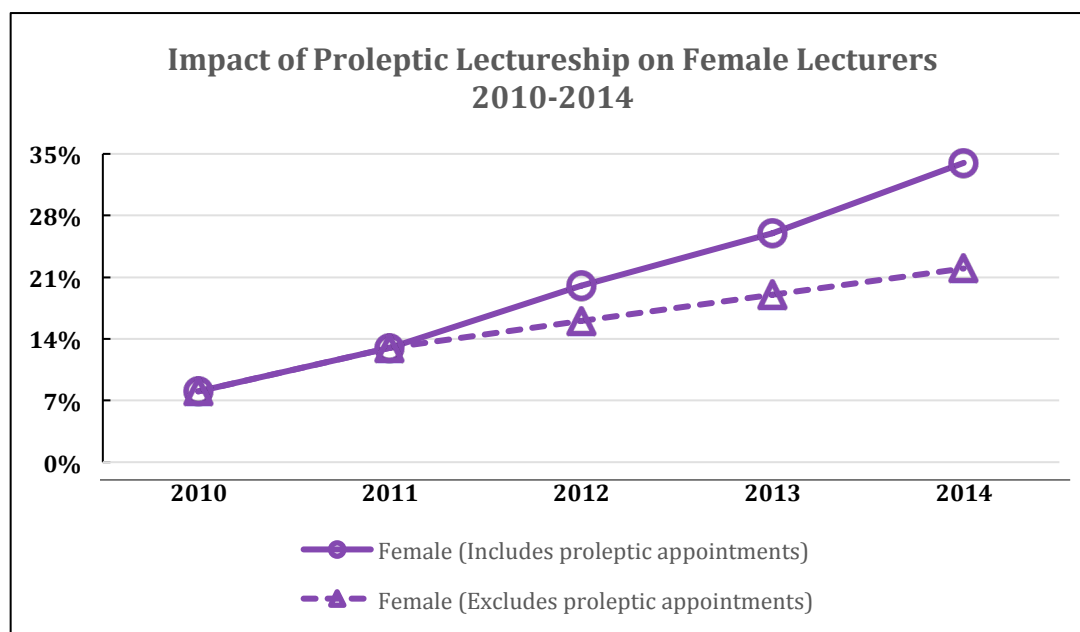

Impact of Proleptic Lectureship on Female Lecturers 2010-2014

Figure 16. Impact of Proleptic Lectureships on number of female lecturers, 2010-2014.

Once on the academic track, staff have a number of challenges they face at different stages of their career. Through talking with female academics we discovered that

some of them would like stronger social interaction and informal mentoring that can arise from developing spontaneous relationships.

Therefore a year ago ADVANCE started holding monthly socials for female academics. They are well attended with on average 60% of female staff attending. We use these informal sessions for brainstorming new ideas that could lead to more women in academic positions. Feedback from the attendees shows the value of these meetings:

> "The monthly "ladies tea" are a great opportunity to fence time in the diary to properly catch up with female colleagues. This is important because the department has grown so big and we are now spread over three different buildings."

We also use these occasions to celebrate successes of our female academics.

Figure 17. Female academic staff celebrating with Professor Angela Sasse, her election to Fellow of the Royal Academy of Engineering.

Understanding our CS Postdoc community better was also thought to be an important aspect of retaining female academics at key career transition points. The female academics suggested inviting the Postdocs to the ladies social event once a term. This will help with communication across research disciplines and also allow Postdocs to be more strongly associated with the female academic community.

ACTION 3.2 *Invite Postdocs to join a Ladies Social meeting once a term.*

A focus group of 9 of our CS Postdocs (both male and female and across multiple research groups) was held in November 2015. A request raised by the Group was for the department to provide support for early career researchers in applying for Fellowships.

ACTION 3.3 *Put in place an annual Fellowship training workshop open to all CS PhD's and Postdocs.*

Career development

a) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

(i) **Promotion and career development** – comment on the appraisal and career development process, and promotion criteria and whether these take into consideration responsibilities for teaching, research, administration, pastoral work and outreach work; is quality of work emphasised over quantity of work?

UCL staff are expected to take part in the Appraisal, Review and Development Scheme. Each staff member has an appraisal meeting with their line manager each year approximately (no less frequently than every two years). The Scheme's aim is for all staff to understand the department's expectations of them, to discuss their contributions, and to feel valued. It is an opportunity to identify training and development needs and review workload and flexible working.

In a survey in 2013, 69% of CS survey respondents had received a review in the last 12 months. Encouragingly, those that had received an appraisal found it useful:

> *"My last appraisal set work objectives for the coming appraisal period and led to me developing my skills (if required) to help me achieve those objectives."*

> 64% positive (68% males and 57% females).

> *"My last appraisal accurately recorded how I had achieved against my work objectives over the preceding period and helped identify and manage any barriers to meeting those objectives."*

> 73% positive (77% males and 64% females).

To improve these percentages the department has tied together the new promotion scheme introduced in 2014 with the appraisal scheme. Feedback from the new promotion process is now always shared with staff in their appraisal alongside a discussion about preparing for promotion.

2015

"My last appraisal set work objectives for the coming appraisal period and led to me developing my skills to achieve them"

54% positive (54% males and 64% females)

"My last appraisal was an accurate reflection of my performance."

71% positive (71% males and 82% females)

"My last appraisal helped identify opportunities for career development."

42% positive (44% males and 41% females)

"I think UCL's promotions criteria are clear."

58% positive (63% males and 45% females)

"I think UCL's promotions process is fair."

59% positive (65% males and 60% females)

ACTION 3.4 *Introduce annual appraisals for all academic staff and ensure promotion opportunities and planning are included in the discussion.*

The Ladies club members were in agreement that the promotion criteria are excellence in teaching, research, enabling and pastoral work, and that the current process is very fair, with no obvious bias towards men.

> (ii) **Induction and training** – describe the support provided to new staff at all levels, as well as details of any gender equality training. To what extent are good employment practices in the institution, such as opportunities for networking, the flexible working policy, and professional and personal development opportunities promoted to staff from the outset?

All new staff have a thorough induction with the department HR Manager, their line manager and other relevant staff. Gender equality is covered as part of the mandatory online equalities training that all new staff have to do within their probation period. We have 100% completion rate from all new staff during their probation for the last 5 years.

Information on training and development is available to all staff via UCL's central HR website. An extensive list of courses, workshops and material are available together with schemes that are specifically designed to support women in academia such as Springboard Women's Development Programme.

The 2013 UCL wide survey revealed that overall, staff are reasonably satisfied with the development opportunities.

"I believe I have the opportunity for personal development and growth at UCL."
79% positive (80% males and 76% females)

"There are sufficient opportunities for me to receive training and development to improve my skills in my current job." 73% positive (75% males and 65% females)

(iii) **Support for female students** – describe the support (formal and informal) provided for female students to enable them to make the transition to a sustainable academic career, particularly from postgraduate to researcher, such as mentoring, seminars and pastoral support and the right to request a female personal tutor. Comment on whether these activities are run by female staff and how this work is formally recognised by the department.

There are now enough female CS academics to act as influential mentors. There is a culture of ongoing pastoral support for female students and any student can request a female personal tutor if she wishes. Our senior members of the department operate an open door policy for students. In all buildings there are student study areas close to academic offices so that students have the opportunity to meet staff informally on a regular basis. The department is now putting in place monthly Town Hall type meetings for all students led by the HoD or deputy HoD's. This is primarily to receive live and timely feedback. Follow-up actions will be implemented by the Senior Management Committee.

At the undergraduate level, all students have a personal tutor and take part in project work supervised by academic staff. The allocation of tutors and supervisors is managed carefully so that all students interact with both male and female staff. For group project work we have adopted a policy of appointing females as group leaders on rotation with males so that both female and male students have the opportunity to take a leadership role. We have found this to be particularly valuable for female students in giving them additional confidence.

Organisation and culture

a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

(i) **Male and female representation on committees** – provide a breakdown by committee and explain any differences between male and female representation. Explain how potential members are identified.

Committee	2012/13		2013/14		2014/15	
	Female	Male	Female	Male	Female	Male

Representation						
External Advisory Board	3 (13%)	20	4 (19%)	17	6 (27%)	16
Senior Management Team	3 (25%)	9	4 (36%)	7	5 (42%)	7
Finance Committee	3 (30%)	7	4 (50%)	4	4 (50%)	4
Teaching Committee	3 (14%)	18	5 (24%)	16	4 (16%)	21
Research Committee	5 (29%)	12	5 (26%)	14	6 (29%)	15

Figure 18: Female and male representation on CS departmental Committees, 2012/13-2014/15.

Female representation on all Committees has been stable or rising steadily since 2012.

The External Advisory Board (EAB), established in 2003, formalises and facilitates dialogue between CS and potential research beneficiaries in industry. In our previous submission in 2012, there were only 3 women on the EAB. The department has recruited 3 additional women executives to the Board. So 3/11 are external members (including the chair), and 3/11 are internal members of CS. Four of its members are on our Athena SWAN SAT.

The Senior Management Team consists of the HoD, Deputy HoDs, Directors of Research, Studies, and External Relations, Finance and IT. Its meetings provide a forum for key staff to plan and define strategy and monitor progress. The meetings also act as a vehicle for communication. Four of its members are on our Athena SWAN SAT.

The Finance Committee has stabilised with an equal numbers of women and men, and two of its members are on our Athena SWAN SAT.

The Teaching Committee mainly comprises the 16 course leaders. The remaining members include the Head of the Department (HoD), the year coordinators and tutors. Three of its members are on our Athena SWAN SAT.

The Research Committee comprises academics who are Heads of Research Groups and the Industrial Partnerships Manager and Directors of other groups. Three of the members are on our Athena SWAN SAT.

(ii) **Female:male ratio of academic and research staff on fixed-term contracts and open-ended (permanent) contracts** – comment on any differences between male and female staff representation on fixed-term contracts and say what is being done to address them.

All our research staff are on open ended contracts with funding end dates, and all our academic staff are on permanent contracts. Although open ended contracts in practice work like fixed term contracts, research staff are eligible for all the same workplace benefits and opportunities as all other staff and are added to the UCL redeployment register prior to their contract ending. Often there are opportunities

for funding extensions or bridging funding while Fellowship applications are being pursued. See Figure 9c.

> (b)   For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

> (i)   **Representation on decision-making committees** – comment on evidence of gender equality in the mechanism for selecting representatives. What evidence is there that women are encouraged to sit on a range of influential committees inside and outside the department? How is the issue of 'committee overload' addressed where there are small numbers of female staff?

The main decision-making committees involved in the running of the Department are the Senior Management Team, The Finance Committee followed by the Research and Teaching Committees. These committees all have female representation, with the first two seeing female representation rising from 25% to 42% and 30% to 50% respectively in the last two years.

The Teaching Committee, which currently has 16% representation of women, is mainly comprised of the 16 course leaders within the department and currently there is only 1 female course leader. The SAT will explore ways of getting more women on the teaching committee either by persuading more female staff to be course leaders or by other means.

ACTION 4.1 Increase the representation of women on key department committees.

> (ii) **Workload model** – describe the systems in place to ensure that workload allocations, including pastoral and administrative responsibilities (including the responsibility for work on women and science) are taken into account at appraisal and in promotion criteria. Comment on the rotation of responsibilities e.g. responsibilities with a heavy workload and those that are seen as good for an individual's career.

There is a standard teaching load defined for all academic staff that includes new staff, research active staff and teaching fellows. It defines the amount of lecture or lab based teaching to be done during the academic year, tutorial responsibilities and project supervision. By default a member of academic staff teaches the equivalent of two modules per academic year and supervises an average of 7 projects per year.

The allocation of specific teaching duties is organised by the Director of Studies but done collaboratively with HoG's and individuals. The key aims are to achieve a good balance of teaching in specialised and general subject areas, and to avoid the need for anyone to go above their defined load.

In allocating duties full consideration is made of individual situations. New staff have a reduced load initially, that ramps up over several academic years. Staff with specific time consuming administrative or research roles, or with personal needs, can request a reduced teaching load; all cases to date have been approved.

All academic staff participate in the tutorial system, which is primarily pastoral, and follows UCL policy. This allows the load to be fairly evenly distributed, with adjustments again made as needed. A similar approach is taken for administrative duties. Most posts are rotated on a three to five year basis.

We have not used formal workload models at a departmental level. Administrative duties are shared as evenly as possible, again with new recruits typically being shielded from these duties during their first year or two.

> (iii) **Timing of departmental meetings and social gatherings** – provide evidence of consideration for those with family responsibilities, for example what the department considers to be core hours and whether there is a more flexible system in place.

Core meeting hours are between 10am and 4pm. Departmental and Group meetings are usually during the lunch hour when there is no teaching. Lunch is always provided during these meetings. Away Days are generally held over two days and are residential, with an option for staff to go home after day one and return on day two.

Social events such as receptions for visitors and distinguished lectures, run later, usually between 4pm and 6pm. These events are arranged well in advance to give staff the opportunity to arrange childcare if needed. The department also arranges an annual summer party outside office hours for all staff, who are encouraged to bring their partners and families including children.

An informal poll of the Ladies Group found all agreed that as long as the event is organised far in advance and there is time to arrange for childcare, socials after 4pm or away days are alright.

> (iv) **Culture** – demonstrate how the department is female-friendly and inclusive. 'Culture' refers to the language, behaviours and other informal interactions that characterise the atmosphere of the department, and includes all staff and students.

The department has a family-friendly atmosphere, many staff members, both male and female, have children at home and openly make use of flexible working hours to attend school events for example.

We have good quality coffee machines, financed by the department and available for free to all staff. They provide focal points for social gatherings in the 3 buildings occupied by the department. This has encouraged mixing between groups and helped those less familiar with the department to feel welcomed and settled.

It was apparent from the survey that most members of the department appreciate the friendly and supportive atmosphere.

> *"I am treated with fairness and respect."* 90% positive (91% male and 90% female)

> *"I think the department respects individual differences (e.g. cultures, working styles, backgrounds, ideas)."* 95% positive (94% male and 100% female)

(v) **Outreach activities** – comment on the level of participation by female and male staff in outreach activities with schools and colleges and other centres. Describe who the programmes are aimed at, and how this activity is formally recognised as part of the workload model and in appraisal and promotion processes.

A very small proportion of girls choose to study computing in schools. In part this is because they are not taught that computing involves a fundamental set of skills underpinning most other subjects. Furthermore, the syllabus in schools has recently undergone a major shift from ICT (using software) to computing (creating software), a change which has left many teachers delivering subject matter for which they have little training.

In this environment we bootstrapped our ARRIVE activities in 2012, increasing events to the level at which we operate today. Two SAT members, Hailes (male) and Harbird (female), coordinate this. Harbird has special responsibility for outreach indicating the value that the department places on outreach-related work.

We have focussed on three major fronts:

- Strategic activities targeting those who influence the educational priorities for 9-18 year olds coupled with establishing a community of teachers in our locality.

- Outreach events for schools and other organisations providing services for young people. Mixed gender schools are asked to bring equal numbers of boys and girls to events.

- Engaging our undergraduates in producing teaching materials for schools to use.

Our activities in all these areas are extensive, a snapshot is given below.

Strategic Activities and Establishing a Teaching Community

Part of our vision involves sharing our knowledge and experience. We have heavily influenced the gender diversity strategy of UCL's FES with respect to outreach and we maintain links with teachers from all 10 secondary schools in Camden and beyond. Supporting the teaching community is important and holding periodic strategy meetings helps to ensure that we are delivering what schools need from our CPD programme and events. Twenty-one teachers attended our planning session in November.

In a broader context, our efforts are directed towards industry and foreign governments with the aim of promoting computing education and boosting the numbers of girls and women involved. We have had discussions with Morgan Stanley, Cisco and the Education Department of the UAE. We are due to visit the Gibraltarian Education Minister in December.
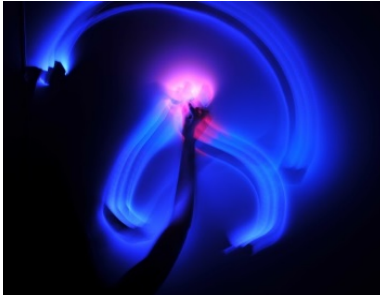
Outreach events for schools and young people

A snapshot of activities since October 2014 shows:

Figure 19. Camden Coding Competition 2015: the Maria Fidelis team collecting their medals.

- For the 12 smaller events (up to 30 attendees), 66% of the 233 attendees were female.

- For the 3 larger events (60 – 100 attendees each), 75% of the 230 attendees were female.

The CS department offered summer internships to three young women and one young man. The image was created by one of our In2Science students. The colour of the LEDs on an Engduino changes with variations in the natural phenomena being sensed.

Hailes and Harbird are part of the teaching team that deliver the UCL and Dyson Summer Workshop, now an annual event. The attendees, aged 17 and 18, are asked to redesign the wheelchair. 50% of the participants are women.

Teaching materials for schools.

Harbird works with all our first year undergraduates to produce teaching material suitable for the classroom. We ensure that as many female undergraduates as possible are assigned to the girls' and co-educational schools we work with so that pupils in schools are aware that Computing is a subject that women enjoy and excel in. The projects are available at: uclcsschoolslab.com.

ACTIONS 1.1 – 1.4 All address increasing the low numbers of girls interested in CS.

Flexibility and managing career breaks

a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

Maternity	Return	Rate		
Year	2010/11	2011/12	2012/13	2013/14
Return Rate	1/1	1/1	1/1	0/0

Since 2007 our department has experienced a 100% return rate following maternity leave. The numbers of female staff taking maternity leave is relatively small, however all are supported to return to work, see Case Study 1.

In 2014 the department set up a formal HR process for fathers taking paternity leave rather than arranging informally with line managers. We believe that this will enable us to track the data on paternity leave. Between 2011 and 2015 four new fathers took paternity leave.

UCL offers 4 weeks full pay paternity leave – this is double the national requirement.

The department has a very flexible approach to work arrangements which can be arranged both formally and informally. We do not hold a record of applications for flexible working. Most employees discuss this with their line managers and a dedicated HR member of staff.

Based on our discussions with staff involved we believe that this arrangement is working for all. This is also confirmed by our survey results:

"My working time can be flexible." 97% positive (97% male and 96% female)

"As long as I get my work done, I have a choice deciding how I do my work." 96% positive (97% male and 91% female)

Flexible working is arranged both formally and informally within the department so accurate numbers are not available. Based on numerous individual examples and excellent survey results as shown above, our department has a very good record in supporting flexible hours.

For example, we interviewed a PhD student who was working flexible hours after maternity leave, and an academic-track SAT member (Drobnyak). Both were actively encouraged by their line managers and professional staff to take as much time and leave as needed to accommodate their family needs.

A teaching-track SAT member (Roberts), had assumed caring responsibilities for his elderly parents that made it difficult for him to schedule time to attend conferences and workshops. Through the appraisal process with his HoD, it was agreed that moving to the teaching track would provide him the flexibility he needed. He is happy to have made this career change and now has a senior post as Director of Studies.

Before going on maternity leave, staff have a number of options to choose from in order to make the pregnancy period more manageable. For example they can work from home if travelling becomes difficult. Early on staff discuss with their line manager the start/end date of their maternity leave, cover during the time they are gone, and any other general support requirements. Once they are back at work, flexible or part time work hours are in place to help with the transition.

In order to help maternity returners get back up to speed with their work and as part of the ADVANCE actions, the Department set up a Post-Break Award in 2012. The award is designed to provide grants after large breaks, such as maternity leave. It has a value of £10,000 and is meant to help with getting the awardee's research back up to speed once the leave has finished. In the last 3 years the award has been given 4 times to all maternity returners.

The department will continue the Post-Break award.

As one returner commented:

"I used my Post Break award to hire a research assistant for 4 months, which helped me close on the gap on my research made by my maternity leave. "

In CS there are easily accessible designated areas for breast feeding and baby changing in the building. The breast feeding room has a breast feeding chair and a refrigerator for milk bottles.

Most importantly in CS there is an informal network of peer mentoring support for maternity returners from those who have also returned or more generally from academics who are raising a family and continuing their academic careers.

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5. Any other comments: maximum 500 words **(**461)

Please comment here on any other elements which are relevant to the application, e.g. other STEMM-specific initiatives of special interest that have not been covered in the previous sections. Include any other relevant data (e.g. results from staff surveys), provide a commentary on it and indicate how it is planned to address any gender disparities identified.

The following describes additional CS Athena SWAN Beacon activities that reach out to people outside UCL's CS department.

Consultancy on diversity.

In 2014 our Athena SWAN Champion (Butler) was contacted by the VP of Diversity at Morgan Stanley (an industrial partner of the department). This led to a consultancy session where we looked at how our AS plan and execution could be applied to Morgan Stanley. This was followed by a half day training provided by 3 members of the SAT team to enable the IT department of Morgan Stanley to begin to run more effective outreach events with their link schools. It is anticipated that this work will be expanded to other financial companies in the city who are part of an outreach network, thereby scaling up the outreach activities and increasing significantly the numbers of girls positively impacted. HSBC are already in discussions with the CS department.

ACTION 5.1 *Expand consultancies on diversity in industrial companies.*

Athena SWAN workshops

Since 2014 our Athena SWAN Champion (Wardle) has been a speaker and panellist at two external workshops encouraging STEMM Departments to apply for AS awards. The first workshop, in December 2014, was organised by John Clark (U. York) in conjunction with the BCS Academy, and concentrated on CS departments applying for a Bronze award, with the secondary aim of fostering positive collaborative support in developing a CS Athena SWAN community. The 2nd workshop, in

November 2015, was organised by John Clarkson (U. Kent), in conjunction with the London Mathematical Society (LMS), and focused on Mathematics departments applying for a Silver award.

ACTION 5.2 Increase voluntary support for other UCL departments and universities in their Athena SWAN award applications.

London Hopper

Since 2013 our Athena SWAN Champion (Wardle) and first ASPIRE leader (Romualdo-Suzuki) have been part of the UCL organising team of the London Hopper Colloquium, an annual all day event that welcomes about 50 early career female researchers in computing drawn from across the UK. The attendees hear a variety of female academic and industrial speakers, some at the beginning of their careers and some at very senior levels. Perhaps the most important aspect of the Colloquium is the unique opportunity it presents for attendees to meet and network with other early career female researchers in computing. London Hopper receives financial support from the UCL CS department, IBM and the BCS Academy.

The London Hopper Colloquium will continue to be offered each year.

Karen Spärck-Jones Lecture

Since its inception in 2011, our Athena SWAN Champion (Wardle) has been the academic liaison to the annual Karen Spärck-Jones (KSJ) Lecture that showcases the work of senior women in CS research. The KSJ Lecture, a free event, is held in the evening in the same BCS venue as London Hopper, and also receives financial support from the UCL CS department, IBM and the BCS Academy.

Wardle will continue acting as academic liaison for the Karen Spärck-Jones Lecture each year.

6. Action plan

Provide an action plan as an appendix. An action plan template is available on the Athena SWAN website.

The Action Plan should be a table or a spreadsheet comprising actions to address the priorities identified by the analysis of relevant data presented in this application, success/outcome measures, the post holder responsible for each action and a timeline for completion. The plan should cover current initiatives and your aspirations for the next three years.

7. Case study: impacting on individuals: maximum 1000 words (816)

Describe how the department's SWAN activities have benefitted **two** individuals working in the department. One of these case studies should be a member of the self assessment team, the other someone else in the department. More information on case studies is available in the guidance.

Ivana Drobnjak (SAT member)

I have been a Lecturer at UCL's Department of Computer Science (CS) since January 2015, having joined the department in 2009 as a Postdoctoral Researcher with 3 year funding from the EPSRC project grant of my supervisor. In 2012 I was awarded a 3-year Leverhulme Trust Fellowship and one of the key steps for me after becoming a Fellow was to be considered by CS for the position of Proleptic Lecturer, which would guarantee me a lectureship at the end of my fellowship. This went through in 2012 which meant that I did not have to apply for permanent jobs elsewhere, did not have to move locations, and hence could spend some time focusing on starting my family without these additional stresses.

I now have three children, Nina (4 years old) and twins Alex and Marianne (2 years). The Department has been extremely supportive throughout, enabling me to develop both my career and maintain my family life. In addition to the excellent structure that encouraged my career path, the CS department has been an extremely friendly and supportive place to have children. I took 2 fully paid maternity leaves for both my pregnancies and was advised by the very friendly administrative staff throughout. I also always felt that my having a baby was looked upon with kindness and shared excitement. My colleagues at the department were very friendly and supportive. After both maternity leaves I chose to work full time, but had quite a few days working from home when the babies were not well. Everybody was very comfortable with this arrangement.

The Department's Post-Break award of £10,000 for people who are coming back from a prolonged break was enormously helpful. I received this after both my maternity leaves and could afford to hire a research assistant for a few months to get up to speed with my research. These support mechanisms had been put in place with the strong support of our Head of Department (HoD) who was instrumental in finding funds for the Post-Break award, in encouraging Proleptic Lectureships, and in general always being there to hear and support new ideas.

As part of our Athena SWAN activities, I organise monthly Ladies Tea-time socials in the Department and hear lots of stories from other female academics who always praise the department for enabling work-life balance, for encouraging high quality

research and teaching over grant applications, and for caring about science, quality of life and sustainable harmonious solutions. I believe that it is this attitude and the department's support that enhances our quality of life and makes the department a very female-friendly place to work.

Licia Capra (non-SAT member)

I joined the Department of Computer Science at UCL as a Lecturer in 2005, and was promoted to Senior Lecturer in 2009, Reader in 2012, and Professor in 2015. I always found the college-wide promotion process very transparent, the criteria clear, and the department very supportive and helpful. However, something has changed over the years, which I found extraordinary.

I remember back in the autumn 2008 approaching the Head of Department, to ask whether he would support my case for promotion in the upcoming promotion round. He asked me to send him my CV, and we then had a very constructive 1-to-1 meeting, at the end of which he enthusiastically said he would support my case. I submitted my case for promotion in November 2008, and was promoted to Senior Lecturer effective October 2009. The whole process felt fair, transparent, and the overall experience was very good. What happened for two subsequent promotion rounds I went through was even better.

For the past few years, the department has put in place a process whereby, each autumn, every member of the research/academic staff has to prepare their CVs and send them to their Head of Research Groups (HoRGs). During a meeting with the Head of Department and all HoRGs, everyone's case/CV is discussed. Individuals who are deemed ready for promotion are then encouraged to prepare a full promotion case and submit in that year's round of promotions. Those who are considered not yet ready for promotion are given constructive feedback on what areas need strengthening, to move forward.

I personally found this procedure extremely positive. First, I received constructive feedback from experienced colleagues every year on whether I was progressing well with my career and what areas needed improvements. Second, I did not have to make a judgement call all by myself as to whether I was ready or not for promotion (and then approach the Head of Department to ask him to support my case). Rather, more experienced colleagues looked over my CV and collectively assessed whether they thought I was ready. In the end, I went for promotion to both Reader and then Professor at least a year earlier than I would have, had I made the call solely by myself.