

**UCLIC@21:
looking back, looking forward**

**Celebrating working
with Professor Ann Blandford**



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UCLiC

Preface

This is a collection of writings from colleagues, researchers and former students Ann has worked with over the years. The theme is ‘UCLIC@21: looking back, looking forward’ and we have invited contributors to reflect on their time working with Ann and how their experiences have shaped their understanding of HCI or their vision of future HCI research challenges.

During Ann’s illustrious career, the field of HCI has grown enormously – not least, the number of topics covered and the many approaches, methods, and techniques now used. The amount of research that has been conducted has also expanded exponentially. What this broadening-out of the field reflects is that it is at a juncture, with an expectation that its researchers branch out in all sorts of new directions.

In the future, the *raison d’être* of the field will have moved on from designing usable systems to solve specific problems to tackling big and pressing global challenges, such as healthcare, poverty and climate change. Ann has been involved in this move into the wild from the get-go, thinking out of the box, thinking big, and thinking new, while at the same time adhering to rigour and excellence; applying design principles, frameworks and concepts that are the stalwart of the field. She also readily understood the need to join forces with many other researchers to address the many societal challenges we face.

Long may her contributions continue to make an impact.

The Wickedest Doughnuts are Made at UCLIC: Ann Blandford's Contribution to Human Error Research in HCI

Duncan Brumby, Anna Cox, Sandy Gould, Simon Li, Sarah Wiseman, and Judith Borghouts

This piece highlights Ann Blandford's contribution to HCI research on understanding human error. To err is human – and everyday computing tasks often slip us up: from failing to attach a document to an email, to buying an unintended item online.

Ann Blandford started a line of research at UCLIC that sought to understand why these errors occur so that we can then work to mitigate them through improved interaction design. This work culminated in the CHI+MED project (<https://www.chi-med.ac.uk>), which aimed to improve the safety of medical devices, such as infusion pumps, to reduce medical errors and save lives. But before telling you about that, and the personal impact that Ann had on inspiring the next generation of HCI researchers, you first need to know how to make doughnuts – yum yum!

The UCLIC Doughnut Machine

Simon Li was a PhD student who was supervised by Ann Blandford between 2002 and 2006. Simon's work focused on the psychology of human error. To conduct this research, they needed a way of getting people to systematically make errors while using a computer interface. This is surprisingly tricky because in a lab-setting people know they are being observed and so are careful to avoid making errors that make them look bad. It was from these requirements that the Wicket Doughnut Machine was made (see Simon Li's separate

piece in this publication for the origin of the Doughnut Machine's name).

Figure 1 shows the computer interface for the Wicket Doughnut Machine – an imaginary machine that would make the most delicious doughnuts. All the user had to do was specify the number and variety of doughnuts to be made to fulfil an order. The Doughnut Machine was superficially easy to use, with a point-and-click interface to set the doughnut orders. But in actual use, it was tricky; it purposefully broke almost every usability rule in the book so as to trip users up and encourage errors.



Figure 1 Wicket Doughnut Machine interface

Over the years, the Doughnut Machine was used in many research projects at UCLIC. In a seminal paper, Li, Blandford, Cairns, and Young (2008) used the Doughnut Machine to examine the effect of interruptions and task structure on errors. Brumby, Cox, Back and Gould (2013) used the Doughnut Machine to investigate speed-accuracy tradeoffs in how people resume a task following an interruption.

The original Doughnut Machine had a focus on slip errors, and its procedural task structure was adapted for various research contexts. For example, at the US Naval Research Laboratory it became a Sea Vessel Production Task (Ratwani & Trafton, 2011) that could be used to commission the construction of different types of naval warships (see Figure 2). Back at UCLIC, Sandy Gould turned the Doughnut Machine into a Pharmacy Dispatching Machine, which the user could programme to deliver quantities of pills in various sizes and shapes (see Figure 3).

The CHI+MED Project

While making doughnuts offers a sweet treat, Ann thought carefully about how to apply the insights from her work to help save lives from avoidable medication errors that occur in healthcare settings. From 2009, she led the CHI+MED project (<https://www.chi-med.ac.uk>), which was a major EPSRC Programme Grant that supported a massive team of researchers across different organisations to work together to improve the safety of interactive medical devices, such as infusion pumps. It was as part of CHI+MED, that Sandy and Sarah were supervised by Anna and Duncan.



Figure 2. Sea Vessel Production Task interface

Number entry errors

While studying her MSc at York, Sarah Wiseman had learnt all about the exciting work on CHI+MED from Paul Cairns and had completed her MSc project looking at how we might best investigate number entry errors in the lab (Wiseman, Cairns & Cox, 2011). When Sarah joined UCLIC she continued this line of work discovering that there were clear patterns in the numbers used when programming infusion pumps (Wiseman, Cox & Brumby, 2013) and that thinking about these numbers as a language can be helpful as there are similarities in the way we copy numbers. This raised questions about the way we study number entry as a whole and whether using random numbers is an ecologically valid practice. Sarah also investigated how we might

be able to redesign number entry interfaces so that errors are less likely to occur (Wiseman, Cox, Brumby & Hennessy, 2013).

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Figure 3 Pharmacy Dispatching Machine interface

Interruptions and Errors

One of the reasons why people make errors is that they are interrupted. Li et al. (2008) originally found that people were far more likely to make an error when programming the Doughnut Machine after they had been interrupted by a distracting secondary task.

Sandy Gould's PhD further examined how interruptions cause errors. This research started in the lab at the Malet Place Engineering Building - as can be seen in Figure 3, Sandy turned the Doughnut Machine into a Pharmacy Dispatching Machine for prescription ordering, and explored why some interruptions are more disruptive (i.e., more likely to cause errors) than others. The Pharmacy Dispatching Machine then migrated online, allowing for the naturalistic study of self-interruptions. We gave the task to crowdworkers – people who work online doing small tasks for other people – and investigated how often they were either interrupted or interrupted themselves (Gould, Brumby & Cox, 2016). We found that just reminding people to focus on the task in hand meant people interrupted themselves less often.

After CHI+MED had completed, Judith Borghouts joined UCLIC as a PhD student (2014-2018). Like Sarah, Judith studied her MSc at York and had learnt all about the exciting work on CHI+MED from Paul Cairns. Judith continued this line of work looking at how to support people to manage self-interruptions at the office workplace, in particular during data entry work. Following up on Sandy's work of moving interruptions research out of the lab and Ann's chapter on qualitative HCI research (Blandford, 2013), office workers were studied at their workplace to understand the root causes of errors that occur as a result of interruptions. It was observed that people can often get distracted from work and experience challenges resuming their work task. It was from these findings that TimeToFocus was developed, a notification tool showing people the duration of their interruptions while working on a task. Borghouts, Brumby and Cox (2020) found the tool was effective in making people reflect on what they were doing during interruptions, and they used this insight to avoid task-irrelevant distractions.

At the same time that Judith was at UCLIC, Ann and Anna were working together on the NIHR funded ECLIPSE project (2014-2017,

<https://fundingawards.nihr.ac.uk/award/12/209/27>). In the hospital setting, medication sometimes has to be given via a patient's vein (intravenous), often using a pump which controls the speed at which the medication is given (infused). There are various studies of the intravenous administration of drugs in hospitals; these suggest that errors often occur in the preparation and administration of these drugs. Depending on the methods used and what is counted as an error, published error rates vary from 18% of doses to 173% of doses (error rates of more than 100% are sometimes given where studies count more than one error per dose). Many of these errors are very minor and unlikely to affect the patient. However, others can lead to patient harm. There was little information available to guide UK hospital staff in deciding how best to prevent errors involving the administration of intravenous medication, and whether or not the costs of smart pumps would be justified by any impact on error reduction. Our study aimed to fill these gaps in knowledge.

Conclusion

From fictional laboratory to real workplace tasks, Ann Blandford's contribution to human error research spans from basic psychology to applied HCI applications. The study of human error, interruptions and the CHI+MED project took place during the 'early days' of UCLIC and has significantly influenced both the individual careers of the people working on the project, but also human error and interruption research internationally. Thank you, Ann!

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Ann Blandford: Supervisor, Teacher and Role Model

Abdigani Diriye, PhD

I first met Ann in the winter of 2006. I was completing a Master's in Computer Science at King's College London and was toying with the idea of doing a PhD. I had been working on document-ranking problems and much of my focus was on back-end optimisation. Ann was a strong proponent of taking a human-centred perspective to improving the efficaciousness of technology. In my first meeting with Ann, I described the research project I had been working on and my goal of improving document-ranking. Ann described to me why a 5–10% improvement in the precision or recall of a set of documents would have marginal, if intangible, impact on users. In her usual precise, structured and evidenced-laden communication style, she shifted my thinking, and I started down the road of human-centred design.

I am fortunate to count myself as one of Ann Blandford's students. My PhD under Ann was a transformational and productive experience. Over a period of 4+ years from 2007 to 2012, Ann drummed into me the importance of clear, concise and well-structured scientific writing and introduced me to a breadth of HCI research techniques from think-aloud to wizard-of-Oz. I applied qualitative and quantitative methods and designed user studies to investigate the impact of different novel interface features on human behaviour. This training would benefit me immensely in the future. The first 18 months of my PhD were hard: I had not published and was feeling out of place. There was this patience Ann had and confidence she instilled into her students. Ann created an inclusive and intellectually-edifying work environment – and as a result I learnt to enjoy the journey and focus on my development as a researcher.

Ann would push me to sharpen my thinking, question assumptions, do the hard things, and thoroughly analyse my data. With Ann's belief, guidance and training, I designed, developed and studied several prototype search engines and published half a dozen papers during my PhD.

I left UCL in 2012 and spent time in academia and industry working for universities and tech companies. I adopted Ann's user-centred approach to problem-solving and project deliverables, and always asked, 'What does this mean for the user?'. This served me well and I have seen measurable user and business impact by taking this viewpoint. In industry, a commonplace practice nowadays is to consider during the inception of a project, what the end-user impact is when writing a business case. I place much of the success I have had in industry due to this human-centred perspective that I developed under Ann's supervision. My colleagues and I at Microsoft, IBM Research and Amazon have developed features and platforms to reformulate queries on the Bing search engine, develop new Alexa voice assistant functionality, and build platforms to offer micro-loans to users in Africa.

When I look back at my time as Ann's PhD student, Ann was more than a supervisor, she was a role model, teacher, mentor and coach. I learnt a tremendous amount from her as a researcher, but her ethics, how well she treated others from all walks of life and decency as a human being are yardsticks I judge myself on and aspire to. Ann has left an indelible mark on me and is one of the reasons for the person I have become today.

Wad mahadsantahay (*Somali: 'Thank you'*), Ann. I owe you much.

Making a difference to human factors in medical devices

Aisling Ann O’Kane, Associate Professor in Human-Computer Interaction for Health, University of Bristol

Ann Blandford’s name emerged for me online first. As a Canadian finishing a master’s in Sweden and the Netherlands, I wasn’t privy to UK HCI royalty yet! I was searching online for a supervisor with expertise in human-computer interaction for healthcare, and here was Ann’s name, the PI of EPSRC CHI+MED project, looking to make a difference to the human factors of medical devices. Through Ann’s support for my application, I arrived at UCL with a million ideas for personal health devices that went in all sorts of directions – Ann sorted that out quickly! She trimmed studies, stopped potential distractions and guided my PhD work so that it made a bounded contribution to understanding the real-world use of diabetes technologies. During this time, Ann was synthesising the knowledge that had been gained during HCI research using qualitative methods, and in particular applied to the complex context of healthcare. She first published an article online in the *Encyclopedia of Human-Computer Interaction*, coining the term ‘semi-structured qualitative research.’ Unsurprisingly, she expanded on this concept into a textbook which I point research students to, see referenced in HCI papers I review, and use to qualify my pragmatic approach to qualitative research. I even use the comics from the book in my own teaching, although I think Dominic Furniss might have had a hand in this creative direction for the textbook!

Ann was massively supportive of me expanding on my PhD research and mentored me through a fellowship application at UCL, and then the fellowship itself until my son was born. She was supportive of me during this time, and indeed a role model for the active role she was

taking in her grandchildren's care at the time while balancing HCI superstardom. Even after I packed up my bags for Bristol, she has been supportive of my career with references at the ready and availability to give invited talks despite her very busy schedule building up digital health at UCL. She even rocked my crying 8-week-old daughter in Glasgow at CHI, despite being up against a paper deadline. I am very lucky to have found her as a supervisor and I credit my success and my outlook on pragmatic approaches to HCI health and care research to her.

A pleasure and an education

Clare Selden, Professor of Experimental Hepatology, UCL

I have recently started collaborating with Ann (2020 onwards) and it has been both a pleasure and an education. Not only have I learned about 'usability', and human-computer interaction itself, an entirely new field for me, Ann has guided both myself and the colleagues and students from her department that I've worked with, gently through from start to a successful finish of the MSc project students in her department. She has also been an inspiration in how to get through mountains of paperwork in examples such as RAEs, PhD theses, grant applications etc. I am glad she isn't making a clean break just yet and hope to be working with her albeit maybe not in person for a while to come.

I wish her the very best for her future enjoyment and thank her for all her help since we have been working together.

Recognising the pleasure and reward of learning from others

Edward Fottrell, Professor of Epidemiology & Global Health, UCL

It has been an immense privilege to work with Ann over the past seven years. Our first interactions led to co-supervision of a PhD that combined our different academic expertise but common interests in digital intervention design and global health. Over these years I have learnt much by spending time with Ann and observing her lead and execute research and education, and the associated administration, with calm authority and expertise. I have observed techniques and skills in supervision that guide students with the right balance of encouragement and compassion. I have observed openness to collaboration and interdisciplinary research that values the need to work together to address critical problems and that recognises the pleasure and reward of learning from others. And I have observed disciplined management and organisation of time, diaries and notetaking that mean the Outlook invite for the next meeting often arrives before the current meeting has ended – although I have always found it amusing that a Professor of Human-Computer Interaction relies so heavily on a pen and paper Filofax!

Since 2020, Ann and I have collaborated on a large interdisciplinary project to describe the role of context on risk, experiences of and responses to diabetes in urban Ghana. The project has been challenged by Covid, delays, budget cuts and budget increases, and I have greatly appreciated Ann's calm guidance throughout, as well as her commitment to keep 'digital' on the agenda and as a critical element in all aspects of our work. Travelling with Ann to Ghana in spring 2022 was a highlight of our collaboration and again I learnt by

observing her naturally inquisitive and investigative approach to her first experience in a new, different context.

It is through such collaborations with Ann, and previously with another colleague at UCLIC, that my understanding of HCI developed, as well as my appreciation for how transdisciplinary approaches that truly integrate methods and results provide insights that any single disciplinary approach would miss. I have learnt from HCI to see how the previously-unseen aspects of how digital approaches affect communication, empathy, morale and motivation of users and have deepened my appreciation for 'systems thinking' to appraise the implementation challenges and likely value of any new approaches. These factors are so important to the potential efficiency and effectiveness of digital (and indeed any) health intervention and continue to inform my work in health data capture, processing and use and in intervention development in a range of contexts.

I wish Ann every happiness as she reduces her working time and transitions into retirement, though I know her work and her influence on many others will persist for many years to come.

Researching socio-technical systems: Looking back at the journey and the outputs

Dominic Furniss, Human Factors Consultant & Trainer

I look back at my time at UCLIC with great fondness, for the work we did, the accomplishments we achieved and the people we met... and I'm using the word 'we' because we did so much of this together.

It was a Christmas drink in 2003 where this all began. At the end of my first term at Remax House, we got talking about MSc projects over a few glasses of red wine. You were looking for someone to do a control room project with the London Ambulance Service, I had been interested in Distributed Cognition since my psychology degree, and we didn't know at that point that this first project together would culminate in DiCoT, and that this would be the beginning of a decade or more of working successfully together.

I enjoyed my MSc immensely but never planned to do a PhD. As luck and fate would have it, the qualitative researcher you had lined up for a PhD on the HUM project dropped out. This was a chance for me to continue what I was enjoying, and so after an interview with Paul Curzon we started our second chapter: investigating why UX practitioners and Human Factors professionals working on safety-critical systems use the methods they do. It was a deep dive into qualitative research, leading to 'Confessions of a Grounded Theory PhD' (Furniss et al., 2011a). With the different frames of thinking we applied, we adapted FRAM – which at the time was focused on accidents – and used it in a more positive way. We invented *positive resonance to explore how socio-technical systems can flourish or stall*.

Between the PhD and starting a postdoc position on CHI+MED, I ventured across to Halden, Norway, looking at Resilience Engineering for nuclear power plants. From this, and continuing our work with Jonathan Back, we developed and drafted 'A Resilience Markers

Framework for Small Teams' (Furniss et al. 2011b). We proposed a way of linking high-level resilience theory and detailed ethnographic reports, we also created a central role for a repertoire of resilience strategies. We'd later introduce Big R and little r innovations, referring to new innovations and transferable innovations, respectively. Then make cognitive resilience more tangible by categorising and naming strategies, e.g. separation strategies and differentiating strategies, to help prevent confusing similar things.

CHI+MED and ECLIPSE were our first serious forays into healthcare, taking on the challenges of doing fieldwork in hospitals. Creating two volumes of *HCI Fieldwork in Healthcare* (Furniss et al., 2014, 2015) from our CHI workshop was a highlight, complemented with your own book with Stephann Makri and myself *Qualitative HCI Research* (Blandford, Furniss & Makri, 2016). Circling back, we published on centric layers of sociotechnical system for DiCoT and used distributed cognition to explore structure, agency and performance variability around infusion pump use.

Emerson said, 'It's not the destination, it's the journey'. The destinations/outputs matter, but I've more used them as milestones and waypoints to describe the journey, and the purpose of this is more to say thank-you for this enjoyable journey.

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It is always fun to see Ann in action

Claudia Estcourt & Pam Sonnenberg
on behalf of the SEQUENCE Digital team

The one thing we regret about Ann is that we didn't meet her sooner. Our working links began relatively recently compared with many, but the advances we have made in interdisciplinary digital sexual health research have been seismic. Ann has taught us much about human-computer interactions in her characteristic, straight-talking style. In our group we take much enjoyment from pulling apart ideas and looking at them from different perspectives. It is always fun to see Ann in action, rapidly getting to the nub of the issue, then interrogating us all (nicely) about the scientific reasoning behind our thinking before helping us pull it all back together again – always in a better place than the sum of the parts.

Ann looks after her team and always acts and advises with the very best interests of the person at heart, even if it means more work for herself. Ann is a pleasure to work with, as she always, always delivers, ever mindful of the stress of those leading on the bid or paper.

Ann, we will miss you hugely but know you have a wonderful new chapter ahead. Life will never be dull, up mountains or with grandchildren – and in time perhaps the thrill of both simultaneously!

Wishing you fun, excitement and fulfilment.

Truly remarkable and unforgettable lessons

Amirrudin Kamsin, Universiti Malaya

The third of November 2008 was a special date because it was my first meeting with Ann, face to face for the first time at UCLIC, in the Engineering Building in Malet Place... Level 8, if I am not mistaken. My heart was full of mixed feelings: excited, pounding and wondering how my PhD journey would be under Ann's supervision. Actually, a few months before I came to UCL, I had asked some students under Ann's supervision, about Ann's personality or style in supervising her students. This, indirectly, gave me the opportunity to know and understand Ann before even embarking on my PhD journey. I was hoping that I could meet Ann's preferences or requirements. Throughout this long journey, 4 years physically in London and 2 years remotely from Malaysia, it was full of up-and-down moments. Among these, the one that is still fresh my mind when my viva voce panel said that I had to correct my PhD thesis within 18 months. I thought I could have completed my PhD after 4 years.

Among the funny things that happened to me was the feeling of anxiety or sometimes scare, every time when there was a supervision meeting with Ann. I was not sure whether Ann would be happy and satisfied with my report or research progress presentation, or the other way around. Throughout this tough 6-year journey, there were times when Ann was very happy, and there were also times when Ann was not satisfied, frustrated or asked me to do more research, data analysis and so on. There were times that her questions could be so provocative. But most of the time, her views were very constructive and encouraging. Sometimes while walking out from her room, I felt so confused, sad and demotivated. But I know now, it's normal for PhD students. If she hadn't done those things, I would have never been where I am now. Anyway, it was all a very useful practice that I've just come to understand, particularly now, where I myself have

been supervising my own PhD students with different characteristics and progress, that sometimes can be challenging to handle.

The invaluable knowledge, skills, lessons and much more that you have given me, Ann, through this PhD research training, are truly remarkable and unforgettable. I will always admire your great achievements, which are so inspiring. I hope that one day I might reach your level. You have contributed so much especially to human-computer interaction. I hope that you will keep contributing your expertise locally and internationally even after your retirement. But please also enjoy your retirement with your beloved family members, to the fullest. Hopefully one day, I will be able to meet you again in the UK and in Malaysia. Love you, Ann...

Detailed and helpful feedback

Atish Rajkomar, former PhD student

I had the great pleasure of working with Ann during my MSc and PhD at UCLIC. I got introduced to Distributed Cognition in her Organisational Informatics class, and got hooked onto the topic, thanks to how brilliantly she presented it. My MSc dissertation and PhD studies focused on Distributed Cognition in healthcare settings, and were part of the CHI+MED project, which Ann led.

I have fond memories of working with her and learning from her. I especially remember the detailed and helpful feedback she would give on draft chapters and manuscripts, and how she helped me considerably improve my writing skills.

For personal reasons, I chose not to continue in academia; otherwise, I would have been keen to continue working with her on further projects. I wish her all the best in her retirement!

Ann Blandford: a framework for interactions

Michael Harrison, Emeritus Professor, Newcastle University

I have known Ann for about 35 years. We met working together on the Esprit-funded Amodeus project. Our common research has focused on frameworks or tools for analysing interactive systems. An important question for her has been, and continues to be, how requirements of interactive systems should be expressed to enable a clear and precise understanding of how the design should reflect the requirement. Does the requirement impose a constraint on the devices concerned, or the relevant training involved or the organisational mechanisms? Of course, the answer is often that it involves a combination of these factors.

Ann's early research in this context resulted from collaboration with Richard Young on programmable user models – the idea of producing a model of the user as well as a model of the device and analysing how these models might be used to produce explanations and aids to the understanding of interaction errors such as post-completion errors (see for example, Li et al. 2008). Ann's work with Richard Young aimed to produce representations of these user errors, as discussed, for example, by Reason (1990) and Card, Moran & Newell (2018) in a form that could be more readily integrated with a specification of an interactive system. Ann and I then worked with Phil Barnard on an interaction framework (Blandford et al., 1995), a neutral framework that was designed to express interaction principles, that could be interpreted as requirements on the software design or other aspects of the system environment. I think this early work, matured through collaborations with David Duke (Blandford & Duke, 1997) and Paul Curzon, involving more formal models, perhaps led to the DICOT work (Vincent & Blandford, 2015; Furniss et al. 2015), a framework for guiding the analysis of an existing system similar to that produced

by Beyer & Holtzblatt (1998), for example, but informed by concepts from Distributed Cognition (Hutchins, 1999). This work led to interesting studies of a number of environments, including the medical systems that formed the basis for the multi-university EPSRC-funded CHI+MED project, which Ann directed. My link back to Ann's work relates to the formal models of these systems that form the basis of my current research. Ann worked recently with Paolo Masci to produce formal specifications of the systems as analysed using the DICOT model (Furniss et al. 2015).

Ann's work over the years has been exemplary, combining a deep understanding of the principles involved with important and practical applications. This account is of work in progress. I look forward to seeing future developments. It has been a pleasure and privilege to work with her.

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Where is My Mind? Understanding Cognition and Attention

George Buchanan, Director, University of Melbourne iSchool

User attention is a limited resource. At any moment in time, a user of a digital device is not only engaged in that interaction, but also with other people, physical environments and tasks that they have to maintain an awareness of alongside their current primary activity. The laboratory ideal of a person with fully focused attention is seldom found in real-world contexts.

Ann's theoretical focus on the user's wider context has stood the test of time, whether looking at personal medical adherence (Stawarz, Cox & Blandford, 2014), digital library use (Stelmaszewska & Blandford, 2004) or emergency response work (Blandford & Wong, 2004). A particular influence on my own work in recent years has been the lens of distributed cognition, where DiCOT (Blandford & Furniss, 2006) has been a method I've taught and used in my own research, including group (McKay & Buchanan, 2014) and individual work (Buchanan, McKay & Makri, 2019) in libraries. With my colleagues at RMIT and Melbourne, we are starting to examine how Ann's theories can apply to the threat of misinformation (Buchanan et al., 2022).

While I started as a more technology-focused researcher, working with Ann broadened my perspective to focus more on the user, and to understand that their interactions sit in the broader context of their life and other work. Ann's focus on this pre-dated the growing interest of HCI in this theme in general. It has been a delight to see the recognition of that work grow in recent years, both within and beyond the domain of health, where so much of Ann's current work is situated.

I had the good fortune to have Ann as a PhD supervisor, and at the time the potential of mobile phones to be a new form of digital interaction was widely promoted. I doubt many of us at the time would have expected mobile interaction to be so pervasive. Ann's recent work shows how far mobile interaction has come, being even part of people's control of their health (e.g. Stawarz, Cox & Blandford, 2014). The very pervasive nature of today's mobile phones and digital watches may have its roots in the enthusiasm I and others had for a new form of hardware. Over two decades later, our hopes that that technology could have a large impact may have been fulfilled. However, the proof of the pudding has been much more in the eating: those devices are even more embedded in, intertwined with and happen alongside the wider view of a user's activity than was the case with the desktop.

In the long run, Ann's interest in the user's context and interaction with others was more prescient. Her theories will long stand as current and valuable even after early work on mobile interaction lies gathering digital dust in abandoned corners of digital libraries.

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Filling up hours of her day that do not exist

Dilisha Patel, final year PhD student in HCI

Looking back, I remember my first interaction with Professor Ann Blandford very clearly. She welcomed me into her office and made it clear that whilst she was very busy, she was giving me her full attention. This has seldom changed over the years, with Ann being very busy, and filling up hours of her day that do not exist but being able to give you time and attention. I believe it was because she saw something special in me that I was successful in securing a PhD under her guidance.

When I began, Ann was writing a seminal piece on the seven lessons for interdisciplinary research. I think this was the ideal time for me to work with Ann, as I was coming from a health discipline, and to explore digital health and HCI right when Ann and colleagues had articulated the valuable differences between the discipline approaches. This only helped her to guide me from my former practices and understand the value of my experiences.

She pushed me from the beginning, not allowing me to get lost in my PhD. She recognised my traits and abilities and impelled me to motivate myself. My determination to focus on a specific population was humoured, until it was clear to me that there was more value in changing focus. Ann enabled me to find this path somewhat by myself.

Through being mentored by Ann, I have been privileged to observe her working style and approaches and achieved a deeper understanding of the value of human factors. And most importantly how to convey this importance to others who may not see it as clearly. There is immense value in having human factors considered in research and design and it can be overlooked or undervalued by others from different disciplines.

I have witnessed first-hand how Ann has flown the flag and conveyed the value of including HCI approaches in research projects. I have also learned how to be confident and assertive to convey this value to others and improve the success and efficacy of research and impact.

Looking forward, from looking back, I believe I have hugely benefited from working alongside Ann. She has got me through some very tough times in life and work. It has been through her honest understanding and support that I have achieved what I have and why I hope to continue on this trajectory and continue flying the flag for human factors in digital health and well-being.

Digital health is ubiquitous, and many researchers, disciplines and domains are focused on incorporating digital health into their work streams. As a field, we need to continue being at the forefront to incorporate our learnings, methods, and theories to produce high-impact and valuable outcomes. Ann has shown me how to do this confidently and competently.

Being open. Being honest. Being approachable. Being knowledgeable. This is Ann and these are the traits I hope to emulate in my career too.

Making sense of the messiness of people's real interactions with various technologies in their daily lives and work

Yvonne Rogers, Professor and Director of UCLIC

When I first joined UCL, Ann spent much time helping me get settled in and up to speed, explaining all about the structure and politics of UCL.

I discovered during her time as the previous UCLIC director just how much she had done transforming it into a well-oiled and thriving centre. I am very indebted to her in those early days. She was also very gracious in how she stepped down from the directorship role, moving over to take up a new position managing a very big EPSRC platform grant. She even gave up her penthouse office for me.



Ann has had widespread influence in the field of HCI and beyond throughout her career. At various times, we have both worked on publishing our research applying the distributed cognition approach in HCI. Where Ann went the extra mile, however, was turning DCog into DiCoT (Distributed Cognition for Teamwork) with her then student Dom Furniss. Together they developed a framework that made DCog more accessible to researchers and practitioners alike, by providing a new structural support that made it much easier and systematic to be able to analyse and label small team interactions. Since then, it has been used by many students and researchers.

After working on DiCoT, Ann strode forth and introduced Human Factors to the newly emerging area of digital health – which has since become a burgeoning field. In a relatively short period of time it is amazing to see how many projects in this area Ann has initiated, collaborated on and led in quite diverse areas, from designing AR to help surgeons to providing sex education. It is not surprising to see how Ann has been highly influential at many levels, globally and locally. She has worked with many teams in both developing and developed countries. For example, Ann worked remotely with a team in South Africa to develop a locally-appropriate approach to designing and evaluating two digital interventions for men to make an informed choice about HIV testing. The local team had no prior experience of HCI but were able to develop skills and confidence under Ann's guidance and are now leading on ongoing developments.

Throughout her illustrious career, Ann has collaborated on many projects with multidisciplinary teams. Based on her experience, she has written extensively about how to be successful when collaborating with different organisations; spelling out best practice and strategies for interdisciplinary working, especially with health professionals – who can be a tricky lot, given the nature of their work and the time pressures on them. Ann has also been very generous when it comes to writing books that will help others. She has co-

authored several on methods in HCI, including a much popularised one on qualitative methods in HCI. In one of her early books, she wrote about interacting with information by explaining her 'information journey' model, taking into account information interactions over time situated within people's daily lives and work. Part of her own journey has involved forging a path, making sense of the messiness of people's real interactions with various technologies in their daily lives and work. HCI has not had a strong tradition of reflecting on and writing about the methods it uses. Ann has put this oversight to right, reflecting on her own experiences and sharing these with others to contemplate how it compares to their work.

Despite planning to downsize over the last few years, it seems Ann has actually continued to grow her research team! She has been an incredibly successful partner on a number of recently awarded grants and to this day she is embarking on all sorts of exciting new research projects in healthcare. Long may Ann's stamina and insightful contributions to HCI continue – but hopefully she will now be able to spend more time enjoying all the other pursuits and pastimes in life she is passionate about!

UCLIC@21: looking back, looking forward

Industry perspectives

Chris Vincent, founder of Science and Technology Consulting Ltd

When working in industry you sometimes get questions like, ‘What is HCI?’. Designers are intrigued – what does it mean and is it HCI, CHI or Human Factors? Definitions aside, my experience of working with UCLIC is that they epitomise the discipline and have led the way in showcasing the best of what can be done to support the design, evaluation and implementation of interactive computing systems. The work has a strong focus on societal and organisational aspects – i.e. the study of the world around a technical system (not just the system itself). Here the challenge can be one of representation. Understanding social systems is not an easy thing to do, but representing them to inform, design and evaluate is even more challenging. UCLIC do a great job of showcasing this work.

Ann introduced me to the concept of Wicked Problems. Problem solving is not just constrained by our ability to formulate; it also relies on expressive adequacy and how this holds across people from different backgrounds and perspectives. Part of the challenge of the design of interactive computer systems is one of representation and the degree to which a representation can adapt to local needs, whilst at the same time maintaining a common identity. The blueprint/map needs to carry a unified meaning but also accommodate varying perspectives. In a way the design of the representation underpinning an interactive system is no different from the interactive system itself. This challenge continues to fascinate and I am amazed at how widespread this challenge is.

Representation is fundamental – and applies across many disciplines. It feels like we have finessed the engineering of physical systems but

less so societal ones. The work at UCLIC is instrumental in this respect – making the invisible visible and understanding the world in order to improve it. So much can be achieved through dialogue, creativity, design thinking and soft systems methodologies, but will the digital representations of the future change the game? Have ubiquitous technologies become the means to capture a design rationale as well as being the product of it? Can socio-technical systems monitor and improve themselves in ways that are not currently possible?

I have always found working with UCLIC a humbling experience and was proud to co-author papers with Ann. Until someone solves the problem of representing socio-technical systems, I'll leave an impression for the future of seamlessly translating from observational work to a design solution and being able to update the solution as the world around it changes. I'll express a massive amount of thanks and gratitude for providing inspiration. I wish UCLIC the very best of luck for the future.

The importance of the HCI perspective in applications of digital health interventions

Josie Carmichael, PhD student

Looking back, my first interaction with Professor Ann Blandford was via several email exchanges, in which we discussed my interest in applying for my now PhD project. As an optometrist by background, human-computer interaction (HCI) was an area in which I had no previous experience, and although I recognised the project to be an amazing opportunity, I had reservations about whether my experience was adequate for the role. Having emailed Ann for advice, she replied promptly, with words of encouragement, stressing the value of my background, which ultimately led to me deciding to apply.

Through my own experiences and witnessing Ann's mentorship of other researchers in our team, I have recognised this as the aspect of Ann's leadership style I most admire; she encourages students to recognise and play to their strengths. She also has the ability to provide guidance, whilst encouraging independence and autonomy that is empowering for students, as we explore our own areas of research interest.

Despite a steep learning curve, I have already learnt a great deal from Ann over the past two years. In particular, I have learnt the value of multi-disciplinary expertise in developing and evaluating digital health interventions. Reading her paper 'Seven lessons for interdisciplinary research on interactive digital health interventions' (Blandford et al., 2018) and hearing of her personal experiences, has helped me to navigate between the two cultures of 'Health' and HCI, highlighting the fundamental differences that can occur and how these differences can make necessary collaborations challenging. Despite these challenges, I have witnessed Ann's success in conveying

the importance of the HCI perspective in applications of digital health interventions.

Digital health is ubiquitous and the importance of its incorporation into workflows is being recognised across a range of disciplines. The breadth of domains of research projects for which Ann has offered her expertise illustrates this clearly. Ann has led projects in an impressive range of healthcare specialties, including my own research into the application of teleophthalmology and artificial intelligence (AI) in the eyecare pathway. During such collaborations she continues to be enthusiastic about continuing to learn, from both her colleagues and students – another trait of Ann's that I admire.

Healthcare systems and the ways that people engage with their health and wellbeing are experiencing a period of rapid change, with AI being one of the more recent 'hot topics' of focus. Optometry and ophthalmology are currently at the forefront of such digital translation and I feel privileged to be able to explore the human factors associated with its potential implementation, with Ann as my mentor. I hope we can play a part, no matter how small, in improving the understanding of these systems in this area to identify and overcome barriers which currently exist.

As Ann's final PhD student, I still have a great deal to learn, and I look forward to benefitting from her mentorship over the coming years.

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An engineering approach to HCI research

John Long, Emeritus Professor of Cognitive Engineering

Dear Ann, congratulations on your retirement! Your CV says it all. Well done that woman! Now you can write all those books and climb all those mountains for which you had insufficient time... Although we have never worked together, I have cited your work, as below:

‘As an example of an engineering approach to HCI research, Blandford (2013) advances a view of engineering as the servant of design. According to the latter, the users’ needs are identified outside this engineering process. This view is contrasted with HCI as comprising iterative software development lifecycles. The latter address HCI engineering validation in terms of usability, utility and experience. Blandford’s aim is to question the role and value of an engineering approach, concerning interactive computer systems. The questioning is in the interest of a better understanding of that approach.

On what grounds might the Blandford paper be classified as an engineering approach to HCI research?

First, an engineering approach to HCI research is a way of addressing the topic or problem of designing human-computer interactions by codifying knowledge explicitly, to support design, as specification for performance, that is desired.

Blandford argues that an engineering approach addresses practical problems with a view to their resolution. The latter are associated with human-computer interactions and expressed in terms of usability, utility and experience. Design for performance is implicated in these criteria and identified with the notion of well-engineered.

Second, an engineering approach to HCI research requires the performing of actions to progress that approach to the topic or problem of designing human-computer interactions.

Blandford identifies a number of ways for an HCI engineering approach to address the design of human-computer interactions. These ways include: researching principles, developing a phased design process, improving

requirements and testing methods and enhancing cognitive modelling. All the latter implicate the acquisition of codified engineering knowledge to support design for performance.

Third, an engineering approach to HCI research requires the evaluating of the success of the actions performed to progress that approach.

Blandford identifies both verification and validation as ways of supporting an HCI engineering approach to progress and to increase the assurance of this progression.

Fourth, an engineering approach to HCI research requires the cumulating of the successes as a way of establishing whether the topic or problem of designing human-computer interactions has been addressed or not.

Blandford reports no assessment and so no cumulating of successes.

Conclusion: On balance, Blandford's research can be classified as an engineering approach to HCI research. Most of the criteria are met. The approach is currently at a high level of description, in keeping with its aim of questioning the role and value of engineering in relation to interactive computer systems.

This classification suggests that Blandford could decide to support any of her future HCI research, either on the basis of the engineering approach, presented earlier or on the basis of the engineering framework later.' (Long, 2021)

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Imagine a rabbit...

Katarzyna (Kathy) Stawarz, former PhD student



...a rabbit jumping out of a hat.

The first thing that comes to mind when I think about Ann is a rabbit, or to be more precise, a doodle of a rabbit peeking from a magician's hat scribbled on the margin of the very first paper I sent her for feedback.

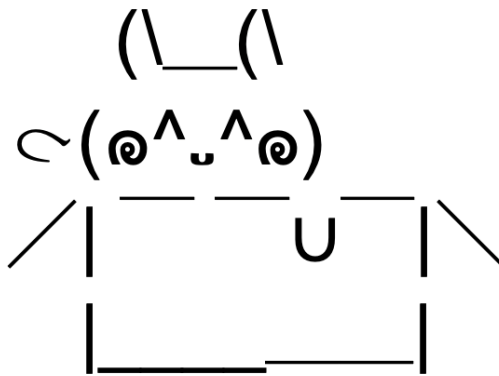
Ann was my PhD supervisor and it was an honour and privilege to work with her. I have learnt a lot about writing, research and HCI – but it's the rabbit that has lodged itself in my head as if it were a comfy hat. Thinking about it always makes me smile, even though at the time I was not happy to see it. I'm pretty sure I'm not the only person who has met the rabbit – it was Ann's usual trick (ha!). I can only hope that she will learn to do that trick with a real hat and a real rabbit (a toy rabbit would do, too).

On that paper of mine Ann drew a rabbit to highlight a part that came out of nowhere, like a rabbit suddenly pulled out of a hat. There might have been more than one. Now, I always think about these furry creatures when editing my papers. Oh, there's a rabbit here, and here, and here. In an early draft, when you're still trying to think through writing, the points that come out of nowhere multiply like, well, rabbits.

Making a point and crafting a coherent story is one of many things I have learnt from Ann. Another, related thing is thinking critically about multidisciplinary research. I have always been impressed by

how she can take different fields and pull together threads from these different fabrics. This is how I see HCI now: a tapestry made of multiple threads that often come from different domains and make a whole that is obviously more than its parts.

But it all starts with rabbits and, perhaps counterintuitively, HCI needs more of them. Sometimes new ideas and associations jump out of nowhere. Maybe initially they don't make sense and there is no coherent story. Maybe after you write them down and try to explain them, they still make no sense and you have to draw a mental image of a rabbit jumping out of a hat to help you focus. But then it clicks and that's where the magic happens – that's when you learn how to bring these different strands together, combine knowledge and methods from different research domains and create something meaningful. And that's what HCI is and should be about.



Interaction C – A poem

(with apologies to A.A. Milne's 'Buckingham Palace')

Julia Manning, PhD student

They're changing guard at Interaction C –
Ann Blandford went up with Prof Harold T.
Ann is reducing her time at UCLIC,
'A professor's life is quite a trick',
Says Ann B.

They're changing guard at Interaction C –
Ann Blandford went up with Prof Harold T.
'We submitted many papers to CHI,
They all scored fives, we were on a high!'
Says Ann B.

They're changing guard at Interaction C –
Ann Blandford went up with Prof Harold T.
'Qualitative interviews are the best,
Conducted with cake and no t-test',
Says Ann B.

They're changing guard at Interaction C –
Ann Blandford went up with Prof Harold T.
'Thematic analysis, I have cracked,
But anyone seen my Filofax?'
Says Ann B.

They're changing guard at Interaction C –
Ann Blandford went up with Prof Harold T.
'I loved all my students present and past,
But the best ones were surely the last',
Says Ann B.

They're changing guard up on the second floor –
Ann Blandford's office is busy no more.
Supervision no longer the top call,
'You will find me up the climbing wall',
Says Ann B.

Promoting the development of technology for the greater good

Dr Louise Gaynor, UCLIC Manager

It was Ann's research that drew me to UCLIC originally. I was applying for the manager role in the Autumn of 2009, but I was coming from a health research background and wanted to continue to support research in this area. Although I was curious about the research of UCLIC generally, it was the CHI+MED project that drew my attention. I had never really heard of Human-Computer Interaction (HCI) before, so I was excited to find out more.

All I knew about HCI was that there were times during my PhD when I would furiously curse at my computer when Word or Excel would crash or there was something I wished the program could do (or stop doing), but was frustrated to find it couldn't or wouldn't – then all of a sudden a few months later, the program could suddenly do the thing I wanted months ago – and all of a sudden my life was made that little bit easier! Little by little software improved, there were new devices, mobile phones and they kept getting more and more elaborate, easier buttons, fewer buttons, then no buttons – there were new things you could do, new games, more games, the environment in Grand Theft Auto was much more real and the characters more life-like. I had never really thought about how all that happened, until I found UCLIC and Ann's research and it made me realise all the work that went on behind the scenes to improve technology. Such research requires input and collaboration across a range of different disciplines and involves figuring out how people look for information on a screen, how they think about the data/information or how they use a device to enter or manipulate data, even considering the strategies people use to make sure they don't make mistakes – and then combining all of this to improve on the design to ensure a safer or more enjoyable user experience.

Ann's main research focus is on Digital Health, which is the development of digital technologies for healthcare purposes, a field which is growing exponentially and which Ann embedded in UCL as she was the Director

of the UCL Institute of Digital Health from 2015 to 2019, which then merged with the UCL Institute of Healthcare Engineering. Such research will be a driving force for the improvement of health and greater access to care for millions around the world. The potential for positive impacts on a global scale is massive. However, the challenges will not only be around creating true health equality, but also the likelihood for healthcare data to be abused as well as issues around privacy or consent. For example, AI technologies are being developed that could more accurately diagnose and track disease progression (e.g. cancer) or assist in patient treatments and surveillance, but therein lies a risk as these technologies provide the means to be used for increased surveillance, manipulation, social control and loss of personal freedoms. Here is where UCLIC can lead the way, however, highlighting such concerns, promoting the development of technology for the greater good and perhaps designing mitigating features to be built into such technology if possible. This brings me back to what drew me to UCLIC in the first place – after having watched many sci-fi movies over the years, often with themes of mankind’s annihilation by machines, it was reassuring to be reminded that people can and do design technology that works for real people, that makes you not want to throw your computer out the window, that improves healthcare and how it is delivered, and that makes lots of things in life generally easier!

Ann was the Director of UCLIC for a further two years after I joined the dept as manager in 2009 and this was my first proper managerial role – I had a lot more responsibility than I had in previous roles, so it was a bit daunting at first. But I had a great role model in Ann with regard to leadership – she was always firm, but fair in her leadership style, always inclusive, compassionate and kind, but also knew when decisions had to be made. I’ve really enjoyed working with her over the years, while she was Head of UCLIC and then helping her with various projects after Yvonne took the helm. I’m very sad that she is gradually stepping down, but also glad that she will still be part of our dept and UCL for some years yet. I’m delighted for Ann that she is finding more time for interests and activities beyond work, but I hope that she will always have time for her HCI family at UCLIC!

Look at the bigger picture

Suziah Sulaiman, former PhD student

I joined UCLIC in March 2003 as a PhD student. The first person I met was Ann, my supervisor. She was not in her office on the day we were supposed to meet but there was a little yellow sticky-note on her door for me saying, 'Do fish me out from the meeting room downstairs, if I am not in'. That was sometime in late March 2003 at Bedford Way, London.

I met Ann in person. A cheerful, friendly and warm English Lady. Her welcoming gestures made me really feel very at ease, and to some extent, very at home. It did not take long for me to like Ann and grow fond of her. After the first meeting, I promised to myself to get through the PhD life and graduate from UCL under the supervision of Ann. I was determined. After all the struggles and hardship, I finally made it! Thank you so much, Ann. I would not have been able to make it without you. It was a shared success.

I have very high regard for Ann and have continued following her work from afar. I tried to copy Ann's technique in supervising and coaching research students. It works ... My understanding towards the topic areas in HCI also improves over time, i.e. through experience and practice. Ann has trained me to look at the bigger picture, not just the details – to see the wood for the trees. (I hope I have said this correctly!)

Thank you so much, Ann, for your supervision, guidance and, most importantly patience, with me. I have learnt a lot from you. Not just academically but also about life, English culture and society. You have been an excellent mentor, a friend and, if I may say, a big sister to me whom I will cherish forever.

Wonderful perspective and directness

Dr Yogini Jani, UCLH NHS Foundation Trust & UCL School of Pharmacy

Prof Ann Blandford, a name that in my mind is synonymous with the study and understanding of human-computer interactions!

I had to think back to how long we have known each other... We were first introduced by Prof Nick Barber, and met to discuss smart infusion pumps in what appeared to be a science lab. Sadly, on that occasion, I was unable to collaborate with you, Ann. However, as they say, good things come to those who wait... and sure enough, I was able to work on the project at a later stage and we had a publication from it (Jani, Chumbley, Furniss, Blandford, & Franklin, 2021). Since then, you have been kind enough to support with the supervision of students (Jana, Rachel and Reham).

I was first exposed to concepts of human-computer interactions, through the lens of Donabedian's model (Donabedian, 2005) of structure, process and outcome across levels of technology, individual and organisation, during my own doctoral study, an evaluation of an electronic prescribing system (Jani, 2008). Each collaboration with Ann and the team has built on that foundation and raised awareness of this important, often implicit, aspect of (health) technology design and implementation. It has emphasised the importance of recognising that unless the interplay between human and computer is considered, many otherwise excellent innovations may not deliver the anticipated benefits. In the complex environment of the NHS where there are often limited resources and opportunities to study these intricacies, the awareness and study of human-computer interactions has shaped my approach across all areas of my practice. As the Clinical Safety Lead for Digital Healthcare, I constantly find myself asking questions about how the technology is really being

used in practice, how distributed cognition (Blandford & Furniss, 2006) and various artefacts influence teamwork, work behaviours and outcomes, and whether anyone process mapped work as done (Blandford, Furniss, & Vincent, 2014)! For every alert, flag or symbol that is requested or if there are reports that users need more training for the digital health technology, I recall and apply principles of human factors (Williams, Aldakhil, Blandford, & Jani, 2021). My research interests develop this thread through areas of medication and patient safety in a digitally-enabled healthcare system and understanding how design and human-computer interactions upstream may influence outcomes of digital and data science-driven innovations downstream.

Ann, you have a wonderful perspective and directness of getting to the crux of the issues – focusing on what really matters, without getting distracted by the mundane. I have learnt so much from you and continue to be inspired by you. I wish you a very happy retirement.

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An amazing legacy

Harold Thimbleby, former UCLIC Director, 2001–2005

Human-computer interaction, the science of how people and computers work together, has amazing success stories. Computers and handheld devices, like mobile phones, connect us to each other through social media and to the world's knowledge through the internet; they help us navigate the world, pay taxes, buy food, teach and heal. Some computers deliver justice, some literally give sight to the blind, some drive cars and fly planes. Making all that innovation desirable, safe, easy, practical to use, and empowering is what human-computer interaction is all about.

These astonishing success stories of human-computer interaction are a factor in one of the most important projects that UCLIC was involved in: CHI+MED, which was ably led by Prof Ann Blandford. Ann was also Director of UCLIC at the time.

CHI+MED (Computer-Human Interaction for Medical Devices) aimed to discover and spread reliable knowledge to transform the way in which computerised medical systems are designed, bought and used.

CHI+MED ran for six years from 2009, and with its nearly £6 million EPSRC funding* obviously involved a huge number of international collaborators and students – including over 50 directly-named individuals from four universities and several hospitals. We wanted to make healthcare systems – particularly computer-based systems – safer, whether in hospitals or at home, and in so doing, to help nurses, doctors, managers and device manufacturers save lives. We delivered many successful insights, which are still available on <http://www.chi-med.ac.uk>.

One of my favourite memories is from when we did a visit to the Science Museum to explore how people interact with 'walk up and use' exhibits. Afterwards we regaled to the pub, and Paul Curzon tried

out a magic trick on me. I had no idea how he could keep identifying the card I had picked without him seeing it! We were soon surrounded by lots of people laughing at my predicament. I could just not see what he was doing; I felt everyone else was thinking I was stupid. Of course, Paul was tricking me to look the wrong way, and to make matters worse for me, he kept changing his trick without me realising. He was deliberately fooling me by carefully controlling my attention, memory and expectations.

It was part of CHI+MED's creative research. Indeed, Paul was making a much deeper point: magic shows how you can engineer things so everyone will always make the same mistake at the same point. You can trick people at will. Magicians do this for entertainment, conmen do it to cheat you, email phishing systematically tricks people out of their savings ... and medical device manufacturers do it by accident. We are all often unwittingly fooled and make mistakes we do not understand, though all too often we don't even notice until it's too late. Accidental misdirection in human-computer interaction is as hard to fathom as deliberate conjuring.

Medical devices used in hospitals accidentally perform 'tricks' on nurses every day: the nurses miss critical details in their interaction because they are misdirected by a toxic mix of their clinical demands and poor design. Fortunately, nurses are professional, and either they very soon notice errors or, thankfully, minor errors rarely matter. But sometimes the consequences are catastrophic, and patients suffer. Like me with Paul's card tricks, nurses are surprised and confused about what's happened. That makes them very easy to blame.

Paul's and other CHI+MED work showed how we can use insights like this to control and avoid errors, and therefore how we can design systems to be much safer.

Unfortunately, the popular impression of the 'obvious' and 'easy' benefits of computers mean people far too often overlook the value of the hard scientific work that needs doing. Indeed, a few years after

CHI+MED, we lived through the overwhelming public health crisis of the Covid pandemic – when there were plenty of stories of messed up app and computer system designs. It would have benefitted millions of people if we had had more reliable, safer and easier to use systems. More recently, in 2021, the entire Irish healthcare system lost its computers from March through to September, over six months, with clinicians having to fall back on pen and paper; all because their computer systems stopped working after, yes, a successful phishing attack that tricked someone.

As CHI+MED showed, lives depend on getting interaction safe. As UCLIC's success and impact shows, studying interaction is serious, and really well worth doing. Ann and the CHI+MED project she led has left an amazing legacy.

* Blandford A (PI). CHI+MED: Multidisciplinary Computer-Human Interaction research for the design and safe use of interactive medical devices. EPSRC, EP/G059063/1, 01/10/2009-31/01/2016.

The focal point for the team

Henry Goodfellow, GP & NIHR Clinical Lecturer in eHealth, UCL

We were first introduced during the start of the covid pandemic by an admired college and friend, Elizabeth Murray. I vividly remember that Elizabeth only had wonderful things to say about you and was so excited to have you onboard the long Covid project. Since then, we have formed a wonderful virtual relationship over the course of the last two years. Despite never having met in person, I will look back on our weekly meetings with you and the rest of the team with much fondness. I feel those meetings helped me personally get through the pandemic with the working from home and the isolation, by providing a source of camaraderie and joy. We were so lucky to have such a diverse group of wonderful people from all walks of life working together for such a good cause. You were often the focal point for the team and helped create such a wonderful working environment for all of us.

Your contributions to the project have been immense and I am certain the project wouldn't have been a success without you. You are able to find the simple and obvious solutions to some of the most complex problems in digital health design. At every stage you have a clear focus on what needs to be done next. I am in awe of your dedication to your work, especially how you can take on the mindset of many different patients to really understand how an app will affect each of them differently.

It has been a pleasure and an honour to work with you over the last two years. I am especially grateful to your support during one of my most difficult periods. Your unwavering support during this time helped me tremendously. You have inspired me throughout our time together not only with your dedication to work and integrity but your caring and supportive attitude towards everyone you work with. I am very disappointed that we won't be able to continue working together in the future and you will be sorely missed.

Working with Ann Blandford

Judith Stephenson, Margaret Pyke Professor of Sexual & Reproductive Health, Institute for Women's Health, UCL

I have had the great fortune to work with Ann since 2013 in two main ways: on an NIHR funded research project to create and evaluate an interactive website to aid women's choice of contraception, and in jointly supervising PhD students with her. The Contraception Choices website (<https://www.contraceptionchoices.org/>) is perhaps the research project which I am most proud to have led – it is hugely popular with women and healthcare providers and Ann's contribution was key to its success.

Working with Ann was my first introduction to the world of HCI, which made me wonder why it had taken so long to encounter this modern 'must-have discipline' for much of my research in sexual & reproductive health. It was also a confirmation that experts in this field do not necessarily follow the stereotype of strange computer wizards (or sorceresses?). Anyway, I learnt a great deal from Ann, whom I regard as a true scholar in the best tradition of academia.

But it was probably through the many hours of joint PhD supervision with Ann that I learnt most from her. It was rather like being shown the 'model answer' to a really difficult question. I particularly admired Ann's meticulous and dedicated approach to supervision – nothing that arose from the student was brushed aside and each issue was considered with clarity, insight and constructive feedback. If she entered a competition for the best PhD supervisor, I'm pretty sure Ann would get it!

It was also a very enjoyable experience working with Ann – friendly, wise and professional – with plenty of smiles, laughs and a few confessions all round. *Having dedicated so much of her working life to HCI and to UCL, I sincerely hope that Ann will dedicate her retirement to enjoying herself to the hilt in whatever way she chooses.*

I think about the algorithm; you think about the user!

Daniel Alexander, Professor of Imaging Science, UCL

It has been huge pleasure to work you over the years! Both in various administrative pursuits, in the Department of Computer Science and in the Institute for Digital Health, for example, and in more scientific matters. For the latter, your perspective is so complementary to my own: I think about the algorithm; you think about the user! That viewpoint really made me think differently about medical technology; not just in the projects we worked on together, but in others too. Those thought processes have added a great deal to the work we produce in CMIC and beyond.

I wish you a very happy retirement, although I hope we haven't seen the last of you – I would be very surprised!

To Ann

Jeremy Opie, Postdoc Research Fellow, UCLIC

It has been my great pleasure to have worked with you over the past 30 months, and what an interesting 30 months it has been. I feel very fortunate to have been among your last group of RAs and to have you as my first academic line manager. The knowledge you have imparted to me over this time I will cherish and use throughout the rest of my career. You have also helped me to identify myself as a human factor researcher and that the strengths from past professions are a benefit to my current role. Alongside our research together it has also been fantastic to TA with you on digital health, and to have the privilege to teach with you and discuss the intricacies and difficulties of working with healthcare professionals.

Although our working relationship started off in person with work as normal, it quickly changed to being stuck in our own little boxes at home, trying to figure out what the new normal was. I am especially thankful for your mentoring and friendship at this time, as I was not only separated from my new social and work life, but also from my family. This was a time that was difficult for everyone, but despite the challenges of the world, you were a constant driving force in my life and continued to ensure that I was doing well with regular check-ins even though your stack was still overflowing. I feel as over this period we got to know each other better than if we had continued to just be colleagues interacting within Gower St.

However hard the lockdowns were, one of my favourite experiences interacting with you was during our regular weekly team meetings. During one of our one-on-one meetings, you needed to step out of frame, most likely to open the door for a plumber. When this occurred, I had the idea to grab a screenshot of your background. I then did a little touch-up to the background (removing your name) and then sent it to all of our weekly meeting attendees to set as their

virtual Zoom background. Then on our next meeting everyone started to join the Zoom call with your room as their background, making it appear as though we were all with you. The surprise on your face and the joy it brought to the team during a tough period is a priceless moment to me.

Ann, you have had an amazing career and you have made a huge impact on my life. I wish you all the best with your future plans of writing the papers you have been wanting to write for years, and climbing the rocks you have yet not had a chance to climb.



An inspiring pioneer

Maura Bellio, former PhD student

One word that I would use to describe Ann and my experience working in HCI with her is ‘pioneer’. As history narrates, Ann has been a pioneer since the very beginning of her journey into Academia for her PhD, guided by true passion and curiosity. Her way of chasing progress in Human-Computer Interaction has seen her contributing to AI from back in the 1990s, when reading about research meant picking accurately-catalogued papers in endless rows of collections at the library, to paperless, potentially infinite and overwhelming digital libraries.

Being a pioneer in the early days of HCI, up until now, meant that everything had (and has) to be said about theories and systematic approaches. Ann has a natural talent for structure and order, and through her many papers on methods, models and frameworks, I have learnt how important it is to define an innovative concept and think of it in terms of scalability. Ann and her teams have helped define complex and scattered realities in the realm of behaviour change, distributed cognition, or digital information-seeking. The models they brought to life have been put to test throughout the years, disciplines and contexts, in a lifelong learning experience.

Interdisciplinarity is another key characteristic of Ann’s work and the one that I see as building a bridge between the past and the future of HCI. Although it has always been at the intersection of different areas of expertise, now is a time that requires going the extra mile. Ann has been a great advocate of multidisciplinary and a blended understanding of subject matters. I admire her willingness to learn something new every time and make it a seamless part of her work.

One special mention goes to her focus on HCI for digital health and healthcare settings. This knowledge area is incredibly challenging, and the level of complexity exponentially increases once other disciplines are included in the factor. Her tireless work on clarifying needs and the interplay of hard-to-balance systems has set a precedent for us all to bring this approach forward, in an elegant, curious, creative and structured manner. As topics become even more advanced and sophisticated, special 'multi-expert' figures are already taking the lead in championing innovation through the strength that only team effort can provide.

HCI work at UCLIC with Ann taught me exactly this. That we can advance only with a critical and open mentality. And that for innovative work to make it to a successful finale – or being on the pathway to it – it requires a lot of patience, trial and error, discipline and disciplines.

Working with Ann

Matt Jones, Computational Foundry, Swansea University, UK

I first met Ann on the day we were both being interviewed for jobs – by Harold Thimbleby – at the soon-to-emerge Interaction Design Centre (IDC) at Middlesex University. We shared a typically uninspiring university buffet in a windowless office; I think both of us were wondering if we had made a mistake in applying!

How wrong we were: over the next five or so years we saw the IDC grow and flourish with many amazing colleagues joining us – Yin Leng Theng, Penny Duquenoy, Paul Curzon, Gary Marsden, Paul Cairns, George Buchanan, Gil Marsden, Nick Bryan-Kinns and Bob Fields, to name just a few. For those of you who never visited the original location for the IDC, it was in a big metal box of a building on the North Circular Road in London. From the outside, then, it looked like a super-sized shipping container; but inside, we had a lively, fun and diverse community, shaped in no small part by Ann.

During that time, Ann provided rigorous, impactful and inspiring leadership in information interaction, including early work related to healthcare. Ann was already an accomplished researcher when she joined Middlesex and for me – an early career person – a wonderful example to follow. I learnt that there didn't have to be a tension between doing world-class research and wanting to change the world (for the better). Indeed, by watching Ann I could see that both can be achieved in a gracefully choreographed way. Back then I (with Gary Marsden) was doing what might now be called 'design research' and 'in the wild' studies; whilst different to Ann's methods, I was encouraged by her generous perspectives on what must have seemed to her odd approaches and concerns.

After I left the IDC for New Zealand, I watched from a long distance as Ann with Harold transformed UCL's already impressive human factors research into what you see today in UCLIC. Returning to the UK in 2005, I was a (small) part of the CHI-MED project team; here I learnt more from Ann as she helped steer highly integrated, interdisciplinary research, nurturing in me a passion that has shaped my research career.

While Ann's research contributions are many and widely known, as I hope you can tell from the paragraphs above, the greatest impact Ann has had – and one we should all strive for – are the people she, including me, has encouraged and mentored. Sometimes with a challenging, probing question or critique of our work; sometimes with a puzzled stare; but, always with a humble, genuine concern to build up and motivate. Thank you, Ann.

An ability to see all that is special in others

Mark Warner, former PhD student

The morning of the 24 June 2016 was the first time I spoke with Prof Ann Blandford. The United Kingdom had just announced the result of the Brexit referendum, and without realising it at the time and in an almost poetic act of balance, another significant life event occurred. I had just spoken to the person who would have a profoundly positive impact on my life. After this conversation I applied for the PhD position Ann had advertised and a short while after I had a phone interview, which Ann later told me she had conducted while in a car park. It must have been a nice car park, as a few weeks later I received an offer. Ann took a chance on me, despite my non-traditional academic background. This is Ann. What is special is her ability to see all that is special in others, and to work tirelessly, yet seemingly effortlessly to surface their potential in a way that makes it seem natural. I started my PhD a few months later and was nervous entering full-time education for the first time in my life, having previously only studied part time as a distance learner. This was in no way an environment with which I was either familiar or comfortable. That soon changed. Ann's focus on my integration into this unfamiliar environment was what allowed me to progress and flourish.

From the start, I had weekly meetings with Ann to discuss my work. While I looked forward to our meetings together, I always felt slightly nervous beforehand. Ann would often challenge or question my decisions, assumptions and ideas, which helped me think more critical about my own work. Yet, she would also share in my excitement and happiness when experiencing successes during my PhD; that first paper published, that exciting new finding from an analysis. And our meetings were not just there to discuss work. Ann cares about people, and she made sure I knew that she cared about me. We would often share stories and experiences from our personal

lives, and I took great comfort in speaking and receiving advice and support from her.

In many of our conversations together, Ann would relate back to research projects she had been involved in over her career. She would recall fascinating findings and insights with an infectious level of excitement. These conversations have helped to shape the way I think about and value research, and in particular qualitative research. They have also fundamentally shifted how I view the discipline of computer science. I remember one project that Ann discussed, where she described being embedded within an ambulance control centre. She talked about how computer systems, people and environments worked in combination to influence rapid decision-making. She talked about how the structure of people and place influenced the awareness of people working in these safety critical roles. It was this and many other research stories that cemented in me the critical role that HCI plays in computing. Drawing on these experiences, Ann also evidenced to me the critical role of qualitative work in researching the rich relationship between computers, people and environments. She made me appreciate how the insights from these and many other works are often not generalisable nor 'statistically significant', but are hugely significant often because they are not generalisable.

In my current work, I endeavour to share what I have learnt from Ann with my students. I hope that I encourage, inspire and support both students and colleagues in the same way Ann has supported me. I am grateful that Ann took a chance on me, that she saw my 'special'. We may have lost our membership to the EU on the 24 June 2016, but for me I gained something far greater, and for this I can only say thank you.

A strong focus on investigating end-user adoption

Neil Oxtoby, Dept of Computer Science, UCL

I'm a theoretical quantum physicist by training – not three words that many would associate with human-computer interaction, but this is UCL Computer Science after all...

Ann was a big part of my introduction to the world of HCI. This came via my desire for the computational technology I develop to have real-world impact in medicine and healthcare, and my location in UCL CS.

Allow me to explain.

My arrival at UCL CS in 2012 found me applying my physics and CS training to help solve the mysteries of Alzheimer's disease progression with Danny Alexander in the Centre for Medical Image Computing. We made good progress in the early years, culminating in us leading a European (Horizon 2020) consortium on neurodegenerative disease progression modelling called EuroPOND (2016–2020). Indeed, our success led to the formation of a new group: Progression Of Neurodegenerative Disease (POND). In EuroPOND (and POND) we were (and still are) keen on making sure that the new disease modelling technology we develop has clinical impact, and so EuroPOND included a strong focus on investigating end-user adoption, including identifying possible barriers as early as possible in the design and development phases. EuroPOND included a PhD project dedicated to HCI, for which we recruited Maura Bellio (graduated 2021). Danny had the wisdom to involve Ann as Maura's second supervisor (I was Maura's subsidiary supervisor).

I met with Ann many times during Maura's PhD. I had my own ideas about usability, end-user needs, explainability, etc. – Ann was the

perfect person to correct some of these ideas (!) and to help place them formally within HCI concepts and frameworks. Maura did a great job of both gleaning and synthesising developer and end-user perspectives through interviews, workshops and multidisciplinary team meetings with medics. This would not have been possible without Ann and her UCLIC team! They did a stellar job and I very much enjoyed every discussion!

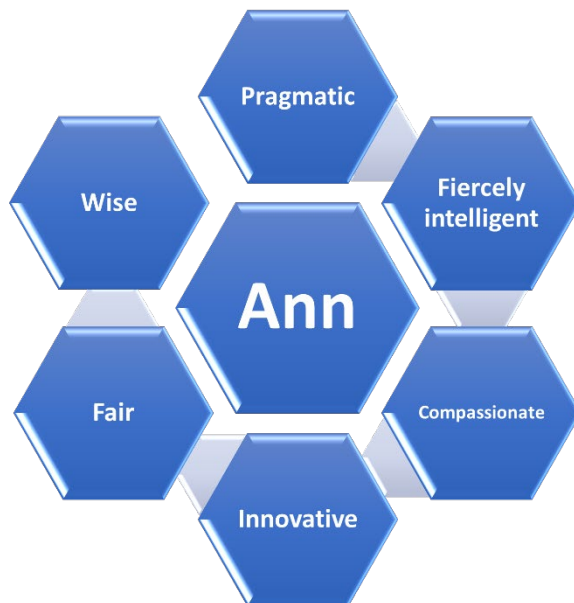
Ann, I wish you all the very best for the future and hope that our paths cross again soon.

Aside: during the CoViD-19 pandemic, Ann joined one of our virtual meetings while out on an afternoon walk. It was then that we realised that Ann and I both live in St Albans! We haven't yet managed to catch up locally, but I keep my eye out for her whenever I'm in town.

She opened up the world of HCI to me

Dr Jo Gibbs, Senior Clinical Research Associate and Honorary Consultant in Sexual Health & HIV, UCL Institute for Global Health

As a clinical academic who had not been aware of the field of HCI prior to meeting Ann, I found Ann inspirational, and she opened up the world of HCI to me. I have worked with, and known Ann, in various roles starting from when I was a research associate. I am unable to describe how much I have learnt from Ann, both from a research perspective but also MSc and PhD supervision, team management and general life common sense. To me, Ann combines wisdom, compassion, fierce intelligence, pragmatism, fairness and innovation to be the amazing person she is. Not known for my artistic ability or creativity, this was my best attempt at illustrating this (!):



An unwavering commitment to the people in her team

Niels van Berkel, Associate Professor, Aalborg University, Denmark

My first interaction with Ann dates to a remote job interview in November 2018. As the interviewee, I had to carefully balance the Australian heat with an appropriate interview appearance – the result being a combination of flashy summer shorts with a shirt and blazer. As an applicant for the role of Research Fellow in Human Factors for Surgical Interventions, I found myself facing a Biomedical Engineer, a Clinical Doctor and a Professor of Human-Computer Interaction. Looking back, this sounds almost like the start of a joke. Instead, this job interview turned out to be the starting point of a wonderful and exciting adventure.

Knowing Ann's excellent reputation, combined with my then blissful ignorance regarding colonoscopies, my hopes for landing the position were not high. I was, therefore, thrilled when I found a job offer from UCL in my inbox the very next day. Asking around for experiences among colleagues who worked with Ann, I was suggested to talk with George Buchanan – a colleague at the University of Melbourne. George, who I only then found out used to be a former student of Ann, spoke with enthusiasm of London, UCLIC, and, in particular, of his PhD supervisor. I was soon convinced that this was the right choice for me. So, I quickly finalised my thesis work, packed two large suitcases and moved to London.

The positive words I heard about Ann proved to be accurate. Working with Ann, both during and following my time at UCL, has indeed been a pleasure. She shows an unwavering commitment to the people in her team. It remains a mystery how exactly she consistently manages to find the time for in-depth input on research ideas, spotting

'bunnies' in writing, and a caring eye for everyone's personal lives. Her leadership remains something I look up to as I reflect on my own. Ann's research has covered a broad spectrum of digital health. It is without a doubt that this work has positively impacted today's clinical work and will continue to inspire scholarship in this area for a long time.

Ann, it is hard to imagine that you will retire. On behalf of myself and all your colleagues, I hope that this will be a very gradual process. While my time at UCLIC was limited, compared to the postdoc preceding me, I will carry your inspiration with me for a long time to come. Thank you for all that you have done for us.

Invaluable lessons for interdisciplinary digital health research: Reflection and reminiscence

Nikki Newhouse, Postdoctoral Researcher, University of Oxford, & Olga Perski, Marie Skłodowska-Curie Postdoctoral Research Fellow, Tampere University and University of California, San Diego

What is digital health? Not so long ago, we might have thought of the term as referring almost exclusively to systemic efficiency within healthcare organisations or the prioritisation of quantifiable clinical improvement. However, the explosion of interest in the digital health field in the name of patient activation, cost-efficiency and provision of equitable healthcare has seen a welcome turn towards interdisciplinarity, driven in no small part by Prof. Ann Blandford and her commitment to translation across scientific disciplines and societal sectors. The development, optimisation, evaluation and implementation of digital health tools require expertise from multiple scientific disciplines – including, but not limited to, HCI, medicine, psychology, sociology and engineering. Indeed, people working to develop digital health tools have traditionally been firmly grounded in one of these disciplines, each with its own terminologies, tacit ways of working and metrics for success.

This was the playing field we entered back in 2014/15 as PhD students, both supervised by Ann. As a pioneer of interdisciplinary working, Ann encouraged us to seek out a research environment in which influences from multiple disciplines would inform our work. As such, Olga worked with Ann, Prof. Susan Michie (UCL Department of Clinical, Educational and Health Psychology) and Prof. Robert West (UCL Department of Behavioural Science and Health) to explore how

we can define, measure and promote user engagement with digital health tools for smoking cessation and alcohol reduction. Nikki worked with Ann and Prof. Elizabeth Murray (UCL Department of Primary Care and Population Health), exploring the role of technology in supporting women's wellbeing at the transition to new motherhood. Early supervision meetings were often observations of an academic masterclass in formidable disciplinary debate: *What do you mean by implementation? How 'systematic' do we have to be when reviewing literature? What is evaluation? Does theory matter? Where is the target user in the development process?*

These debates took on a life of their own and became a primary focus for a growing group of PhD students who were working (independently and increasingly, together) on interdisciplinary digital health projects and who met regularly to discuss this exciting, evolving narrative around digital health. Ann encouraged us to take this further and we took on the mantle of facilitating the UCL TechSharing Seminar Series (<https://ucltechsharingseminars.wordpress.com/>). With Ann's support, we obtained funding in the form of a small policy grant and successfully ran a series of interlinked seminars. The series aimed to foster knowledge exchange and collaboration between academics, clinicians, policy-makers and industry professionals with an interest in digital health. Attendees participated in interlinked events to share their experiences of creating policy, research and/or commercial impact and led to the creation of a diverse and vibrant community of enthusiastic professionals who were (and are!) committed to the development, evaluation and embedding of technology innovation in the UK National Health Service. Ann remained a constant presence in this endeavour, whether it be helping to secure speakers, or herself contributing as panel discussion moderator. Indeed, Ann drew on the learning from these seminars in combination with the growing need for interdisciplinary 'translation' when she brought us together to write the 'Seven lessons' paper (Blandford et al., 2018). The paper

focused on research and development for interactive digital health tools and sought to highlight the deep differences that can catch people unawares and make interdisciplinary collaborations challenging. Crucially, Ann wanted to ensure that the paper enabled people from different disciplinary backgrounds to work together with better mutual understanding to generate new knowledge about digital health tools. The ‘Seven lessons’ paper has, since its publication in 2018, proved an invaluable starting point for new PhD students and experienced researchers working at the intersection of technology and healthcare.

This focus on mutual understanding and supportive collaboration is at the heart of our experience of working with Ann. Indeed, for us both, we learnt crucial lessons around the importance of fostering empathy when working in interdisciplinary contexts, taking an interest in research outside of one’s immediate scientific discipline, valuing and being curious about the ‘other’, and being brave enough to ask questions and ‘be’ interdisciplinary, even when it means challenging the status quo. As we both now move into our own careers, leading our own projects and supervising our own students, we are proud to be part of a new generation of interdisciplinary digital health researchers carrying Ann’s legacy forward.

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Intellectual humility

Stephann Makri, Senior Lecturer, City, University of London

Working with Ann has been immeasurably formative. It has not only shaped my academic career, but also myself as an individual. From curious MSc student, to diligent PhD student, to dedicated academic, Ann's influence has provided firm steerage and the strongest possible moral compass. In particular, Ann's qualities as an inspirational leader, academic with the highest integrity and researcher who places such emphasis on rigour, have guided me through my academic career so far and will no doubt continue to do so in the future. Ann demonstrates a rare quality among academics – intellectual humility – and this is a quality I try to emulate and propagate, especially through engaging with my own students. To quote influential mathematician and astronomer Nicolaus Copernicus, *'To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge.'*

When looking forwards, such as when trying to shape the future of HCI as a discipline, it's often useful to look back – to how the past has influenced us. Ann's strategic vision for HCI – with people and pragmatism at its centre – has undoubtedly helped shape my own HCI vision during my academic research career. Understanding the rich detail of user interactions to propose design questions and solutions (something which much of Ann's work has focused on) is a mainstay of my research, as is following a rigorous approach to qualitative research focused on understanding the complex 'hows' and 'whys' of user interactions. Ann is also shaping future generations of HCI students and researchers; I regularly hear from my students that the book we co-authored on qualitative HCI research (Blandford, Furniss & Makri, 2016) has helped guide their dissertation research.

Looking forwards to future HCI research challenges, Ann's interest in Human-Information Interaction (HII) – focusing on how and why people engage with digital information environments has paved a long-lasting multi-disciplinary research path for me. My research has now started to tackle important HII-related societal issues, such as understanding the human experience of misinformation to try to find new, more effective ways of combatting it and the impact of social and algorithmic filtering (e.g. through 'echo chambers' or 'filter bubbles') on people's beliefs and behaviour, to reduce polarisation and encourage autonomous view formation and change free from undue influence. Almost all my research in HII continues to have at its core understanding people and their experiences interacting with information, as well as a strong focus on proposing new ways of informing the design of the next generation of digital information environments. Ann inspired this strong HCI focus on understanding people's engagement with information to inform design – a focus that has become increasingly recognised through the establishment of conferences such as CHIIR (ACM SIGIR Conference on Human Information Interaction and Retrieval) and expansion of HCI-influenced work in Information Science journals such as *JASIST* (*Journal of the Association for Information Science and Technology*).

Ann, thank you for everything you've taught me. Not only about HCI as a discipline, but also how to be the best academic I possibly can – embodying key academic values such as fairness, integrity and equity. I will continue to pass on what I have learnt from you to future generations of HCI researchers.

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A legend

Romy Beattie, former Teaching Administrator, UCLIC

How I see Ann... an ageless human being... thanks to her ability to choose to be at the edge of everything surrounding her. Ann always gave me the impression that she knew exactly what she was going to achieve in everything she was working on. There was nothing coming her way that would stop her in creating and achieving her goals exactly the way she wanted.

I have huge admiration for Ann, and I am eternally grateful for what she did for me. She always knew in her heart what was the right thing to do, and she chose always what was right. She knew that, to continue to thrive and grow, we must accept the new, adapt to it, make it familiar, and with that perspective, she was always on the look-out to create new research, new interactions, new experiences which fed her soul, and made her a legend in the HCI field and UCL.

There are some experiences that I will hold in my heart with love about my interactions with Ann.

One of them was when Ann asked if I was happy working at UCLIC, and I told her that I was afraid of being fired because of my minutes, how I was writing them, as I was told that was no good. She asked me to give her the next 'minutes' – I typed them for her to read. So I did, and after reading them, she said to me: 'Perhaps the way you write your minutes will never be the way I write minutes, because English is not your first language, but I can assure you that it is clear, and I can totally understand everything you communicate, therefore I want you to know that you will never be fired because of this'... thank you Ann, I was so scared of losing that job.

Then, when I applied for the permanent job at UCLIC, I was so nervous that I got the time wrong, and I arrived one hour earlier, which did not help because I saw some of the British candidates. At that

moment, I thought in my heart, I will not get the job (because of the way I write in English, and I would totally understand if they chose someone native that could write minutes or emails in 'proper English'), so I prepared myself psychologically to receive the news that I was not selected. I was last to be interviewed, and Ann asked me to wait for her, so we could walk together back to the UCLIC department at Alfred Place at the time. We arrived at the building, and she asked to go by the stairs, and while going up by the stairs, she said: 'So Romy, we made a decision, and we decided for you to get the job', but in parallel, my mind could hear only through the lens of my fears, and I was so focused on acting cool with the bad news so I understood that 'I did not get the job', and I said, 'Of course, I totally understand your decision Ann, it is OK', and then she said, 'Did you hear what I said?', then when I stopped and she repeated, I was like 'OMG, thank you so much', and I had the best feeling of my life after so much struggle. As you can see, Ann is a powerful woman and I know Ann, that you know it, and I am grateful for you using it wisely.

Ann is respected and admired by so many, and on that note, I truly see from where I am standing, compared to many others, she is choosing to retreat from her activities with grace and a sense of proudness that she must rightly feel for herself.

Ann, sometimes we speak in metaphors, but it is because this is an elegant way of writing amazing things about someone.

I am grateful for the opportunity you gave me; it meant so much as you can only imagine.

With love and warm regards, always.

From the wickedest doughnuts to the best aubergine: Ann's influence on her students

Simon Li, former PhD student

Ann was my PhD supervisor from 2002 to 2006, and I was Ann's first PhD student at UCLIC. Like many other contributors to this publication, I feel proud to have been taught by and worked with Ann, and it is an absolute pleasure to write this short piece to honour Ann's contribution to UCLIC and her influence on her students.

The Wicket Doughnut Machine was a product under Ann's supervision (alongside with co-supervision from Paul Cairns and Richard Young). To be honest, I did not expect much from the fictitious toy task that we came up with, except for fulfilling my PhD thesis. Therefore, it was an utter and rewarding surprise to see that the task paradigm had led to a series of investigations into errors and interruptions (carried out both at UCLIC and in the USA) for a number of years after I left UCLIC. Looking back, Ann was able to achieve beyond her immediate expertise at the time, namely, running laboratory-based experiments. Despite differences in academic background between Ann (maths and AI) and myself (cognitive psychology), Ann's intellect and supervision guided me in the most fruitful research direction, resulting in contribution to knowledge outside of her own expertise. Now that I am an academic myself, I have yet to master the same skillset.

Despite Ann's incisive questioning throughout my PhD, she never questioned why I had named the task paradigm as 'Wicket Doughnut Machine'. The irony is there is an error in the name, which I did not know until Anna Cox asked me the reason behind it. It was intended to mean that the doughnut machine was a bit unhelpful, to which I then learnt from Anna the correct spelling of the word! But it was too late for correction at the time because the task paradigm had already

been submitted for a conference publication. Ann, did you ever notice the error?

I have kept in touch with Ann to this day ever since I left UCLIC in 2006. The influence of Ann on me is profound: as a researcher, Ann has reminded me that running behavioural experiments is only one way of addressing certain research questions. From time to time, the reminder would pop into my head and allow me to approach HCI problems with open-mindedness and academic maturity.

As a supervisor, Ann not only helped me grow intellectually, but also helped me get through some personally challenging times during the PhD, for which I am forever grateful. Ann has always been a role model for how I should treat and care for my own students.

While the doughnuts from UCLIC were fictitious, Ann makes real-world grilled aubergines with tomato and mozzarella; and they are the best! Ann knew I liked them and made them again for my farewell before I left London.

Ann, thank you for everything!

Building more ‘human’ human-computer interactions

Sheila Pontis, Honorary Research Associate, UCL

My career can be divided into two periods: before and after my time working with Ann. Right after finishing my PhD, ten years ago, I joined UCLIC to work with Ann as a research associate. While I worked with her on the same floor for only a little over a year, we continued working together remotely for quite some time, and since then I have considered Ann as my mentor, who always has had the time to answer questions, give advice, or write a letter, even when I know she is incredibly busy.

We worked together in various projects of different topics – sensemaking, information seeking, visual analytics, serendipity – where qualitative research was the common denominator to understand diverse populations and domains. Although my background isn’t in HCI, but in information design, since the first day Ann welcomed my difference and encouraged me to value my own expertise. For my first project meeting with her, I shared what I learnt from the literature review I was working on as diagrammatic summaries (see Figure 1*). I remembered her surprised face and me thinking: ‘Oh, this is not the “academic” way,’ but she was amused: ‘This is the first time someone has presented research in this format,’ she said. Collaborating with Ann in such range of projects expanded my understanding of HCI and showed me the potential of qualitative research for design and beyond.

What has been most inspirational from Ann’s guidance has been learning how to be a true researcher and develop a genuine curiosity for learning from, with and about people. In design practice, doing research has become relatively common, but doing it well remains incredibly difficult. Ann is, to this day, one of the few people I know

UKVAC Joint Research Project [Dec 2012]
PHASE 1: Overview

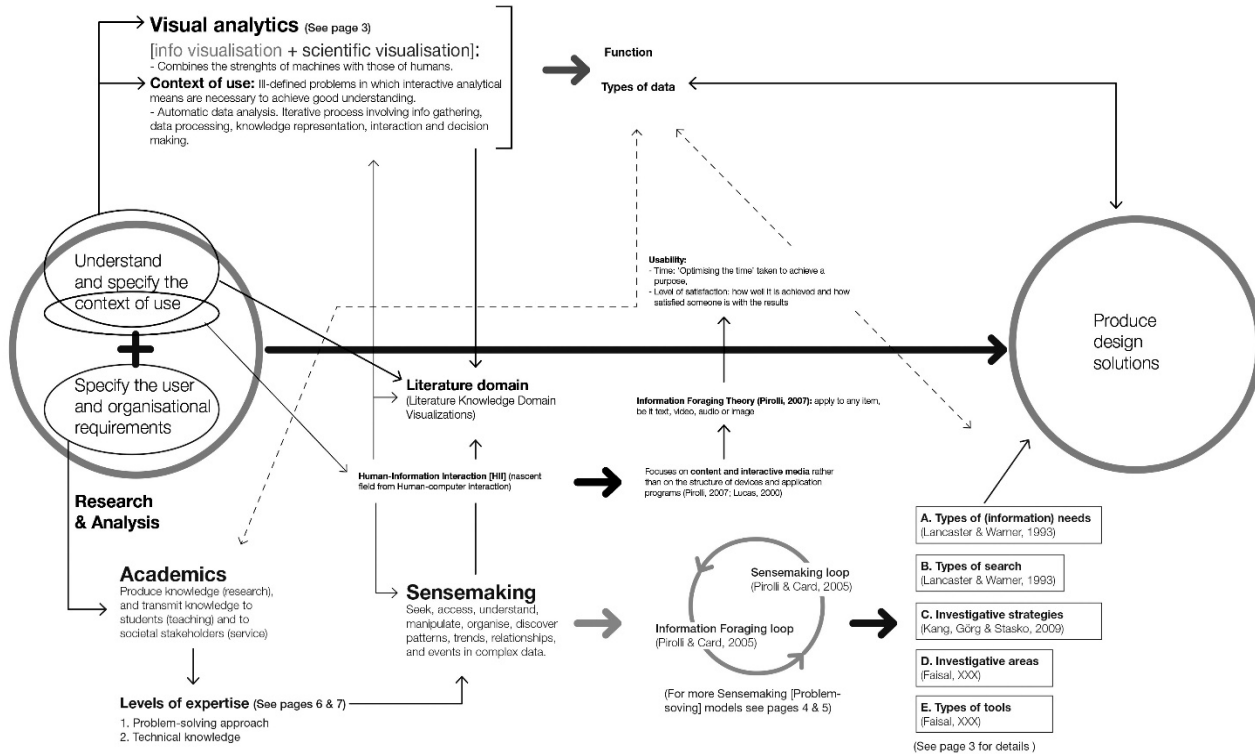


Figure 1

who can explain why qualitative research is important and how to do it ethically and rigorously, so it contributes valuable insights to a project. Her wisdom has shaped the way I design, research and teach by adding a layer of depth and rigour but also empathy –understanding who you are designing for has become central to my work. I have made one of my goals to bridge research and practice, and help other designers become familiar with qualitative research, understand its potential and do it in a way that truly helps to address others’ needs.

Inspired by my experience with Ann, I wrote a book on field research for information designers where I bring the rigour of academic research and common HCI methods into design professional practice. The more we can spread the value of research to every domain, as Ann has done during her career, the more we can design more ‘human’ human-computer interactions.

* *Source:* Literature overview for The Nobel Laureates (NL) Problem. UKVAC Project 4112–46065, 2012-2013. Joint project between Middlesex University, Imperial College London, University of Oxford, Bangor University and University College London.

A wonderful mentor

Soojeong Yoo, Research Fellow, UCLIC

Prof Ann Blandford is a great mentor and role model for ECRs and students.

Thank you so much for being such a wonderful mentor on my postdoc journey at UCL and while I was settling in the UK.

I've learnt so much from you. You've inspired me to learn more and go beyond my limits and to make me be a better researcher and professional academic career in future.

I will always be grateful to you for your support and kindness.



Qualitatively different: Ann's approach to qualitative data in HCI

Professor Paul Cairns, University of York

Back in 2001, UCLIC was founded as an evolution of UCL's Ergonomics Unit. Ann Blandford and myself joined Harold Thimbleby, the first Director of UCLIC, as the new wave of staff to teach on the MSc in Human-Computer Interaction with Ergonomics. Around that time, HCI was also going through a new wave.

Digital technology was moving away from functional, work-specific computers to ubiquitous, multi-purpose, personal devices and moreover ones that were connected to a burgeoning information space through the Internet and the World Wide Web. Remember that many devices that we now take for granted did not yet exist. The very first iPod appeared at more or less the same time as UCLIC (though unlike UCLIC, it has now been discontinued). And Facebook and Twitter were still several years in the future.

HCI was, therefore, moving away from looking at the engineering of interfaces to achieve specific well-formulated goals in a work environment to understand how interactions, situated in complex physical and social contexts, led to experiences that users valued (or not) (Bodker, 2006; Harrison et al., 2010). This move meant also embracing new methods. The more formal and quantitative methods of the engineering paradigm needed to be complemented with the insights of the lived experience that could only be found through more qualitative methods. Ann, in many ways, was already ahead of what the rest of HCI was only beginning to realise. In the 1990s, with others, she had developed a formal model of user interactions (e.g. Blandford & Young, 1996) called Programmable User Models (PUM). This is very much in the engineering tradition of HCI. The formal model is a logical method that leads to the better engineering of interactions. Such methods still have their place today. Indeed, the design of email systems leading to people forgetting to include attachments is an example in Ann's

work using PUM (Blandford & Young, 1998) and is still not solved in many current systems.

At the same time, Ann also knew that such methods were not enough. For formal models of interactions, or any other engineering method, to be useful to designers, she also needed to understand the lived experiences of those designers (Blandford & Rugg, 2002). And she was clearly recognising, more widely, the critical role of experience in the uptake of systems, not just the experience-based apps like SnapChat and Spotify, but in the more functional and productive software systems that many professionals use every day. With Anne Adams, Ann was at the vanguard of using Grounded Theory as a method in HCI (Adams & Blandford, 2002) to reveal what people actually do as opposed to what designers think they do. This use of qualitative analysis became a persistent theme in her work (e.g. Makri, Blandford & Cox, 2008; O’Kane, Rogers & Blandford, 2015).

For those of us also adopting qualitative methods in HCI, we were realising that, whilst qualitative methods had grown out of the Social Sciences, the goals of these methods in HCI were very different. We were not only trying to provide an account of the social context but were also interested in understanding how that social account informed interactive systems and their design. There is a certain pragmatism in HCI that means whilst an ideological commitment to using ‘the’ method has its place, it is secondary to the insight we gain about interactive systems. Ann recognised this pragmatism a long time ago which led her to provide the tools to treat qualitative data with respect but to not lose sight of why we were interested in it. These she characterised as semi-structured approaches (Blandford, 2013).

Despite spending a lot of time thinking about statistical methods, I have always valued the qualitative methods that can provide the conceptual foundations from which quantitative approaches can be developed. Ann’s work has been crucial in making those approaches available to HCI researchers more broadly. There will always be a place to understand the account of qualitative methods from the social scientists who developed them but I also tell my PhD students not to lose sight of the fact that, as HCI researchers, we are (not only) social scientists. And to do that, I point them to Ann’s work.

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‘People, Idea, and Things – In that Order’, *John Boyd (1927–1997)*

Annie Lau, Macquarie University, Sydney, Australia

I very was fortunate to be part of Ann’s group back in 2018, when I spent two years at UCLIC during my visiting fellowship. Before meeting Ann, I had heard of many amazing things about her, initially from her published work, but later from my friend and colleague, Simon Li, who was one of her early PhD candidates. I was in a vulnerable state in my career when I joined Ann’s group. On the outside, it appeared I had it all. I was on a research fellowship, where I could conduct my independent research and spend time abroad. But internally, I was lost, not quite sure what was the next ‘idea’ or ‘thing’ I ought to be working on; while at the same time, trying to find a new ‘normal’ after returning from maternity leave. I was feeling deflated, worried and exhausted – not quite aware of what I needed to know, let alone what to do.

During this period, I found UCLIC and Ann’s group to be a safe and nurturing environment, a place where I was able to rebuild my confidence and rediscover myself. Under Ann’s mentorship, I was very fortunate to be given the opportunity to: supervise MSc students; meet and interact with many of the accomplished early-career researchers (ECRs) and students in Ann’s group and at UCLIC, where there were wonderful discussions at QUIDDLE, corridor chats and seminar series; and collaborate with other UCLIC colleagues on student supervision and research projects.

But what was most striking was the way Ann guided, mentored and shepherded her team. The focus she places on People (especially ECRs and students) was palpable. I was amazed at how much care and time she spends with her team. Some of the memorable

moments I have of Ann include the following: 1. Regular team mentoring sessions, where she would spend almost 1.5 hours every few weeks guiding us through important issues in academia which not many people talk about. This was before Covid, and she would often bake and bring cakes along to these sessions! 2. Annual Christmas gatherings, where she would bring people together who had worked with her before from all over the world, to stop, reflect, catch up and send each other well-wishes. 3. She is so time-poor, but she always has time to give. Her emails would always contain thoughtful and practical advice, filled with personal and delightful anecdotes. I remember one occasion when a journal gave us very short notice for a manuscript submission, and Ann managed to give us very detailed feedback on time a few days before Christmas, while she was caring for family members who had caught Covid!

These are indeed special memories. My mentor Enrico Coiera once taught me the importance of '*People, Ideas, and Things – in that order*'. Ann demonstrated to me *in practice* how to put *People*, especially ECRs and students, at the front and centre. I believe that is indeed the future of HCI, the mentoring and nurturing of the next generation. When people are well taken care of, ideas and things will naturally follow. That is indeed the insight I will carry with me throughout my academic career.

Ann, you are a role model to many of us. We wish you all the very best as you enter this new adventure in your next chapter. I look forward to our annual Christmas gatherings. Take care and keep in touch!



Information technology, medication safety and friendship: looking back and looking forwards

Bryony Dean Franklin, Professor of Medication Safety,
UCL School of Pharmacy

Looking back...

It was just over ten years ago, on 1 January 2012, that the School of Pharmacy, University of London, merged with UCL. As might be expected, the merger was viewed with a mixture of trepidation and excitement in various different proportions among staff and students of the School of Pharmacy. One of the sources of excitement was the opportunity to find new collaborators at UCL. With this in mind, I remember Nick Barber and I going out to find interesting people who were studying topics that overlapped or complemented our own research interests – which is how we found ourselves in Ann’s office. We heard about the work that Ann and her team were doing in healthcare, using a human factors approach to study technologies such as infusion pumps, and decided to look out for opportunities to work together.

That opportunity came to fruition when we decided to apply to the NIHR for a grant to study errors associated with the use of infusion pumps to administer medication in English hospitals, with Ann and I as co-leads, collaborating with a team who had already done similar work in the USA. The ECLIPSE (‘Exploring the Current Landscape of Intravenous Infusion Practices and Errors’) study was successful in gaining funding, took place between 2014 and 2018, and represented a really exciting and enjoyable collaboration between the School of Pharmacy and UCLIC. I really enjoyed working with Ann on this project – both admiring and learning from her different background to mine, her ability to see patterns in data, her way of asking

insightful questions that get to the nub of the issue, and all with a very inclusive and collaborative approach. Ann is also one of those very rare people who can see both the big picture and the detail.

Following ECLIPSE, Ann and I applied for IMPACT funding from UCL and Cerner to fund a PhD looking at how hospital electronic prescribing systems might affect inter- and intra-professional communication. Following funding, we advertised the studentship and then jointly supervised our successful candidate, Soomal. Again, I had the privilege of working with Ann, learning more about the HCI literature and research paradigms, but also admiring her incredibly well-organised approach to planning and conducting her work.

In parallel with all Ann's inspiring work in academia, it's her love of life and her kindness that have also brought such joy to our various collaborations. Just a few examples include Ann's love of climbing, travelling and her family – and her kindness in all situations and particularly following the death of my mum.

...Looking forwards

Working with Ann has enhanced my understanding of HCI as a rigorous field of research and cemented my view of the importance of collaboration between HCI researchers such as Ann and those of us in other disciplines. Our collaboration has also emphasised how important HCI is in relation to the technologies used for the prescribing, dispensing and administration of medication and the implications for medication safety. I wish Ann a happy retirement, with more time to do those things that bring her joy, and very much hope that we can continue to keep in touch and collaborate in some way.

The two Professor Blandfords hypothesis

Richard Butterworth, former Research Associate

The only rational explanation for Professor Blandford's academic output is that there are two of her. Otherwise, how does she have time to eat or sleep?

I proposed the two Professor Blandfords hypothesis when I worked for her as an RA. At 5:30pm one Tuesday evening I popped my head into her office and left her a draft paper we were working on for comment. She was just packing up to go home and put the paper on her desk saying she'd look at it when she got a chance. I then walked home, cooked a dinner, watched a bit of telly, had a bath, went to bed, slept, got up, had breakfast and walked back to work for 9:10am. On my desk was the paper from the previous evening completely covered in Ann's comments, she'd rewritten four sections herself, updated the lit review, spelling and grammar checked it, and translated the abstract into Italian and Cantonese.

This is only possible if there are two of her. Or that coffee she drinks is even stronger than it looks.

There have been recent rumours put about by Dr Who fans that she found a temporal worm hole in Cambridge and uses it to have 48 hours in her day, but such explanations are trivial to falsify.

One of her, or two of her, or whole legions of her, I can honestly say that I have never worked for anyone else who I felt to be completely on **my** side, looking out for my best interests, and willing to stick up for them. Even when my best interests weren't the same as the university's best interests, or even – probably – her best interests. Thanks Ann(s)!

A brilliant storyteller and teacher

Roos van Greevenbroek, Research Fellow, UCLIC

I was fortunate to be taught by Ann as a student during the HCI MSc 2019/20, but also to have worked with Ann as a researcher on the SEQUENCE Digital project since May 2020.

As a student, I learnt that Ann is a brilliant storyteller and teacher. She was teaching qualitative methods as part of Interaction Science and explaining to us about the information-seeking and sense-making framework. I sometimes found it difficult to follow as I'm more of a visual thinker, and Ann was mostly focusing on the conceptual explanations. However, this soon changed, as Ann told us a story about how she went to Brazil, the land where women wear very tiny bathing suits, and packed a 'regular' bathing suit herself. She was surprised of the looks she got when she went to the beach and was the only one wearing something with 'significantly more material' – having made sense but not meaning of the information that Brazilian women wear very tiny bathing suits. My visual thinking brain was firing away on this scenario, and I remembered this framework so well that it has shaped my perspective and approach when doing HCI research. The way in which Ann brings out the humanness in her observations and reflections inspires me.

After the HCI MSc I was a researcher in the SEQUENCE digital project with Ann, where we worked (as the only 'HCI-people') alongside a team of health psychologists and sexual health clinicians. Together we were developing an online sexual health clinic (eSHC) where people can get treatment for STIs online through an algorithm of questions that checks whether it's safe to prescribe treatment. We experienced ongoing interesting challenges of working with non-HCI people, in particular with clinicians. I learnt that Ann is incredibly reflective and brilliant at identifying and vocalising assumptions and asking pertinent and radical questions. Through her observations and

questions, our team and I learnt that HCI people and clinicians have conflicting processes where clinicians focused on doing a RCT first with a sub-optimal version of the eSHC and adjusting the eSHC to fit the context after the RCT, while HCI focused on developing the complete eSHC first to meet user needs and context fit, and then doing a RCT. Where clinicians forget how design alterations after the RCT can affect users and health outcomes differently, HCI builds a perfect 'solution' without knowing whether it's really clinically effective.

Ann's reflections and questions helped us understand that our different disciplines cause us to have our own assumptions, which are so normal for us we don't even think about communicating this on a level that is informative for others. She equipped us with a better understanding of each other, making us collaborate better as a team. It shaped my understanding of HCI in practice and working with (or rather accepting) the fuzziness of the real world, while being able to look at this with interest.

Many thanks, Ann, it was an absolute pleasure learning from and working with you.

The brightest of intellects with the biggest of hearts

Aneesha Singh, Associate Professor, UCLIC

Prof Ann Blandford was the director of the UCL Interaction Centre when I first joined as a PhD student. This was over a decade ago! At this point, Ann seemed to be at a pinnacle already, a world-renowned HCI researcher, full professor, and Director of one of the foremost HCI groups in not just the UK, but the world. But resting on her laurels is not one of Ann's trademarks – as we all know she is an excellent climber – going higher always reaching new heights and happiest when doing so. And always an inspiration!

I have had the privilege to observe at close quarters how passionate Ann is about embedding HCI in health research, and how she tirelessly works to convey the importance of user-centred approaches to designing healthcare technologies. In my time at UCLIC, I saw Ann start the Institute of Digital Health, which later became Institute of Healthcare Engineering, working on a variety of challenging projects related to digital health. Ann is a flagbearer for interdisciplinary research – with her HCI hat on, she has collaborated widely on projects with clinicians, behaviour change experts, engineers and other disciplines. I worked with Ann as a postdoctoral fellow on one of these projects to investigate the role of apps and online interventions for prevention, early diagnosis, referral to care and ongoing management of HIV, particularly how people made decisions around HIV self-testing and seeking care. During this time, I was influenced by Ann's earlier work on information-seeking and sense-making in my approach to the project. Our paper in CHI 2019 on 'Negotiating HIV-Related Digital Resources' (Singh, Gibbs & Blandford 2019) illustrated how technological resources designed to provide information related to people's health in life changing

situations often ignore how people feel, neglecting to provide important information and emotional support and reinforcing stigma. Ann is excellent at identifying patterns. This makes her an excellent qualitative researcher. She is reflexive not just in analysing data but also in the ways we work. Thus, beyond contributing insights to the exciting research with a great team on this project, Ann had conversations about challenges around working in interdisciplinary teams with us and her other team members. This culminated in the paper, led by Ann, on 'Seven lessons for interdisciplinary research' (Blandford et al. 2018) and focused on enabling people from different disciplinary backgrounds, specifically HCI and Health, to work together with better mutual understanding and how future interdisciplinary research could be better supported.

Ann's mentorship has been a constant presence for me throughout my academic career. I have always looked up to her. In my PhD years, she was my first-year viva examiner, a milestone I approached with great trepidation. She was also my first and only postdoc boss. When I took on my first academic position at UCLIC, she extended her warm support and shared both opportunities and wisdom with me. In the pandemic years, she reached out with support and handsewn masks for me. My children also got one in Pokemon patterns. This is quintessential Ann – the brightest of intellects with the biggest of hearts. I respect and adore her in equal measure.

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