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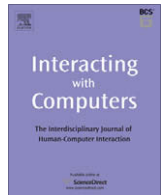
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Inventing HCI: The grandfather of the field

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ABSTRACT

Brian Shackel is considered by many to be the grandfather of the field of human–computer interaction. The present paper provides a commentary to Shackel's seminal (1997) paper on the field, "HCI: Whence and Whither" with accompanying observations of his life's work and intellectual contributions.

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1. Recruiting Brian Shackel

When I was invited to edit a special issue of the *Journal of the American Society for Information* (JASIS, now JASIST) on the topic of Human–Computer Interaction in late 1995, it was a chance to acknowledge formally the growing importance of HCI to the information science field. For sure, HCI had been incorporated into information systems courses at some schools, and senior IS faculty such as Chris Borgman and Gary Marchionini had published in various HCI journals and conferences over the preceding decade, but in committing a full issue to this topic, JASIS was recognizing the emerging centrality of HCI research to this domain.

Once I had agreed to take this project on, the first name I thought of as a contributor was Brian Shackel, then close to retirement. Memory suggests that he did not need a lot of persuading to contribute. However, he and I went back and forth several times via e-mail before Professor Shackel agreed to my suggestion that he write a historical overview. As I recall, he felt that such a paper would be difficult to produce in a timely manner and that a decent historical overview of the field might not lend itself to the constrained format of a journal article. While I would have been happy to receive a contribution from Brian on many themes, I was convinced that he possessed a unique perspective on the emergence of HCI as a serious academic subject; I wanted this story told in the special issue. Fortunately, my pestering paid off and the resulting piece, read now more than a decade later, holds up very well.

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2. The background that fit

There were innumerable reasons why Brian was the perfect writer for such a perspective. As author of what many consider to be the first paper on HCI in 1959 (his "Ergonomics for a computer" paper published in *Design*), he had been instrumental in giving shape to the emerging human factors analysis of software and hardware user interfaces. In founding the Human Sciences and Advanced Technology (HUSAT) Research Centre (later an Institute) at Loughborough University in 1970 (where he remained for the rest of his career), he created the largest university-based research and consulting group for the study and practical application of HCI in Europe. The name of HUSAT has all but disappeared with mergers and re-branding. But, over the subsequent 30 years, HUSAT was at one point in their careers home to many of the leading researchers and consultants in HCI (Tom Stewart, Martin Maguire, Cliff McKnight, Ken Eason, Leela Damodaran, just for starters) – people who have spread its methods of user-centered design around the world. All would acknowledge, Brian had a strong impact on their thinking.

3. And, a personality to match

On a personal level, Professor Shackel never stood still. He was pushing continually for new applications of computing that would serve human needs far beyond the desktop. His early interests in physical ergonomics expanded to interests in mobile technologies for communication and navigation, testing methods for industry, scholarly communication and electronic publishing, the health scares of IT, and of course education for designers and managers in the IT industries.

I recall a plan of Professor Shackel in the late 1980s to have his entire office of material scanned and made accessible only online, so he could experience and others could study what it would be like to live in a paperless office. All of this was at a time before most people had seen an electronic document other than word processor files, and a web browser was not yet invented. The plan never reached fruition, (one of the rare occasions I can remember of Brian not getting his own way), much to relief of some of his co-workers.

With a career such as his, Professor Shackel was the only scholar in the field who could provide an insider account of HCI's evolution. That he was British and had spent his career in the UK only added to my convictions: we simply had to bridge the divide that created two cultures in the field, the American version and the rest. There were also other divides without such neat geographic boundaries (more intellectual and philosophical), that I felt Professor Shackel could move between. Of course, being Brian Shackel, he was not content to just look back. He wanted to end his contribution by doing what he always did, looking forward.

The original draft took a little longer than originally planned, but Brian's was not the only paper to miss deadlines. I soon learned to keep in continual dialog with the authors and to offer insights re emerging drafts as soon as they landed on my desk – well before having a version that we sent out to external reviewers.

4. The times, they were a changing

At the time that this special issue was under preparation, HCI was becoming a mainstream research area. The ACM SIGCHI was then the fastest growing special interest group in ACM (its conference was now in its second decade) and there was talk in many universities around the world of formal HCI degrees. Tom Landauer had just published his excellent *The Trouble with Computers* through MIT Press and serious discussions of the productivity paradox were commonplace. At Indiana, I was facing a battle with computer science over the title of my course, Introduction to HCI, which they felt should not be allowed to exist outside of a computer science department (a rather quaint border dispute resulting from my teaching it within an LIS program). The case for HCI grew to the point where in 2001 we put in place a new masters degree in HCI at Indiana, at the new School of Informatics – one of what is now a long list of such degrees across the US and the world.

In the mid 1990s there was a shift occurring in HCI. One could at last see a future that was not dominated by the formal modeling approach, with its roots in cognitive theories of task performance, or the endless accumulation of usability results from interface evaluations. The CSCW community had developed its own interests in HCI, and the humanities folks were drawn to hypertext structures and genres. MIS researchers in end-user computing started to recognize (and be recognized by) HCI approaches.

Computing was also beginning to become untethered from the desktop. Of course, the early laptops and PDAs such as the Newton were cumbersome, but they pointed to a future of computer use away from fixed office settings. And, in the mid 1990s, everyone was discovering the joy of browsers and the Internet. The downside of this was an almost fanatical dismissal of existing research in some quarters, as the intoxication of new tools suggested that only dedicated new studies of humans using the web could provide guidance. In such circumstances, a historical overview was both timely and required.

5. The progress of HCI

Professor Shackel's paper took as its starting point not his own writings in the 1950s, but the much earlier emergence of ergonomic concerns in work designs from WW1 and even back to

18th century physiology. While there was little space in a paper to deal comprehensively with the earliest origins of interface design, Brian always was quick to point out that he could trace interest in usability back to Thomas DeQuincey, who died in 1859 – and to whom Brian frequently attributed the quotation: “it is not the utility but the usability of the thing that is in question”. He structured the history of HCI into three 15-year blocks starting in 1950 with the emergence of computers and ending with a view of the 1980–1995 period that gave us the familiar HCI journal and conference scene that lives on today. This really was a convenience only. I know that Professor Shackel saw 1969–1970 as pivotal years, with the first publication of a dedicated HCI journal, *International Journal of Man–Machine Studies* (now *IJHCS*) and the foundation of both HUSAT in the UK and the Xerox Palo Alto Research Center in the USA.

But, his time blocks do represent important shifts that mattered for him. The early period was a time of concentration on the technology and its use by a rather homogeneous group of users. The emergence of minicomputers in the late 1960s created a greater concern for the diversity of users whose needs were not as predictable. Serious psychological study of “casual” users (as they were termed, though their use was hardly so) can be traced to this period. Of course, by the time we hit the 1980s, computers were becoming everyday tools for all, and for Professor Shackel, this meant that usability concerns were paramount. There could be no simple design fix for all.

The concept of usability reflected, for Professor Shackel, a zone of influence for HCI professionals where they could have an impact on the design process of new technologies. For this to occur, the field needed to provide methods for assessing usability in all contexts. The operational definition we now routinely employ, characterizing usability in terms of efficiency, effectiveness and satisfaction for specified users, tasks and contexts, was created largely by Brian in his 1981 paper “The Concept of Usability”. While a variety of people have tinkered with the wording, his ideas have had a direct impact on international standards for usability assessment, an important measure of the field's true impact. Standards work is not popular, but Brian recognized early on the importance of HCI's ability to inform standards for design. In my view, too few people recognize his contribution, either to the definition or to the embodying of usability in such form.

6. A human factors strategy

Usability could only be understood contextually. Professor Shackel noted in this paper that HCI had, in part at least, had come full circle by the mid 1990s from its early concerns with systems design. The explosion in personal computing focused attention throughout the 1980s on individuals sitting at an interface. The renewed interest in organizational and social contexts that emerged through CSCW and more socio-technical analyses of HCI seemed crucial to him, and he emphasized strongly the need for the field to address such issues in practical methods for design.

In so doing, he espoused the need for a human factors strategy within the complete design process, a desire that still echoes with many practitioners today. Professor Shackel posed sweeping themes in the history of HCI that ran

- from system supremacy to personal empowerment,
- from single user access to multi-user networks, and
- from augmentation to digital libraries.

In his telling of the history of HCI, there are pressing questions and important funding initiatives. We may quibble, each of us, with the details but his overarching view describes the terrain

fairly evenly. Along the way, he also took exception (or as he put it, had some 'balloons to prick'). He always objected to simplistic analyses of user behaviour or need, especially if presented without any empirical support. In particular, and predating more current criticisms of the web, he felt the advocacy for hypertext and the removal of structure in complex information spaces such as scientific documents to be facile and faulty, a triumph of populism over science which he would never accept in his work on HCI. As many can attest, if you were caught on the wrong side of a Brian Shackel criticism in public, he could pursue his point relentlessly (even if he appeared, while you first spoke, to be asleep!).

7. The future

Professor Shackel ended the paper with a look at the future. He listed seven near-term and seven longer-term issues ahead for HCI.

Nobody can be precise in making such predictions and it would be churlish to score his performance now. Brian based his views on both his lived experience of the field and his passionate belief in progress. It is intriguing to see that he pushed in the near term for larger screens in the workplace (Having said that, I wager that he would have been an enthusiastic early adopter of the iPhone). He also advocated for better naming conventions on the web, a more standard approach to publishing, and better system design methodologies that incorporate organizational factors into the process. Longer term, he argued that theoretical insights would come – but that we first should aim to establish more facts about users and interaction (so as to build a solid foundation for the field). Professor Shackel acknowledged the failure of expert systems to deliver on promises, but he anticipated that virtual reality and simulation software would become far more prevalent. Most unusually for an HCI researcher in the 1990s, he advocated greener technologies to help ordinary people become better world citizens, with domestic IT at the forefront.

8. In retrospect

As I read the paper now, a decade later, I am grateful that I asked (and Brian agreed) to write it, as I now realize that while we anticipated him living a long time and ultimately writing a book on the field (which several of us had often urged), no better telling of his historical view ever emerged than this paper.

I used Professor Shackel's paper immediately in my HCI class and still point people to it for an overview. After reading it, there often is more recognition from students of the dynamics underlying our current technological world and our field's role. Some may find his telling of the HCI story to be too European (and perhaps even too British), but HCI is not an American discipline: it is an international one, and Brian's chapter makes this clear. Sadly, much of the story of HUSAT and of Brian is not easily available on-

line – harsh testimony to the easy loss of history in an age of data smog. One can only hope this is redressed in time. But, we do have this history and Brian's legacy of writings that span the first half-century of HCI's existence.

9. Conclusion

It was an honor to have worked with Professor Shackel. He was one of the fairest men I ever met, able to disagree with you frankly and directly but never allowing personal feelings to interfere or carry over to other discussions. His editing of technical reports, usually with a red pen, was legendary in HUSAT. We all tried to produce drafts that he could not fault, but invariably he found something. He never would allow anyone to employ the term "overall" when discussing data (he always would circle that term and write in the margin "Overalls are what workmen wear!"). I still hoped, to the end, for a book on the history of HCI from one of its founding figures, but it was not to be. This paper is his telling of the history, and while it is brief, we are the better for reading it.

About the author

Andrew Dillon is Dean & Louis T. Yule Professor of Information Science at the School of Information, The University of Texas at Austin.

Between 1994 and 2002, he was a faculty member at Indiana University where he held several positions in Library and Information Science, Cognitive Science, and Informatics. He was the founding director of Indiana University's Masters of Informatics in Human-Computer Interaction.

Prior to this, he was a Research Fellow at the Human Sciences and Advanced Technology Institute (HUSAT) at Loughborough University in the UK, where he worked with Brian Shackel on a variety of research projects related to usability and electronic document design.

Dean Dillon holds a Ph.D. (1991) in Psychology from Loughborough and an M.A. (first class) in Applied Psychology from University College Cork. He has served on multiple editorial boards including *Interacting with Computers*, JASIST, IJHCS, *Journal of Documentation* and JELIS. He has published more than 100 articles on the human aspects of information design and use, and recently received the Rudolph Joenk Jr. Award from IEEE for his co-authored paper (with A. Sengupta) entitled "Query by Templates: Using the Shape of Information to Search Next-Generation Databases".

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