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Human–Computer Interaction

contents

Editorial
from Janet…

This will be my last contribution to *Interfaces* as editor. I am standing down at the AGM in September due to an increase in other commitments. Tom McEwan will be taking over and I am sure will stamp his own style on the magazine. Looking back over past issues I was rather surprised to see that I have been editor for four years so a change is probably well overdue!

That said, it has been an interesting few years in which we in HCI have seen our research, commercial practices and teaching influenced more and more by the growth of the web. In my first issue in Spring 1996 we featured a report on a British HCI Group Symposium on "Hypermedia Usability and the Web", which challenged the HCI community to understand the market and tailor our methods and practices to the web culture. Four years on HCI 2000 takes up that theme: usability engineering for e-business. If you want to know how far we have gone towards meeting the challenge then get along to Sunderland in September for what promises to be a stimulating conference: you'll find details inside.

In that first editorial I was also planning an issue on HCI education ("what should we teach? How should we teach it? And does it make a difference anyway?") and we are still trying to find solutions, again influenced by an ever-changing market. The 3rd HCI Educators' Workshop held at South Bank in April gave a number of us the opportunity to explore some different approaches and perspectives on teaching HCI, as well as to enjoy some respite from actually doing it! Alistair Kilgour reports in this issue.

I finished my first editorial with a plea for commissioning editors: so I'll end on the same note. Editing *Interfaces* can sometimes be a lonely job: please keep Tom busy with lots of contributions. If anyone would like to join the team I am sure Tom would be more than happy to hear from you. As I said back then the only qualifications are ideas, a little time and a lot of tenacity! Why not give it a go?

Many thanks to all who have contributed to *Interfaces* over the past four years: it wouldn't exist without you and my job would've been a lot harder. Three of these deserve special mention. Fiona Dix, our production editor, has often gone beyond the call of duty to ensure an issue is actually published; Xris Faulkner and Alan Dix have regularly produced copy at the last minute to ensure there was something to publish! So Tom – you know who you can depend on!

Janet Finlay, ***Editor***

…and from Tom…

I'm very excited to be taking over from Janet as editor of this legendary magazine.

I studied HCI as a discipline for the first time only six years ago, though I had worked in software since 1987. After four years in the multimedia industry trying to apply these ideas, and two subsequent years at Napier teaching them, my perspectives may be different to some.

I'm a tad overwhelmed at editing for the very people I have revered for so long. I hope you'll forgive any crass vulgarity – or plain ignorance. I do believe that the outside world is both ready and desperate for the ideas of the HCI community.

Perhaps the first stage to greater acceptance of HCI ideas is to improve the interface to them! Although learned journals revel in obscure language, I hope we don't. 'Less is more' in everything we preach, let's apply that to everything we write too!

Tom McEwan
Editor

FORMAL METHODS ELSEWHERE

A Satellite Workshop of FORTE-PSTV-2000

devoted to applications of Formal Methods to areas other than communication protocols and software engineering

sponsored by University of Kent at Canterbury; CNR-Istituto CNUCE

Pisa, October 10, 2000

A wide variety of formal models, languages and methods have been developed in the last two decades for supporting the specification, design, verification, implementation and testing of computer networks and distributed software systems. While considerable experience has been gained in the application of formal methods to the areas for which they were initially conceived, the high abstraction level of these concepts suggests that they could play an important role in several other disciplines such as chemistry, biology, physics and even arts, humanities and social sciences.

The FM-ELSEWHERE workshop, co-located with FORTE-PSTV-2000 at Pisa, will be a forum for researchers who are interested in the application of formal methods to virtually any area of research, except communication protocols and software engineering.

IDA2000

International workshop on interacting with databases

7 September 2000, Greenwich, UK,

in conjunction with the

11th International Conference on Database and Expert System Applications – DEXA2000

Whereas database design has been a major research topic for many years, user–database interaction has not received such great attention. Nowadays, new database applications, namely multimedia and Web databases, are achieving increasing importance, and new technologies, such as those based on the extensive use of graphics and visualization, are emerging.

The purpose of this workshop is to discuss the impact new application areas and technologies are having (or will have) on database interaction modalities.

RIGHT TO REPLY

Make Inter*faces* interactive! We invite you to have your say in response to issues raised in Inter*faces* or to comment on any aspect of HCI that interests you. Submissions should be short and concise (500 words or less) and, where appropriate, should clearly indicate the article being responded to. Please send all contributions to the Editor.

NEXT ISSUE

Inter*faces* welcomes submissions on any HCI-related topic, including articles, opinion pieces, book reviews and conference reports. The next deadline is **15 July** – we look forward to hearing from you.

With thanks to:
commissioning editor: Xristine Faulkner (South Bank University)

To receive your own copy of Inter*faces*, join the British HCI Group by filling in the form on page 19 and sending it to the address given.

cover photo: University of Sunderland – hosting HCI 2000, Usability or else!

Deadline for issue 44 is **15 July 2000**. Deadline for issue 45 is **15 October 2000**. Electronic versions are preferred: RTF, plain text or MS Word, via electronic mail or on Mac, PC disks; but copy will be accepted on paper or fax.

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Usability Evaluation for Virtual Environments:
Methods, Results and Future Directions

This two-part report summarises an international workshop held at De Montfort University, which explored the usability evaluation of virtual environments (VEs). The workshop examined current approaches to evaluation of VEs, the difficulties in utilising evaluation techniques designed for conventional desktop interfaces, and identified gaps in the problem space for future research. Part 1 concentrates on aspects of VE usability; Part 2 (in the next issue of *Interfaces*) will examine the role of different evaluation methods in assessing VEs.

Introduction

Human–computer interfaces have moved from text based through 2D graphical interfaces, multimedia and computer supported co-operative work, to full fledged multi-participant Virtual Environment (VE) systems. Throughout the history of user-interface development, many evaluation techniques have been designed and employed in order to develop more usable systems. However, VEs provide a new set of challenges since they afford many new types of representation and interaction and form a superset of existing user interfaces. In some ways VE technology is still in its infancy although many application areas are now seeing productivity gains. Any one technique of designing or evaluating interfaces is thus bound to fall short of the full set of criteria which are involved with a particular design, system or technology. Usability evaluators need to change their approaches and adapt to the new kinds of interfaces.

VEs are a novel application area of computing technology, demanding an understanding of human–computer interaction and computer-mediated human interaction in virtual spaces. There has been a tendency to ignore or minimise the evaluation of VE applications (Durlach & Mavor, 1995). However, major usability problems have been found, resulting in user frustration and a low system acceptability (Kaur et al., 1996). There is a need for specialist guidance and toolkits for VEs. Standard usability engineering and HCI evaluation techniques such as Nielsen and Mack (1994) do not directly address the usability problems introduced by these interfaces (Steed and Tromp, 1998). In particular, the current criteria for evaluation (usability principles) are only partially applicable to VEs and do not cover the range of issues that arise in VE interaction. For example, additional criteria are needed to cover novel aspects, such as user representation, viewpoint orientation, navigation and presence. However, it is not clear how existing methods should be adapted and the techniques applied to VEs. The differences between VEs and conventional interfaces are not fully understood.

This workshop addressed the usability evaluation of VEs and sought to develop understanding of user interaction in VEs, usability requirements and approaches for evaluation. An initial objective was to establish a dialogue between individuals separated by background. A common understanding of usability and evaluation was promoted through a discussion of definitions and previous work with conventional interface types. The focus of the workshop included theory, the fundamental understanding of VE usability, as well as the practical problem of VE evaluation. The workshop represented an early attack on the problem, where the problem space was outlined rather than concrete solutions provided. The workshop was a one-day event consisting of interactive and informal group discussions, instead of individual presentations. This report summarises the broad and stimulating discussions that took place on the subject of VE usability evaluation.

Part 1: Issues in VE Usability

VE interaction

Chair: Kulwinder Kaur Deol
Contribution: Understanding how users interact with VEs is essential for usability evaluation.
Main question: What criteria need to be considered when evaluating VE interaction?

The problem space for VE interaction was structured into 5 areas (see Figure 1): the technology, human and task which form the interaction experience, the environmental context in which

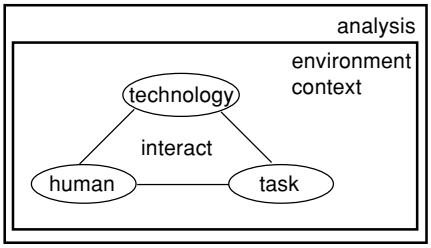

Figure 1: The problem space for understanding VE interaction

this occurs and the analysis of this process by researchers.

Important aspects of the technology were the interaction paradigm (e.g. mouse-based, gestural), the senses and devices/platform involved, the level of object and interaction realism (e.g. simulation, abstract environment) and the type of VE (desktop, immersive, augmented, distributed, hybrid).

Important aspects of the human were their knowledge, motor skills, sensory abilities, attitude/expectations, motivation, culture, imagination, demographics, individual differences and level of interface/domain expertise. Many of these aspects were felt to be particularly important in VEs, as opposed to other interface types. For example, an additional spatial dimension is involved so motor skills are important for 3D manipulations, real world phenomena are often copied to some level so knowledge and expectations are involved and VEs are more exploratory so motivation and imagination are important.

Tasks in VEs can range from structured tasks to more open goals, such as exploration and discovery. The type of task followed the common known applications of VEs, such as education, training, evaluation of designs, etc., and a task analysis was needed to break down and understand these. There were also generic interaction tasks in VEs, which have been detailed in Kaur (1998) as task and action based behaviour, exploratory behaviour and responsive behaviour to system initiated prompts and events. For example, definition of goals, navigation, object manipulation, event interpretation, etc. It was noted that there can be synchronous as well as sequential activity, and the former may be more common in VE interaction since it can involve a number of input devices and is often less structured than interaction with more traditional interfaces. The interaction is also multi-sensory and can have close links with real world actions. Possibilities in the real world can be extended through empowerments in the VE or there can be limitations/constraints.

For supporting interaction, affordances and cues appeared to be the most natural method, and such embedded support was felt to be superior to more indirect forms such as help screens. Embedded constraints could be applied to limit interactions to only valid possibilities. Agents were also discussed as a technique for delivering interaction support and metaphors were discussed for abstract concepts. Where real world concepts were applied and either extended or limited in some way, these needed to be supported so that the user could understand the differences. The trade-offs between guiding the user for efficient and easy interaction against allowing the user to discover interface features for more interesting and challenging interaction were highlighted as an issue for consideration. To interest or challenge the user, motivators needed to be designed into the VE and care was needed not to frustrate the user by incorporating too much complexity. In either case, some level of positive feedback was felt to be important, although it was not clear what form and modality this should take in different contexts.

In summary, although some useful work had been carried out in this area, there was a lack of theoretical and empirical research focusing on VE interaction criteria. Areas for future research included understanding different interaction requirements given different contexts, understanding multi-sensory perception and interaction, and judging the level of support to provide – the discovery over guidance debate. A list of relevant areas of literature was proposed, including HCI models and guidelines (although these would need adapting), literature on learning, engineering psychology (e.g. work with pilots) and semantics/cybernetics.

Navigation

Chair: Chris Hand
Contribution: Navigation is a key interaction activity with VEs that needs to be evaluated.
Main question: What criteria need to be considered when evaluating navigation in VEs?

A working definition of navigation in VEs was agreed, incorporating aspects of locomotion (ie. moving a user's viewpoint or avatar through an environment), wayfinding, orientation and the acquisition of spatial knowledge. The aids and tools that support navigation were also flagged as being important. Current work generally covered most of these aspects, but it was felt that the large body of research in experimental psychology had not been sufficiently taken on board by the VE community. Virtual and real world navigation was similar but not identical and this was important to understand.

Most VE work on navigation involved using similar metrics in measuring the spatial knowledge acquired by subjects: angular error in pointing to unseen landmarks, time taken and length of routes, recall of landmark sequences, etc. There was concern over the lack of consensus in the literature on the use and correlation of the established (2D) spatial ability tests (Guilford–Zimmerman, 1948) with actual performance in VE navigation tasks. A standardised navigation ability test for use in 3D VEs may be more appropriate, perhaps incorporating direction pointing as a good correlate of overall spatial ability.

Other issues that arose included scale, type of environment and frame of reference. Navigation at different scales requires different skills and tools. Darken and Sibert's (1996) definitions of large and small-scale environments were felt to be insufficient. In particular, the definition of a large-scale environment as being one in which it is impossible to view the whole VE simultaneously was debated, since travelling far enough should allow any world to be viewed. On the other hand, perception of detail modifies this: viewing the whole of a very large world from a distance may render small details invisible, which then requires moving in close again. Related to scale is the type of environment: open-country terrains, sea-scapes, office buildings, villages and so on are all quite

different in the demands and affordances presented to a navigating user. Also, does the user only ever see a first-person view of the world, or are they provided with further frames of reference such as out-of-body views of themselves situated in the environment?

In summary, it was felt that single, isolated studies of navigation were insufficient. Wider studies and a consolidation of results were needed. Areas requiring further research included the role of non-visual senses; movement interfaces (e.g. treadmills); the design of non-Euclidean space; the effect of task and equipment on experimental design; understanding visual cues and abstract navigation aids (as opposed to maps and compasses); and assessing and improving the validity of experimental metrics.

Social Interaction

Chair: Jolanda Tromp
Contribution: Social interaction is an important activity within multi-user VEs that needs to be evaluated.
Main question: What criteria need to be considered when evaluating social interaction in VEs?

It was first established that it was difficult, and perhaps unnecessary to develop a single unified model of social interaction. This was because of the variations in real world and VE interactions, and the immature/evolving technology. VE technology brings limits to social interaction, which may be neither good nor bad but need to be taken into account. Re-creation of real world interaction may not be possible, and more importantly not necessary. VE design goals need to be assessed carefully, in particular the needs of the VE and the design of behaviours different from real world behaviours. There may be certain conventions in the VE and different styles of human behaviour to support or different personality-based interaction styles (e.g. strategic vs. tactic). The lesson to take away is that we are presently in a 'pre-paradigmatic' state where it is arguably too 'early' to define a generic model of social interaction in VEs.

However, several important issues could be defined for reasoning about social interaction in VEs:

Context of Use The context of use (e.g. a VE for training, education, business, entertainment, or abstract vs. realistic VEs) helps decide how much social interaction is expected to impact on task performance, how important support for social interaction is and how much detail social interaction should be represented in. The context can include task performance with the application, social interaction inside the VE (e.g. multiple users aware of each other's presence via the VE only), and social interaction outside the VE (e.g. a group of users collaborating on a task using one workstation).

User Representation The need to support social interaction also affects the design choices for user representations. Users can be represented by a pointer, cursor, avatar, text-only, video and speech, or a combination of these things. Users need to be able to sustain awareness of each other and each other's activities. This has a large impact on the user representation and the detail necessary. It may mean that we need to represent facial expressions, gestures, gaze and emotions, as well as the presence of intelligent agents.

Communication Communication in VEs can be supported by different media (e.g. text, audio, non-verbal expressions). In order to communicate effectively users need to have mutual orientations and be capable of understanding each other's viewpoints (e.g. reversibility of perception). This means they need awareness of each other and the capability to monitor each other's actions. VE participants can communicate across and between spaces in different ways from the real world, and so there may be a need for different social conventions. For instance, we might need to create extra support for 'turn-taking' in conversations through an automatic or semi-regulated 'cueing', to support an awareness of the 'flow' of communication.

Groups In order to support group interaction we may need to create special mechanisms to support users in the formation of groups and social networks, and in the sharing of knowledge. These needs can be researched through a social network analysis of the formation, development and 'contents' of group relationships.

Design of the Virtual Space Spaces can either afford or hinder social interaction. VE spaces need to be designed with this consideration in mind.

Reversibility of Perception The ability for mutual understanding and mutal awareness has already been mentioned, but the discussion repeatedly emphasised the need for a reversibility of perception between VE participants as something crucial to social interaction support. When interacting effectively, people need to be able to see/know that they see/know what the other person sees/knows, and that the other person(s) sees/knows that they see/know this. However, creating a VE which accurately represents the viewpoints and abilities of one participant to another is difficult, but we might be able to support participants in novel ways not available in the real world.

Technology Impact Finally, an important topic was the impact of VE technology on users, and society as a whole. VE technology may allow us to interact in new ways, in new kinds of social rules and networks, and it may allow us to develop hitherto unconventional ways of acting or thinking. For example, controlling the interface by means of bio-feedback, or psycho-physiological feedback, navigating n-dimensional spaces, or learning to entertain multiple threads of communication with one or more people. The main issue here is that we should not limit our thinking of the design of VE spaces and interactions to the conventions that have evolved in the real world. However, we must be aware that introducing novelty

may influence stress or coping levels within users and teams.

In summary, answering the design questions for the above topics can lead to a semi-requirements description, which may subsequently be used for evaluation. It was felt it would be worthwhile to work towards a model of social interaction for VEs, which could be developed through exploratory studies where users are observed and the issues of relevance to their interaction assessed, as well as how these issues inter-relate.

Presence

Chair: Anthony Steed
Contribution: Presence affects the interaction experience and therefore impacts on usability evaluation.
Main question: How does presence impact upon usability and usability evaluation?

The ability to generate 'presence' is one of the properties of VE technology that has received most attention in the literature over the years. Whilst the participants in this session each had their own definition of exactly what presence was, everyone agreed that presence was the unique factor that distinguished the experience of a highly technologically immersive system from desktop systems. Presence was thus operationally defined as that state that generated 'realistic' reactions to virtual events. Thus, if the person was present one should be able to observe objective reactions, such as looming reaction, physiological changes and fear responses to all manner of events. Also, in subjective reporting the person should report that they felt within the VE rather than they felt they watched pictures of it.

The discussion touched upon further definitions and the methods used to evaluate the degree of presence that existed within the literature. An interesting thought experiment was suggested: how would you evaluate a VE system that generated a sense of presence for (non-human) animals? The discussion then turned to the relationship between presence and usability. This started from one contentious position statement that argued that presence was the ultimate test of usability for a VE system. That is failures in usability could destroy presence and that presence was necessary in order for an immersive system to be usable. We heard that although many causes of 'breaks in presence' (Slater and Steed, 1999) were due to the display system, others could be attributed to bad usability design of the environment itself. For example, inconsistencies in the design metaphor could lead to misunderstanding of 'fantastic' events inside the VE, which would lead to the person reporting themselves being brought back to the real world. On the other hand, good usability could enhance engagement and awareness within the environment and consequently support presence.

Consistency rules are nigh on impossible to enforce rigorously in a VE due to the lack of fidelity, or even total absence of sensory stimulus in different modalities. We followed this theme with a discussion of how many sensory modalities were required to support an illusion of presence. Generally it was felt that one modality was not enough, and that the combination of consistent and synchronised cues in multiple modalities was far more compelling. Although no evidence for this was cited, it was suggested that multiple modalities were needed for an unconscious reassurance to the person that the cues were in fact 'honest'.

In summary, the following areas were proposed as avenues for research: methods for deciding which tasks require or are supported by presence, assessing whether realism was the only way to support presence, investigating 'background' cues (such as horizon cues) required to support presence, and the development of presence measures that could be used to compare systems in order to start filling out Ellis's 'iso-presence' classes (Ellis, 1996). Usability may well be a factor that could be tuned to create a desired presence level.

Utility

Chair: Howell Istance
Contribution: Utility is an important contextual issue when evaluating the usability of VEs.
Main question: What constraints do the general utility of a VE place on usability evaluation?

A working definition of utility as a 'measure of how well the provision of a VE helps the user fulfil one or more real-world tasks' was adopted. However, the understanding and meaning of utility would change according to the level in an organisational structure. At the top of the scale, there is a social and environmental view of the value and utility of VEs. Lower down, corporate management will view utility of VEs largely in economic terms, either in terms of money saved through their use or money made through their sale. Further down the scale comes the individual, whose view of utility is likely to be related to task, or at least work-related, outcomes.

Initially the dimensions defining a utility space were scoped. One issue was the diversity of meanings and systems, encompassed by the terms 'virtual environment' or 'virtual reality'. Another issue was the range of domains represented in VE systems which extend from purely work-related to those that are purely entertainment related. Between these are systems that have a component of each, so-called 'edutainment'. Quite different criteria, against which utility might be judged, apply at different positions along this dimension. Within work-related domains, utility may be related to the extent of transfer of navigational awareness from the virtual to the real world, or the efficiency in procedure training within a variety of contexts. However, we agreed that there was a danger in restricting the scope of utility to consider only real-world equivalent tasks, as this may prevent discovery of new uses for VEs. Within work/entertainment, utility may be viewed as the level of enjoyment obtained during learning experiences, in addition to a more conventional view of computer-based learning utility, although VE utility will be impacted by a trade-off between time spent learning and level of enjoyment.

Another dimension considered was that of expected outcomes versus unexpected outcomes. It is difficult to predict all of the uses of a VE once a system is used, and there may be unexpected benefits (and dis-benefits) from the system providing unforeseen utility as well as those that were originally anticipated. It was considered whether a view of utility should link to systems development methodologies as a means of discovering lateral benefits and uses. Indeed, the extent to which we could learn from experiences with more established technologies was considered.

Finally, a space was constructed with the following orthogonal dimensions within which to locate utility: work/entertainment; planned + expected benefits/unplanned + unexpected benefits; society + environment/corporate management + individual (perceptions of utility). It was recognised however that there is a danger in defining utility with respect to its position within this space, as utility is not a static notion, but changes over time, system usage, and even the assessment or measurement of the level of utility itself.

To be continued…

In Part 2: Approaches to usability evaluation and their role in VEs.

Acknowledgements

We would like to thank all participants for their contributions to the workshop, and student volunteers for their help. Thanks also to the workshop sponsors, namely The British HCI Group, De Montfort University and the COVEN Project (ACTS N. AC040).

References

Darken R.P. and Sibert J.L. (1996). Wayfinding strategies and behaviours in large virtual worlds. In: *Human Factors in Computing Systems: CHI '96 conference, Vancouver 1996. Proceedings*. New York: Association for Computing Machinery, pp. 142–149.

Durlach, N.I., Mavor, A.S., (1995). *Virtual Reality: Scientific and Technological Challenges* (National Academy Press, USA).

Ellis, S. (1996) Presence of Mind: A Reaction to Thomas Sheridan's "Further Musings on the Psychophysics of Presence". *Presence-Teleoperators and Virtual Environments*, **5**(2), pp 247–259.

Guilford, J.P. and Zimmerman, E.S., (1948). The Guilford–Zimmerman Aptitude Survey. *Journal of Applied Psychology*, **32**(1).

Kaur, K. (1998). *Designing virtual environments for usability*. Ph.D. thesis. Centre for HCI Design, City University, London. (see http://web.soi.city.ac.uk/homes/dj524/kully.html)

Kaur K., Maiden, N. and Sutcliffe, A. (1996). Design practice and usability problems with virtual environments. In: *Virtual Reality World '96 conference, Stuttgart, Germany, 1996. Proceedings*. Munich, Germany: IDG Conferences & Seminars.

Nielsen J. & Mack, R.L (1994) *Usability Inspection Methods* (John Wiley & Sons, Inc.)

Slater, M & Steed, A. (1999) A Virtual Presence Counter. Forthcoming in *Presence-Teleoperators and Virtual Environments*, MIT Press.

Steed, A & Tromp, J. (1998) *Experiences with the Evaluation of CVE Applications*. Proceedings of Collaborative Virtual Environments 1998, 17th–19th June, Manchester, UK, http://www.cs.ucl.ac.uk/staff/A.Steed/steed-tromp-cve98.pdf

Steed, A., Tromp, J., Normand, V., Dijkhuis, J., (1997). *Combined Usability Inspection Report*, Anthony Steed (ed.), Public Deliverable COVEN ACTS Project N. AC040.

Workshop website: http://www.crg.cs.nott.ac.uk/research/technologies/evaluation/workshop/

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The Third HCI Educators' Workshop

South Bank University, 10–11 April 2000

Alistair Kilgour

The Third HCI Educators' Workshop took place at South Bank University, on April 10th and 11th 2000. It was run with the support of The Learning and Teaching Support Network (LTSN) Centre for Information and Computing Sciences, in conjunction with the British HCI Group. The theme was 'Effective Teaching and Training in HCI'.
In the coming months some of the presenters at that workshop will be contributing articles to Interfaces. In this issue we have a report on the event from Alistair Kilgour, followed by abstracts for some of the presentations.

Think eclectic and double it – this was one of those events where it was hard to discern many central themes when looking at the programme in advance, yet it all gelled on the day, thanks to a generous measure of serendipity (the cybernetic variety to which Ernest Edmonds referred in his paean to creativity and how to support it, one of the highlights of the second day), and also thanks in no small part to the genial hospitality of the hosts, Xris Faulkner and Fintan Culwin (and their enthusiasm for London Pride) .

The workshop almost didn't happen, but the small select band who were there were extremely glad it did. New enthusiasts were recruited to the cause. Christian Jones showed all the energy and commitment of a recent convert in his animated and impassioned account of his approach to teaching multimedia (more on which you can read in the Times Higher Education Supplement, May 26th, pp38/9), and Christian has also offered to host the workshop at Heriot-Watt next year.

Among the tantalising bridges which emerged across two days was between patterns in user interface development, ably and comprehensively reviewed by Sally Pincher on day one, and the concept of genre in HCI, which Janet Finlay explored in a fascinating and thought-provoking contribution on day two. And I was so impressed by the plans described by Shailey Minocha for the Open University's new M873 module on user interface design and evaluation that I have applied to be a tutor on it. I also recognised myself as a lurker on several mailing lists I subscribe to, but had not realised till I heard Blair Nonnecke's analysis that in this respect I was in the large majority, and that there was a strong case for robbing the term of its slightly pejorative, even sinister, connotations. It's OK to lurk – we now know everyone does it!

Alan Payne revealed the shocking lack of robust, easy to use (for teachers as well as pupils), and effective educational software for primary school arithmetic (or mathematics as it has to be called these days), and how he is going about remedying this. Joe Hyde got everyone arguing heatedly with an account of a design example she uses in her courses based on the ticket machine in London Underground stations. Those of us not based in London had not realised the extent to which this innocent piece of technology has been subjected to hours if not weeks of scrutiny by generations of students on HCI courses in London. And Helen Lowe gave an intriguing account of the Mantchi project, in which I was peripherally involved, which made it sound coherent and original, at least in its coinage of acronyms. (Only a few of use know the real story, and our lips are sealed.)

There were lots of goodies here to enthuse and inspire both those new to teaching HCI and those perhaps becoming jaded from the struggle to get the simple message across to succeeding generations. The issues about teaching multimedia, e-commerce and web design, and the academic and research questions surrounding these new areas of HCI application, in particular emerged for me as worth exploring in depth in future workshops. Thanks are due, from the group and the wider HCI community, to Xris and Fintan and all the speakers, for carrying the flag forward and hosting a stimulating and highly enjoyable workshop.

Abstracts

Developing an undergraduate programme in Human Centred Computing

Andy Smith (Luton)

The University of Luton is unique certainly in offering an full undergraduate award in Human Centred Computing (HCC), and possibly in relation to the range of HCC related modules available to all undergraduate students within the Department of Computing and IS. In this presentation the rationale for the development of the programme will be described, and lessons learnt from delivery to the first full cohort of students will be explored. Constraints on course design included conformance to the University's modular credit scheme. Emphasis in course delivery was given to practical case studies. Early evidence suggests that student performance has been improved in their more focused areas of study.

Using a shared workspace system to teach CSCW

Jim Eales (Luton)

In this presentation, we describe efforts to use a web-based group workspace system to facilitate 'virtual tutorials', allowing students to participate from any location and at any time. The basis for this study was an Information Systems module in Computer-Supported Co-operative Work (CSCW) taken by 35 third-year undergraduates. The module focused on both the study of collaboration in the workplace and the design of computer-based support technologies.

The software used was the Basic Support for Co-operative Work (BSCW) system, developed at the German National IT Research Centre (GMD). The software is free and the GMD will host workgroups on its servers; only a web browser is needed for access. The BSCW system is a

shared workspace which allows multiple users to log in and share information by uploading and downloading documents, participating in structured discussions and posting web links, among other activities.

We found a number of significant advantages associated with using BSCW.

- CSCW involves complex issues that are often difficult to teach. BSCW allowed students to experience these firsthand.
- The shared workspace has proved useful for general module administration.
- BSCW provided a facility for students to work in small groups to produce co-authored reports and to share work via the workspace.
- Finally, but perhaps most importantly, BSCW supported new kinds of learning activities. In particular, participation by a subject expert from Australia introduced authentic learning experiences. Also, students' contributions within the workspace were persistent and visible to their peers, enhancing their experience of collaborative learning.

Teaching Creativity AND Computation: Artists Augmented by Agents

Ernest Edmonds (Loughborough)

We believe that shared workspace systems can be valuable in a wide range of educational applications (not just for CSCW), but in order to use them effectively, it is important to develop appropriate educational and social practices.

Computers can be very helpful to us by performing tasks on our behalf. For example, they are very good at performing calculations, storing information and producing visualisations of objects that do not yet exist as a made artifact. Increasingly, however, a different role is being found for the computer. It is the role of a catalyst, or a stimulant, to our own creative thinking. In such cases the computer is not primarily performing a task for us and generating an answer within itself, rather it is helping us to generate answers within ourselves. The computer helps us think creatively. This role for the computer can be illustrated in the context of computer support to creative design. In order to design computer systems that support the creative process, it is important to understand that process well enough to predict what might help, rather than hinder. Given such research, we may begin to define the characteristics of what the computer must do in order to augment creative thinking. The paper explores a particular application of intelligent user interfaces: the augmentation of creative thought in artists.

Genre and expectation: an alternative view of HCI

Janet Finlay (Huddersfield)

The traditional adage 'know your user' becomes increasingly difficult with new media where 'your user' may be anyone with access to a web browser or walking into a multimedia booth. Also applications of such media often represent a move away from traditional task-oriented information systems into the spheres of art, entertainment and leisure. It is therefore appropriate that designers and usability specialists be informed not only by their traditional partner disciplines of psychology and, latterly, social science, but also draw on the experiences of disciplines in the humanities and arts areas. Writers, producers, musicians, directors concern themselves not with 'knowing their user' but with 'knowing their genre'. Genre informs both the audience's expectations of a work and their assessment of its acceptability, novelty and value.

This paper will explore the question of whether it is possible to identify generic structures in interactive systems and how these might be used to illuminate HCI teaching, particularly for the increasing numbers of students coming from arts disciplines. It will discuss the nature of genre using examples from the arts and will suggest possible applications of these structures to HCI.

Media types: Computer Scientist or Art College Graduate

Dr. Christian Martyn Jones (Heriot-Watt)

Commercial organisations are falling over themselves to snap up creative art graduates. So much so that they are now preferred over more traditional HCI experts. Not long ago the corporate excuse for employing creatives was 'that it was better to have them yourself than let them work for the opposition!'. However, today it is not sufficient for you to be seen to have a dynamic, idea generating R&D team, but also that they are directly responsible for your image, marketing, product design, and web presence.

We are not discounting the positive impact of such graduates in attracting end users with their stunning opening audio and visual sequences, we are just greatly concerned about the quality of user studies, and the lack of sound HCI, which needs to be improved upon in order to keep these users coming back.

In this paper we review the current 'state of play' in industry between HCI experts and their creative colleagues, and consider our academic role in teaching the next generation of creative designers. With consideration to the type, background, and expectation of students in our department we have tailored the content of the multimedia design course to match their needs and those of industry. Our findings, ideas for course design, and suggestions for encouraging creativity, are discussed.

Not just a dusty box: Computer-based activities in Primary school education.

Alan Payne and Christian Jones

Having spent the last eight years teaching in various school classrooms and with a verity of age groups, I have seen a great deal of misuse of the dusty grey box in the corner of the room. Recently, better teacher awareness of information technology has improved teaching for older students, however an area which remains neglected is nursery and primary one education. There are many software solutions on the market for such age groups. Although available for use in schools, few work well with the day to day tasks of the curriculum. Instead, there is a need for interactive programs and multimedia systems which fit as well into the classroom as a set of colouring crayons. In the presentation, I will discuss what I believe to be the main issues in nursery and primary computer based learning, and demonstrate our curriculum orientated software.

HCI 2000 Usability or else!

Sept 5–8, 2000
University of Sunderland
St Peter's Campus

http://www.bcs.org.uk/hci/hci2000

"Has CHI missed the bus?" was the provocative title of a recent lecture given by Prof. Mark Apperley, University of Waikato, NZ, at Imperial College. After more than 20 years of study and debate about the subject of the interaction between people and computers, Mark posed some hard questions for us to consider. The most important one for the organising committee of HCI 2000 is whether the programme constitutes a real contribution to the field or is it just 'more of the same'?

Only you, the members of the British HCI Group, will be able to decide when you have attended and contributed to the collaborative effort which is HCI2000!

Now is the time to register for your conference and ensure you take advantage of the excellent Tutorials for continuing professional development. There is a range of topics from "Cognitive Factors in Design" led by Tom Hewett, (Drexel University) to "Designing Usable Mobile Services" led by Anne Kaikkonen (Nokia) and "Making World Wide Web interfaces usable for elderly and/or visually impaired people" led by Mary Zajicek (Oxford Brookes) to mention but a few. There are also 27 accepted papers from a total of 7 different countries, making this a thoroughly international conference. The programme is currently being completed with 18 short papers, 5 posters, 4 organisational overviews, 2 panels and 2 sessions of Industry Day papers. A full list is easily accessible from the Advance Programme on the Conference web-site.

You can make some savings on early bird registration before 1700hrs, 17th July, 2000!

Full Conference	Early	Late
British HCI Group Member	£259	£306
Non-member	£318	£376
Student	£177	£188
Accompanying person fee	£50	£50

So, take a few minutes to browse the web-site and print off a registration form to ensure you have something to look forward to after the long, hot summer we all hope to have!

Nina Reeves
C&GCHE
Publicity Chair

SIXTH INTERNATIONAL WORKSHOP ON GROUPWARE
CRIWG'2000

18–20 October 2000, Madeira Island, Portugal

http://criwg2000.di.fc.ul.pt/

The Sixth International Workshop on Groupware follows on the success of previous CRIWG workshops held in Lisbon, Portugal (1995), Puerto Varas, Chile (1996), El Escorial, Spain (1997), Buzios, Brazil (1998) and Cancun, Mexico (1999).

The CRIWG workshops have been motivated by recent advances in computer-supported cooperative work, and by the need for CSCW to meet the challenges of new application areas. This workshop aims to provide a forum for academic researchers and professionals to exchange experiences and to engage in discussions of the research issues in designing, building, and using groupware applications.

Was that a computer I saw before me?

Cassandra Hall

While the rest of the HCI community was at CHI or at workshops dotted about the UK, I cheered myself up by rather belatedly reading Norman's *The Invisible Computer*. It affected me so much I want to examine some of the points he raises in this column. I hope as a by-product I'll manage to persuade you all to read the book too, if you haven't already.

Norman suggests that technology has stages and that the product we see at different points in the life cycle is like that because of the customer pool it is drawing on. It's a nice idea but I'm not sure that I can agree with all of it. He suggests that in the early stages products are worried about functionality because the sorts of people that buy them will be those who are looking for a fix to a problem and will be attracted by a gadget that can do that. He suggests that technology only becomes invisible as it grows up. Although it is true that artefacts do gradually improve I am not convinced it's simply customer base doing the dictating. If it was, then you could simply chuck out all forms of the artefact all at once and grab all the market. I think that early technologies aren't able to consider customers because they are still developing. The first people who buy are pioneers who know the area. As the technology develops and can be more supportive so more people buy in. Norman even goes on to discuss that, at some length, later on so I'm not sure why the two strands are never woven together. However, I suspect it's the same stage effect but different lights. Still, Norman has as always affected my thinking, and has an uncanny way of being right, so I'm sure as time goes by I'll see the error of my ways and reform completely.

What Norman is doing in industry puzzles me. Perhaps messing around in academia got too much for him. He is impatient with technology and the rate of progress and someone like that might believe they could fix better from the inside than from the out. But his asides along the way don't leave me with the picture it's that simple. I can't help thinking it's like that bit in *Paradise Lost* Book 2 where the fallen angels tell themselves that it's much better here than it was there and the buildings are better, they're doing something constructive and there's more lucre to play with.

He wants computers to become appliances that are invisible, that we don't have to struggle with. Functionality has gone wild, he says, and I have to agree with him. I'm frankly fed up with toasters that toast bread, bagels, croissants, half an elephant and can act as an egg timer, radio, hair drier and exercise the dog when they have a spare minute. The trouble with equipment like that is it's always doing something else when you need it to be doing something quick and it'll be off walking the streets when all you need is a slice of toast. But I'm not satisfied with Norman's picture of exclusive computers. Yes, I've taught students for ages that computers will be in everything but I'm not sure that I understand or accept his view of what will happen to the PC. He says that an all singing or dancing laptop will be the norm (technology's answer to the Swiss Army knife) but at home and at the office specialised equipment will be the order of the day and it will be able to communicate with other bits of specialised equipment.

I'm not sure I want that. I want a PC with all the functionality I have but one that's not driven by Windows whatever number it chooses to append to it. I want one that is so usable even the dog can make it do something useful. But I have this fear that Don Norman sees my desk littered with a zillion little itsy bitsy intelligent appliances that are going to drive me nuts and fall into the cracks between the wall and the desk. I have a ghastly vision of my handbag loaded down with Intelligent Appliances, A4 batteries. and the great hulk of an Unintelligent Appliance I'll also have to carry because it'll be so much more flexible. I know also I'll have to have them all in different colours to match my clothes or it'll make me go funny.

But in another sense, I know he's right. The Ordinary Household doesn't need word processors like Word or spreadsheets like Excel. Yes, they may need to rattle off the odd letter or do the odd sum but most homes won't want to do much more than that. I doubt if the Ordinary Household needs MS Money. Who on earth would have time to go to all the trouble of setting that stuff up and using it? Anyone with enough time to do that would have nowhere to go and therefore nothing to put into the wretched program in the first place. And who would want to? It strikes me that anyone who did would be the height of sad and in need of a life rather than an Intelligent Appliance. I was once rash enough to enter stuff into MS Works. The wretched program reminded me every few minutes that I had a dental appointment in *n* day's time. It made my life a misery. Even after I'd gone, and recovered from the trauma of that instrument of torture known as dental charges it chose to tell me that I had an appointment *n* days ago. It's one of the many MS products that have the ability to gloat. I expect, even now, MS Money is counting up how much I spent in the sales and will e-mail interested parties when I'm least expecting it and don't have a string of excuses ready.

But to get back to Norman's book. *The Invisible Computer* is wonderfully gimmicky from its greaseproof paper-like fly cover to the pictures of technologies and appliances dotted throughout. There's a mass of Norman's wisdom on the way and served up with his usual no nonsense smack 'em in the eye writing. This is Norman at his best, his wittiest, his most impatient. Though I must admit I felt the slightest twinge of disappointment when I found he carried a Swiss Army knife. Hitherto, I've always felt sorry for people who did that. Have you noticed how they always have gadgets that are no earthly use, like squiggly things for prising stones from camel's feet, and nothing you need right now like a bottle opener or a nail file? It worries me too, that he likens laptops to Swiss Army knives. I'm either going to have to reclassify the users of the former

Book Reviews

David Oxley

from 'workaholic' to 'sad' or the latter from 'sad' to 'sensibly prepared for all eventualities.'

One of the most likeable things about Norman as a writer is his incredible and disarming honesty. I know of no other person who will say so publicly: I was wrong. It makes it very difficult not to accept the rest of his argument because you know if he had any doubts, he'd say so. *The Invisible Computer* is a wonderful book, worth every penny of your hard-earned income and every minute of your hard-pressed time. Read it. I can't even begin to do it justice in the space that can be spared here. He'll make you laugh; he'll make you think. He's made me hope for a future where people can use equipment without having to say: 'Have I broken it?' every three minutes.

• Norman, D. (1998) *The Invisible Computer*, MIT Press.

Information Appliances and Beyond: Interaction design for consumer products
Eric Bergman (ed.)
Morgan Kaufmann
ISBN 1558606009
April 2000, £28.95, 375pp.

Inspired by Donald Norman's 1998 book *The Invisible Computer*, the editor, Eric Bergman, has brought together a broad collection of relevant developments in the IT and Consumer Electronics industries. The main purpose of this book is to illustrate current practices in the development of Information Appliances.

The term 'Information Appliance' encompasses a whole host of devices such as mobile phones, personal digital assistants (PDAs), portable internet audio players, vehicle navigation systems, and any other application-specific device hiding a computer processor inside. The book consists of various papers and interviews with developers from some high profile companies such as Nokia, Psion, Palm, Microsoft, and Sun Microsystems, as well as some words of wisdom from Norman himself.

Side by side, you can read about the decisions made during the development of specially optimised operating systems like Windows CE, Palm OS, and EPOC. The '80/20 rule' seems to be a common thread amongst all the developers, where they assume that only 20 per cent of the functions are used 80 per cent of the time. In the case of the PalmPilot they removed the least used functions, whereas Microsoft and Psion just hid them. The PalmPilot developers discuss their 'less is more' philosophy, used at both interface and application level. Microsoft describe their emphasis on familiarity and squeezing as much in as possible.

I empathise with both the PalmPilot and Psion developers. They used very little user-centred design methodology in developing their first generation products, and the PalmPilot developer had difficulties convincing developers that they could not rely solely on what they knew about developing desktop computer software. Both were fortunate to have been successful and put the lessons they learned to good use in developing later generations.

PDAs are not the only information appliance to be discussed in this book. Set-top boxes are included in the contribution from Sun Microsystems, Nokia provides an insight into the development of their latest mobile phones (The 9110 Communicator and 7110 WAP phone), and a vehicle navigation system interface is the subject of another chapter.

Also to be found are some less obvious information appliances such as 'Barney the Dinosaur', an interactive toy. It even has a picture of his inner workings, but don't show this to your children as it might upset them to see a Barney skinned completely bare!

A chapter on 'Lessons from Game Design' looks at interfaces used in popular computer games. A lot of novel interface ideas have appeared in computer games over the years, and may be usefully applied to information appliances. The last chapter, on the topic of 'Persuasive Technologies and Netsmart Devices', discusses one of the hottest R&D areas of the moment, including the desire to make devices responsive to our emotions.

Altogether it's a very interesting book, and especially worth reading if you have an academic or business interest in the next generation of digital appliances. If you are a developer (or marketer) of anything that fits the term 'Information Appliance', you may find someone here who is dealing with some similar issues. This book is your comfort blanket.

David Oxley
Napier University TCS Associate developing portable MP3 solutions for Memory Corp plc

Book Reviews

Alison Cawsey

Advances in Automatic Text Summarization
Inderjeet Mani & Mark T. Maybury (eds)
October 1999
The MIT Press
ISBN 0-262-13359-8
£27.95

There is now a huge quantity of information easily accessible to us, yet it is still often hard to find (and digest) just that which is relevant to us, given a particular information need. In the past this problem has been partly addressed by professional abstracters writing short summaries of key points of important articles. Book reviews too serve a similar purpose, providing a short overview of a text, and, we hope, enough information to help readers decide whether it is worth obtaining and reading. Abstracts and book reviews are just two types of summary, both aiming to 'distil the most important information from a source (or sources) to produce an abridged version for a particular user (or users) and task(s).' Other forms of summaries include newspaper headlines, film previews, literature surveys, and so on.

There has been significant interest in automating the process of summarisation, enabling summaries on-demand, adapted to particular requirements (e.g. length or interests). Many commercial tools (e.g. Microsoft Word) now include crude summarisation tools. *Advances in Automatic Text Summarization* provides the first comprehensive overview of key research papers on text summarisation, illustrating a wide number of different approaches. It includes many of the key papers, going back 40 years, as well as some new contributions.

Producing effective summaries is a difficult challenge. The human summariser will attempt to understand the source text, consider the needs of the readers, decide what key information must be included, and construct a coherent and concise summary addressing the readers' likely needs and accurately reflecting the source. At first glance, automating the process would appear to need full natural language understanding before you start. However, it has been found that using simple 'surface' techniques can produce useful (if not very coherent) summaries. Key sentences in a text may be extracted based on, for example, the occurrence of important terms in a sentence, or the location of that sentence within the whole text (without any attempt to understand the text). A summary composed of these key sentences may not read like a human-authored abstract, but may nevertheless serve a useful role in helping the reader to judge the usefulness of the source document. These approaches, based on simple surface features, are easily adaptable to, for example, create summaries biased to the user's interests or search query, and easily trainable based on corpus data.

Creating truly coherent summaries requires going beyond sentence/passage extraction. Information must be extracted from the source text, and the key points used in the summary. Text generation techniques are required to create a new coherent text from the information selected. This is a harder task, but one that now appears tractable, although systems must still be trained or adapted for particular applications (e.g. sports articles).

Both these approaches are well represented in this collection of articles. The book is split clearly into sections representing different issues. These include sections on evaluation methods, and new approaches/problem areas, which includes, for example, multimedia summaries.

The book assumes some background in natural language processing (NLP), and so may not be ideal as an introduction to the subject. However, for those with a knowledge of NLP interested in finding out about the major work on summarisation, or those working on summarisation who want a convenient reference, I strongly recommend this book. It might be suitable as a text at advanced post-graduate level, and certainly a useful addition to academic libraries. It is well organised, includes most of the important research papers on the topic, and has good commentary from the editors.

Alison Cawsey
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Xristine Faulkner

The Essence of Professional Issues in Computing
Robert Ayres
ISBN 0-13-908740-0
Prentice Hall, 1999, 210pp.

This is a good introduction to a sticky topic. Ayres covers the ground in amazing detail but at the same time manages to be lively and interesting; I think the use of cases helps things along. He has opinions too, which also helps. The book is quite comprehensive, gives points of law and offers discussion. I like the way he examines software from several viewpoints and places it within a legal context.

I would have liked to have seen more discussion of the Web and of plagiarism. Ayres touches upon both but they don't occupy a great deal of space. However, Ayres does say that the Web isn't new in legal terms. I like that touch. It shows the law has the ability to be flexible and to anticipate.

This is a vast subject covered to the sort of level that most students will need and an excellent introduction for anyone who wants to go deeper. It is also a worthy addition to the *Essence* series and a timely one.

The Essence of Computing Projects
A Student's Guide
Christian W. Dawson
ISBN 0-13-021972-X
Pearson Education, 2000, 176pp.

The Final Year Project reminds me of those dreadful games I used to be forced into at parties as a child. It's meant to be fun and to develop something or other though neither students nor supervising staff are always any too sure what. I supervise anything from half a dozen projects to maybe 8 or 9 a year and I've always wished there was something I could say to students they should read. I can't convey the joy I felt when this book landed on my desk, courtesy of a whiz of a new marketing person at Pearson. Not only is it in the *Essence* series so it's short and to the point and at a price students can afford but it's on a subject that students really do need help over, and fast.

This is a worthy attempt at outlining the process of producing the Final Year Project. There are hints on finding supervisors and some philosophical discussion about projects along the way. It's a shame that the project is treated as research and write up with very little mention of the building of software as I can imagine that students might be left rather puzzled as to how all the parts fit together. The advantage of excluding discussion of the build is that the book can be used by BIT students and others who don't have to engineer something. And it keeps the book short.

My father read the first part of it and was puzzled by how long it took to get off the ground and having examined that material myself I do wonder how much of the introductory material will be read – interesting though it is. However, the rest of the book does offer quick advice. Students are reluctant to read so a huge tome would have zero impact on them. This little book may well be read.

This is a nice addition to the *Essence* series and one that is needed. I expect now that Christian Dawson has blazed the trail others will follow.

Xristine Faulkner
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Profile
Philip Gray

Senior lecturer in the Computing Science Department at the University of Glasgow. Primary research area: dynamic reconfigurability of interactive systems. Conference chair, HCI '94. Founder member of GIST. First trumpet in Glasgow Computing Brass. Born in New York City a long time ago. Immigrated to Scotland in 1974. Previously lecturer in philosophy, primary school teacher, secondary school teacher, EFL teacher, lecturer in educational computing. Lived in Saudi Arabia and France. Keen tandemist and follower of the Tour de France.

What is your idea of happiness?
Cycling in the Drome Provencale

What is your greatest fear?
Having my PowerPoint slides fail at the start of a 1st year lecture class

With which historical figures do you most identify?
Stonewall Jackson and Rousseau

Which living person do you most admire?
Dervla Murphy

What is the trait you most deplore in yourself?
Unwillingness to go to bed at night

What is the trait you most deplore in others?
Inability to listen

What vehicles do you own?
6 bicycles, 2 Citroens and a barbecue on wheels

What is you greatest extravagance?
A petanque court in my back garden

What makes you feel most depressed?
The first sight in the morning of my unanswered emails

What objects do you always carry with you?
Wedding ring, beard

What do you most dislike about your appearance?
My waist & nose

What is your most unappealing habit?
Arriving late to meetings

What is your favourite smell?
Lavender fields in bloom

What is your favourite word?
Reconfigurable

What is your favourite building?
My grandfather's cottage in upper New York State

What is your favourite journey?
The ascent of Alpe d'Huez

What or who is the greatest love of your life?
Wife Beverly and son David (what did you expect?)

Which living person do you most despise?
No one

On what occasions do you lie?
To embellish a good story

Which words or phrases do you most over-use?
Reconfigurable

What is your greatest regret?
To have come to computing later in life

When and where were you happiest?
Here and now

How do you relax?
Reading medieval history, watching French TV, playing petanque

What single thing would improve the quality of your life?
The ability to say no

Which talent would you most like to have?
The ability to write truly elegant code

What would your motto be?
Never let the sun set on your anger

What keeps you awake at night?
A good debugging session

How would you like to die?
Flat out on my bike, 60 mph downhill in the Alps

How would you like to be remembered?
Fondly

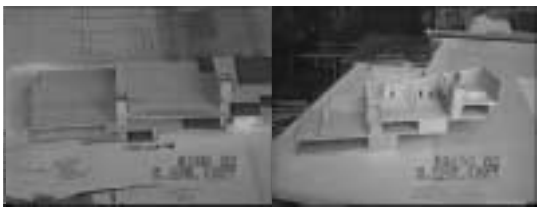
TOUCH: Creating interactional artefacts in a physical world

Michael Smyth

The maxim states that seeing is believing but that it is touch that determines reality. Instinctively we reach out to touch those objects that attract or perplex. Touch conveys an intimacy at both a physical and emotional level.

In the pursuit of the digital world, the sense of engagement that touch offers has largely been sacrificed. Instead, the GUI has been created, the ubiquitous portal into the digital world, with its levels of indirection acting as a constant challenge to HCI practitioners and users alike. Interaction has lost its grounding in physicality.

The vision of an environment populated by interactive and interacting artefacts, as articulated by ubiquitous computing and tangible media, offers the opportunity to reclaim the interface and return it to the physical world. Form and function will be reunited leading to the design of artefacts which both engage and provoke interaction.



In the words of Buxton (1996) there will be a move away from the safety of the Henry Ford school of design that practitioners currently adopt to a world populated with bespoke technologies.

Breaking 'the box' raises the question: where will these technological artefacts go? Most probably the migration from the desktop will be either into the environment or onto our skins. Technology will be more personal and form will impact on how users relate to and interact with these devices.

This is more than product semantics – form and function are inextricably linked to the affordances conveyed by these new artefacts. Touch is a pleasurable sensation; the sweep of a curve, the precision of an angle, the tactile quality of a material. What is less well understood is how such haptic qualities play a role in the creation of a sense of engagement and a linkage with the body which underpins much of our learning.

The phenomenologist Merleau-Ponty's account of 'being-in-the-world' emphasises the importance of the body. He places the body at the centre of our relation to the world and argues that it is only through having bodies that we can truly experience space.

Not surprisingly a number of ideas underpinning phenomenology have been appropriated by the design community when discussing the acquisition of design skills. This in turn has lead some researchers (e.g. Tweed, 1998) to comment that design-based skills are both bodily and cognitive.

Studies of interior designers engaged in the early phase of design have revealed the importance of the creation and manipulation of physical models (Smyth, 1999). Such models enable the designer to manipulate, through touch, a 3D representation of a building space.

The sense of engagement provided by such models was viewed by the designers as something qualitatively different to that provided by drawings, whether these were produced by hand or by CAD.

The characterisation of the designer as 'thinking with their hands' while creating and manipulating physical models supports the findings of Candy & Edmonds (1996) and Roy (1993).

How might technology provide designers with such essential attributes and how might such requirements inform the design of the next generation of technologies?

References

Buxton, W. (1996) Absorbing and Squeezing Out: On Sponges and Ubiquitous Computing. *Proceedings of the International Broadcasting Symposium*, November 13–16, Tokyo, 91–96.

Candy, L. and Edmonds, E. (1996) Creative Design of the Lotus bicycle: implications for knowledge support systems research. *Design Studies*, Vol. 17, No. 1, 71–90.

Roy, R. (1993) Case studies of creativity in innovative product development. *Design Studies*, Vol. 14, No. 4, 423–443.

Tweed, C. (1998) The Social Context of CAAD in Practice. In C. Branki and K. Zreik (eds), *Proceedings of EUROPIA 98: Cyberdesign – Media, Communication and Design Practice*, Paris, France, Nov 25–27, 177–194, Europia Productions.

Smyth, M. (1999) The Activity of Design as Revealed by Tool Usage. *Journal of Design Sciences*, Vol. 7, No. 1, 11–22.

Phil Turner's Bluffer's Guide to Activity Theory

Here is the first in a new series – where the irrepressible gurus of HCI sprinkle the fairy dust of their knowledge over the pond-scum like us, in easy to digest tracts of 500 words or less.

About a month ago the editor asked me to write 500 words on activity theory. This is the sixth complete redraft. And perhaps this reflects the difficulty most people have with activity theory.

Activity theory, with its origins in Russia of the 1920s and '30s, is beset with obscure terminology (for example, the word activity is only an approximation to the original Russian word *deyatelnost* and the German *Tätigkeit* is believed to be a more faithful translation – not speaking either language I take this on trust).

You can add to this the fact that activity theory isn't a theory as such but rather a fairly loose body of thought which is also beginning to appear in different *flavours*. The Finnish–Danish–Californian variety is apparently more popular in the West than the original Russian. This aside, activity theory has been used in the context of CSCW and (allegedly) in HCI proper, though actually tracking down what has been done is a challenge. So should we be interested in activity theory?

Oblivious to these problems I, like any true believer, cannot understand why activity theory hasn't been universally accepted by the HCI community. Surely human behaviour is both social and culturally mediated; surely, all that we do and have learned have been facilitated by these contexts; surely, we use physical tools, plans, and computer-based artefacts to achieve our purposive ends which in turn have developed over time. Five hundred words being mercifully limiting (*surely – Ed!*) I will illustrate some of these concepts with a version of Leont'ev's (relatively) famous description of an activity.

Imagine yourself being transported back to a time when tribes of people regularly hunted animals for food. The tribe might divide itself into different groups to achieve its end – some might lie in wait armed with weapons, while others might drive the animals away from themselves towards those in hiding. Here we see an activity motivated by the need for food. The activity is collective with a division of labour and allocation of responsibilities. The behaviour of the group is mediated by a cognitive artefact (i.e. an agreed plan) and a range of physical artefacts (i.e. weapons). After the hunt the meat will be shared on the basis of formal and informal rules.

Leont'ev argued that an activity, such as this, is the smallest meaningful unit of analysis because analysis of its components (by which the activity is realised) is meaningless in isolation. Indeed individual actions, rules, use of artefacts and so forth may appear to be bewildering or even contradictory outwith the context of the activity. So activity theory potentially offers a means of describing purposive human behaviour in context and as such (huge leap of faith) offers itself as a potential orienting schema for HCI.

What to read: a good place to start is Bonnie Nardi's book *Context and Consciousness* which is still available from any good dot.bookshop – try the first four chapters.

Phil Turner *p.turner@dcs.napier.ac.uk*

Thanks Phil. Presumably if you only read one of the four chapters suggested, then that ain't activity theory. See… it's working already! Anyone else want to play this game?

If you have a subject that you would like to bluff about, then email Tom at t.mcewan@napier.ac.uk Also, working on the 'don't kid a kidder' principle, if you would like to bluff a retort to Phil or anyone else's bluffer's guide, then get in touch. We're more likely to publish the wittiest than the most scholarly correct.

British HCI Group – Application Form 2000

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