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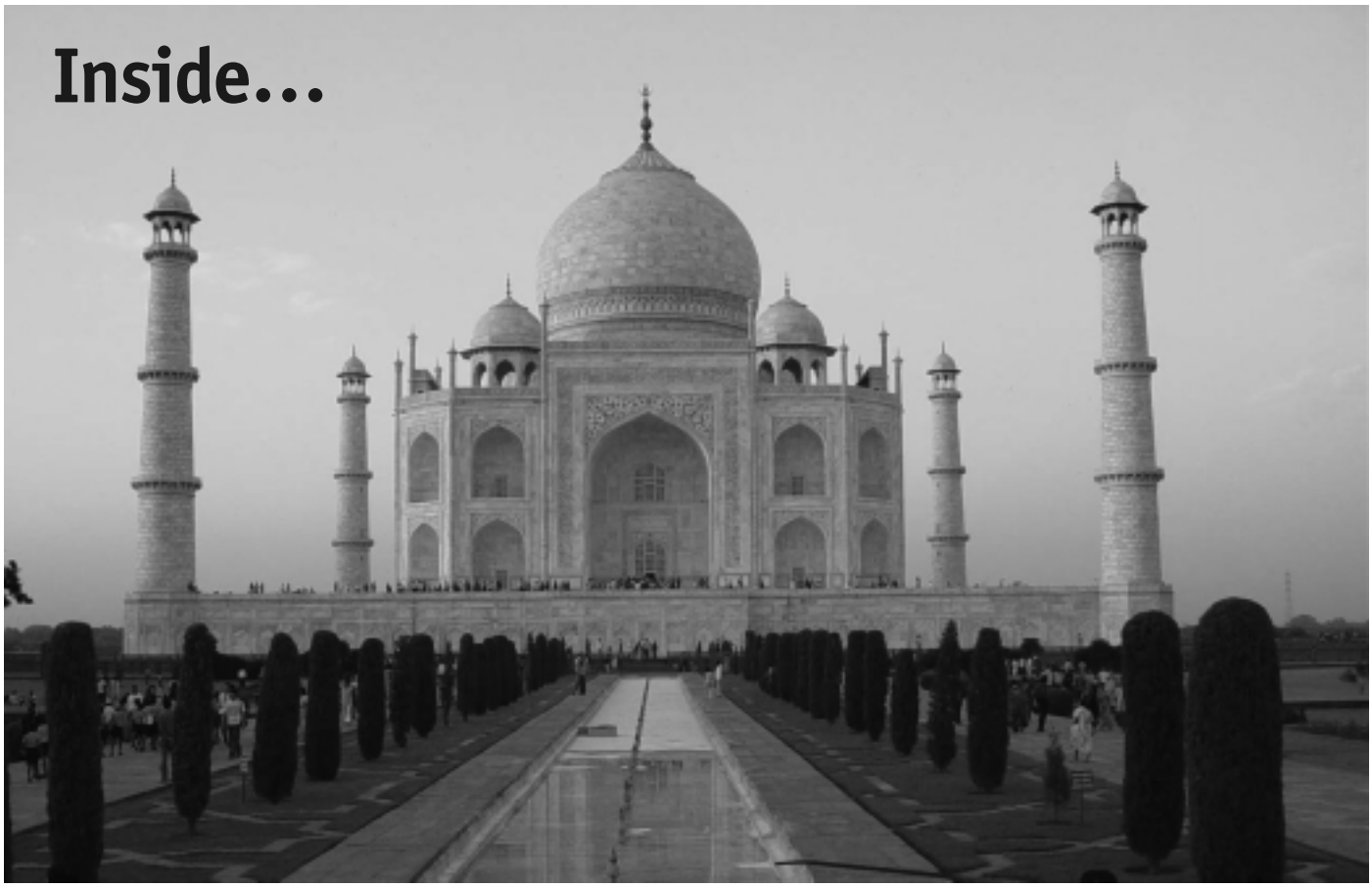

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Human–Computer Interaction

View from the Chair

Keeping our channel on-air

On the date of writing, your Chairs & Officers Group (COG) are shortly to meet to discuss a formal proposal to wind up Usability News (UN), following BCS's rejection of our bid for part-funding. As Communications Chair, I will be tabling some alternatives to closure, but even I have to acknowledge that these can initially only delay the shut-down, unless we can identify a reliable income stream.

There has been resounding silence to the pleas in my previous editorial, but I don't take this as a sign that BHCIG members are happy to lose UN. Its accessibility is exemplary, and it is usable, useful and used. Looking at the site statistics, UN is clearly valuable to you; it helps you connect with the HCI community at large and provides a route into a global marketplace, influencing solutions providers everywhere to take the needs of the user into account.

Excluding weekends and holidays, usage continues to increase and is now around 15,000–25,000 hits per day, with around 1,500 user sessions each day. At the time of writing, the most popular story of the last few months (The Usability Company's eye-tracking study) had been accessed 3,000 times, and several recent job announcements each had around a thousand readers. There are now scores of countries around the world with regular readers of UN. The archive is valuable too: Ann's report on the Designing for Civil Society workshop last September still attracts several hundred readers a month, as do articles from two years ago about website design or proponents of heuristics. The sharpest of you will have deduced from our page-naming convention that UN approaches its 1500th article.

UN is a quality specialist publication, adroitly and professionally edited. It contains a valuable archive for practitioners and researchers, but this comes at a price, one that is several times our annual membership fee income. Learned societies, specialist groups, etc., provide a valuable framework for communities of practice, but if they are to do more than preach to the converted, in out-of-season lecture theatres and back rooms of pubs, then they must have professional communication channels such as UN.

It would take less than £2,000 per month to maintain and even extend the current service. As a member of several professional organisations, I have a steady stream of glossy but increasingly vacuous monthly magazines in my letterbox. The postage costs of these alone would be more influentially spent on the kind of online experiences provided by UN.

There are a number of possible solutions but each has merits and demerits. Advertising revenue is costly to obtain and unpredictable. Sponsorship increasingly requires very tight alignment of the objectives of the sponsored organisation with that of the sponsor. Voluntary contributions are successful in some community web enterprises, but would need a dedicated team of volunteers with virtual begging bowls. UN could provide a number of useful research opportunities. We are considering all options, although my personal preference is simply to make explicit the link between conference and UN.

The annual conference has been *de facto* the funder of the conference – every delegate fee obtained after mid-August

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Editorial

Spending a large proportion of my life typing at a keyboard, gazing at a monitor, I tend to forget that you can interface with computers any other way. Complex interfaces like keyboards, remote controls, and mobile phone keypads distance the user from what they are actually trying to do with the device. They have to learn how to use the interface before they can do anything useful.

It's refreshing, then, to come across interfaces that were designed to be more direct and to make interacting less like hard work. They're chunky with big buttons that you can grasp and press. In fact, for some interfaces, the more like a child's Fisher Price toy, the better.

Last spring, I visited Stonehenge and hired one of their cool little handsets to get a guided tour of the site. I was impressed by the simplicity of it. To listen to a recorded guide, you just pressed the button on the handset that corresponded to the numbered post geographically nearest to you. And that was it! The handset had a handy cord so you could hang it round your neck, and had a long, tapered casing so that you could hold it however large or small your hands.

You can see, then, why I was impressed when I came across the d-touch tangible media toolkit in the HCI2003 demonstrations room. It was the simplicity of it that came across best: you pick up some labelled blocks of wood, place them on a sheet of paper printed with music staves, and you've composed a piece of music. The labels on the blocks are printed with patterns that are 'read' by a small web cam mounted on an angle-poise lamp. The attached PC plays back your music to you. Then Ishii, in his keynote, showed a video demonstrating how he can interact with music by corking and uncorking glass bottles. So simple and literally hands-on.

Music lessons at school would have been so much more interesting if I had had toys like this to play with.

Both of the above are reviewed in this issue of *Interfaces*. Also in this issue are workshop reviews from HCI2003, and articles on metaphors in HCI, making a usability lab fun for schoolchildren, and how the UsabilityNews team made UN accessible after it had gone live. As usual there are book reviews, the regular columnists, My PhD, and the profile. So all that's left for me to say is a big 'Thank you' to Cassandra Hall for supplying her unique columns about life at the Invisible University over the last few years. Thank you Cassandra, enjoy life in San Diego.

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Right to Reply

Make *Interfaces* interactive! We invite you to have your say in response to issues raised in *Interfaces* 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.

To receive your own copy of *Interfaces*, join the British HCI Group by filling in the form on page 27 and sending it to the address given.

Next Issue

Interfaces welcomes submissions on any HCI-related topic, including articles, opinion pieces, book reviews and conference reports. The next deadline is **15 April**, but don't wait till then – we look forward to hearing from you.

with thanks to commissioning editors:
Book Reviews: Sandra Cairncross, s.cairncross@napier.ac.uk
My PhD: Martha Hause, m.l.hause@open.ac.uk
Profile: Alan Dix, alan@hcibook.com

Deadline for issue 59 is **15 April 2004**. Deadline for issue 60 is **15 July 2004**. Electronic versions are preferred: RTF, plain text or MS Word, via electronic mail or FTP (mail fiona@hiraeth.com for FTP address) or on Mac, PC disks; but copy will be accepted on paper or fax.

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PDFs of *Interfaces* issues 35–57 can be found on the B-HCI-G web site, www.bcs-hci.org.uk/interfaces.html

Deflections

Enduring delight delivery from HCI

Gilbert Cockton

In the previous *Interfaces*, I asked, "Is HCI just all fashion and fad?". There was much evidence for answering yes. To let me answer no, I offered a list of Enduring HCI, including: fitting designs to the expected context of use; quality (delivering efficiency, effectiveness and satisfaction in use), and value (delivering systems worthy of use). I see these as HCI's building blocks. With them, we can craft useworthiness (delivering quality and fit with value).

So, which building block is the foundations, which the walls and which the roof? Many in HCI would see quality in use as the foundations, whereas it is the roof! The foundations are value, which determines what is acceptable and unacceptable as regards user performance and experience. The fit of an interactive system to its intended context of use restricts the value that can be delivered by a system. Poor quality in use can restrict it further, even destroy it.

Quality in use can only apply to the capabilities and content of a system. What is not there cannot be made usable. Fit to context is mostly a question of functionality and information. Our local public transport website fails to support its intended audience. It is completely in English, despite the presence of an international airport. It assumes large amounts of local knowledge on bus routes and metro station location. To make this website more usable, we have to fix its functionality and information provision. Fit in terms of adequate functionality and content is a pre-requisite for quality in use. IBM's Dave Berry builds on this in his iceberg analogy of usability (see reference box): at the bottom of the iceberg, well submerged in the interaction ocean, is 'what the user can ask the system to do'. If there is no way of asking, then how can we measure efficiency or effectiveness? This really is a question of fit, not usability.

I do not expect a local transport website to provide dessert recipes and order ingredients, so it is not usability's job to look for any old missing functionality. Test users and usability analysts may well point out the absence of critical functionality, but one cannot measure its quality in use until it's there.

So, what does determine whether my local transport site website should or shouldn't have dessert recipes and Tesco special offers? The answer lies in the foundations of enduring HCI: value. If recipes and special offers can deliver value, then they could be added to the website (after all, the metro station next to Newcastle's massive Tesco Extra is styled throughout with Tesco's corporate identity). Their current absence doesn't make the site unusable though, nor is there a damaging misfit with the context of use, but even so, one could imagine a web promotion that gave discounts on desserts for metro tickets that would deliver value for metro users, the transport operator and Tesco.

Sensible folk who wrestle with the question of what constitutes a 'usability problem' conclude that usability is relative to something. The current orthodoxy is that it is relative to the context of use. However, anyone who has wrestled with the question of what constitutes the potentially relevant aspects of the expected context of use will also decide that required fit is relative to something. This 'something' is intended value.

Value can come from any human desire. Johnson and Sasse, with their colleagues, are pioneers in applying economic or business value to HCI (see references box). But value can also come from the emotion of experience alone, or from spiritual, ideological sources (see my editorial to an IwC special issue). There is no more absolute value in HCI than there is absolute usability. However, HCI will continue to thrash around and jump between fashions and fads until we learn to base everything on explicit foundations of intended value.

Users will suffer all sorts of 'usability problems' if systems bring them real value. Conversely, where trivial usability leads to a system's rejection, perhaps it had little value.

The job of HCI is not just to protect value from the erosion of misfit and poor usability. HCI approaches would seem far less marginal if they actually enhanced value (which Johnson and Sasse have shown with their able colleagues to be possible; i.e., simple changes to the interface can increase perceived value).

If we can move from diverting disasters to delivering delight, then HCI experts will become indispensable parts of every software and new media development team. It is good to see UK HCI pioneers moving the field on here.

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View from the Chair

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might be seen as being split equally between marginal costs and surplus for UN. But what happens if the last minute surge doesn't materialise? Conference funding is also a complex web of managed tensions and contradictions, but clearly UN supports and nurtures the conference. A continuous trickle of articles and announcements before the event, commentary throughout and reviews afterwards, ensure that the conference achieves participation, delegates and dissemination. Whatever the result, the decisions must be made soon to avoid death by a thousand rumours.

Tom McEwan
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I bought my parents a computer for Christmas

Russell Beale

I bought my parents a computer for Christmas a couple of years ago. When you do that, you know you are also offering them free access to a 24/7 helpline, but I'm getting fewer calls now than I did initially. If you think computers have actually become easy to use, buy your parents one.

I was round there the other day, fixing something or other, and asked my father what he wanted from his computer; I got back a simple list, which I've annotated:

not have to boot it up – to be able to simply turn it on and it work, or to be able to leave it on.

not have it crash – need I say more?

be able to find stuff again – photos should go in one place, documents in another. With file dialogue boxes that have so many icons, fields and lists in them you don't know where to start, it's no wonder he's confused. There are desktop icons that flick from window to window as you drill down looking for stuff, and this is supposed to do the same thing as Windows Explorer which has those funny trees where you can click on the left panel or the right one… He simply saves them wherever the system suggests and gets me to find them some time later.

understand when to double-click and when not to – you try remembering which is which when describing how to set something up over the phone from the top of a hill in Wales. You end up suggesting that he click once, and if nothing happens he double-clicks. And that's after weeks of training him on the speed for a double-click.

to send and receive emails easily – sometimes he's connected to the internet, sometimes he's not. Sometimes the system auto-disconnects (if he's first used Outlook Express and that dialled the connection) and sometimes it doesn't (if he used Internet Explorer first).

to write letters – success here – for him. For my mother, she wants to move the cursor with the mouse to where she wants the text to be, and then type. On a blank page, that's not possible.

to edit photos, print out four or six a page, view them on screen – oh, a world of pain and different applications tried and discarded; I'm not even going to go there.

to browse the internet unharassed – browsing the net is the easy part – single clicks, for a start. But the pop-ups and adverts and offers and instructions have turned the information superhighway into a dingy backstreet of grubby hustling and pimping.

He's not alone. There are many users like him – most, I expect. He has fairly simple requirements for his computer – and yet he's failed by the system in pretty much all departments. A little trial and error, a little guesswork, and he gets on handsomely with everything, but it leaves a nagging background worry; constant reminders of how he's not mastered the machine.

I therefore think that we've failed him. Sure, Microsoft has failed him too, but we are people championing usability. We shouldn't preach to the converted, for there are vast tracts of the computing continent that need to see the light and receive enlightenment.

What are we doing? Have we moved on to look at esoteric aspects of interaction design? Are we devising complex theories of human interaction? Yes. Is this useful? Yes. But we mustn't forget the roots. It's not as if they want much – all the requirements seem to me to be very reasonable, and should be easily achievable. For example, I don't understand why a computer takes so long to boot up. For goodness' sake, if I set the alarm on my phone and turn the phone off, it still beeps in my ear at ungodly hours to wake me and then asks if it should be switched on for calls. If the phone can work as an alarm when it's turned off, and can turn on pretty quickly, surely we can get a computer to just turn on more quickly.

As Jack Dee says, working with computers is like being on a gameshow: firstly, it gets all Anne Robinson on you – you're doing the best you can and suddenly: "A fatal error has occurred, you are the weakest link, goodbye", and then when you're so fed up with it and go to turn it off, it becomes Chris Tarrant: "Are you *sure* you want to quit?".

The basic problems still remain and people are still struggling with them. Maybe it's time for us to solve these simple issues that most affect people, before we start tinkering with the more advanced ones. Perhaps then people would listen more to what we have to say, and take us a whole lot more seriously.

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HCI 2003 workshop reports

Metaphor and HCI

Mark Treglown

"Well isn't that clever? It's a metaphor!"
Marge Simpson, *The Simpsons*

With the development of Xerox's 8010 Star system, the HCI/CHI communities chose to take seriously, if only for a short time, the roles that metaphor and analogy might play in designing graphical user interfaces. With Apple's adoption of Xerox's technology in the Macintosh 20 years ago (!) we were promised that '1984 needn't be 1984'. Although this revolution was televised, as an expensive commercial break during the Superbowl, it was not universally welcomed.

While new introductory HCI texts advocate the use of metaphor in order to produce usable systems (though often with little advice on how to use it), the intervening two decades have also seen many critiques of metaphor. Ted Nelson famously claimed:

> … I have never personally seen a desktop where pointing at a lower piece of paper makes it jump to the top, or where placing a sheet of paper on top of a file folder causes the folder to gobble it up. I do not believe such desks exist; and I do not think I would want one if I did.

Another suggested that metaphor as a design approach should die as 'it's all been done'; others advise 'designers of the world, forget the world metaphor'. Most succinctly it has been proposed that 'metaphor is crappy'.

Even though HCI, like all academic disciplines, possesses an over-excitable fringe, only the perverse would voluntarily do 'crappy' work, right? HCI, therefore, mostly turned away from figurative processes in thought and design despite, seemingly, not having managed to define what it meant by the terms 'metaphor' and 'analogy'.

The distinction was once the subject of a blazing row on the floor of a previous BCS HCI conference. The possible existence of rarer and subtler tropes in user interfaces has never been addressed as a result.

Those in the HCI community who persevered in the early days, with the exception of those raised in the semiotics tradition, adopted, for the most part, the structural approach to metaphor. In this view, the success or failure of a metaphor depends on the number of predicates that map between model-theoretic descriptions of the familiar source and the unfamiliar target domain.

Viewed in this way, the opinions of Nelson and others are well founded. Electronic worlds behave in ways that are inexplicable in terms of the given source domain, or even defy causality. New task domains and forms of interaction stretch to breaking point the imagination of designers seeking real-world analogues by which to explain the system. Hence, the search for new visual formalisms and the rise of conceptual modelling based on ideas other than figurative ones are (if you see metaphor in this way) well motivated.

Homo sapiens is a Janus-like creature. While it is important to look back and attempt to deduce the reasons for the comparative failure of metaphor in user interface design, the design of technology is about nothing if not about designing the future.

During the period where HCI, for the most part, ignored metaphor, in other disciplines, such as cognitive science and cognitive psychology, artificial intelligence, linguistics, and complex systems/artificial life, metaphor and analogy did not go through the same lull.

We have to take note of the futurologists who contributed to John Brockman's 2002 edited volume *The Next Fifty Years*. They cited figurative processes in cognition and language as issues, not where great advances will be made over the next fifty years, but where it will take fifty years of advances in theory and experiment before we will have frameworks in place that will allow serious progress to be made. Even so, there are some of us who believe that recent theories and methods addressing metaphor that are developed outside of HCI are mature enough to start being of use to HCI and to start contributing to the future of interface design. A gathering of believers was held at HCI 2003.

Eleven papers were received, and ten accepted; the authors of eight were among the twenty participants shoehorned into one of the University of Bath's seminar rooms.

Presentations were grouped into themes that formed the concerns and gaps in knowledge that motivated staging the workshop:

- Current practice
- Current approaches to understanding metaphor
- The future of design and metaphor theory

Current practice

William Hudson (Syntagm Ltd), the sole representative of industry, in his presentation, and throughout the day's discussions, gave a spirited defence of the structural approach to metaphor. From his work designing interfaces, particularly for websites, he argued that structure-mapping approaches should provide the theoretical underpinning of user interface metaphors, but that we should look at small interface features rather than large virtual environments such as the desktop. He also argued that metaphor should be used to provide transparency and unifying themes, not just to suggest a first set of knowledge and tasks that might be supported by the computer system.

Andrew Vande Moere and Kuk Hwan Mieusset (Swiss Federal Institute of Technology Zurich) also explored mappings between domains to seek language and concepts to explain aspects of their systems. Being virtual reality designers and data visualisers, though, the metaphors they use describe emergent properties of dynamic data, their graphical presentations, and modes of interaction with them. Their concern is to explain virtual environments, but virtual environments that visualise properties of systems that are normally invisible to us.

Sue Fenley (Reading University) surveyed a large number of multimedia educational systems and demonstrated the terrible usability failings that can occur when designers use real-world source domains for their interfaces, especially when needing to support navigation and learning tasks. Especially when educational systems, contrary to most other user interface designs, must conceal entirely, or gradually reveal, concepts as part of pedagogic processes implemented in the software.

Current approaches to understanding metaphor

The second session saw two groups from Birmingham and a group from Portsmouth present models and theories of metaphor comprehension, and their application to HCI.

Mark Lee and William Edmondson (University of Birmingham) revisited two of the metaphors that have received most attention in HCI: the desktop, and the travel metaphor for hypermedia browsing. They showed that metaphor-based design must comprise more than selection of a real-world analogue and analysis of its structure and mappings between domains. They showed that careful study of the existing conceptual metaphors that users possess is required, and must be taken as the starting point of a design process.

These ideas were reinforced and implemented in the ATT-Meta computer program discussed by J.A. Barnden, S.R. Glasbey, M.G. Lee and A.M. Wallington (University of Birmingham). This system does not just map between domains; it ignores mappings that do not add anything to the knowledge needed to make interaction tasks possible.

Dave Billinge and Tom Addis (University of Portsmouth), looking far ahead, presented a model founded on the notion that building a system from a fixed set of inferences (the designer's, which the user must then attempt to deduce) is mistaken. Instead, they argue, systems must be allowed to change dynamically in response to the user's own use of figurative language.

The future of interface design

The final set of presentations looked at the future of interface design from the viewpoint of the theories and models developed under the headings of cognitive linguistics and cognitive semantics.

I presented some of the considerable challenges to HCI from the development of Grid computing that are considered by supercomputing researchers to be 'summer projects' (after the story of Marvin Minsky handing the trivial task of machine vision to a graduate student to solve over one summer).

I argued that these supposedly trivial problems are profoundly difficult and are far from resolution. I claimed, though, that the theories of cognitive linguistics first presented by George Lakoff and Mark Johnson in their 1980 book *Metaphors We Live By* (the application and impact of whose ideas in HCI do not seem to be thought through as often as the book is cited, it must be said), have prospects as theoretical frameworks on which fruitful design and evaluation methods can be built.

David Benyon presented ideas developed with his colleague Manuel Imaz (both of Napier University) that look forward beyond the simple or basic metaphors considered by Lakoff and Johnson where metaphorical mappings are made between just two domains. They sketch a design process based on the notion of blends (due to Gilles Fauconnier) where many domains are relied on in order to understand the unfamiliar domain, and understanding is a process of constructing a model of the unfamiliar domain.

HCI is, or should be, relied on to give the world better interactive systems in our present and near future, and academic HCI has striven to place practical methods for user-centred design and systems engineering in the hands of relative non-specialists.

Metaphor, though, is hard, and we do not yet know all the questions to be asked, let alone their answers, as the debate and discussion at the workshop highlighted. We (the workshop participants) take metaphor seriously, and believe that metaphor cannot be ignored or marginalised within HCI for much longer.

Cognitive mechanisms for metaphor, analogy and perceptions of similarity cannot be ignored in understanding how we understand and act in and with the physical world; and, by extension, how we understand and interact with the model world of the user interface. New approaches from cognitive science and cognitive linguistics give us useful ways of giving coherent semantics to metaphors in user interfaces. We do, though, need more assistance to work out the details.

Further meetings of those interested in metaphor and HCI are being planned. If you wish to participate, or be kept informed, please contact me via e-mail at M.Treglown@cs.nott.ac.uk.

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Accessibility issues for interactive television – two reports

Richard Griffiths

Interactive television (iTV) has potential to influence the way people spend their leisure time, communicate, find information, shop, vote, bank and gamble – and do all sorts of other things that haven't been dreamed up yet. Doesn't it sound like the web! But whilst it may have some similarities, it has certainly got a lot of differences. One is that it is intended to be more democratic, extending some of the facilities of the web to that part of the population who won't or can't get a computer. If marketing doesn't bring that about, then government decree will, with the switch-off of UK analogue television in 2010 or so.

If it is to have any chance of fulfilling this democratic promise, then the needs of all the current audience for TV must be taken into account – and there is even potential for extending that audience through the incorporation of appropriate accessibility technology. So, what are the accessibility issues? This workshop was an initial stab at identifying them.

The members of the workshop came from academia (computing, design, learning technologies, media and cultural studies), the TV industry (ITC) and disability organisations (RNIB – yes, most blind people watch TV!). One purpose of the meeting was to build a community of interest and this was not a bad start. The outcome was intended to be a common set of research issues, themes and potential directions. The topics arrived at are described in detail on the workshop web site: *http://www.cmis.brighton.ac.uk/Research/usableitv/htm/HCIworkshop.htm*

In summary, these fall under the headings of: methods and techniques for design, evaluation and research; social considerations; design. As a sample, under methods: to what

extent are existing human-centred methods of design appropriate (or even practical) given the enormous diversity of the audience for TV? The issues are more far-reaching and fundamental than a casual consideration of the topic might suggest. Just closed caption text it ain't!

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Desmond P Bokšan-Cullen

This was the first HCI workshop I had attended for many years. I found it most stimulating. I am severely dyslexic, which can be an advantage, as many participants have to imagine that they are dyslexic, partially sighted, deaf, etc. I am able to explain and interpret issues first hand. (I am also an Audio Describer for the Blind, in theatres.)

The broad mix of talent and experience in both digital television and the media arts allowed us to investigate and share issues such as the use of subtitles to describe the mood to a deafened audience rather than just the dialogue. John Gil, the chief scientist of the RNIB kept us on the ball by reminding us that we must design the mini and not the Rolls Royce model in order for it to be practical and cost effective. The contributions from the ITC, Brighton and Sheffield Hallam Universities were also stimulating. Dr Deborah Fels of Ryerson University, Toronto, introduced us to the latest developments with subtitling motion pictures as well as interactive digital television.

Dyslexic users of digital television can have many problems coping with multi-screens, especially when the design of the overall screen has been done for artistic rather than practical purposes. I find that the text tends to flicker and 'dance' across the screen when I try to access the news channels; it is better when I can choose the full screen format for my selection from the menu. The ITC and Dr Jane Lessiter of Goldsmiths College presented a short presentation concerning the design of the remote control. It was refreshing to see that particular piece of technology is finally being thought out for use by *Homo sapiens*! We also discussed the infamous 'press the red' button, which is used to access the interactive features of digital television. It isn't much use to 20% of the population who suffer some form of colour blindness, even less use to those partially sighted and others.

I left the workshop with many answers and more importantly greater knowledge which I could use to ask the right questions.

Desmond P Bokšan-Cullen
Eastbourne

Hiroshi Ishii's tangibly good keynote at HCI2003

An outtake from the Purple Press

Tom McEwan

This was the highlight of the conference for many, in which the man made concrete much of the aspirations of HCI community (but, hey, that's what he does!)

In an address that was filled with humour, theatricality and media clips relevant to his audience (unlike some keynotes this summer), his manifesto rolled upon us in waves. 'HCI is more than just GUI. Who cares about incremental improvements to GUIs?!' His work is 'at the border. It's a harsh environment but where much creativity goes on'. 'Pixels impoverish our senses', and so on. The sound-bites just kept coming, and they knocked with impunity against the seashore sandcastles I'd built all week.

Wry comments on CHI's repeated rejection of papers, based on what so clearly enthralled the hall, struck polyphonic chords with goodly chunks of the audience. Yet he was never bitter or curmudgeonly about it. Ah, but when he waves a wand, things happen!

Grounding us for a moment with a picture of an abacus – that totally transparent interface – we yearned to applaud when he showed how the expressive power of our hands is barely tapped into. Images of specialised drawing instruments from the venerable Brewster's Edinburgh Encyclopaedia demonstrated how lost was the richness of haptic interaction, in the flood of a PC's aesthetics.

Hiroshi seeks to give physical form to digital information – seamless coupling between digital and physical; foreground graspable bits v peripheral bits providing eg context; ambient information display – spinning in a wind of bits; architectural space will be ambient interface. Man that stuff gets into ya. For him – every time CHI knocks you back, make a movie instead … usabollywood.

As the Sandscapes of time trickled by, and Eamonn wriggled on the stage wondering when/if he should ever

stop him, my tablet began to lose any sense of battery power; in fact, any sense at all. Susan Dray spoke for all of us when she said that it was the best keynote she'd ever seen. But my notes got even more mangled as even the most bleeding edge conventional interfaces failed to capture the moment. I'll leave you with these three thoughts, impressions captured without memory (and very possibly accurate handwriting recognition) but they have a poetry that might have been haiku on a good day:

> Design is very important to make interfaces accepted
> Mark Weiser profound technologies disappear and weave themselves into the fabric
> Andy asked how he evaluated quality of ideas if not by evaluation – dunno really

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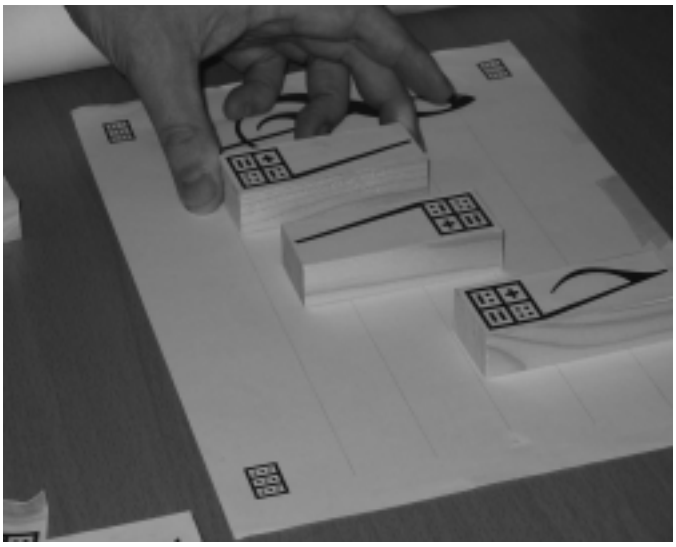
Tangible Music with d-touch

John Robinson

d-touch is a tangible media toolkit demonstrated at HCI 2003 by Enrico Costanza, formerly of the University of York and now at Media Lab Europe. With Prof. John Robinson, Costanza developed a set of 'topological fiducials', marks or glyphs that can be easily printed or drawn then robustly detected in an image from a webcam. Attaching the markers to physical objects turns them into interaction devices whose position and orientation can be monitored as a user manipulates them under the camera.

With fellow Electronics MEng student Simon Shelley, Costanza incorporated real-time processing for fiducial finding and tracking in a music-oriented software toolkit. Tagged wooden blocks function as musical notes or as parts of a musical instrument. Using the programming facilities of d-touch, Costanza and Shelley have implemented a tangible stave, a drum machine and a sequencer, all running on a standard laptop, webcam and speakers. Each application has its own A3 background page forming a surface on which the instumentalist manipulates the blocks.

In the stave application, simply placing a note-shaped block on a line or space on the printed stave causes the appropriate note to sound. Short melodies and harmonies can be built interactively. While the stave includes blocks for different note durations and rests, timing on the drum machine purely depends on where on the timeline the interactor is placed. In contrast to other computer-based drum systems, that timeline is not divided into beats, so the interaction has an analogue feel and ragged rhythms are possible. The sequencer allows recording as well as playback effects controlled by block locations and orientations.



Costanza, Shelley and Robinson have ideas for other musical applications. But they are also keen to exploit the stable software infrastructure of d-touch for new consumer-level applications beyond music. Printed tags, cut out and stuck on to ordinary objects, provide a cheap and effective way to bring tangible media to homes or schools without specialized interaction devices.

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Interacting with Computers

Dianne Murray, General Editor

I am pleased to publicise publication plans for *Interacting with Computers* in 2004.

First, Vol. 16(1) will appear in early February: a Special Issue on *Global human–computer systems: cultural determinants of usability*, edited by Andy Smith & Fahri Yetim with an editorial and the following papers:

A. Smith, A process model for developing usable cross-cultural websites

H. Sialam, The impact of religious affiliation on trust in the context of electronic commerce

L. Conventry & A. De Angeli, Introducing ATMs in India: a contextual inquiry

A.M. Efendioglu, Chinese culture & E-commerce: an exploratory study

Regular papers for this issue are:

D. Lee & W. C. Yoon, Coupling structural and functional models for interaction design

M. Virvou & K. Kabassi, Personalised adult e-training on computer use based on multiple attribute decision making

E. Sillence & C. Baber, Integrated digital communities: combining web-based interaction with text messaging to develop a system for encouraging group communication and competition

Many papers are scheduled for Vols 16(2) and 16(3).Also included in Vol. 16(2) will be an interesting set of commentaries and response papers to our well-received and well-cited Special Issue on *Emotion in HCI*.

Regular papers for these issues will include:

C. Sieckenius de Souza & J. Preece, A framework for analysing and understanding online communities

P. P. Rau, S. Chen & Y. Chin, Developing Web Annotation Tools for Learners and Instructors

J. Huart, C. Kolski, M. Sagara, Evaluation of multimedia applications using inspection methods: The cognitive walkthrough case

A.Oulasvirta, Task Demands and Memory in Web Interaction: A Levels of Processing Approach

C. Stephanidis & A. Savidis, Unified user interface design: Designing Universally Accessible Interactions

M. Watson & P. Sanderson, Tailoring reveals information requirements: The case of anaesthesia alarms

T. Partala & V. Surakka, The effects of affective interventions in human–computer interaction

C. Chen, F. Wu, P. P. Rau & Y. Hung, Preferences of Young Children Regarding Interface Layouts in Child Community Web Sites

M. Sanchez-Segura, A. de Antonio & A. Amescua, Interaction patterns for future interactive systems components

S. Park, D. Choi & J. Kim, Critical factors for the Aesthetic of web Pages: Empirical Studies with Professional Web Designers and Users

In addition, future Special Issues in 2004 to look out for are:

Papers from the 2003 Conference on Universal Usability 2003
HCI in Latin America
Physiological Computing
Designing for Civil Society [Internet activism]

Most importantly, in 2004 we have now reached Volume 16 of *Interacting with Computers*, celebrating 15 years of publication as the journal of the British HCI Group. To mark this milestone, the reminder of the Volume 16 issues will contain, as a supplement to our regular papers, specially commissioned papers by members of our three Editorial Boards. Some papers will be retrospective – taking stock of where HCI has come to over these last years – whilst others will be expert commentaries on the extended field of HCI. All will be worth reading. The intention is to provide a timely, archival and interesting celebration of our continued existence and to stimulate our international readership. Make sure that you follow the rest of Volume 16 closely!

British HCI Group AGM minutes 2003

Peter Wild (Secretary)

Slate

Chairs and Officers Group (COG) is the structure adopted since the AGM in 2002.

Chair, Treasurer, Secretary

All must be corporate members of the BCS plus the Subgroup chairs, the student rep chair:

Chair (Gilbert Cockton)
Student Representatives (Nadia Pervez)
Communications (Tom McEwan)
Competences (Janet Finlay)
Events (Chris Roast)
Research (Dianne Murray)
Membership (Adrian Williamson)
Secretary (Peter Wild)

The new structure supports easier involvement without overheads for a large group of people. The slate was accepted by all present. However there is still a concern with the churn on volunteers. There's a loss of big picture as most volunteers previously attended Exec meetings or followed the minutes. The need for retention of the big picture amongst those who want it leads to online support issues to be investigated over the coming months by Peter Wild.

Meetings Programme

An explicitly BHCIG meetings programme has dropped in recent years. To some extent this has been supplanted by the workshops programme at the HCI conference (around 100 attendees) plus the UPA meetings programme.

New Membership Rates

Membership rates rise for the first time in at least 7 years. The rises were accepted by all present:

BCS member: now £30 from £25
Non-BCS member: now £35 from £30
Corporate membership: now £235 from £195
Student rate remains at £10

Areas of concern

Need more volunteers For many roles this implies better defined activities so that people can pick things up and run with them easily and they also know what time commitment the role entails. A recent example is the change in email news list moderator, and the regional round up email.

Internal Communications There is concern that in the new structure most members of the executive, although having an interest, lose the big picture about what the rest of the executive is doing. Investigations are being made for activities and structures that support maintenance of the 'big picture' without being swamped in the detail of subgroups. This may involve the use of BCS connect. But we need to be aware of how individual exec members work in relation to the BHCIG and avoid yet another email list with attendant archives and addresses.

For more information on anything discussed in these minutes, please contact Peter Wild (peter.wild@acm.org).

My PhD

Can we sing the blinds down?

Fausto J S Salces

When I accepted the position to do my PhD I wasn't completely sure what I was entering, neither was I certain about the specific area of research. After reading for nine months I got the idea!

The idea of using musical earcons for an interface aimed at the elderly came from knowledge of previous research in the area, aesthetic considerations and personal experience with elderly fragile patients. Music and musical memories tend to stay intact in the last period of our lives, even though major cognitive functions decline.

Earcons are defined as: tone or sequence of tones as a basis for building messages (Blattner et al., 1989). An earcon is a non-verbal audio message used in the user–computer interface to provide information to the user about some computer object, operation, or interaction: the aural counterpart of an icon.

To my knowledge, musical earcons have not been used in any interface intended for the elderly, nor for the visually impaired, despite the possible advantages. The aim of my research is to find out the possibilities of using musical tunes (earcons) to transmit information about the house environment to the elderly occupant.

The interface will represent the status of different appliances around the house by visual and audio representation. The appliances included in the interface, for the purpose of the research, are those that elderly users find more problematic to manipulate.

I think that by introducing the audio modality into the Household Appliance Controller, users will benefit from this extra output channel as they can perceive the information in either modality, and the audio channel can act as a pointing component.

The group of elderly users will especially benefit from the multimodal interface as, with the ageing process, most sensory capabilities decline. The presentation of information via more than one channel ensures that it reaches the intended receiver, thus improving their facility to use interactive devices. The research would also help people with various degrees of visual impairment, and not just the elderly.

I have designed an interface prototype that will help determine whether the use of sound and vision together complement each other (increasing effectiveness/efficiency) or result in a perceived loss of information (decreasing effectiveness/efficiency).

The prototype (see Figure 1 for audio representation and Figure 2 for the visual component), has been developed on a computer, and delivers the audio and visual information about the household appliances. The goals of the investigation include: improving the quality of interaction with the computer – in terms of faster reaction times, fewer errors, and user's satisfaction – and other similar devices, and helping the user adapt to situations in which sensory information is poor due to either personal or external circumstances. This is achieved by using a multimodal interface that offers redundant information via the audio and visual channels, so when one sensory modality is non-functional the other delivers the necessary information.

A great deal of work has been done researching the use of sound to display data, monitor systems, and provide

enhanced user interfaces for computers but the research done so far has not been aimed at household applications for elderly users. There is a need to expand on how the elderly can benefit from what information society systems can offer in terms of products and services; especially those which are most relevant to senior citizens.

Figure 1 Musical notation of earcon. This staff notation denotes the earcon notes that represent the music played by the interface.

A research question for this study is whether there are many differences in the performance and preference of the participants using different modalities. This multimodal interface is intended to supply the same information through two channels, audio and visual, and not to provide independent information or supplement each other channel. In this sense when paying attention to one of the output modalities, either the icons or the earcons using the appropriate sense, the other modality offers redundant information.

Reading and developing the tools has been a rewarding experience but trying to get volunteers for the experiments has been very time-consuming and demoralizing. Unfortunately there is no way out of it!

Figure 2 Screenshot of the visual Interface prototype representing six household appliances and their current status (i.e, door closed, blinds down, etc.).

Other research questions I am trying to address are of the type:

- Are the musical tones good for representing status of household appliances?
- Or do the users want to turn the sound off?
- What was the user's opinion of the interface? the sounds? the interaction?
- Did it deliver the information expected?
- Will the Multimodal Household Appliances Controller system be more usable?
- Will the users perceive it as more usable?

I want to find out if the appliance was easy to use, attractive and appealing. I do know that the use of sound is useful for transmitting information. What I want to find out is whether a particular use of music is suitable for a particular user group. Is the system efficient, convenient and natural, allowing users to interact with their everyday skills? Is the learning effort too much to bear for prospective users?

If the use of musical sounds in a simple application works well, then there is the possibility that the concept can be expanded to more complex applications with more functionality.

Currently I am developing another tool to perform further experiments and address the issues that arose from the first study. So by next year everything should be done. Fingers crossed. Any volunteers? There is no age limit so, if you are interested please contact me on cmsfsain@livjm.ac.uk.

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7th HCI Educators Workshop

Following on from earlier successful workshops, in conjunction with LTSN, the 7th HCI Educators Workshop is being held at the University of Central Lancashire, Preston on Thursday 1st and Friday 2nd April 2004.

The workshop will comprise a mixture of invited speakers, paper presentations, posters, panels and debate. The workshop aims to build on and further expand the remit of HCI: its location and use within other subject areas; the variety of modes and methods by which students can learn.

There will be 2 one-day sessions devoted to the following main themes:

- Education in and within HCI (reusable learning objects; education (the roles of teaching, learning, training); eLearning; distance learning)
- The power and impact of HCI (the impact of HCI in other subject areas; the impact of other subject areas on and in HCI; the impact or otherwise of HCI in software design in industry and commerce)

There will be time to relax and interact - a full and varied social programme is planned for the Thursday evening.

Registration costs will cover the workshop (on a per day basis), coffee and lunches, while the social programme will cost an additional £30.

Further details are available at: http://www.ics.ltsn.ac.uk/events/hci2004/index.html

Bookings can be made at: http://www.ics.ltsn.ac.uk/events/hci2004/register.html

If you have any queries, questions or suggestions in the meantime please feel free to contact the workshop chairs at bmcmanus@uclan.ac.uk or jcread@uclan.ac.uk

Key Dates

- Fri February 13th 2004 - Deadline for Submissions of Abstracts
- Mon February 23rd 2004 - Finalisation of Programme, notification of acceptance
- Fri March 12th 2004 - Deadline for early bird registration (cost £50 per day*)
- Fri March 12th 2004 - Deadline for final camera-ready or electronic copy of all presented papers
- Fri March 26th 2004 - Deadline for late registration (cost £60 per day*)
- Thurs April 1st 2004 - Conference starts

The ergonomic keyboard

Stan Allen

Stephen Hobday, a recognised inventor, turned his hand to producing an ergonomic keyboard some twenty-five years ago. Following his meeting concerning keyboard problems with Lillian Malt, a keyboard training specialist, they developed the idea of producing a keyboard of ergonomic shape that also had a new letter layout. This new key layout permitted an operator to work more easily than the with the standard 'qwerty' layout as the most commonly used keys are close together instead of being kept well apart (necessary in Scholes' era to minimise type bar interference). The new key layout (Lillian G. Malt PIRA Symposium 1977) attracted minimal attention but the Maltron keyboard itself started to receive testimonial letters from around the world as sufferers from keyboard related pain (RSI, CTS or WRULDS) found considerable relief from using it.

The original Maltron keyboard, freed from previous mechanical constraints by electronic developments, was created by modelling in Plasticine and Plaster of Paris until the positions of the arms, hands and fingers felt totally relaxed and comfortable; and so free from stress. Three papers by Hobday have been presented describing this early work: 'Keyboards designed to fit hands and reduce postural stress' at the 9th Congress of the International Ergonomic Associations in 1985; 'Keyboards designed to increase productivity and reduce postural stress', at the International Ergonomic and Safety Conference, New Orleans in 1988; and 'Computer related upper limb disorders: a keyboard to eliminate the stress and pain' at the 19th International Medical Assn. for Radio & TV. Congress, London 1994.

It is accepted that musculoskeletal complaints of the neck and upper limbs are common in operators using VDUs for data entry and other tasks. Increasing use of computers over the last twenty years has resulted in more people being exposed to the daily use of computer keyboards (Zipp et al, 1983). This increased interaction with computers has, in turn, resulted in an increase in reports of operator stress related to keyboard use (Gerard et al, 1994; Serina et al, 1999).

Cross-sectional population-based studies have demonstrated a strong positive relationship between discomfort and keyboard use (Bergqvist, 1995; Sauter et al, 1991) Studies conducted in various occupational settings have commonly attributed WRULDs to a combination of factors including high hand forces (Stock, 1991; Armstrong et al, 1987; Silverstein et al, 1987), awkward/static wrist postures (De Krom et al, 1991; Armstrong et al, 1994; Armstrong and Chaffin, 1978), and high frequency hand and finger movements (Hagberg et al, 1992; Silverstein et al, 1987). All of these could be directly related to keyboard use (Armstrong, 1994).

There has been extensive research to evaluate conventional flat keyboards, and to a lesser extent, the more recently developed alternative ergonomically designed keyboards. (Smith et al, 1998; Tittiranonda et al, 1999). Posture of the upper limbs and increased muscle activity and fatigue of the arm, neck and shoulder muscles are factors associated with WRULDs in keyboard workers. (Fernstrom et al, 1994). Higher keyboard operating forces – a function of key force and keying rate – have been associated with upper limb disorders (Feuerstein et al, 1997) and it has also been suggested that the low forces required to operate a keyboard may also be a contributory factor to WRULDs (Elmqvist, 1989, cited by Fernstrom et al, 1994).

Several studies have demonstrated that the conventional keyboard design promotes awkward work postures that are associated with neck, shoulder, arm and hand/wrist discomfort among keyboard operators. (Ferguson and Duncan, 1974; Grandjean, 1978; Hunting et al, 1961; Kroemer, 1972; Zipp et al, 1983). Ulnar deviation is required to get the fingers on the home keys of a flat keyboard and some studies have reported greater deviation in the left wrist than the right (Nakaseko et al, 1985; Bergqvist, 1995; Sauter et al, 1991; Chen et al, 1994; Honan et al, 1995; Smith and Cronin, 1992; Sommerich et al, 1996; Sommerich and Marras, 1994; Hedge and Powers, 1993). Wrist extension is a potentially hazardous position in WRULD development according to Hedge and Powers (1995) and Simoneau et al (1999). Forearms have to be pronated to get the hands horizontal (Simoneau et al, 1999; Honan et al, 1995 and 1996) and as the shoulders abduct to compensate this moves the elbows away from the body (Rose, 1991). All these postures have been associated with keyboard induced pain by Grandjean, 1978, Zipp et al, 1983, and Nakaseko et al, 1985.

Marklin et al (1999) showed that typing on a commercially available split fixed angle or split adjustable keyboard reduced ulnar deviation by at least 8dg. compared with typing on a flat keyboard, as the wrist is placed in a more neutral position in the radioulnar plane to help reduce ulnar deviation. A follow-up study by Marklin and Simoneau (1999) investigated the effect of different widths of split of the keyboard halves. Ulnar deviation could be reduced by about 10dg. compared with flat keyboard users. Users did not medially rotate (and consequently abduct) the shoulders at the customary angle experienced when using a flat keyboard when the halves were separated half or full shoulder width apart. Ulnar deviation was less than 9dg. for the left and 5dg. for the right, with the range of ulnar deviation being 18 to 20dg. and radial deviation being 5 to 10dg. for the three split set-ups.

Another approach to wrist posture has been to reorientate the flat keyboard so that it slopes away from the user. The front edge of the keyboard can then be used as a palm rest. Studies by Stack (1987, 1988a and 1988b) found this to be a major factor in eliminating problems of carpal tunnel syndrome in the Tasmanian Public service. Hedge and Powers (1995) investigated the effect of a negative sloping keyboard and found that wrist extension was significantly reduced when compared with that experienced with a flat keyboard. Typing performance was not impaired. Simoneau and Marklin (2001) investigated the effect of different keyboard slopes on wrist extensions and results showed that as the keyboard slope angle reduced from +15dg. to –15dg., mean wrist extension decreased by about 13dg.

In a study by Nelson et al (2000), keyboard layout was set up with different angles of pitch, roll and yaw. Increasing the pitch increased wrist extension, increasing the roll moved the forearm away from the fully pronated position to midway

between supination and pronation while increasing the yaw showed conflicting results between left and right hands.

This extensive range of published research over the period of 1974 to 2001 has clearly indicated keyboard design characteristics to be avoided.

Many hundreds of cases of recovery from keyboard related pain induced by flat keyboards have now confirmed the accuracy of the original fully ergonomic design concept. The feel of freedom from strain in Hobday's fingers, when the pragmatic process to design the first ergonomic keyboard started back in 1976, has proved to be a reliable guide to functional success.

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See also: www.maltron.com/papers.html

Stan Allen
Maltron Keyboards

Usability, offshoring and India: An update on IESUP

Andy Smith

Whether it's closing call centres, sacking UK workers and shifting the work to Delhi, or the offshoring of IT systems and services to Bangalore and Hyderabad, outsourcing seems to be one of the 'hot topics' of the moment.

As I write this piece, only two days ago *The Guardian* newspaper included a full page spread on Kieran Karnik, the President of NASSCOM (India's national association for software companies), and the *Today Programme* on Radio 4 this morning featured the amazing news that the Nationwide Building Society was not planning to outsource its call centres! The rationale that Nationwide gave for keeping jobs in the UK was the need to maintain quality. I suggest there may be similar concerns within the offshoring of IT systems development where usability and user-centred design may be critical to further quality development. Anyway, all of this is just background to this update on IESUP – the Indo European Systems Usability Partnership – and the second 'Systems Usability' tour of India, which took place during October 2003.

IESUP is a European Commission funded project which attempts to link the British HCI Group/British Computer Society and three European Universities (Luton, Limerick and Uppsala) with the Computer Society of India in order to foster the development of usability in Indian academia and industry. Although the initial rationale behind IESUP was more about spreading HCI across an industry and academia that is strongly technically oriented, the relevance with quality offshoring is now becoming much more evident.

On the latest trip we had a truly European mix of speakers with David Benyon and myself from the UK, Jan Gulliksen and Bengt Goransson from Sweden, Liam Bannon from Ireland and Gerrit van der Veer from the Netherlands. We delivered three separate seminars focusing on HCI in the Curriculum, Human Centred Computing and User Centred Design. These were held in Delhi, Mumbai and Bangalore. David gives his 'Don's Diary' view of his experiences in the adjoining column, but here I'll talk a bit more about overall progress within the IESUP project.

Bengt Goransson, Liam Bannon, Girish Prabhu, Andy Smith and Iqbal Ahmed outside the office of the Minister for IT, Karnataka State

Overall we met our targets for attendance – although as David makes clear in his piece, getting computer scientists in Indian universities involved is proving very difficult. Almost all academics we met originated from design schools and institutes, which now clearly seems to be the natural home for HCI in India. However our aim is to try to involve university Computing departments more. One very useful part of the tour was a meeting held with the Minister for IT in the State of Karnataka in the Parliament Building in Bangalore. From contacts made here we are hoping to work closely with the Indian Institute of IT, with the possibility of seeking further funds to support curriculum development.

In Bangalore the vast majority of delegates were from industry. Indeed there is a small but developing usability community in both Mumbai and Bangalore. As a result of the tour, and in particular thanks to Jan and Bengt and the seminars they led, the relationship between our discipline and the problems/advantages of offshoring are becoming more sharply focused.

Taj Mahal

It is leading to a potential dilemma. Hopefully we all agree that a user-centred systems design process should lead to a higher quality product for the user. So adapting India's current approaches to software offshoring to include proper 'usability' and a more user-centred approach should be a good thing. But by so doing are we encouraging even more jobs to be lost to the UK/European economies?

In fact the BCS has recently addressed the issue of facing up to the offshore IT challenge and has outlined what it thinks the UK must do to compete against growing competition from developing countries (see *http://www.bcs.org/ebulletin/031126/offshore*). The BCS points to a recent study by research firm Gartner which forecasts that 10% of IT jobs in IT companies and 5% of those in user companies will have moved abroad by the end of next year. However the BCS acknowledges that market forces will prevail and that the UK can and must compete. According to the BCS this means the very close integration of business and IT, although we, as HCI/usability folk, might include the integration of users too.

When considering how the development of usability in India might impact on the European IT industry, speaking as an academic, I suppose there may be two challenges. Firstly we cannot avoid striving to find ways in which the global understanding of our subject is increased. Secondly we should try to develop methods through which the quality of software developed at an international level is enhanced through effective user-centred design, whatever the direction of the outsourcing.

However, speaking as a practitioner, I hope that if we do make an impact in building usability both in India, and within offshoring projects, the resulting growth in usability

activity is shared between both ends of the partnership. Currently, at least, we do have the users close by! Within IESUP we are looking at ways of securing further partnerships and funds to take these issues further forward.

There are two more major IESUP events in 2004. During March/April we are arranging a series of seminars in Chennai (Madras), Hyderabad and Kolkata (Calcutta). Later in September/October we are hoping to arrange the first all-India conference on HCI, possibly to be held in Bangalore.

We are keen to hear from individuals who would like to participate in such events for which flight and accommodation costs are paid. We are also keen to work with European companies or organisations that are interested in the role that human–computer interaction has in quality offshoring. Please contact Andy Smith for more details.

Andy Smith
andy@optimum-web.co.uk

Don's Diary

David Benyon

Tuesday

Arriving just after midnight into the mêlée of Delhi airport, I am relieved to see my name on a card and to find that our organiser is there with drivers to deliver us to the hotel. I am a member of the Indo-European Systems Usability Partnership (IESUP) group that is to provide a series of workshops on 'usability' and human–computer interaction; a sub-discipline in computing concerned with making computer systems easier to use.

Wednesday

We spend the morning, in the comfort of a hotel straight out of the British Raj, in detailed planning of the seminars we are to give. There are three professors of computing from three different countries and amazingly we agree on the basic content. In the afternoon I wander through the streets of Delhi where I am constantly enjoined to buy something. Eventually I find a friendly taxi driver who drives me round the main sights. The roads are wholly chaotic to my eyes; culturally I am at sea.

Thursday

The first of the seminars at the British Council starts badly when my co-presenter suffers an early morning bilious attack. He continues stoically to provide the introduction. The other presentations and discussions are good, though the attendance is disappointing. We encounter what is to become a familiar problem – whether to shout over the noise of air conditioners and horns from the streets or whether to cook gently in the Delhi heat. We shout.

Friday

To the Indian Institute of Technology (IIT) Delhi. It is a large campus university so culturally I feel back on track. We are in a seminar room on the top floor, this time fighting the ten whirring fans that keep the heat at bay. The fans and our laptop computers mean that the electricity keeps tripping out. Of course, as computing professors, we have no overhead transparencies as backup. A technician arrives to fix things just in time. A few people from the Design school are there, but no-one from Computing. At 11 am we get chai (tea) and semosas, but no coffee until the lunchtime thali!

Saturday

We board a mini-bus for the trip to Agra and the Taj Mahal. The outskirts of Delhi are covered in 1970s logos for Firestone tyres, Gulf oil and Gold Leaf cigarettes. Cows, pigs, goats and dogs wander intermingled with the rickshaws, bicycles, trucks. Finally the road gets into the countryside which appears more wealthy. The road is good and soon we are in Agra. The Taj Mahal is everything it is meant to be.

Sunday

An early start takes us via the amazing fort and mosque at Fatephur Sikrit to Jaipur, the pink city. The road is appalling and the 200 kms take us six hours to complete. We are dozing in a gentle reverie when the windscreen on the minibus shatters in a loud 'pop'. Luckily

Removing the broken windscreen on the road from Agra to Jaipur

no-one is hurt and our enforced wait in the middle of the countryside provides great interest for the local children. Jaipur's streets are as chaotic as I have come to expect them to be, but with the interesting addition of camels, elephants and monkeys.

Monday

Travel to Mumbai and some relaxation by the pool. The difference between rich and poor is at its most visible as shanty towns line the streets from the airport and nuzzle up to the hotel gates.

Tuesday

We repeat the first seminar at the National Centre for Software Technology. There are a few people from industry and a good crowd of students from the National Institute of Design. The discussion centres on how to involve the 'right' people in these seminars. We are in danger of preaching to the converted. Much of the software development in India is outsourced from the US and elsewhere and we are keen that the software developers should understand issues of usability. It has taken twenty years for this message to get across to British industry, so perhaps we are being overly optimistic about how long it will take in India.

Wednesday

The last seminar, this time at IIT, Mumbai. Again there is not a computer scientist in sight, but several members of the Design school turn up. We discuss how the IESUP initiative should move forward. It seems that human–computer interaction in India is not based in computer science, but is seen much more as a design discipline. We hear that the IESUP parallel events in Bangalore have been well attended, but then Bangalore is the capital of India's 'silicon hill'. We reflect over all these issues – and other cultural differences in education and road travel – at dinner before I head off for the 12.50 am flight back to Edinburgh and the first frosts of Autumn.

Bengt Goransson giving a seminar in Bangalore

UsabilityNews and web accessibility: Part 2

Dave Clarke, Ann Light and Claire Paddison

Introduction

The aim of the UsabilityNews Accessibility Project (UNAP) was to investigate the accessibility of UsabilityNews, the BHCIG's news service specialising in user-centred design, and answer the question, 'Is it relatively easy to make a web site accessible after it is live, with minimal investment of time and money?'. UNAP was a joint project between IBM Warwick 'Ease of Use' and the UsabilityNews team. This is the second feature reporting on what turned out to be a most successful collaboration. Results from the user survey that kick-started the project were reported in *Interfaces* (issue 57) in a feature that dwelt particularly on the accessibility needs of the respondents, and in UsabilityNews (UN), which carried details during December of more general findings about use of the news service. This feature gives results from the rest of the project: a heuristic evaluation of the accessibility of the design at the time (April 2003); redesign of the pages to form a test site parallel to the main site, user testing through the summer and the quiet launch of a more accessible UN late last year.

If you have not yet had a look at the redesigned UN, go to *http://www.usabilitynews.com* and see if you can spot the differences that tweaking the pages has made. In all, about one and a half days went into adapting the site to meeting W3C 'A' standards once needed changes had been identified. The rest of this article talks further about how the changes were decided upon and effected.

Project goals

UN carries regular contributions provided by usability professionals around the globe, fully edited content, a bi-weekly newsletter, specific sections for jobs, paper calls and events, and a news headline web service for syndicating content. It receives around 300,000 hits per month. When the site was first designed and developed, there was little budget and time to spend on detailed analysis of requirements, the target audience or indeed for following recommended accessibility guidelines – a common situation in industry, where budgets are often restricted and timescales are tight. But, having proved itself as a useful resource for a community that is increasingly addressing the issues that accessibility raises, it became pressing that UN got its house in order. And it seemed appropriate to welcome the introduction of the Disability Discrimination Act in October 2004 with a site that met the act's goals of inclusiveness.

Heuristic evaluation

Introduction

Heuristic evaluation applies specialist insight and experience to identify and categorize design errors. A team of experts formally inspects a design, supported by scenarios and tasks, and a checklist of usability and accessibility heuristics. Heuristics are guidelines that embody important principles derived from cognitive psychology and other research.

Accessibility heuristics were used to give a sense of the type of accessibility issues within the site and where these issues lay. Using accessibility heuristics rather than a set of accessibility guidelines as part of the inspection process can also be far more effective in a shorter time frame as there are 65 Web Content Accessibility Guidelines compared with nine memorable heuristics. This method of evaluation can also help web site developers plan which areas of the site to make accessible first; a particularly useful feature when retrofitting guidelines to an existing web site.

Results

From an accessibility perspective, it was found that navigation support was lacking. When a screen reader user navigates the page they may do so using a variety of methods, for example, using the heading tags, links, or frame headings. Therefore it is important to ensure that all navigation options are available to the user. The UN site lacked many of these elements, for example, there were multiple 'show all…' links, which do not differentiate themselves. When a screen reader user chooses to listen to a list of links on the page, only the text of the link is read, not the surrounding text. Therefore, it is important that link text makes sense when not contextualized by the text around it.

Efficient keyboard navigation is also essential for non-mouse users such as people with upper limb disorders. When a new page is loaded in UN, the initial keyboard focus is in the search text field. Care should be taken that the keyboard focus starts at the first piece of text on the page and continues in a logical order.

As well as navigating the page it is also important for the screen reader user to understand the context of the content. To a sighted user, it is obvious which fields are associated with which controls; however, for non-sighted users this can be difficult. For example, the text box where search text is entered is simply announced as '*text*' in IBM Home Page Reader. The search button is read out after the field label, forcing the screen reader user to work backwards once they have understood what has happened.

From a usability perspective, information is often presented inconsistently. This can be equally problematic from an accessibility perspective: for example, users with learning or literacy difficulties are able to better comprehend the page when terminology is used consistently and the same information elements are constantly presented and displayed. The categories in the list 'Call for papers, Events, General News, Jobs' do not correspond to the titles at the top of the page [all the latest], [paper calls], [jobs], [events]. This also makes it harder for users to understand the categorization. A further example showed that not all synopses indicate the venue in the 'Paper calls' list. There are also inconsistent descriptions of job locations in the job headings. Some descriptions follow the pattern 'Title – Place – Country", some miss either Place or Country elements. The same applies to conference headings.

Conclusion

There were many minor accessibility and usability issues present within the UN site. By using the heuristic evaluation method, we were able to see these issues in the context of the site as a whole and recommend appropriate solutions.

Design modifications

Introduction

The heuristic evaluation raised a number of issues with the site design, and the report produced categorized the various problem areas, as well as making suggestions as to how they could be rectified. The report also helped us prioritize and make decisions as to which were to be 'tackled now' as part of this project and which would have to wait for a full 'UN version 2' in the future.

Some examples of modifications made

Visibility of ALT text and font size

When the user disables images in their browser, the ALT (alternate) text should be displayed. Due to the fixed sized images in the UN header, however, although the ALT text was present, it could not be seen on the screen. In addition, if the user increased the browser's font size, this also raised image alignment problems. The header images were simply redesigned to accommodate this.

Skip to main content link

To allow those using non-visual displays to rapidly scan content, a 'skip to main content' link was added to all pages. This is not difficult to do – here's the HTML code using a tiny transparent, single pixel image (not seen visually) to provide the link:

```
<a href="#maincontent"><img src="/images/
tiny.gif" width="1" height="1" alt="Skip to
main content" title="skip to main content"
border="0"></a>
Header HTML here
<a name="maincontent" id="maincontent"></a>
Start of main content here
```

Control and label associations

These were added to all web form controls (text boxes, drop down lists, etc), explicitly to provide a relationship between a label and its associated control. Not only does this assist screen readers but it also provides a larger target for those using a pointing device. Here's some sample HTML code:

```
<label for="txtHeadline">Headline:</label>
HTML formatting here etc...
<input TYPE="TEXT" id="txtHeadline"
NAME="txtHeadline" SIZE="50" MAXLENGTH="100"
VALUE="">
```

Now the controls are no longer only related 'by position'.

Context and physical placement of text

Explanatory text was modified accordingly to ensure text (and related controls) were meaningful in their own right and did not depend upon text that was physically distant from it.

Conclusion

The testing took place in two stages (through the heuristic evaluation and user evaluations), and design modifications were only made after the first stage, with further improvements pending.

These design modifications were implemented by tweaking the existing site design and were accomplished in just one and half days.

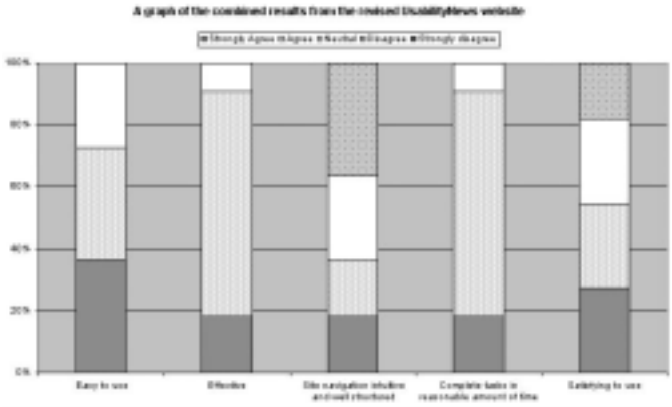
User evaluations

Introduction

The aim of the user evaluations was to determine whether the site was accessible and usable. To do this, eleven participants took part in the user evaluations: six participants with special accessibility needs, tested at their own desks using their own equipment, and five participants – used as a control group – tested using a standard computer.

Unfortunately, because of project constraints, the 'final graphical header' which incorporated some of the heuristic evaluation recommendations was not available until after the user testing.

Results



The majority of participants (91%) felt that the site was effective and agreed that they could complete tasks in a reasonable amount of time. 72% of participants found the site easy to use, but disappointingly 36% of participants did not find the site navigation intuitive and well structured. This may have been the underlying reason why only 19% of participants found the site satisfying to use.

Search

Screen reader users were unaware what the 'Search' field was for in the top right hand corner - the screen reader only read out "*edit box*". One user guessed it was the search edit box while another thought it was for submitting their email address. "*Again, there is a box there which purpose I don't know, and then there is a link to advanced search as well. My reader cannot read what the box is.*" When screen reader users carried out a word search on the page they were only able to find 'Search' at the bottom of the page, which means that the search button was not labelled correctly.

Text

Participants with visual impairments were very happy that the text was resizable – "*A good thing is that you could easily increase the font size, which is crucial for me.*" However, increasing the font size on the site forced text outside the associated graphic – "*When using a larger font size, the banners look a bit unprofessional, but at least they are not forcing the font size on the user.*"

Also, increasing the font size did not allow the text in the top navigation bar to be increased. "*There seems to be nothing to prevent the categories bar to be bigger than it is now – it would make it more visible and easier to read.*" Contrast of the text against the background may also have contributed.

Too much white space can increase the amount of time it takes to find information – "*I don't like lot of white space, because it makes scrolling longer, but you have the right amount of white space, that's fine*".

Links

'Show all…' is not an accessible link. Links should be labelled in context, for example, 'Show all jobs', 'Show all events'. Also, important information should be positioned at the top of any list. For example, 'Show all' was positioned at the bottom of the list of 'Jobs' therefore participants were unsure whether it was a list of all jobs or just a partial list. Finally, no information was provided explaining what the partial list was showing, for example, are they the most recent jobs submitted to the site? – "*How do we know that this is a complete list of conferences?*"

Conclusion

It is essential that a user evaluation using people with special accessibility needs be conducted as part of the full user-centred design evaluation process. This study confirms that some issues will not be identified as part of an expert evaluation.

As a result of the user evaluation findings, the UN team have decided to incorporate the full scope of recommendations as well as the recommendations from the heuristic evaluation not already implemented.

Conclusions

We have been very pleased with the project. Each stage played a valuable role and fed nicely into subsequent ones. The Heuristic Evaluation in particular was invaluable for identifying and prioritizing the main accessibility issues with the site, significantly aiding and speeding up the site modifications phase of the project.

As we said early on, a full redesign was never an option – the project aim was rather to see what could be done in a limited amount of time and minimum effort. As we have discovered, it is indeed possible to make a site accessible 'after it is live' with restricted resources.

The investigation also raised other issues that could not be tackled as part of the project, but would lead to recommendations for a future UN version. The Search facility needs to be improved for example. It is now based on old technology and an upgrade to a proper 'rank based' search engine approach would significantly improve both usability and accessibility. A full design would of course also be nice, allowing a more complete and 'purist' solution, tackling usability and accessibility from the very beginning. The rest of the survey feedback could also be encompassed and more suitable Internet technologies such as RSS, CSS and XHTML utilized.

Further information

Further details on the UNAP project (including downloads of the HCI 2003 Conference paper and PowerPoint slides) can be found at **http://www.visualize.uk.com/unap/**

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Erickson & Dorst to headline HCI2004

HCI2004: Design for Life • LeedsMet 6–10 September 2004

Interfaces can exclusively reveal that Tom Erickson and Kees Dorst have agreed to be keynotes at HCI2004.

Thomas Erickson practices interaction design and research at IBM's T. J. Watson Research Center in New York, telecommuting from his home in Minneapolis. His current work involves studying and designing systems for supporting computer-mediated communication (CMC) in groups and organizations, and his principal aim is to create systems that can mesh with the social processes that govern our daily communication practices.

Erickson's approach to systems design is shaped by methods developed in HCI, and theories and representational techniques drawn from architecture and urban design. His theoretical and analytical approaches are drawn primarily from rhetoric and sociology. In addition to CMC, research interests include virtual communities, pattern languages, genre theory and interaction design.

Over the last two decades Erickson has published about fifty refereed papers, and has been involved in the design of over a dozen systems ranging from advanced research prototypes to commercial products. Prior to joining IBM Research in 1997, he spent nine years at Apple Research, five years at start-up called Software Products International. Before that he studied Cognitive Psychology at University California, San Diego.

Kees Doorst is a designer and a philosopher. As a designer he took part in the design of over 50 products. His thesis *Describing Design – A Comparison of Paradigms* was awarded Cum Laude in 1997. The dissertation compared two fundamentally different ways of describing design processes: Rational Problem Solving and Reflective Practice.

Currently Kees Dorst works as a senior researcher in the section Philosophy of Technology at Eindhoven University, and he has played a key role in setting up the newly founded Industrial Design Department at the Eindhoven University of Technology. He is the author of numerous articles and three books relating to Industrial Design and he is the editor of the Dutch design journal *ITEMS*. His latest book *Understanding Design* contains 150 one-page essays, stimulating designers to think about what they do, how they do it, why and to what effect.

Additional keynotes will be announced on the website www.hci2004.org. Note that the final deadline for submissions is fast approaching – 7th May; more details on the website.

The conference is shaping up well. Over 60 full paper submissions were received by the deadline for that category. The social programme is also quite advanced with the conference dinner and reception to be held at Salts Mill, Saltaire, home of the David Hockney Galleries (http://www.saltsmill.org.uk/). The Buffet reception will be at the award winning Thackray Medical Museum in Leeds (http://www.thackraymuseum.org/).

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Usable Tours

Transforming the Usability Lab into an IT learning zone

Davis Marasco

Packed with buttons and gadgets, things that move and zoom, interactive processes that require teamwork, and tools that facilitate collaboration, Usability Labs are IT playgrounds for kids of all ages. The interactive nature of the lab brings IT down to a level where participants can get hands-on experience with the equipment and processes without feeling intimidated by the technology. Read on to find out how the IBM Hursley Product Usability Design Group (PUDG) tailored some standard usability activities and ended up with a successful fun-filled day of IT activities!

The driving force

Originally, the PUDG team developed a tour for the Usability Lab Open Day in celebration of our lab's refurbishments. The tour entailed a set of three concise hands-on activities aimed at giving internal employees a taste of user-centred design (UCD) and the services our team offered. The feedback we received was positive; participants had fun brainstorming, prototyping and testing their 'kitchen-based interface'! The event's success, coupled with our frequent requests to run on-site activities for school kids, prompted the development of a formal set of activities. The notion was to design an 'off the shelf' tour that any member of the team could easily run, even with little notice.

As a part of the IBM Mentorplace® initiative (an IBM mentoring scheme for local school girls), the PUDG team offered to run the tour as an event for a group of school girls aged 12 to 14. In addition to the Mentorplace® requirements (e.g. time limits), we brainstormed other requirements for the tour activities:

Interactive and hands-on

Participants should get their hands dirty with the various pieces of equipment available in the Usability Lab – it's the best way to learn, and much more fun than watching someone else!

Showcase the Usability Lab and the UCD process

Few people in Hursley Software Development Labs and moreover, the 'real world' have heard of UCD, let alone know what it's all about. Using the Usability Lab, the activities should give participants a basic understanding of UCD and its inherent benefit in the design process.

Enable participants to leave with a sense of achievement

The activities should give a new spin to the 'heads down' developer image of IT; technology, technical processes and related equipment can be used productively by anyone with the desire to learn.

Flexible to accommodate a variety of audiences and timescales

The tour should be a series of packaged activities which can easily be adapted to the requirements of a particular session, without affecting the value of the tour.

Logistics

One aim of the tour was to showcase the Usability Lab, so Stations 1–3 were staged in the Lab itself. Due to size constraints, Station 4 had to be held outside the Usability Lab in a conference room in Hursley House.

Thirty-six school children were split into three teams (Team A, B, C) and each team was assigned two chaperones, one from IBM and one from the participating school. As there were only three PUDG people available on that particular day, we decided to assign one to each team. This meant that the PUDG representative ran each of the Tour activities, moving from station to station with their assigned team.

Activity details

To begin, students were told they had just been hired to work on the FridgePlus project by Smart Toys Inc., a fictitious company that advocated UCD principles. The FridgePlus was to use Internet connectivity to create an intelligent refrigerator and their job for the day was to design the user interface for an LCD panel that would be mounted on the fridge. Each of the first three stations represented a different phase in the design process: requirements gathering, prototyping, and usability testing (Stations 1–3). Station 4 was a mini-design workshop which, although it was not directly related to the FridgePlus, tied the activities of the previous three stations together.

Students were given a brief explanation of the theory behind the task and how it fitted into the UCD process at the beginning of each activity.

Station 1: Requirements Gathering

Brainstorm FridgePlus requirements and prioritize the list for one of the user groups using GroupSystems™ software

Staged in our Decision Support Centre (DSC), Station 1 required participants to brainstorm requirements for the FridgePlus. Each student was assigned a ThinkPad® equipped with GroupSystems, a piece of software used to facilitate, document and centralize team brainstorming. They were instructed to spend 10 minutes typing in features they thought would be good to have on the FridgePlus. The facilitator started with a few example ideas appropriate to their age group such as a 'Justin Timberlake Alert', an alarm that indicated the fridge was low on Justin's top three favourite foods. The second step in this activity was to assign and prioritize each of the features to one or more (time dependent) of the profiled five user groups; mum, dad, grandparent, sibling, you.

Station 2: Prototyping

Prototype the task flow to assign a name to a glass of chocolate milk in the fridge using the SMART Board and Denim© prototyping software

Students sat in a circle around an electronic whiteboard upon which the prototyping software, Denim, was projected. This enabled the students to interactively sketch out the designs. They were told to imagine they had just bought some chocolate milk at the grocery store. Before putting it in the fridge:

- Label it with a name
- Set the expiry date alarm

Since no one had ever used a SMART Board or Denim before, the PUDG representative gave a quick little demonstration. Students were encouraged to collectively design the task flow

and were called up individually to each have a turn using the technology.

Station 3: Usability Testing

Run, observe and participate in a usability test using a PowerPoint prototype of the FridgePlus

Each student was assigned a specific role and given a task sheet which gave more detail about their specific role and instructions. There were six tasks (Interviewer, Test Administrator, Recorder, Observer, Equipment Controller, Test Participant) so students were required to pair up. Once the activity was explained, students went off into the appropriate room (the observation room or the test cell) to begin the activity. The students in the Test Administrator role were given a Session Scenario sheet to be read aloud explaining the basis for the FridgePlus test and the two tasks for Test Participants to perform. A PowerPoint prototype was provided to simulate the FridgePlus interface.

Station 4: Mini-Design Challenge

Design and present a costume for a superhero, Zapper

This activity was originally developed for another school event run by IBM. At an accelerated pace, students are required to brainstorm and prioritize requirements, design, draw and pitch a superhero's costume. In light of this, we thought it would be a perfect way to bring together the principles learned through the other three stations.

The group was divided into two equal teams and each given a design pack which contained markers, glue sticks, coloured paper, and poster paper. They were instructed to follow the printed instructions and at the end of the 20 minutes they were to present their costume to the other team. Both chaperones and the PUDG representative judged the presentations and deemed one team the Design Challenge winner based on a set of criteria (e.g. number of features). Small cakes were given as prizes.

At the end of the tour all the teams met in the auditorium room for a five minute debriefing session facilitated by the PUDG representatives. Due to miscommunication, this was not planned and so the PUDG team had to run it *ad hoc*. As a group, we quickly reviewed each of the stations and then asked the students for their thoughts, impressions on the afternoon overall. Students voiced their opinions on what they did and did not like and what new things they learned. In general the students had a great time learning about this new face of IT.

Looking back

Overall the event was a success as evidenced by comments from the students and chaperones. The students had a great time playing with the various bits of equipment and at the same time learned something new either about UCD, IT or themselves. The PUDG team was pleased with the afternoon as well; the Usability Lab got some publicity with the news items surrounding the event, the department finally had a canned Usability Lab tour the team could easily run, and it was a great way to spend an afternoon. It was rewarding to be a part of something where students get excited about IT!

At the end of the session, we combined the feedback from the students and the chaperones with our own observations to run-down what worked and what could be improved for next time. These 'lessons learned' are summarized below.

Lessons learned

Add in a five minute 'Introduction' session

Once students were escorted down to the Usability Lab, they were immediately divided up into groups and sent off to the appropriate activity room. In hindsight, a group spiel was needed to introduce the PUDG team, explain a little about what we do and what the students would be doing.

	Activity			
	Station 1: Brainstorming	**Station 2: Prototyping**	**Station 3: Usability Testing**	**Station 4: Mini Design Challenge**
Task	Brainstorm and prioritize a list of requirements for the FridgePlus	Prototype the task flow to assign a name to a glass of chocolate milk in the fridge using the SMART Board and Denim© software	Run, observe and participate in a usability test using a PowerPoint prototype of the FridgePlus	Design and present a gadget for the superhero, Zapper
Skills learned	• Brainstorming techniques • Prioritize requirements • Target user profiles • GroupSystems software	• Prototypes: use, purpose, place in design cycle prototypes • Denim software • SMART Board hardware	• Usability testing: administrating, observing, running and purpose in design cycle • PowerPoint software • Observation room equipment (cameras, microphones)	• Group work • Rapid prototyping • Presentation skills
Equipment	• Computers with GroupSystems software	• Denim© software • SMART Board	• PowerPoint prototype • Role instruction sheets	• Design pack: assorted pens, markers, paper • Task instruction sheets • Prizes for winning team
Location	• Usability Lab: DSC Room	• Usability Lab: Foyer	• Usability Lab: Test cell & Observation room	• Hursley House conference room
Duration (mins)	20	20	20	20

Table 1 Activity Quick view

Laminate usability testing task sheets and fix them to the relevant pieces of equipment

It was soon apparent that 12 students was too large a group to run the usability testing activity; there seemed to be confusion over where they were to stand and perform their individual roles. Afterwards, we thought that fixing the task sheets to the appropriate positions (rather than handing them out) in both the observation room and test cell would help space the students. Additionally, laminating the task sheets would make them more durable and reusable.

Include a wrap-up session

Although the PUDG team facilitated an impromptu wrap-up session, it was a great way to close out the afternoon. It brought everyone together to share their afternoon's experiences and gave the PUDG team an opportunity to get feedback on what did and did not work.

Provide participants with information sheets about each activity

It would have been helpful to give participants something tangible to take away from the event. An informational handout offering quick educational bites about each of the activities with space to add their own comments may help to remind them what they did while on site. It could also include links to follow-up sites, just in case some students were interested in IBM, the Hursley Software Labs, UCD, or IT in general. These information brochures could be tailored to the specific audience (internal website links for IBM employees versus links to external site for visitors).

Try to incorporate current classroom lesson themes with the activities

The challenge is always to make the topic relevant to the target audience. As the activities need to be flexible to accommodate a range of user groups (students, IBM employees, customers, etc.) it may prove difficult to find a universal topic that's engaging for all. One suggestion was to get in

touch with the school/group/department in advance to get a feel for their current topics. This buzz item could then be somehow incorporated into one of the activities. For example, if a class is currently studying India, one option might be design a travel website for India as the subject of the mini-design challenge activity.

Next steps

At the time of print the PUDG team has not yet run another tour, however, modifications have been made for next time taking into account the previously stated Lessons Learned.

The success of the event has got the PUDG team thinking about the possibility of an Ease of Use course for internal Hursley employees based on a similar set-up. This would serve two purposes; further increase the awareness of the Usability Lab, the PUDG team and their services, as well as educate the employees of Hursley Software Labs on the UCD process and its benefit to the development cycle. Hopefully, this would in turn, increase the buy-in from teams that are not currently sold on UCD or who simply do not understand what UCD is all about.

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Usability Engineer, IBM UK
Acknowledgements go to:
Keren Lyndon and Brian E Jones
Usability Engineer, IBM UK

Living without a Jeepload… erm… keyboard

Laura Cowen

Getting to grips with handwriting recognition at HCI2003

When Eamonn offered me a tablet PC to play with for the week, of course I said "yes". I'd never used one before and so, with a short introduction to the main parts of it I started playing. Tom McEwan had had his tablet all afternoon so we were soon connected up to MSW messenger (via wireless, of course) and chatting away both by text and by voice (the latter, though, was slightly pointless as we were, in fact, sitting only a metre or so apart on the floor of a small, empty room. Still it was fun. But not as much fun as collaboratively drawing a picture on the shared whiteboard (via wireless, remember).

A tablet PC, in case you've never come across the the before, is a kind of laptop without were keyboards – essentially just an LCD screen with some buttons around tee frame. You enter tact, not by means of a traditional keyboard, but using a stylus. You can can extra handwrite on the screen or simply call op the on-screen keyboard and tap the keys with are tip of your stylus.

At first, I stuck with the on-screen Qwerty keyboard. flowerer, that was like typing with one finger at a time on a very small keyboard. so t wrought I'd give are handwriting recognition a fair go. And actually, without having done any calibration myself, its not too bad. Granted, my first sentence of this article Came out like this:

When Eamonn offered me a
tablet PC to playacts for
brewed, of onset said "yes".

And it does get a Git tedious having to go back and correct not just the odd mistyped letter but a nonsense strong of words. On the plus side though, when you do correct typos, it generally takes only one attempt. On the odd occasion you do have to weep repeating yourself until it gets it but ante whole its pretty good.

Laura Cowen
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The (final) Cassandra column

Cassandra Hall

I am not yet born; O hear me,
Let not the man who is beast or who thinks he is God
Come near me…

Alexander Pope suggested that: 'Hope springs eternal in the human breast' and Jakob Nielsen gave lovely confirmation of that optimism in an Alert Box during the summer. An upbeat Jakob told us that: "The IT industry is maturing." It's funny. We say that about the IT industry all the time but what I'd like to know is what we actually mean by it and what we can expect when and if it does mature? And will that be an improvement? After all, beaujolais is drunk green. Just imagine November with the cry: "Le beaujolais de l'année dernière est arrivé!". It won't catch on; it doesn't have the same ring.

Jakob is sure he knows what maturity means for IT, though even his optimism is toned down by a 'hopefully' that spoils the impression that something grand is just around the corner and that Jakob is privy to it. "Hopefully," he says, "this maturity will result in a slower introduction of new features, which in turn will let companies focus their attention and resources on making existing technology work better for users."

Now, call me churlish, chuck slings and arrows and brickbats and 'let the club footed ghoul come near me' but I can't see the companies I have anything to do with focusing their attention on brushing up the interfaces to existing technologies. There isn't any money in it – it's full speed ahead to the iceberg of featurism and any users must take their chances in the icy waters when the lifeboats fail.

OK, I know. You're wondering what has brought on this sudden and miraculous about face from my fascination with gadgets. I'll explain. My best friend has just moved house. She'd been living in some obscure portion of the UK that her arrogant and snobbish ex (OK, I didn't like the guy) described as a 'cultural desert' as he hotfooted it back to Mummy and Daddy and East Sussex. Yes, life is nicely ironic isn't it? I expect he'll spend eternity with Jeffrey Archer and David Blaine; with Beagle 2 engineering any communication he has to do with Earth, if God has the sense of humour I think he has.

Anyway, she eventually bowed to pressure from family and friends to move closer to 'home' so we could all keep an eye on her. I went to visit her over Christmas to see how she was getting on. She greeted me with a wodge of instruction booklets and desperation. Could I make the hot water work? Would I show her how to manage the oven? What did I make of the shower? Did I know anything about extractor fans? For every fixed piece of equipment in her new house, she had a pretty fixed set of problems. And all of her troubles were to do with interfaces a long way off transparent and instruction booklets that didn't. I grabbed the first instruction booklet – it turned out to be the programmer for the boiler – and set off to bring electronic order to the chaos my friend calls her life.

Now, I'm used to instruction books written by machine translation systems, instructions written by semi-illiterates with firsts in subjects I don't much like, instructions written by the pompous, the hurried, those who quite clearly have never used the system, and so on. But till then I'd never seen one written with such disarming honesty. There isn't space for all of the gems but here's one to give you a feel:

'If you want to make changes to the programme (10 minute steps) it is suggested you write them down before making the changes.'

You may be thinking with instructions like this, it's all a piece of cake but actually, the system is complex and even honesty is no clove of garlic to the vampire of incomprehensibility. Not convinced? Well, maybe this will whet your appetite for a redesign:

'You cannot set the first switch on time (ON1) before mid-night but you can set the OF2 after mid-night so long as you don't try to exceed 23 hours 50 mins after ON1.'

Only a genetically modified human being could operate a system like this one is with a 'Yes' button for confirmation but without the corresponding 'NO!!!' button when you can't agree. Mind, we have colleagues at the Invisible University who act like that. I can just imagine the Whiz of a cost-cutting engineer who figured out (quite rightly) you don't need a 'No' button – it's only for the WIMPS. Let's hope the political parties never get hold of that one.

But the Whiz had gone one further and also realised that the rational might conclude that '+' could possibly mean 'Yes' and that '–' could stretch to 'No'. So, in order to add a certain *je ne sais quoi* they'd decided that the 'Yes' and '–' button should be shared and the '+' button should be separate. I knew you wouldn't believe that one so see Figure 1 below.

Figure 1 My best friend's boiler programmer

Now do you believe me?

Anyway, after a series of helpful hints the manual concludes, like Jakob, rather hopefully I think: 'If you get confused…'

Confused? I wasn't confused. But I was totally helpless with laughter as I imagined the user trials we could have with this one. Actually, to be fair the system does come already with a default which the instruction booklet writer hopes will be the one you need. I hope so too. In fact I hope so much that I'm seriously considering adding a lecture on the nature of hope in human existence and its relationship to HCI in my forthcoming lecture series. I will also teach the power of prayer and the malevolence of fate so that my

students are perfectly attuned to the workings of modern technological development. We will have tutorials in crossing our fingers, holding our thumbs. This will save a fortune in trying to develop cross cultural systems. However, in deference to Richard Dawkins, I'll ask them to read the whole of Pope's *Essay on Man* to get it all in proportion.

Yes, I set up the programmer on the boiler for my friend and told her not to play with it. Not that there was any need for the warning; the poor girl is totally traumatised by all the complex systems she's surrounded by. She's currently operating the central heating via the thermostat which she can understand. My guess is that most people using that system will be leaving it to the default or doing just what she does – setting it to constant and turning the thermostat up and down to get the central heating to operate when they want it to.

OK, so Don Norman argues that difficult systems will only be used if people have to use them. But he should have added that quite often there are ways round difficult systems that users will find so that actually features no longer function as they were designed to but the system does roughly what the user wants it to do. People only use features they 'need' and the rest lie dormant and unused unless the 'need' arises and unless help is at hand. And that help can be from another human being or from an internal eureka. Those features will then be learned or discarded until the situation they were needed arises again. If the need arises frequently then the feature will become part of the user's repertoire and they will learn them no matter how seemingly difficult they are. That's the depressing bit for HCI experts since that very fact plays straight into the hands of usability dinosaurs. Users either learn or discard functionalities depending on their levels of desperation. And worse still, none of that acts as any kind of brake on developers who are fed by a fuel we all know as Commercialism; or Profit if you want to take a Popian view.

I hope – hålla tummarna (holding my thumbs) as my Swedish grandmother taught me – that 2004 brings the very best for users of technology and HCI experts everywhere – and if you know your Louis MacNeice whose 'Prayer Before Birth' has given me my title quotation – may it provide, metaphorically and literally speaking, all the water you need to dandle in, grass, birds, the works. But above all, since we are reduced to superstitious behaviour, I wish for a 'white light in the back' of technologists' minds to do the guiding.

Postscript

This is my last column. I'm going to San Diego for a bit. And now I'm going to be pretentious for a change and say, like Arthur, I will return when I'm needed.

Live long and prosper, British HCI.

Cassandra Hall

Book reviews

Another varied selection in this issue to whet your appetite, with reviews on

- *Emotional Design: Why We Love (or Hate) Everyday Things*, the latest Donald Norman book in which he explores the role that emotion plays in our experiences of using everyday devices..
- the 3rd edition of *Human–Computer Interaction* – a key text whose earlier editions will be familiar to many of you and which is likely to become familiar to new (and not so new) generations of students.
- *HCI Models, Theories and Frameworks – Towards a Multidisciplinary Science* – anther essential reference text which handily draws together 15 different models, theories and frameworks.

If you are interesting in reviewing books then please let me know – we can't offer payments but you do get to keep the book! In particular we would very much welcome reviews by students on key textbooks, such as *Human–Computer Interaction* (reviewed in this issue) or *Interaction Design* (reviewed in earlier issues) –- so if you are a student please get in touch.

Sandra Cairncross, Book Review Editor
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Emotional Design
Donald Norman
Basic Books
ISBN 0-465-05135-9

Donald Norman is an influential character in HCI, with a back catalogue of best-selling publications and a 'Lifetime Achievement Award' from SIGCHI. His latest book captures the *Zeitgeist* and was my most thought provoking read of 2003.

Crammed with ideas and facts, it raises as many questions as it offers answers; it is also well illustrated and eminently readable. In covering 'new scientific advances in our understanding of the brain … and emotion' (8) it makes a perfect companion to Patrick Jordan's work in *New Human Factors* and Ray Crozier's (sadly out of print) *Manufactured Pleasures: Psychological responses to design*.

Early on we discover that the book is 'about affect, not just emotion' (10) and that 'emotion and cognition are thoroughly intertwined' (8). The author claims this progress grounds emotional design in science rather than mysticism and demonstrates its implications over the next 288 pages. Along the way he offers the reader some useful practical points for designing for the emotions.

The main content is divided into two parts: 'The Meaning of Things' and 'Design in Practice'. These cover everything one would want, from games to cinema and robotics. All the big names are here: researchers (e.g. Rosalind Picard), innovators (e.g. Hiroshi Ishii), designers (e.g. Philippe Stark), and businesses (IDEO).

All the key issues are dealt with, although not necessarily where, when, or at the level of detail one would expect. Indeed, some topics are skipped over, including the social and cultural aspects of affect. The reader is asked to accept a definitive statement on the subject, which can be disconcerting when the author provides a list that includes 'attractive people' and 'symmetrical objects' as 'situations and objects' that 'give rise to positive affect' (29).

Norman's reputation for making a

subject accessible is augmented by new research in *Emotional Design*. The book presents a model resulting from his work with Andrew Ortony and William Revelle in emotion and cognition, and negative and positive affective states. The model proposes the following:

> three different levels of brain mechanism: the automatic, prewired layer called the visceral level; the part that contains the brain processes that control everyday behaviour, known as the behavioural level, and the contemplative part of the brain, or the reflective level. (6)

Furthermore, 'These three components interweave both emotions and cognition' (6). The model is then operationalised into: 'Visceral Design', 'Behavioural Design' and 'Reflective Design' (5). It is suggested that these elements work in concert with the behavioural aspect fitting with traditional HCI design concerns.

The bulk of *Emotional Design* expands on the model's implications although the results can sometimes seem counterintuitive (to my experience). For example, he states that 'attractiveness is a visceral level phenomenon – the response is entirely to the surface look of an object' (87).

Music sets another challenge requiring a workaround so that the behavioural element is linked with performance (not the act of listening). We find that 'The initial pleasure… is visceral, the enjoyment of playing and mastering the parts behavioural, and the pleasure of analysing intertwined, repeated, inverted, transformed melodic lines reflective' (115).

The model echoes Jordan/Tiger's 'scientific studies of pleasure and design' (104) that specifies 'Four Pleasures' consisting of Physio, Socio, Pyscho and Ideo elements. The main difference with the Ortony, Norman, Revelle model is a lack of a discrete social dimension. Norman explains this absence by stating that Socio-Pleasure 'combines aspects of both behavioural and reflective design' (104). The author takes a similar (to Jordan) tack to moving away from traditional usability concerns.

In the past Norman confesses that he 'addressed utility and usability, function and form, all in a logical, dispassionate way…' The result has been a well-deserved criticism from designers: 'if I were to follow Norman's prescription, our designs would be usable – but they would also be ugly' (8). Designers do not escape blame as he claims that 'designers want their colleagues to recognise them as imaginative, creative and deep, making something pretty or cute or fun is not well accepted' (66).

On a more positive note, he admits that design by committee is dangerous and reinstates artistic integrity stating that 'the best designs come from a clear vision and focus … usually … driven by one person' (96). Indeed, 'when it comes to visceral design, the iterative method is design by compromise, by committee, by consensus. This guarantees a result that is safe and effective but invariably dull' (96). However, the book is better on the science than the art.

We find that 'Sophistication often brings with it a peculiar disdain for popular appeal' (38) and the product range, he cites is limited and biased towards 'designer products' (design = Philippe Stark) and blokes' stuff (power showers, tools and cars) which he describes in such loaded terms as 'sleek', 'sexy', 'inviting', 'powerful', 'firm', (67). His taste is often drawn to the retro (The Beetle, Audi TT, PT Cruiser) although balance is restored with some Japanese product design and of course, his trademark collection of teapots.

He often comes across as a pessimistic soul, arguing that we are 'living in an untrustworthy world' (142). Indeed 'it is not uncommon to hate the things we interact with' (7) as we are 'Always connected, always distracted' (151).

The emotional user is affluent, fickle and is in a fit of 'worry about the image [they] present to others' (83). However, we are offered a future where 'Emotional machines will avoid problems of annoyance' (194), with 'technologies that provide the rich power of interaction without the disruption' (157).

In the final (most philosophical) section of the book he fleshes out the future stating that 'future machines will need emotion for the same reason people do' (160). Donald Norman has made a bold step, bringing art and science together, in an accessible and engaging manner, to a subject that affects all of us. He offers us a humanist perspective on technology that links the past, present and future of emotional design.

John Knight
(c) 2004 User-Lab
Birmingham Institute of Art and Design

NB I was generously given an advanced uncorrected proof to review and so page numbers and quotations may differ in the final published version of the book

Human–Computer Interaction 3e
A. Dix, J. Finlay, G. Abowd, & R. Beale
Pearson Education (Prentice Hall), 2004
0-13-046109-1, £39.99

Human-Computer Interaction by Dix, Finlay, Abowd and Beale is an established HCI course text first released ten years ago, and now in its third edition. It is clear from this latest edition that the authors have carefully reviewed their previous version and added new topics and depth to others to enhance and keep the book academically current in its coverage. As a textbook it has a good address of human–computer interaction and related issues and on most topics provides a suitable level of detail, accompanied by further references for the reader should they wish to investigate more.

As with many similar textbooks it starts with an overview of HCI that sets a clear context of the topics and areas involved and the way in which they are integrated and contribute to the larger field of computer science. These introductory chapters and sections are presented in such a way that the reader gains a fast understanding overall and wishes to read on.

Chapters are well presented from the first introductory page with precise overviews that guide the reader directly to specific topics and areas of interest. The chapters are written in a style that enables the reader to quickly build up a background to the topic, through introductory level opening discussions, progressing into the subject with deeper explanations and examples.

Throughout each chapter there are work through exercises included to ensure the reader does not only understand theory, but also has the opportunity to try out models, etc., at a practical level. For most readers this will be sufficient to their own or their course's needs. However, for those who wish to 'dig' even deeper into topics, many useful references are provided for further reading at the end of each chapter.

In relation to topics addressed within the text coverage is good. The textbook, in my view, covers five specific areas of HCI particularly well. Firstly it provides a clear overview of human–computer interaction, the raw components and their importance to the wider field of computer science.

It moves on to focus well on HCI design and addresses many design models, notations, guidelines, and approaches to modelling of systems. Coupled to design it has a suitable focus on system implementation issues addressing languages and topics such as CSCW applications.

The text complements implementation by addressing evaluation and effective approaches to evaluate an interface and HCI at depth. Finally, the latter chapters focus on new and emerging HCI areas such as virtual reality, multimedia, and web applications. On these later issues the book is fairly introductory, but it does form a good introduction to these topics.

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HCI Models, Theories and Frameworks – Towards a Multidisciplinary Science
John M Carroll (Editor)
Morgan Kauffman, 2003
1-5586087, £39.95

This is a collection of fifteen different HCI models, theories or frameworks from design rationale to activity theory to information processing theory. Some will be familiar to many of you but some will not. Overall John Carroll has done an excellent job in bringing together a good set of theories. The authors have done a good job of writing about them and illustrating them. The students at Virginia Tech who tried out the chapters before we got to see them also did a good job. Overall, then, this is a book worth having.

One could inevitably be 'picky' over why some approach was left out or why some approach was included. But I won't be. If they are good enough for Carroll, they are good enough for me.

The book is organised according (roughly) to the level of description that a theory, model or framework provides. So it begins with theories of perception and these may be used to guide designs. It goes on through theories of cognition (GOMS), to more abstract views of cognition such as cognitive dimensions and mental models to distributed cognition, cognitive work analysis, activity theory, workplace studies to claims analysis. Each chapter explains the background theory and perspective, shows how this can be applied in practice, and gives an example or two. The result is an accessible introduction to some key approaches to HCI.

To pick on one example, I found Penelope Sanderson's presentation of Cognitive Work Analysis (CWA) particularly good. CWA has evolved from the work of Jens Rasmussen and his colleagues originally working at the Riso National Laboratory in Denmark. Originally formulated to help in the design of systems concerned with the domain of process control, where the emphasis is on controlling the physical system behind the human–computer interface, it provides a different and powerful view on the design of interactive systems.

One principle underlying CWA is that when designing computer systems or any other 'cognitive artefact' we are developing a complete work system which means that the system includes people and artificial artefacts. Seeing the whole as a work system enables designers to recognise that this system is more than the sum of its parts; it has emergent properties.

Another principle of CWA is that it takes an ecological approach to design. Taking an ecological approach recognises that people 'pick up' information directly from the objects in the world and their interaction with them, rather than having to consciously process some symbolic representation.

Sanderson provides a discussion over the similarities between the ecological psychology of Gibson and designing systems that afford certain activities. She also presents a good description of the 'abstraction hierarchy' which is how CWA describes a system at five levels of description.

At each level of the hierarchy the connection going up the hierarchy indicates why some system or component exists, whereas the relationship looking down the hierarchy indicates how something is achieved. The chain of 'hows' describes the means by which something happens and the chain of 'whys' describes the reasons for the design; the ends or teleological analysis. This means–end analysis is something missing from other HCI frameworks. CWA is not easy but Sanderson presents an excellent review and some detailed example.

Other particularly good chapters were Bonnie John's on GOMS and related methods and Steven Payne's on mental models. Whether you are interested in using this book as a teaching resource or as a reference book, it meets the brief. There will be a lot more HCI theory courses cropping up now that Carroll has taken the trouble to pull together these diverse theories, methods, frameworks (call them what you will) together.

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HCI2004

Do you know of any gadgets we could play with?

Organisation for HCI2004 continues apace and as in previous years there is an opportunity to have 200 HCI specialists scrutinise your ideas, prototypes and development systems. Last year we successfully used RFID (Radio Frequency IDentification) tags to allow notification of interest in interactive posters, a technology topic that now fills the retail paper columns. So if you:

- have seen some enabling technology that the conference could use
- know of some research projects that would like up to 200 HCI specialist users
- know some company wanting to do evaluation on their next product

then tell us by contacting Adrian Williamson of the HCI2004 committee at *Adrian.Williamson@gtnet.com* and help ensure the conference continues its topical state of the art tradition!

Call for Papers

MOBILE HCI 2004

The 6th International Conference on Human-Computer Interaction with Mobile Devices and Services

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www.mobilehci.org

Profile Sivasegaram Manimaaran talks to Alan Dix

I am an Associate Programme Manager at the Engineering and Physical Sciences Research Council (EPSRC) where I am involved in managing the 'Human Factors in ICTs' area and the Research Councils' Basic Technology Programme. I've been in post for two years and prior to this, studied for my degree and PhD at the Department of Chemical Engineering at Imperial College London and worked as a postdoctoral researcher in Chemical Engineering Departments at Imperial College and Rensselaer Polytechnic Institute, NY. In between postdocs, I travelled and worked for one year in New Zealand, Australia and Hong Kong until my Credit Card(s) could take no more…

What is your idea of happiness?
Radiohead live and at their depressing best

What is your greatest fear?
Heights

With which historical figure do you most identify?
Malcolm X

Which living person do you most admire?
Apart from my parents, I would have to go for Noam Chomsky

What is the trait you most deplore in yourself?
Shyness

What is the trait you most deplore in others?
Intolerance

What vehicles do you own?
None and I hope Ken can help keep it that way!

What is your greatest extravagance?
My upcoming holiday in Sri Lanka :-)

What makes you feel most depressed?
Mass-market tabloids

What objects do you always carry with you?
Apart from the obvious, something to read

What do you most dislike about your appearance?
My one-pack

What is your most unappealing habit?
Drifting off…

What is your favourite smell?
Home cooking

What is your favourite word?
Bazillion

What is your favourite building?
Aboriginal tent Embassy in Canberra

What is your favourite journey?
London to AN Other holiday destination

What or who is the greatest love of your life?
My Gaëlle-friend

Which living person do you most despise?
No one

On what occasions do you lie?
When recounting stories that will embarrass my friends – more embellishing than lying, I think…

Which words or phrases do you over-use?
"You lie… and yo breath stank" (courtesy of the Infectious Grooves)

What is your greatest regret?
Well, there was this chat with Alan Dix about a questionnaire…

When and where were you happiest?
Travelling and visiting new places

How do you relax?
With a few Belgian beers and/or a nice meal and wine with friends

What single thing would improve the quality of your life?
Teleportation

Which talent would you most like to have?
To sing like Geoff Tate of Queensrÿche

What would your motto be?
To quote the great Homer – "Mmm Doughnuts"

What keeps you awake at night?
Cricket highlights on Channel 4

How would you like to die?
While active

How would you like to be remembered?
With a smile

… and from Alan …
Anyone who knows the workings of EPSRC is likely to know Manni already … although I know I have never seen that hat before (Manni, you must wear it at Leeds). If not and you are working in HCI research, then you should get to know him! Sometimes as I chat with people at conferences and meetings I notice that they talk about the EPSRC a bit like one does of the Tax Man or … even worse … the VAT MAN (now actually I always find that when you talk to them the tax and even vat office are very friendly … but you'll never believe that, so let's stick to the EPSRC). Now this 'us-and-them' feeling is not without cause; you slave for days, weeks, months over that carefully crafted grant proposal, send it off and it comes back with incomprehensible comments and a verdict: 'yes' (occasionally), more often 'no', or, most annoying, 'fundable but insufficient funds available' – well done, you won the 100 metres but we ran out of medals! Of course in reality all those (silly) reviews and the panels that make the decisions are made up of your colleagues – so don't blame Manni! The folks at EPSRC want us to write the best proposals and to produce the best work in HCI. So chat to Manni next time you see him standing lonely at the tea table at a HCI meeting …

British HCI Group – Application Form 2003–2004 *Please print or type*

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The data on this form will be treated as confidential to the BCS. Names and address may be used, under our strict control, for mailings judged by the British HCI Group Executive to be of value to the membership.

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Do you wish your contact details and professional interests to be listed in the Membership Directory sent to all members of the group? (We will NOT use your home address, unless that is all you have given us.) Yes ☐ No ☐

Getting Involved…

We are always looking for people interested in contributing to HCI group activities by, writing for Inter*faces* magazine, helping run the annual conference or joining the executive. If you are able to contribute in this way or if you have ideas for 1-day meetings or new activities please contact Adrian Williamson, adrian.williamson@gtnet.com

Membership Fee

Membership classes and fees for 2003–2004 are:

BCS Member £30 ☐ Non BCS Member £35 ☐ Student £10 ☐ £ .....

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Journal Subscription to 'Interacting with Computers'

The HCI Group manages a journal, *Interacting with Computers*, published quarterly by Elsevier Science. Members may subscribe to this journal at a reduced rate (£52.50).

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