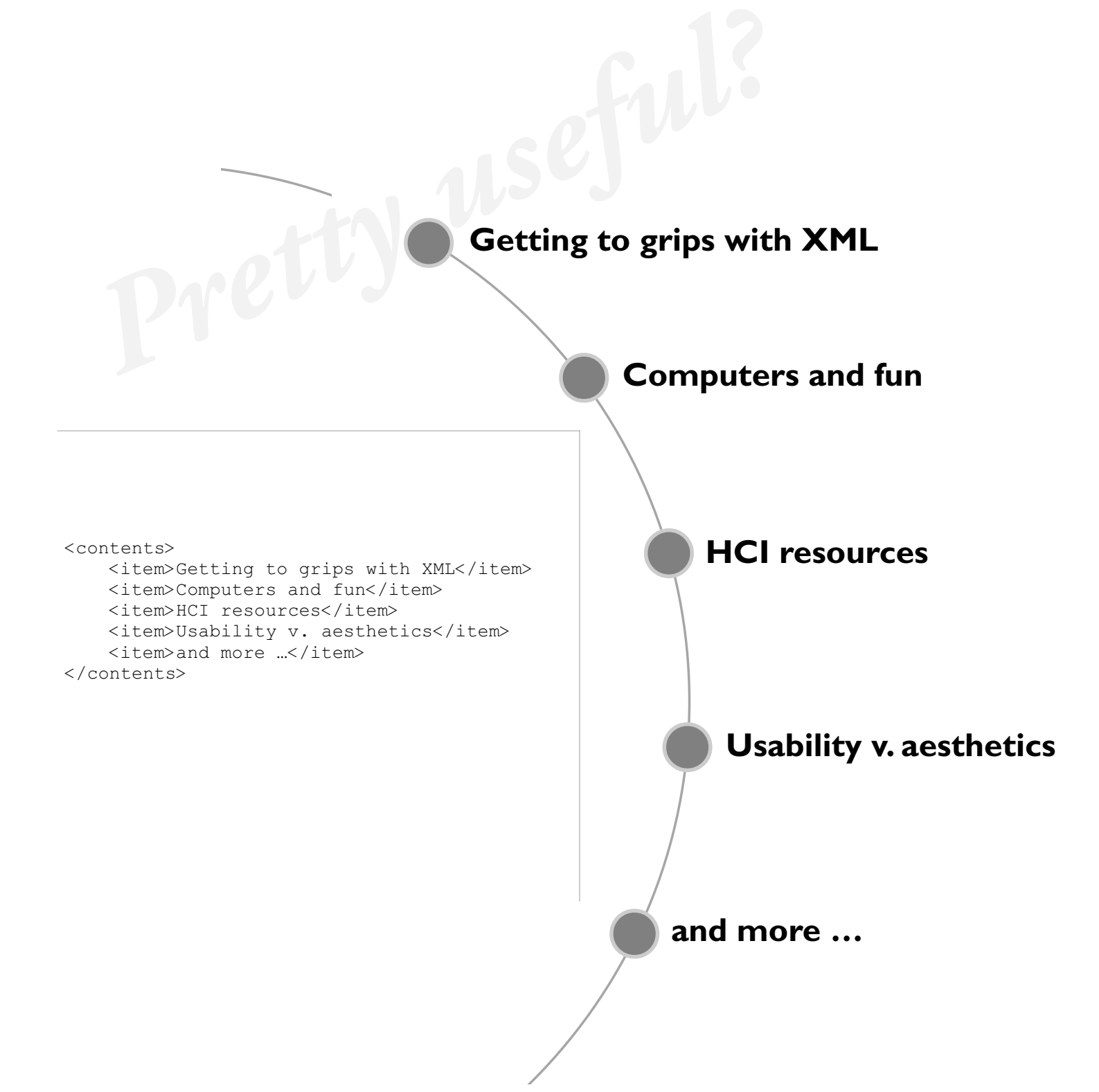
Interfaces

No. 42 Spring 2000

British HCI Group
www.bcs-hci.org.uk



Published by the British HCI Group • ISSN 1351-119X
Human–Computer Interaction

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From the Chair

Desert Island References

I was recently asked to provide an entry for the Reader's Guide to the Social Sciences. The brief was to choose eight references that would give a reader a picture of what HCI was about and provide a short paragraph supporting each choice. Of course, it was tempting to choose my last eight publications. This would be like the subject of the radio programme "Desert Island Discs" choosing 10 of his or her own records and was clearly immodest.

I guess I took the coward's way out by choosing mainly edited books, so really my key references were collections of references. I went for: *Monk & Gilbert* (oops slipped already!) to illustrate the interdisciplinary nature of HCI; *Preece et al*. to illustrate the maturity of the subject (we have a 770 page text book); the Windows interface guidelines (we have standards); the *CHI conference proceedings* as where to go for the state of the art; *Greenberg, Finn et al.* to show how HCI covers human–human communication as well as human–computer communication; *Card, Moran and Newell* as an early example of theory in HCI, and *Kraut* as a pointer to where HCI is going next (into the home). The full references are given below.

I suspect that these would not be everyone else's choice. If you have alternative suggestions send them to the Interfaces editors (not me).

Card, S. K., Moran, T. P. & Newell, A. *The psychology of human-computer interaction*. Hillsdale, NJ: Lawrence Erlbaum, 1983

Finn, K. E., Sellen, A. J. & Wilbur, S. B. *Video-mediated communication*. Mahwah, New Jersey: Lawrence Erlbaum Associates, 1997

Greenberg, S. *Computer-supported Cooperative Work*. London: Academic Press, 1991

Kraut, R., Mukhopadyay, T., Szczpula, J., Kiesler, S. & Scherlis, W. "Communication and information: alternative uses of the internet in households" In C. Karat, A. Lund, J. Coutaz & J. Karat (Eds), *CHI'98, Human Factors in Computer Systems*, Los Angeles. (pp. 368–375). City: ACM Press, 1998

Microsoft Corporation, *The Windows interface guidelines for software design*. Redmond: Microsoft Press, 1995

Monk, A. F. & Gilbert, N. *Perspectives on HCI: diverse approaches*. London: Academic Press, 1995

Preece, J., Rogers, Y., Sharp, H., Benyon, D., Holland, S. & Carey, T. *Human-Computer Interaction*. Reading, MA: Addison-Wesley, 1994

Williams, M. G., Altom, M. W., Ehrlich, K. & Newman, W. CHI'99. *Human factors in computing systems*. New York: ACM Press, 1999

Your chairman

Andrew Monk

Editorial

Welcome to another issue of *Interfaces*, containing the educational, the entertaining and, perhaps, the controversial. Coming prior to the Third Workshop on Effective Training and Education in HCI (see page 17) it has a timely focus, both directly and indirectly, on what and how we understand and communicate HCI. As an HCI educator, I have found myself re-examining both the content and the practice of what I teach. Do the old tried and tested methods still hold good for 'new' media? Can 'usability' be meaningful without aesthetics? Is it possible any longer to 'know our users'? What core skills must our HCI graduates have? With students increasingly coming from backgrounds of design and art rather than business or computer science, is HCI, as we know it, relevant, or do we have to rethink our approaches? And given these shifts in emphasis, what can we learn from other creative disciplines – art, theatre, music, literature and so on – about meeting generic expectations of 'users'? Some of these themes, and others, are picked up in this issue. It is a timely debate and we would welcome your views.

I'm pleased to welcome Tom McEwan as joint editor. Tom will be known to any who attended INTERACT'99 as one of the editors of the Purple Press – need I say more? Please contact either Tom or myself if you have any ideas or materials for *Interfaces*.

Janet Finlay
Editor

RIGHT TO REPLY

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

NEXT ISSUE

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

With thanks to:
commissioning editors: Barbara McManus (University of Central Lancashire), Xristine Faulkner (South Bank University), Alistair Kilgour (Heriot-Watt University)

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

Deadline for issue 43 is **15 April 2000**. Deadline for issue 44 is **15 July 2000**. Electronic versions are preferred: RTF, plain text or MS Word (5/6), 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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and copy email submissions **to Fiona Dix, Inter*faces* production editor; email: fiona@hiraeth.com**

Getting to Grips with XML

Adrian Williamson

Introduction

The eXtensible Markup Language (XML) is seen as one of the significant enabling technologies for progress towards e-commerce. The ability to structure and instrument documents in a form which is readily machine readable is crucial to world-wide data exchange for business. Needless to say there is little new in the principles behind XML, so those of us with good memories can blow the dust off our 'nroff', 'troff' and LaTeX manuals as an outline introduction to it. XML is Unicode character based and so is also human readable, although this is less significant for the purpose of automated processing. Nevertheless it presents a more accessible medium than, say, a proprietary wordprocessor file format. XML is a subset of the Standard Generalized Markup Language (SGML), which is an established ISO standard (8879) originally created by Charles Goldfarb in the early 1970s. XML is currently at version 1.0, and is under the jurisdiction of the World Wide Web Consortium (W3C) to help prevent its being hijacked by any one vendor or business interest.

XML is of course a sibling of the HyperText Markup Language (HTML). Whereas HTML concerns itself almost exclusively with appearance, XML aims to cover structure, semantics and presentation style. This further separation allows a variety of presentation styles to be generated for the same (unchanged) document, for example one for screen display and one for printing. These benefits are not for free, however, and there is a significant overhead in applying these different elements of markup to new and existing documents. XML also differs from HTML in allowing you to define your own elements marked out by your own tags. Tags are markup such as '<P>' and '</P>' which define element bounds and can be tailored to your particular design. This potential benefit also introduces the problem of incompatibility and clashes, particularly significant for business document exchange. The W3C has a standard on 'namespaces', which provides rules for scoping documents and their components to help avoid clashes. Work to help with compatibility is given by public repositories of standard documents. These are an important feature of e-commerce initiatives such as Microsoft's BizTalk™, Rosettanet and BizTokens™ from Gnosis.

Components of XML

There are a number of components that are used in the processing of XML documents. There will be the core document of interest; for example, this file 'HCIFORM.xml' describes a screen with a form for some interface application:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<?xml-stylesheet type="text/xml" href="HCIFORM.xsl"  ?>
<!-                                                  ->
<!- A document Defining a simple Form                ->
<!-                                                  ->
<!DOCTYPE HCI_SCREEN SYSTEM ".//HCIFORM.dtd">
<HCI_SCREEN name="confirm">
<HCI_FORM name="NewFormData"
          position="relative"
          x="100"
          y="50"
          units="pixels">
<HCI_LABEL name="Label01"
           label="Membership Number:"
           x="20"
           y="20"/>
<HCI_TEXTFIELD name="TextField1"
               width="50"
               height="20"
               x="20"
               y="30"
               columns="10"
               table="&#39;customer_entry&#39;"
               row="5"
               field="ID">
This is data for Mr. Jolly
</HCI_TEXTFIELD>
<HCI_BUTTON name="Button1"
            x="40"
            y="60"
            label="&entry_text;"
            activate="CollectID"/>
```

```
</HCI_FORM>
</HCI_SCREEN>
```

As you are able to make your own elements, anyone processing this will need information on the design of this particular document, and this is usually held in a Document Type Definition (DTD). This may be included in the document or be separate to allow sharing, as it is here. The line in the document:

```
<!DOCTYPE HCI_SCREEN SYSTEM "./HCIFORM.dtd">
```

calls in the appropriate document design from the file 'HCIFORM.dtd'. The contents of this DTD are shown here:

```
<?xml version="1.0" encoding="UTF-8"          ?>
<!—                                          —>
<!— A document definition for a simple form —>
<!—                                          —>
<!ELEMENT HCI_SCREEN (HCI_FORM)+>
<!ATTLIST HCI_SCREEN name CDATA #REQUIRED>
<!ELEMENT HCI_FORM((HCI_LABEL)*,(HCI_TEXTFIELD)*,(HCI_BUTTON)*)>
<!ATTLIST HCI_FORM name CDATA #REQUIRED
                   position (relative|absolute) #REQUIRED
                   x CDATA #REQUIRED
                   y CDATA #REQUIRED
                   units CDATA #REQUIRED>
<!ELEMENT HCI_LABEL EMPTY>
<!ATTLIST HCI_LABEL name CDATA #REQUIRED
                    label CDATA #REQUIRED
                    x CDATA #REQUIRED
                    y CDATA #REQUIRED>
<!ELEMENT HCI_TEXTFIELD (#PCDATA)>
<!ATTLIST HCI_TEXTFIELD name CDATA #REQUIRED
                        width CDATA #REQUIRED
                        height CDATA #REQUIRED
                        x CDATA #REQUIRED
                        y CDATA #REQUIRED
                        columns CDATA "1"
                        table CDATA #IMPLIED
                        row CDATA #IMPLIED
                        field CDATA #IMPLIED>
<!ELEMENT HCI_BUTTON EMPTY>
<!ATTLIST HCI_BUTTON  name CDATA #REQUIRED
                      x CDATA #REQUIRED
                      y CDATA #REQUIRED
                      label CDATA #REQUIRED
                      activate CDATA #REQUIRED>
<!ENTITY entry_text "Enter">
```

This approach is strongly analogous with database techniques, and we could view the DTD as a schema, and the document as an instance. We can process the DTD and document together to provide document validation using an XML parser. There is also a proposed metadata layer above XML called the Resource Description Framework (RDF), which is a document type able to describe new relationships between resources. We might think of RDF as the tool which the next generation of librarians will use for tasks such as cataloguing.

We could also produce a style sheet in the eXtensible Style Language (XSL or XSL Transformation (XSLT)). The style sheet for this document is introduced by the line in the document:

```
<?xml-stylesheet type="text/xml" href="HCIFORM.xsl"  ?>
```

which indicates the type and location of the style formatting. The contents of this 'HCIFORM.xsl' file might be:

```
<?xml version="1.0"?>
<xsl:stylesheet version="1.0"  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

  <xsl:template match="/">
    <html>
```

```
      <xsl:apply-templates/>
    </html>
  </xsl:template>

  <xsl:template match="HCI_SCREEN">
    <body>
      <xsl:apply-templates/>
    </body>
  </xsl:template>

  <xsl:template match="HCI_TEXTFIELD">
    <P colour="black">
      <xsl:apply-templates/>
    </P>
  </xsl:template>

</xsl:stylesheet>
```

This would produce the following output for our sample 'HCIFORM.xml' document from the XSL processor:

```
<html>
<body>
<P colour="black">
This is data for Mr. Jolly
</P>
</body>
</html>
```

The principle of XSL is that it transforms one XML document to another by following the processing rules in the appointed file. In the example above we have shown how the XML document may be translated into a valid HTML document. As HTML can be defined in XML this can be a valid XML document too, and the output could be verified against an HTML DTD.

The facilities within the XML framework are expanding all the time, and the W3C recommendations are gaining wide acceptance. There is work on XPath, XPointer and XLinks which covers a generic framework for Hypertext linking, which aims to be more maintainable than current HTML schemes.

The XML Document

After that whirlwind tour, let's examine some of the more important aspects of this storage and display mechanism. First consider our sample document. The first line must be a suitable member of the prolog, usually an XML type declaration as here:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
```

which determines which version of XML is in use, the character encoding for the document and whether the DTD is stored within the document or will need to be retrieved from a Uniform Resource Locator (URL). The URL may be generalised to a Uniform Resource Identifier (URI). In this case the DTD is external, and the XML parser will know where to fetch it from when it processes the document type line:

```
<!DOCTYPE HCI_SCREEN SYSTEM "./HCIFORM.dtd">
```

This indicates that this document is of type 'HCI_SCREEN'. The remainder of the document contains elements and content defined by their tags which resemble closely HTML which you may already be familiar with. For example, consider the 'HCI_TEXTFIELD' component:

```
<HCI_TEXTFIELD name="TextField1"
               width="50"
               …
```

As in HTML, this is an element with attributes. The attributes are name value pairs associated with a particular element, as defined in the DTD. The attribute value for 'table' contains a strange sequence '&#39' which is reminiscent of entries in HTML such as '"':

```
table="&#39;customer_entry&#39;"
```

This is XML's way of expressing Unicode characters, and is a form of entity. The '&#' is the Unicode signature, the digits (eg '39')

the character number, and ';' the terminator. '&#39' is in fact the single quote character. When the document is parsed by an XML parser, this entity will be replaced by the correct character. Because XML uses characters for markup, we must always have a mechanism for distinguishing content from markup, and so these escape sequences are used for the characters: '&'; '<'; '>'; '"'; '"'. In fact we can escape any characters in the document, for example to make non-printing characters visible.

There is also content for the element between the start and end tags, as in HTML:

```
<HCI_TEXTFIELD … >This is data for Mr. Jolly</HCI_TEXTFIELD>
```

End tags may be explicit as in the line above, or if the element is empty of content then the short form close can be used after the last attribute: '/>'.

Our example document also illustrates user defined entities, and one is declared in 'HCIFORM.dtd' as:

```
<!ENTITY entry_text "Enter">
```

and used in the 'HCI_BUTTON' attribute called 'label':

```
label="&entry_text;"
```

Once again the XML parser will see the user-defined entity reference '&entry_text;' and replace it with the substitute text 'Enter'.

The Document Type Definition (DTD)

This contains the schema for the document, saying which elements are allowed, what their attributes will be and which values are permitted. The declaration of an element is usually in two parts, the contents (if any) and then the attributes (if any). In our example DTD, the content lines for the first elements are as follows:

```
<!ELEMENT HCI_SCREEN (HCI_FORM)+>
<!ELEMENT HCI_FORM((HCI_LABEL)*,(HCI_TEXTFIELD)*,(HCI_BUTTON)*)>
<!ELEMENT HCI_TEXTFIELD (#PCDATA)>
```

This defines 'HCI_SCREEN' as containing one or more 'HCI_FORM's using the traditional regular expression nomenclature (Backus Naur Form (BNF)). The 'HCI_FORM' is then declared as containing zero or more 'HCI_LABEL's followed by zero or more 'HCI_TEXTFIELD's followed by zero or more 'HCI_BUTTON's. The definition for 'HCI_TEXTFIELD' allows this element to have contents which can be text or other elements. In contrast other elements are used just for their attributes and have no content. For example:

```
<!ELEMENT HCI_LABEL EMPTY>
```

This approach to content definition allows content, sequences and options to be defined. Attributes are allocated with a separate declaration such as:

```
<!ATTLIST HCI_FORM name CDATA #REQUIRED
                    position (relative|absolute) #REQUIRED
                    x CDATA #REQUIRED
                    …
```

This defines the name of the attribute and the type of value it can assume. It may also be mandatory ('#REQUIRED') or optional ('#IMPLIED'). In the example above we have specified that 'position' may only have one of two values: either 'relative' or 'absolute'. We can also introduce default values in the DTD as in the 'columns' attribute:

```
columns CDATA "1"
```

This will ensure that the attribute always has a value (implicitly required) of '1' unless it is overwritten by a value from the document.

The Style Sheet

The semantics and content of the document are separated from its presentation, which is defined by a style sheet, the 'HCIFORM.xsl' file. An XSL processor will use the document and the style sheet to produce output, in a suitable form for display, printing or re-use in another document format. This file has the usual pre-amble, including a reference to the relevant XML 'namespace' (xmlns:xsl= "http://www.w3.org/1999/XSL/Transform). The style sheet contains sets of rules and actions in the form of templates, for example:

```
<xsl:template match="/">
  <html>
```

```
    <xsl:apply-templates/>
  </html>
</xsl:template>

<xsl:template match="HCI_SCREEN">
  <body>
    <xsl:apply-templates/>
  </body>
</xsl:template>
```

The first rule looks for a match of '/' which is the root of the document. When it finds this single instance, it will insert the text '<html>' and then process the other nodes ('<xsl:apply-templates/>'), followed by the tail text '</html>'. The second rule looks for 'HCI_SCREEN' elements, and produces text '<body>' before moving on to process other rules ('<xsl:apply-templates/>') and terminate with '</body>'. The full range of processing is defined in the W3C XSL standard.

XLinks, XPath and XPointers

You may be familiar with Hypertext links as used in HTML, but these are not powerful enough for the next generation of XML-based systems. The current way of using URLs mean that they are limited to pointing one way, at one document. They may also need anchors embedded in the target document – if the document is legacy or other read-only then they cannot be used. By contrast, XLinks provide multidirectional links where the links run in more than one direction. We can define any element as a link, not just the '<A>' element of HTML. In fact the links do not even have to be stored in the same file as the documents they link, and the XPointer component allows links to quite arbitrary positions in some XML document. Here is an example XLink which covers some reference in a document:

```
<REFERENCE xmlns:xlink="http://www.w3.org/XML/…"
           xlink:type="simple"
           xlink:href="reference07.xml">15</REFERENCE>
```

There is a namespace reference (not yet established) and then attributes ('xlink:type' and 'xlink:href'), along with the associated content text '15'. XPath is a language which works with XSL to allow references to any part of an XML document, which is further used by XPointers to allow references into existing XML documents by specifying target elements or other components. Only XPath is currently a W3C recommendation, XLink and XPointer are currently in draft.

The Future

There are many more XML developments under way, covering a wide range of technologies from databases to interfaces. Now you have a grasp of XML, you can track its progress and relevance to your area of work by watching the W3C website. The universal and public nature of XML has also generated a good range of public domain resources for you to experiment with, including sample programs and demonstrations. As an example IBM's Alphaworks site is particularly rich, but a Web search will bring you the most up-to-date materials for your specific area of interest. Happy grappling!

Bibliography

Standards

W3C http://www.w3.org/
XML 1.0 http://www.w3.org/TR/1998/REC-xml-19980210
XSLT http://www.w3.org/Style/XSL/
XPath http://www.w3.org/TR/xpath.html
XLink http://www.w3.org/TR/WD-xlink
XPointer http://www.w3.org/TR/xptr
namespaces http://www.w3.org/TR/1999/REC-xml-names-19990114/
RDF http://www.w3.org/TR/REC-rdf-syntax/
URL, URI http://www.w3.org/Addressing/
Unicode http://www.unicode.org/unicode/standard/versions/Unicode3.0.html

Books

Goldfarb, C.F. & Prescod, P. (1999) The XML Handbook - 2nd Edition. Prentice Hall.
Harrold, E.R. (1999) The XML Bible. IDG Books Worldwide. ('http://metalab.unc.edu/xml/books/bible')

Ebusiness

BizTalk™ http://www.biztalk.org/
Rosettanet http://www.rosettanet.org/
BizTokens™ http://www.gnosis-inc.com/

Software

Alphaworks http://www.alphaworks.ibm.com/
W3C http://www.w3.org/XML/#software/
Apache http://xml.apache.org/

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CHI 2000

Conference on Human Factors in Computing Systems
The Hague, The Netherlands

1-6 April 2000

Today, computers are portable, held in the hand or carried in a pocket, worn as part of clothing, and embedded in offices, homes, and automobiles.

Human-Computer Interaction as a field is thus increasingly concerned with a growing community of people, more diverse in their background, skills and training than were yesterday's typical users.

The tutorials featured at CHI 2000 represent the leading edge of current practice and research worldwide. This year's topics include:

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The annual CHI conference is the premier worldwide forum for the exchange of information on all aspects of how people interact with computers. CHI 2000 features a full program of presentations, demonstrations, tutorials and exhibits. It is sponsored by ACM's Special Interest Group on Computer-Human Interaction.

Computers and Fun 2

York, 20 December 1999

Andrew Monk

Electronic pills, a message system for gossip, and interactive TV were just some of the inventions discussed at this

one-day meeting on the Monday before Christmas. The workshop was organised on behalf of the British HCI Group by Andrew Monk with the help of Steve Emmott of NCR Knowledge Labs, London, Chris Johnson of the University of Glasgow and Anu Mäkelä of the Helsinki University of Technology.

The meeting was to discuss what makes for enjoyment in the use of information and communication technology. One question is how one may measure or conceptualise fun. In this vein Marc Hassenzahl from Siemens in Munich described a psychometric model for assessing the "hedonic quality" of a product, and Ella Tallyn from Hewlett Packard Laboratories presented an analysis comparing the structure of dramatic narrative and electronic games. Richard Thomas from the University of Western Australia examined the issue of exploratory style and its relation to fun.

Other authors presented inventions of one kind and another along with reflections upon their value for recreation. Children who are unable to speak and have to rely on a speech synthesiser to communicate have previously only been able to make small talk or instrumental requests, e.g. 'please pass me that cup'. Dave O'Mara from the University of Dundee described a system to allow these people to tell stories and jokes using phases they have entered in advance. 'Re-Gossip', presented by Christina Anderson from ID's, London, and Jussi Holoponainen from Nokia, Tampere, was a text-based communication system to be used with a wireless PDA. The invention presents an interesting way of making role-play games more accessible to a wider audience. The game is to make up a dramatic narrative in the form of a soap opera involving the other players. You all have fictional personas that you have supplied to the system and the narrative progresses through messages sent from one player to another containing 'gossip'. There is a token economy where gossip that is interesting enough to be passed on earns the originator points that can be used to find out more about the other players and so provide material for further gossip.

Paul Curzon from the University of Middlesex described how he used games to teach computing algorithms. Finally, Guy Winter and Jo Hooper of the BBC described some of the new developments in interactive TV and the issues that need to be tackled in this very new area of entertainment.

The first York meeting on Computers and Fun was held in November 1998. What is interesting when one compares the two meetings is a new consensus about the research agenda we are all pursuing. It is surprisingly difficult to stop oneself inventing things that are really to support work rather than recreation. Now we are beginning to understand how to make things that are fun rather than useful. This is well illustrated by the paper containing the electronic pills invention referred to at the start of this article. This was presented by David Frohlich and Rachel Murphy from Hewlett Packard Laboratories in Bristol who described a number of conceptual designs to illustrate how technology can be made more tangible and also more frivolous. Imagine you could take a pill that would transmit some small piece of information about you for the time it was in your body. Sensors worn by other people or in the buildings you enter would detect this information and react in some way. For example, let us say you had selected a pill to represent your mood that day. If a friend had taken the same mood pill when you both got home your phones would ring simultaneously to put you in touch with one another.

Did we have fun? Well, several delegates took the organiser's advice and spent the weekend in York finishing off their Christmas shopping and there was a good-sized delegation at the pub after the meeting. To stimulate the final discussion we all worked in teams against the clock to build conceptual designs illustrating fun as it might be experienced by such diverse audiences as '80-year-old ladies' or 'retired carpenters'. This resulted in much enthusiasm and wit, even some insights about fun. I certainly enjoyed the meeting and am already making plans for Computers and Fun 3.

Re:Gossip – A social network of truths and lies.

Gossip Workgroup:

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Re:Gossip is a project that originated in the Future of Fun II workshop during the Handheld and Ubiquitous Computing conference in Karlsruhe in September 1999. It arose out of our common interest in the connection between the invisible networks of wireless technologies and the invisible social networks that surround us in everyday life.

The goal is to make visible the hidden relationships that make up social networks and to transform these networks through wireless, handheld and internet technologies. Re:Gossip is both the real exchange of social data and the fictional game of storytelling. It is seriously fun.

We are entangled in a tightly woven social fabric of which many of the intersections and communication processes are hidden. The social structures made visible are those of governments, corporations and institutions. Other social structures that have no representation are trivialized as fiction or, on a day-to-day-level, as gossip. Gossip is the most effective and compelling way of weaving the social reality. In Re:Gossip, the internet is both the representation and the communication process for the underlying and ad-hoc social network of gossip and social fiction.

Re:Gossip starts with a small group of friends and associates. They may have only met once and may not 'see' each other again. Re:Gossip can be used to stay in touch, to get to know each other better and to further develop their knowledge of each other's life as fiction, fact or somewhere in the middle. 'Exaggeration

furthers understanding.' When you join Re:Gossip you are given permission to exchange and embellish each other's social data. As community members you are challenged to both expose as 'unvarnished truth' the social relations of other members while maintaining the vital bonds of the community. You are as free to tell stories about other Re:Gossip members as they are free to tell stories about you…

The heart of the system is the Re:Gossip server and the ubiquitous access to that server. The Re:Gossip system keeps track of all the pieces of gossip going around. Each piece of gossip has a unique identifier and the users should be able to pull out detailed information about the gossip (for example, the gossip body, the trail of the gossip, etc.). The important part of spreading the gossip is to register to the database that you have received a certain piece of gossip. The registration can be done automatically (in case of e-mail and SMS) or via the Re:Gossip web site. When spreading the gossip all you have to do is to mention the unique Re:Gossip number and, of course, tell the gossip itself!

Perceived novelty of functions – a source of hedonic quality

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In the last decade, researchers have expressed the notion that there is more about (software-)product quality than mere usefulness (i.e. utility and usability, e.g. ISO 9241-11). In the Technology Acceptance literature, for example, perceived fun/enjoyment was found to contribute to software system acceptance (e.g. Igbaria, Schiffman & Wieckowski 1994). In the field of software-ergonomics the rather narrow focus on task-related issues was challenged by designers/developers of consumer products (e.g. Adams & Sanders 1995) and broadened by introducing 'emotional usability' (Logan 1994; Kim & Moon 1998).

In a preceding laboratory study (Hassenzahl, Platz, Burmester & Lehner (in press)), we attempted to measure a construct coined 'user perceived hedonic quality' (HQ, e.g. originality, impressiveness) and to determine its impact on judgements of appeal (APPEAL, e.g. good, attractive). Regression analysis showed an almost equal contribution of HQ and 'user perceived ergonomic quality' (e.g. controllability, simplicity) to APPEAL. We concluded that the importance of a product's hedonic quality aspects should not be underestimated, because it might be a potential source of increased product quality (let alone sales and acceptance).

With the present (case) study, we set out to isolate a potential source of hedonic quality of a technically oriented consumer product, namely a 'home automation system' (HAS). It enables the user to configure, program and control her/his own sensor-actor connections, such as switching on the light when motion is detected. The 'user interface design group' (CT IC 7) of Siemens was asked to outline the product and to design the actual user interface.

Method: Fourteen individuals (7 women, 7 men) participated in a diagnostic usability test of prototype versions of the HAS. They worked through a number of tasks. At the end of each session they were given a semantic differential (Hassenzahl, Platz, Burmester & Lehner (in press)) and were asked to make an assessment of the product's HQ. HQ is the mean of a 7-item scale (e.g. exciting – dull), running from –3 to +3 (Cronbach's Alpha: .89). Computer expertise (CEXP) was assessed with a 5-item questionnaire. On the basis of the resulting sum score, CEXP was then dichotomised (median split) in either 'low' or 'high'. The participant's job background (JOB) was classified in either 'technical' (e.g. software developer, electrician) or 'non-technical' (e.g. estate agent, teacher).

Results: Figure 1 shows the mean HQ for different levels of JOB and CEXP. A 2x2-analysis-of-variance (JOB x EXP) revealed a significant main effect of JOB ($F=8.71$, $df=1$, $p<.01$): Participants with a non-technical job background perceived the HAS as more hedonic than participants with a technical background. No main effect of CEXP emerged. The JOB/CEXP interaction was only marginally significant ($F=4.58$, $df=1$, $p<.10$).

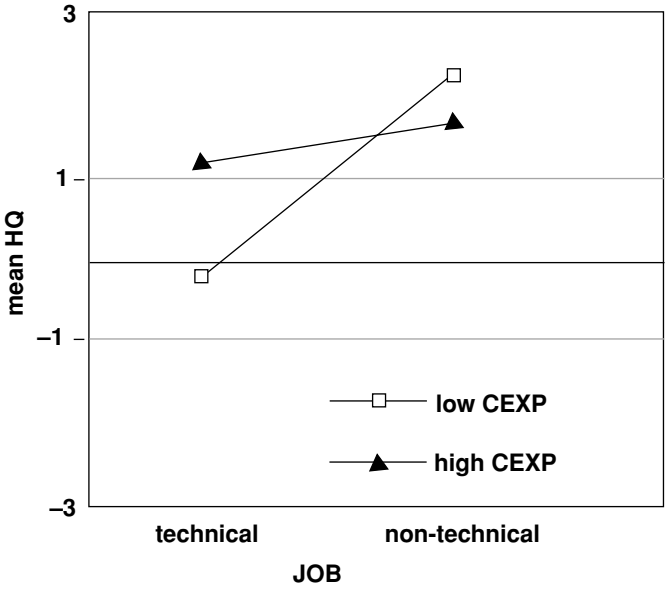

Figure 1 Mean HQ for job background (JOB) and computer expertise (CEXP)

Discussion: The HAS is perceived as less hedonic by participants with a technical job background compared to participants with a non-technical job background.

A possible source for this effect might be the perceived novelty of the system's functions. Presumably, it depends on the individual's standards and experiences, manifest in the job background, whether a function is regarded as new or not. Functions that seem to be common and boring for an individual with a technical background may be extraordinary and interesting for an individual with a non-technical background.

This interpretation has an interesting implication. A product's functions may serve a purpose beyond being useful – their mere perceived novelty can be a source of hedonic quality and through that contribute to the appeal of the product.

References

Adams, E., & Sanders, E. (1995). An evaluation of the fun factor for the Microsoft EasyBall Mouse. In *Proc. of the 39th Human Factors and Ergonomics Society Annual Meeting*. (pp. 311–315).

Hassenzahl, M., Platz, A., Burmester, M., & Lehner, K. (in press). Hedonic and

Ergonomic Quality Aspects Determine a Software's Appeal. *Proceedings of CHI 2000*.

Igbaria, M., Schiffman, S.J., & Wieckowski, T.J. (1994). The respective roles of perceived usefulness and perceived fun in the acceptance of microcomputer technology. *Behaviour & Information Technology*, **13**, 349–361.

ISO 9241: Ergonomic requirements for office work with visual display terminals. Part 11: Guidance on usability. International Organization for Standardization. (1996).

Kim, J., & Moon, J.Y. (1998). Designing towards emotional usability in customer interfaces – trustworthiness of cyber-banking system interfaces. *Interacting with Computers*, **10**, 1-29.

Logan, R.J. (1994). Behavioral and emotional usability: Thomson Consumer Electronics. In M. Wiklund (ed.), *Usability in Practice*. Cambridge, MA: Academic Press.

Designing for TV based interactivity

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The age of digital TV presents the chance for TV to become interactive. This has introduced the concept that the TV and PC are converging . This paper addresses this issue and attempts to unravel the degree to which TV and PC design can be considered the same. It argues that interactive TV use represents a fundamentally new challenge to designers and producers, and to the HCI community. The BBC has been developing interactive services for some time. For TV-centric services (rather than BBC On-line), the BBC will offer Digital text, enhanced and interactive television (i-TV). To produce these, a number of pragmatic design decisions have been made.

TV use is fundamentally different to PC use. Industry leaders refer to the two activities as 'lean-forward' and 'lean-back' activities, and 'viewers' are now commonly referred to as 'users' (Draper, Earnshaw, Montie, Parnall, Tol, Wilson & Winter, 1999). This is a very simplified (perhaps over-simplified) description, but is essential to changing attitudes. PC use is typically characterised (in HCI) by a one-to-one relationship between user and machine, physical proximity to the screen, high-resolution displays, goal-based interaction and the use of graphical pointing devices and text entry tools (keyboard). This contrasts with TV, which is a many-to-one relationship between a social group and the machine, greater physical distance, lower resolution, entertainment-based interactivity and the use of a remote control. This has significant effects upon design.

The social nature of TV implies that most viewing must be 'negotiated'. Thus, when interacting, the formation of intent, specification of the action sequence and execution (to adopt Norman's terminology, 1988) are radically altered. Due to this compromise, we can no longer assume intention is always clearly specified. Perhaps more fundamentally, the nature and formation of the goals have changed. Whilst in PC use the goal is often precise (as in work demands), TV's concern with entertainment and with fun suggests goals may be poorly specified, or non-existent. Users have no internal 'goal formation', thus the intention is unspecified. This implies that the users become more susceptible to 'reactive' goal formation, where decisions about behaviour are the result of what is seen (perhaps in a manner similar to an 'elimination by aspects' process of decision making).

The design of the current generation of i-TV addresses concerns with the social nature of TV and the lack of goals, but also considers a number of further issues. Of great interest is how (or indeed whether) to maintain consistent design for the goal-based interactions (such as accessing schedules listings and news information services) and interactions with poorly specified goals (such as interactive programmes), and how any consistency will be achieved and managed.

The Technology Acceptance Model (TAM, Davis, 1993) has helped to understand the importance of designing for usability. Thus, the concepts of 'usefulness', 'ease of use' and 'satisfaction' are addressed. Where goals are unclear, usefulness seems less important, but ease of use and satisfaction gain much greater prominence. Designers face a fundamental difficulty in resolving the switching between goal-based and goal-less interaction, thus simplicity and transparency of operation are essential. i-TV is not intended for just PC 'savvy' users but the general public, who must be able to see what is available, and how to access it, and so develop a usable mental model. The complexity of interactivity is further compounded by the restriction to a remote control, and the much poorer resolution.

Satisfaction, or the aesthetic design elements, becomes crucial as the design will influence enjoyment. Furthermore, maintaining engagement by users of i-TV is vital. Interactivity can create interruptions to the narrative 'flow' (Green, 1998), but this is an essential component of story-telling that has made TV so successful. To address this, work studying the role of pace and interactivity for games (e.g. Neal, 1990: Malone, 1982), drama and individual engagement (Jagodzinski, Turley & Rogers, 1999), and of course fun are being used to help design.

In conclusion, the anticipated convergence of TV and PC seems unlikely to occur in the manner expected. Designing for human interaction with TV is a new design paradigm that deserves much greater attention of the nature being discussed at conferences such as 'Computers and Fun'.

References

Draper, S., Earnshaw, N., Montie, E., Parnall, S.,Tol, R., Wilson, D. & Winter, G., (1999) TV Anytime. *IBC 99*, Amsterdam 10-14 September, International Broadcasting Conference, pp 103–108.

Norman, D. (1988) *The Psychology of Everyday Things*. DuPree Knowles.

Davis, F.D. (1993) User acceptance of information technology: system characteristics, user perceptions and behavioural impacts. *International Journal of Man–Machine Studies*, **38**, pp 475–487.

Green, J.S. (1998) *A taxonomy of interactivity*. Carat International.

Neal, L. (1990) Implications of computer games for systems design. D. Diaper et al. (eds) *INTERACT 90*, Elsevier Science, pp 93–100.

Malone, T.W. (1982) Heuristics for designing enjoyable user interfaces: Lessons from computer games. *Human Factors in Computer Systems*, ACM, pp 63–68.

Jagodzinski, P., Turley, S. & Rogers, T. (to be published) *Paradigms for the design of interactive drama*. Contact: peterj@soc.plym.ac.uk

Joke telling as an introduction and a motivator to a narrative-based communication system for people with severe communication disorders.

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Children with severe communication disorders miss out on the experience of actively telling their own stories. Good communication is an interactive experience of listening, responding and turn taking, not something that is easily achieved with voice output devices. Pre-programming sentences which may or may not reflect the individual's real thoughts has been one way in which the non-speaker's voice can be heard. A musical analogy can be made here – with practically zero knowledge of how to read or produce music, synthesiser technology has enabled the most tone deaf, musically illiterate person to produce pretty amazing sounds by simply pressing a button. Give the same person a traditional piano and we have a very different scenario – the point being that he or she is still musically illiterate. Wherever possible, the ideal would be to give the individual a real understanding of the underlying processes taking place.

Interactional conversation (Cheepen, 1988), which is characterised by free narrative and phatic communication (greetings, farewells, etc), allows us to go beyond casual acquaintance into firm friendship and meaningful relationships. The need to engage in story telling led to the development of a story-based communication system called Talk:About (Waller et al., 1999).

The Talk:About software package allows the user's own pre-stored written material to be used in interactive conversation. Stories are given appropriate 'topics' and 'people' tags which can then be used to retrieve specific material. Frequency and recent use are also used for retrieval. Fast greetings, needs and wants are handled by a Quick:Chat feature which provides an icon-based interface. Talk:About is complemented by word prediction software.

A recent evaluation of the system by a multi-disciplinary team of researchers has shown positive results in increasing non-verbal children's interactive communication skills (Waller et al., 1999). An important aspect of the research was how the idea of story telling could be introduced in a way which would motivate the user to learn the system.

Introducing the concept of story telling to a non-speaking child who often has not had the opportunity to develop language naturally is a problem. One solution was provided by a Talk:About user. CH (a young girl) indicated that she wanted to copy a book of jokes into her system. All children, of all abilities, appear to love nothing better than to tell jokes – old jokes, new jokes, variations, puns and riddles – the language of the playground! CH was able to experience this stage of development when she was able to relate jokes by herself using the speech synthesiser.

Jokes are a special type of story and many jokes have a set form and structure (e.g. 'Knock-knock' jokes). This has led us to investigate the development of a system which will provide user support in both the creation and narration of jokes. Such a system will allow the user to produce jokes and puns – both as an introduction to the idea of story telling and experience of the conversation aid itself. Interaction will also be facilitated, as telling a joke is a two-way process (what would be the point in keeping it to yourself!).

Researchers at Edinburgh University have developed a computer program, JAPE (Joke Analysis and Production Engine, see Binsted et al., 1997), which generates simple punning riddles. Using a computer program inspired by JAPE, the concepts behind using stories for interaction will be introduced with the help of the automatic introduction of jokes and riddles. The JAPE researchers note that human-assisted pun generation is possible by prompting the user for typical associations, such as asking the user what a bomb typically does (explode?), rather than relying on a lexicon. It is envisaged that such a system could form the basis of a 'joke assistant' which would provide non-speaking children with access to interactive conversational material.

The preliminary ideas behind using joke-telling for story development will be discussed followed by a demonstration of how a joke generator component in a communication device would be used – fun as both an educator and motivator in the social development of individuals who may have previously 'not got the joke'.

References

Binsted, K., Pain, H. & Ritchie, G. (1997). Children's evaluation of computer generated punning riddles. *Pragmatics and Cognition*: **5**, 305–354.

Cheepen, C. (1988). *The Predictability of Informal Conversation*. Oxford: Printer Publishers Limited.

Waller, A., Francis, J., Booth, L., Tait, L., & Hood, H. (1999) The WriteTalk Project: Story-Based Interactive Communication. In: C. Bühler & H. Knops (eds), *Assistive Technology on the Threshold of the Millenium*. Amsterdam: IOS Press, 180–184.

Riding the wave of the reckless explorer

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There has been considerable success towards the goal of making computers more accessible. However, the playful, exploring user has been rather overlooked in the rush to help timid novices.

It has been suggested there is a broad pattern of exploration styles (Thomas 1998):

- The timid user tries out a few things and then possibly settles into a very restricted pattern of activity
- The systematic explorer exhibits a small number of explorations followed by a period of no new trials and then explores a little more and so on
- The over-eager person rushes in, tries many new things but quickly becomes overwhelmed and gives up, perhaps never using that interface again.

Analysis of Mason's data (1986) reveals these trends for discretionary users. Similarly Carroll and Carrithers (1984) found the plodder and reckless styles, which loosely correspond to the timid and over-eager types. The plodder adopted a low-risk strategy, preferring to read and reread the

manual until sure of the outcome of an action. Although this behaviour had relatively few errors, recovery when an error did occur was problematic. In contrast, the reckless explorer spent much time recovering from the many errors, read the manual superficially and sometimes chanced upon solutions. Both these styles were about equally successful in learning the system but below the best performances.

It is likely that neither style exhibits c-flow (Draper 1999) – a deep, but effortless experience with immediate feedback on tasks that can be completed. However, perhaps the systematic explorer approaches it.

Identification of Styles

An exploration can be defined (Thomas 1998) to have occurred the first time a command is used. The curve of cumulative explorations over time may be estimated given knowledge of the frequency distribution of command invocations. The series of waiting times for the ith command serves this purpose.[1]

Given an estimate of the exploration curve for a general population of users, an individual's profile can be classified as damped, balanced or under damped depending upon whether the actual exploration curve is below, the same as, or above the estimated curve. These correspond roughly to our three styles.

Accommodating Styles

Exploratory environments provide the user with opportunities for exploration and learning by doing within the context of an acceptable level of uncertainty (Carroll 1982). We suggest that the mix of these factors can be adjusted to suit the style of user.

We hypothesise that to increase fun – in the broader senses described by Draper (1999) – the positive traits of the extreme styles should be supported while the negative aspects should be avoided if possible. Thus the affordance of objects can be varied, as can the number of opportunities presented at any time. Errors might be reduced for the reckless by slowing responses, biasing random variables to safe ranges and applying easy defaults. Special hints could coach the timid in error recovery.

The following table shows desirable adjustments for each style and possible means to those ends.

Style	Desirable adjustments	Means available
Reckless	Reduce errors	Reduce response times
		Bias random variables to safe ranges
		Use easy defaults
		Reduce STM load when possible
	Make exploration fun	Increase opportunities
		Reduce affordances
Timid	Improve error recovery	Provide recovery hints
	Make exploration safe	Inflate affordances
		Reduce opportunities
Systematic	Promote c-flow	Fine tune opportunities, affordances and STM load

Users appear not to like interfaces whose adaptive component is hard to understand. Certainly changing a game's response times or defaults to suit an exploration style could be confusing. For games, though, it ought to be possible to have sets of states that are entered via a combination of actions consistent with a style of interaction. Thus the game would not change and the interested user could explore and understand all the behaviours of the system.

1 Thanks to Alan Dix for this insight

Conclusions

An approach to the measurement and control of damping to enhance fun has been outlined for discussion. Research is required to verify some of the assumptions and hypotheses, for example that the over-eager are motivated by the presentation of many slightly obscure options but dislike errors. If we can understand the principles perhaps it will be possible to stretch or constrain the system so that interaction is more fun and more deeply in harmony with our inclinations.

References

Carrol, J.M. (1982) The adventure of getting to know a computer. *Computer*, **15**:11, 49–58.

Carrol, J.M. & Carrithers, C. (1984) Training wheels in a user interface. *CACM*, **27**:8, 800–806.

Draper, S.W. (1999) Analysing fun as a candidate software requirement. *Personal Technology*, **3**:1, 1–6.

Mason, M.V. (1986) Adaptive command prompting in an on-line documentation system. *IJMMS*, **25**, 33–51.

Thomas, R.C. (1998) *Long term human-computer interaction – an exploratory perspective*. Springer-Verlag.

Learning Computer Science through Games and Puzzles

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Many children's games have similarities to the structures we teach in Computer Science and those structures are chosen for similar reasons. For example, standard race game boards are lists – processed from start to end. More interesting games use more interesting structures. A circular list is found in Monopoly: the game could never end. Snakes and Ladders uses a directed graph. A treasure hunt is a traversal of a linked list. Stacks are so important that they abound in childhood, from the toys consisting of poles and rings we give to toddlers to the Towers of Hanoi puzzle. The similarities are not surprising since abstract data types model structures from the real world, as do games.

General lessons about algorithms can also be found in games. For example, the aim of Patience is to sort a pack of cards. Are its rules an algorithm? It illustrates why finiteness and determinism are important properties of algorithms. The importance of choice of representation can be demonstrated by, for example, the games of Spit-Not-So and Nim. In Spit-Not-So 9 cards are placed face up. Each has on it one of the words: Spit, Not, So, Fat, Fop, As, If, In, Pan. Players take turns to pick a card. The aim is to be the first player to collect all cards containing a particular letter. For example, Spit, Fop and Pan form a winning set, as they contain all the Ps. This game is equivalent to Noughts and Crosses/Tic-Tac-Toe [2]. Changing the representation to a 3-by-3 grid with a word in each cell makes the game suddenly easier. Nim consists of three piles of matches. Players take turns to remove any number of matches from one pile. The winner is the player who takes the last match. Winning moves can most easily be identified if the piles are represented using binary numbers. Winning moves are ones where the addition-without-carry of

the three numbers of the resulting position is zero. Choose a good representation and you win the game.

20-Questions illustrates why binary search is faster than linear search. Would you start by asking 'Is it Michelle Pfeiffer?' or would you ask questions such as 'Male or Female?' that halve the number of people left whatever the answer? The most successful players are the ones who come up with a series of questions that approximate a binary search.

We can conversely design new games by starting from Computer Science. For example, let us invent a game based on Heaps. In Patience, the seven stacks of cards are arranged as an array. Cards can be moved between any of the stacks. In our newly invented 'Heap Patience' the stacks are arranged as a binary tree. Cards can only be moved to the top of their parent's stack. In addition, the face up part of any stack can be exchanged with its parent, provided the top card is greater than the top card on the parent stack. The stacks thus act together like a heap with high cards moving to the root of the heap. Playing it provides the basis for an understanding of Heaps. Rather than teaching it to undergraduates, teach it to children.

Childhood is an excellent training ground for computer scientists. By this we do not mean that good games players will make the best computer scientists. Rather we suggest that the world of games and puzzles is full of hooks upon which the learning of computer science can be hung. Bell et al. [1] demonstrated a similar idea, developing activities for children that teach computing without using computers. We suggest that existing games use the same underlying structures as the data structures of Computer Science, their aim is often similar to the aim of common algorithms, and in some cases the best play is that which most successfully approximates the best algorithms. The more games and puzzles a person knows, the greater the foundation upon which the teaching of data structures and algorithms can be built. Games developed from Computer Science can both be fun and provide the foundations for learning the subject. We have looked at links between games and data structures and algorithms. It may also be possible to identify or design games with links to other aspects of Computer Science. We are currently using games to teach data structures and algorithms. With a longer-term view we should be designing new games that have deeper relationships with Computer Science concepts. We should be teaching them to children to provide the basis for them to learn Computer Science in the future.

References

1. T. Bell, I. Witten and M. Fellows, *Computer Science Unplugged* http://unplugged.canterbury.ac.nz
2. E.R. Berlekamp, J.H. Conway and R.K. Guy, *Winning Ways*, V.2, Ch.22, Academic Press, 1982.

Engaging the audience in games, narrative and digital media

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Entertaining an audience relies on the process of drawing in and psychologically immersing the audience in an experience. For simplicity this paper will refer to this process as engagement. Keeping a participant engaged in a digital interactive narrative is often a problem. Audience or participant engagement seems to be more easily sustainable either in traditional narrative forms, e.g. the novel, where the author is in control, or continuously interactive media, e.g. real-time combat games (like Quake or Doom), where the participant drives the experience. In interactive narrative the control must be shared, the author must have some say in what occurs in order to relate a story, but the audience must also have some control, in order for the experience to be interactive. Giving a measure of, but not complete, control to the audience creates problems. Also the more successful forms of interactive narrative are limited in the types of experience they provide. This paper will describe a detailed examination of the process of engagement in narrative and interactive forms, in order to better understand the problems and limitations of digital interactive narratives.

For example, engagement in sports and games is goal oriented. Games encourage competitive behaviour, inciting the desire to overcome, to win. We become engaged through the process of honing our skills and possibly collaborating with others in order to achieve our goal. Games cover many kinds of experience; they can be physical or intellectual or both. They are, however, rarely emotional in their engagement; this is not to say that we do not experience emotions when we play, but they do not engage us through our emotions, but our desire to achieve a goal. In contrast, the narrative process can instigate several types of engagement, e.g. intellectual engagement provided by the context and deep meaning, and emotional engagement with the characters and their situations. Through the narrative process we come to empathise with characters as it evokes their subjective experience within us.

Interactive narratives are part game and part narrative, as such puzzle solving tends to provide the central source of engagement. Puzzle solving is a major contributor to the narrative process in which pieces of the plot are presented in such a way as to encourage us to work out what is going on, obvious examples of this process are who-dunnit novels. The detective genre of narrative transfers well into interactive narrative; the audience plays the role of the detective who has to solve the mystery, hence providing the goal aspect necessary in games (e.g. BladeRunner, Westwood Studios 1997). However these types of experience are generally limited to plot and action biased stories, and tend to lack the emotional engagement that is so important for most narrative experiences.

This paper will conclude with recommendations for the design of new techniques for digital interactive narratives, which we hope will enable the creation of richer, more emotionally engaging interactive narratives.

Getting physical: what is fun computing in tangible form?

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Traditional experiences of computing have been anchored in the 'work-station': a single-user device with a standardised interface, used to accomplish serious tasks. This has led to an emphasis within human–computer interaction on the design of a very limited range of human–computer interfaces which are 'easy to use' for specific tasks.

In this paper we explore the interaction of two kinds of design moves away from this paradigm; making the computer un-easy to use for more frivolous user experiences and radically altering the interface to make computing resources more physical (see Figure 1).

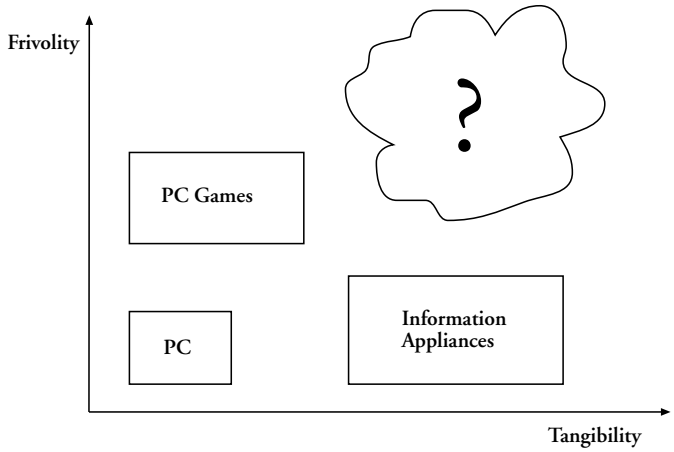

Figure 1 Design dimensions for fun computing

We perform this exploration, not analytically, but practically through the presentation of three cases studies of design in this area:

Case 1 Musical phone – a phone that is more like a string instrument in appearance. If the user needs to make a phone call, the phone number has to be plucked out on the product like a short tune. If a call comes through on the phone then it plays out the tune of the caller's phone number.

Case 2 Digital butterflies – a 1 metre high installation with a water filled glass bottom tank sunk six inches from the top. Real lilies float on the water while butterfly images are back projected onto the flowers. When a user approaches the installation the butterflies become agitated and cluster into the middle of the lilies. If the user bends down to smell the flowers the butterflies fly away.

Case 3 Smart pills – pills containing radio transponders that represent different moods. The user would swallow the appropriate pill to represent their mood that day. If a friend of the user had also taken the same mood pill, their home phones would ring simultaneously and put the two empathetic friends in touch with each other.

Our paper concludes by offering up for discussion some of the elements which make for fun in these situations. These include uncertainty in how to use the device, some initiative on behalf of the device itself, an element of surprise and delight, intrinsic enjoyment in the process of interaction, and some poetic licence in how user actions are translated into effects.

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HCI resources
getting started
Barbara McManus

You're working in the field of HCI for the first time – where do you look for support?

If you find it easier to start with an overview, particularly if a thin book helps you to get started, you can do no better than look at either Jenny Preece's book: *A Guide to Usability, Human Factors in Computing* (1993), or Christine Faulkner's book: *The Essence of Human–Computer Interaction* (1998). Preece is aimed more at managers and Faulkner makes an ideal starting point for a new lecturer with little initial reading time.

Having read a little of what is involved in the area, you are now ready for a more in-depth piece of work. In the UK there are two notable books that fulfil that criterion. They are *Human–Computer Interaction*, second edition (1998), by Dix et al., and *Human–Computer Interaction* (1994) by Preece et al.

Now that you have an insight into HCI, you should do some background reading. If you are not yet convinced of the importance of good design, and problems when it is ignored, Don Norman's classic book *The Psychology of Everyday Things* is a must! For examples of items that don't follow these human factors principles, visit www.baddesigns.com/

There are many sources available on the Web, but how do you decide which websites are worthy of consideration? One suggestion is to start with people for whom you have some respect. By this I mean that they have been through the peer review process, producing papers and books. Arguably this does not necessarily mean that what they produce on the Web is credible but it's as good a starting point as any! So with this in mind, here are three URLs for you to use as a means of launching elsewhere:

- Keith Instone's site at www.usableweb.com/
- Bruce Tognazzini's website at www.asktog.com/
- Jakob Nielsen's website at www.useit.com/.

Another excellent web site can be found at www.pantos.org/atw/.

Unsure of the subject matter to be taught on an HCI course?

Take a look at the American view at www.acm.org/sigchi/cdg/ or, for the UK view, *Whither HCI education in the UK?* (www.cms.dmu.ac.uk/bcshci/documents/interfaces.html). See also *New directions in Human–Computer Interaction Education, Research and Practice*. This can be freely distributed, and is located at www.sei.cmu.edu/community/hci/directions/TOC.html.

There's so much, where do I start?

There are many URLs to HCI resources full of information useful to the HCI community. A superb one can be found at www.hcibib.org/. This can be searched for books (including chapter information), articles and many other areas of interest to new lecturers. Other sites worthy of a visit include the British HCI Group's site at www.bcs-hci.org.uk/. Whilst there it's worth looking at hci-resources.html and at british-hci-mailing.html to receive announcements of conferences, jobs, etc. See also:

www.acm.org/sigchi/hci-sites/ and www.acm.org/sigchi/
http://is.twi.tudelft.nl/hci/

Lewis and Rieman have a shareware book available on the Web via ftp from ftp://ftp.cs.colorado.edu/pub/cs/distribs/clewis/HCI-Design-Book/.

The Psychology of Menu Selection: Designing Cognitive Control at the Human/Computer Interface by Kent L. Norman can be found at www.lap.umd.edu/pomsFolder/pomsHome.html.

An up-to-date knowledge of standards and guidelines is important. When it comes to teaching about standards, *An Employers Guide to Display Screen Regulations* is available from www.system-concepts.com/stds/hse_index.html. To maintain a record of the status for ISO 14915 (*Standard for Multimedia User Interface Design*) and ISO 9241 (*Ergonomics Requirements for Office Work with Visual Display Terminals (VDTs)*), see www.system-concepts.com/stds/ISO14915.html and www.system-concepts.com/stds/status.html respectively. Smith & Mosier's guidelines are available via ftp from: ftp://ftp.cis.ohio-state.edu/pub/hci/Guidelines/.

Don't forget to consider users with disabilities – an area worth noting when working with small devices such as Personal Digital Assistants and Palmtops. Microsoft maintains some good pages at www.microsoft.com/enable/dev/guidelines/software.htm.

Teaching about the past and the future of HCI?

Brad Myers has an essay on the Web entitled *A brief history of Human Computer Interaction Technology* at www.cs.cmu.edu/~amulet/papers/uihistory.tr.html. If you're teaching about hypermedia and the Web, students should have an idea of the history behind it and the need to be aware of past research. For this, an analysis of Vannevar Bush's seminal paper is an excellent start. This can be found at www.isg.sfu.ca/~duchier/misc/vbush/. See also the comments on Bush's work by many famous names at: www-eecs.mit.edu/AY95-96/events/bush/index.html. A very good history of hypertext can be seen in one of Jakob Nielsen's early columns at: www.sun.com/950523/columns/alertbox/history.html.

The importance of usability and evaluation

This area of HCI should not be underestimated. Jakob Nielsen's book *Usability Engineering* (1993) is one which covers this in some depth, so his site is an obvious follow up at www.useit.com/papers/heuristic/.

If you feel that you want to give your students some 'light' reading with a message to enable discussions to take place, there are many books for you to consider. You could point them in the direction of books such as: *Set Phasers on Stun: And Other True Tales of Design, Technology, and Human Error* by Steven Casey; *The Inmates are running the Asylum, Why high-tech products drive us crazy and how to restore the sanity* by Alan Cooper; *The Media Lab, inventing the future at MIT* by Stewart Brand; *HAL's Legacy, 2001's Computer as Dream and Reality*, edited by David G. Stork. For more technical and educational discussions, you could try *Readings in Human–Computer Interaction: Toward the Year 2000*, second edition, by R. Baecker et al.

HCI is an enormous field and this is only touching on a few areas, but, like the Web, when you get into it you will be amazed at how fascinating it is and how much more you need (and want) to read about it.

All of the Web sites mentioned have been checked for correctness on 27th February 2000.

A Guide to Usability, Human Factors in Computing
Edited by Jenny Preece
Addison Wesley, 1993, 0-201-62768-X

The Essence of Human–Computer Interaction
Christine Faulkner
Prentice Hall, 1998, 0-13-751975-3

Human–Computer Interaction, second edition
Alan Dix, Janet Finlay, Gregory Abowd and Russell Beale
Prentice Hall Europe 1998, 0 13 239864-8

Human–Computer Interaction
Edited by Jenny Preece et al
Addison Wesley, 1994, 0-201-62769-8

The Psychology of Everyday Things
Donald A. Norman
Basic Books, 1988, 0-465-06709-3

The Media Lab, inventing the future at MIT
Stewart Brand
Penguin Books, 1988, 0-14-009701-5

The Inmates are running the Asylum, Why high-tech products drive us crazy and how to restore the sanity
Alan Cooper
SAMS, 1999, 0-672-31649-8

Set Phasers on Stun: And Other True Tales of Design, Technology, and Human Error
Steven Casey
Aegean Publishing Co (1998), 0-963-61788-5

HAL's Legacy, 2001's Computer as Dream and Reality
Edited by David G. Stork
The MIT Press, 1997, 0-262-19378-7

Readings in Human–Computer Interaction: Toward the Year 2000, second edition
R. Baecker et al.
Morgan Kaufmann Publishers, 1995

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The Third Workshop on Effective Training and Education in HCI
South Bank University, April 10th–11th 2000

The Third Workshop on Effective Training and Education in HCI is to be held at South Bank University, London on Monday 10 April & Tuesday 11 April 2000. The workshop addresses the problems and challenges of teaching HCI. It aims to bring together educators from all over the UK and further afield.

The programme for this year includes techniques for designing interfaces, an examination of the special problems in teaching HCI in a university context, distance learning, multimedia and designing HCI courses. The workshop is sponsored by the newly formed LTSN Centre for Information and Computing Sciences and is run in association with the British HCI Group.

Further details can be obtained from Xristine Faulkner, email xristine@sbu.ac.uk.

Confessions of a heretic

Warning: reading this article may damage your equilibrium

'What's in a name?' Andrew Monk asked a few *Interfaces* ago. Juliet asked the same question and suggests that Romeo doffed his. There's a lot to be said for that. It's difficult to imagine Sid and Daisy as star-crossed lovers. A while ago, the Evening Standard and the Daily Mirror ran articles suggesting if you were called Pratt you'd be one and Bone was bound to be a butcher. I mulled this over with a fellow teacher who promptly reminded me his name was Chalk.

But Andrew had set me thinking. What would I call HCI if it hadn't already been labelled? I thought it ought to be something dynamic, that turns into an acronym that can be easily pronounced that side of a bottle of vodka. A colleague put down the demise of a research group to the fact that you couldn't say its acronym. The Americans can at least say CHI even if they can't agree how to pronounce it but HCI is impossible even without aforesaid vodka and a change of teeth.

However, when I thought about it I began to grow scared. Changes of name imply something drastic has happened or is about to happen. But so far as I can see that isn't the case with HCI. In fact, a serious proposal to change its name would worry me rather.

Recently, I decided it would be nice to trace the history of usability and to provide a definition. This proved more difficult than I first imagined and eventually I ended up with an earlier attempt at providing a goal for HCI in the form of 'user friendly'. I know that using the term 'user friendly' – there, I've said it again – isn't going to win me any friends – but what the hell I like a quiet life and I'm ex-directory. But in fact, the concepts of usability and user friendly aren't those many poles apart.

The big guns were fired at 'user friendly' in the form of Norman and Draper's book in 1986. Now, if HCI is going to listen to anyone it'll be Norman and it has. Say 'user friendly' to an HCI expert and your career is over. And now here's the heresy. I do actually wonder how wise we've been. I read and re-read Norman and Draper's objection to the term and I sympathise. Jakob Nielsen objects to it too on the grounds that it is 'unnecessarily anthropomorphic'. I've objected to it because I was never quite sure what it meant though it sounded OK. But I'm recanting. The Oxford dictionary has a splendid definition of 'user friendly' that is so good I wish systems were like that.

And whatever we may think, people like it. The general public may not know what HCI is but they do know and use the term 'user friendly' and they use it in contexts that are appropriate even if the term isn't one we like. So what if they do say 'freezer friendly', 'environmentally friendly', 'micro-wave friendly' and a host of other friendly friendlies. HCI was there first and we can easily be explained in those terms. What tipped it for me was a chapter in a super book – *The Politics of Usability* by Trenner and Bawa. I now intend to share one of the many, many nuggets. Trenner, writing on the importance of 'spreading the word' and getting usability into the forefront mentions that readers of PC magazine when faced with usability trials were puzzled by the terminology. She comments that:

> almost no one in the focus groups had a clear understanding of what usability meant and when discussing usability issues were more likely to talk in terms of understanding, user friendliness, ease of learning, or liking, making no connection between these terms and the term usability.

The concepts the focus group mentioned are close to our definitions of usability, but the term itself was alien to the people who actually wanted to know about how usable products are. If they had used the term 'user friendly' there's a good chance they would have been understood. I find that rather sad in that we're busy trying to get our field known and accepted and we're at the same time dispensing with the few points of contact we have with people for whom the field is alien. It's akin to Rapunzel cutting her hair and tossing it over the edge of the tower rather than turning it into a rope for shinning down, and then legging it to the city.

Paul Booth, writing in 1989, said:

> Unfortunately, despite the gradual refinement of the term usability, it appears unlikely that a general agreed definition of usability will emerge within the next few years. The main reason for this is that the term usability is used by many researchers to mean many different things. Indeed, some researchers have argued that the term is so vague and ambiguous that it ought to be abandoned.

HCI seems to have a problem with the terms it uses. In order to reinforce the sense of deja vu I would like to examine a comment made by John Karat in 1996 who, in the ACM's own journal *Interactions*, this time talking about User Centred Design (UCD) which is really a concept that is at the heart of usability engineering, had this to say:

> Rather than becoming more clearly defined as the CHI [Computer Human Interaction] community matured, is the term 'user-centered design' (UCD) becoming akin to 'family values' in nature – a concept which everyone subscribed to, but for which there seemed to be no agreed definition?

Unlike in the case of 'user friendly', though, there have been attempts to be more careful about how the label 'usability' should be applied. Terminology in HCI is still finding its feet and terms do quite often take some time to firm up and stabilise. Sometimes they go out of vogue because the need for them disappears and sometimes they are replaced by something a little more apt and concrete. In a newly emerging field this playing with words is probably inevitable as we try to find out just what the problems are and just what the framework of our discipline should be. In fact, I say in a 'newly emerging field' but, judging by remarks made by scientists in other fields, naming is not always done wisely in established fields either and appears to be quite often the results of what may be best described as fashion. Steven Rose talks about this at some length in his latest book

and it cheers me that his discipline is busy making the same mistakes. But, for a new field like ours, fashion could be fatal.

A change of name to something that was instantly recognisable would be nice. However, I wonder if that is at all possible. Frankly, I fancy playing with the letters we already have and turning it into something pronounceable – Hu-Co-In, which sounds like something on a Chinese menu, or HIC, which sounds like the aftermath of a good night out.

I have been flippant – perhaps too much so. But I do have real fears about our current abandonment of terminology that the general public is just warming to. I have real regrets over not attempting a closer definition of 'user friendly' rather than casting it out. As things have turned out it would have been better to have made a claim to it and done something with it. I fear we are to be saddled with it in any case, and not on our own terms.

Yes, I do wish HCI had been more sensibly named – our 'parents' haven't been kind to us – but as someone who changed the spelling of her first name from Christine to Xristine I know the dangers. So, no one comes looking for Mr Chris Faulkner any more but then no one asked for Iris before either!

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British HCI Group

Executive Report

The HCI Executive met for its winter meeting on 25th January 2000 at South Bank University in London. After the apologies and approval of the minutes of the previous meeting, members spent some time discussing the website and the webmaster was left with a number of tasks. Readers will find elsewhere details about forthcoming meetings and the progress of HCI 2000 (at Sunderland). A little time was spent in discussing the name for HCI 2001 since this is to be a joint meeting with the IHM at Lille, France. The final decision was IHM-HCI 2001 and it was noted that it will be held in September because of French holidays in August. HCI 2002 will be back in the UK at South Bank University. Under the usual reports, the membership secretary reported that the HCI Group has 448 members. *Interfaces* still needs willing helpers but *Interacting with Computers* is going well with a steady rate of submissions.

The main business was to further the Group's work concerning meeting the needs of practitioners. All the practitioner representatives were present and a lively debate ensued about how these needs would be best accommodated. Eventually, one of the representatives was tasked with finding out more about the needs of practitioners, initially by preparing a set of questions to provide informed feedback. The next Executive meeting is on 15th May 2000, again courtesy of South Bank University. Please lobby Executive members (whose names appear on the back of *Interfaces*) if you have any matter for discussion.

Stella Mills
HCI Group Executive Committee

HCI 2000
Usability or else!

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

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

The title sounds as if the organising committee are holding a gun to your head, but it's more of a Wearside promise than a threat! The formal 'Call' said it all, or did it?

HCI 2000 will cover the main areas of HCI research and practice, but will focus on usability engineering for business. While HCI approaches have penetrated many application areas, bringing clear benefits over the last decade, electronic business will nail down usability as an essential design goal. The HCI community will be expected to respond with ever-improved methods, techniques and design approaches that ensure usability is taken seriously from conception through design and development to installation and operation.

It omitted to mention the stunning buildings providing the venue for the Conference. The impression of light and space has transformed the old docks and shipyards of Sunderland. It also failed to remark upon the possibility of arriving by train either at Sunderland itself, or at Durham, with its glorious view of the castle and cathedral. The latter offers the opportunity to have a taxi ride with one of the most friendly and informative drivers you'll ever find, at a price so reasonable that, if you live south of the Watford gap, you'll have to pinch yourself!

The preparations are well under way now and the invited Keynote speakers represent a wide range of experience in the field; for instance, Jim Hollan, Professor of Cognitive Science at the University of California, San Diego (UCSD), Professor Gillian Crampton-Smith from the Royal College of Art and Lucy Suchman, lately of Xerox, but soon to be Professor of Sociology at Lancaster University. The Advance programme will have full details.

There has already been an encouraging response to the first call for papers and tutorials, which are currently being considered by referees. You are now invited to submit for the Industry Day, Panels, Organisational overviews and late-breaking results suitable for short papers or posters. All details are on the web site.

The Advance programme will be dropping through the letter-box in April so don't leave it till then to submit for the late-breaking tracks.

Remember: Whoever develops for the invisible public, it's usability or else!

Nina Reeves
C&GCHE
Publicity Chair

Profile

Xristine Faulkner

My first degree was in something else – not Maths or Geography. After a PGCE in FE I thought teaching at Secondary level would be fun for a bit. I did this for much longer than a bit but eventually managed to stop. I took a PG Dip in Computing and AI and then an MSc in Man Computer Systems (before women users were invented) at De Montfort. SBU was mad enough to employ me and I'm still there. I've written a few things. A few people have even read some of them. One or two have been quite nice about them, but they were students whose work I was marking so they probably don't count. I live with one and a half Jack Russells (which explains most things), a lot of shoes and a goldfish. My ambition is to get a life and a bigger study but not just yet, as I'm too busy.

What is your idea of happiness?
When the dogs haven't wrecked my house I'm pretty happy.

What is your greatest fear?
Maps and spreadsheets and being asked to do something with them.

With which historical figure do you most identify?
Cassandra – mythological but you never know!

Which living person do you most admire?
Tony Benn for his honesty, Don Norman for his commonsense, Colin Davis for his Sibelius recordings, Diana Rigg for her performance of Medea and my father for rebuilding my kitchen.

What is the trait you most deplore in yourself?
Impulsiveness. And yes it has.

What is the trait you most deplore in others?
Selfishness. It's so destructive.

What vehicles do you own?
None. SBU doesn't pay me much and I don't blame it.

What is your greatest extravagance?
Nail varnish, books, CDs and flowers.

What makes you feel most depressed?
Nothing. It takes up too much time. I've done it once or twice and didn't like it.

What objects do you always carry with you?
Credit card for nail varnish, books, CDs and flowers, and keys.

What do you most dislike about your appearance?
I'd like to be thinner!

What is your most unappealing habit?
I burble when I'm nervous which is most of the time!

What is your favourite smell?
Carnations. Dioressence comes a close second.

What is your favourite word?
Time.

What is your favourite building?
Tower Bridge. It reminds me of my grandmother.

What is your favourite journey?
Anywhere involving water. I don't remember place names or where they are which makes returning a bit tricky.

What or who is the greatest love of your life?
At the moment, my teddy. Always there and doesn't want wardrobe space.

Which living person do you most despise?
Margaret Thatcher!

On what occasions do you lie?
I try not to – I'm very bad at it. I tend to withhold the truth rather than lie.

Which words or phrases do you over-use?
Um. Maybe. Hey you, stop that! (to a dog).

What is your greatest regret?
That I'm not a poet!

When and where were you happiest?
Now. I'm an incurable optimist and think now is happiest.

How do you relax?
Read, listen to music and play Seven Kingdoms. Sometimes simultaneously.

What single thing would improve the quality of your life?
Fresh flowers every day.

Which talent would you most like to have?
I'd like to play the harp. I took up the recorder again but the dogs howled and I couldn't blow and laugh simultaneously.

What would your motto be?
Mail me then I'll have to do it!

What keeps you awake at night?
Rosie P – the JR. She's ancient and fidgety and snores something terrible even when awake.

How would you like to die?
I don't mind. It's probably much easier to do, than to watch. I'm as ready now as I'll ever be!

How would you like to be remembered?
I hope the future is too busy being constructive to bother with that!

What's in a mouse?

Product review: the XLR8 Point & Scroll Mouse

Interex Europe, tel: 0192 329 0401, www.xlr8.com, around £29 inc. VAT

One of the minor ironies in these supremely ironic times is how Apple could have come up with such an abominable mouse for the otherwise extremely stylish iMac. The round mouse looks great, sure, but being round, it has no sense of direction, so quickly becomes confused, so you finish up moving it up and the cursor goes left. So within a couple of months of getting an iMac last year, I replaced the Apple-supplied mouse with a Macally iMouse. This looks as good (if anything better) and also behaves like every well-behaved mouse should.

And I thought that was that, till I read in a magazine about the XLR8 Point & Scroll mouse. Shortly after reading about it, I received through the post the latest Jigsaw catalogue, and there it was – or so I thought – so I ordered one. But things are never that simple. It turned out that the device in the Jigsaw catalogue was the 'XLR8 Plug and Play Scrolling USB Mouse', compatible with both the PC and the Mac, but available only in boring matte black. The magazine article had shown a translucent device, much more in keeping with the iMac's looks. It turned out that, although manufactured by the same company, the XLR8 Point & Scroll mouse is a different device, which was not available from Jigsaw. I eventually tracked it down to a different supplier – feeling of course that it was essential to have a device whose look as well as feel was in keeping with the iMac. (I am always amused, by the way, when suppliers of devices targetted at the PC market use the term 'plug and play' as if this was some kind of special selling point. Plug and play has been the norm on the Mac since the beginning; it seems bizarre to say the least that it is still an aspiration rather than a reality for many PC devices.)

The first unusual thing about the XLR8 mouse is that it has three buttons, revolutionary enough for a Mac mouse. However, the middle button is also revolutionary in another sense – it is a notched wheel. With this you can scroll vertically on most applications, or horizontally if you also hold down the option key on the keyboard. The wheel has stops at fixed positions, and the greatest thing when scrolling is that moving the wheel from one stop position to the next causes the text to scroll by one line. So you can scroll up or down by exactly one line at a time. This feature alone makes the device worthwhile; once you have experienced it you wonder how you ever managed without it.

Another trick the middle button can play is to trigger continuous scrolling. The trigger is a click of the button; the direction of scroll is then determined by the direction of the subsequent turn of the wheel. The speed of scrolling is determined by how far you move the wheel, so you can achieve either slow scrolling (e.g. to keep pace with your reading speed), or fast scrolling to move quickly to the beginning or end of the document. (In practice though, I still find it easier to drag the scroll bar elevator in order to move quickly to the beginning or the end of the document.)

And what about the extra (right) button? This is something completely new to most Mac users. The functionality of the right button is configurable. It can, for example, be set to bring up a contextual menu. (Contextual menus are a new feature on the Mac, introduced in MacOS version 8.) Or it can be set to equate to double-click. In practice I have found the latter to be the more useful, maybe because I never got used to taking advantage of contextual menus when I started to use the new operating system. Whatever the reason, the mapping 'left button equals select, right button equals open' seems particularly natural, and is likely to be the setting I will stick with. As an additional bonus, this mapping also allows the right button to be used to select a whole word in a word processor, a requirement which is more frequent than you might imagine.

The host computer being a Mac, there is no reason why you can't have two mice (mouses?) attached at the same time. The iMac keyboard acts as a USB mini-hub, and you can plug a mouse into each of the ports on either side of the keyboard. Of course both mice control the same cursor, and the 'normal' mouse button still does the standard thing. I experimented for a while with the two mice, using the right mouse for navigation and the left for button clicks. It was quite easy to get used to, but offered little advantage over having the left hand on the keyboard.

Recently there has been renewed attention to the whole area of two-handed input, pioneered several years ago by Bill Buxton. I supervised an experiment a couple of years ago in using two mice on an SGi workstation for 3D navigation, which was moderately successful. However, there does not seem to be much advance in PC (or Mac) operating system support for two independent input devices, so a general move to genuine two-mouse control seems unlikely. The trend is much more towards putting more functionality into a single mouse, as in the device reviewed here.

After using the Point & Scroll mouse for a couple of weeks I went back to the Macally mouse to see what I missed. Surprisingly it was the lack of the 'right click opening', rather than the 'scrolling without moving' facility, which caused the most immediate and uncomfortable withdrawal symptoms. Double-clicking has been with us for so long, not just on the Mac but also on Windows, that it is now quite hard to see it for what it is – a small but unnecessary extra burden introduced to cover up for the fact that the original Mac mouse had only one button. No doubt users who have known only Windows systems will already know how to avoid the double-click – I still use it on Windows because of a long history of Mac conditioning, and because I am too lazy to learn the alternatives. But given the chance to live without double-click on the Mac, I have found it strangely liberating.

Anyone buying an iMac or G4 now should insist on the Point & Scroll mouse in place of the round mouse which I believe Apple are still supplying as standard on USB machines, notwithstanding the extensive negative response it has met with from users. Less than £30 is a small price to pay to end the tyranny of the double-click. And it is available on the PC as well – in fact it may already be standard issue on some. It's a small but not insignificant (if long overdue) advance in input device technology.

Reviewed by *Alistair Kilgour*
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Book Reviews

Xristine Faulkner

Web Site Usability
A Designer's Guide
Jared Spool, Tara Scanlon, Will Schroeder, Carolyn Snyder, Terri DeAngelo
Morgan Kaufmann, San Francisco, 1999
ISBN 1-55860-569, £21.99, 157 pages

Web Site Usability is a report and the authors are quick to point out that it 'isn't about the theory of web site design'. So if you're looking for theory then this book is a bad choice. What it is instead is an excellent report on the research carried out by the authors. It is based on the data from their research. It describes how sites work (or don't work) when people try to use them for answers to specified questions.

What is so fascinating about the report is that it offers a different slant to the sort of conventional wisdom that is being peddled at present about how web sites ought to be designed. Spool et al. say that the data suggests that the shell approach (high-level links stay the same but content changes) didn't perform well. The best news they can offer about graphics is that 'most of the time, they don't do much harm' and page layout 'needs to be different'.

The book is very short and highly readable. The preface emphasises that this is a report and at 157 well-spaced pages it isn't as long as most BSc project reports and more entertaining than a lot of them. It is based on research carried out on nine web sites. The team picked popular sites, and two – Disney and CNet – were high profile sites that had received favourable media reviews. More than fifty tests were carried out but I'm unclear how many users the tests involved. I'm not sure whether that isn't made apparent during the book, or I am simply being dense (or reading too quickly; it was hard to put down). The material the team used for the tests is included in the book, as are screen shots from the sites and their tentative findings. These findings are interesting and require further study. It would be rash indeed to put too much emphasis on a single study of just nine sites (with 50 users?) but there are enough suggestions and ideas here to give researchers something to think about for a little while at least. I came away from the book keen to get my students to try out some of the team's ideas.

I enjoyed the book a lot. At £21.99 it's a bit expensive for what it is but the screen shots will bump up the price. I did ask around SBU to see what better-paid academics thought in case it was 'my poverty but not my will' that speaks. Maybe it's just us, but they confirmed my response. This leaves me unwilling to suggest that students buy it because it isn't a text book that would cover a unit, and it's too expensive to buy on a whim if you're a student. However, I'm delighted by it and I did actually buy my copy rather than have it given to me by a publisher. I enjoyed the way in which material was presented, I enjoyed the findings, the wisdom along the way and the refreshing honesty. I'm pleased to have read it and am sure it will come off the shelf again. I have to say that it's only the first 96 pages that are about the research and the rest of the book is taken up with screen dumps and site descriptions and the evaluation material. Even the most reluctant reader shouldn't find this hard going so it's one for academic shelves and for the library.

Designing Web Usability
Jakob Nielsen
New Riders, Indianapolis, 1999
ISBN 1-56205-810, £34.99, 420 pages

Jakob Nielsen is obviously very pleased with the latest addition to his impressive publications list. His alertboxes have given us progress reports on sales and he is clearly delighted with the new baby. As it turns out, his delight is justified. This is indeed a good book and I'm well aware that I am not going to be able to do it justice in a short review. I feel a bit like someone with a huge cauldron of minestrone soup, urging it on the uninitiated by offering out thimblefuls. You really do need to read this one to discover just how good it is. Nielsen says that 'a book does no good if nobody reads it' and he is keen to get his ideas about web design across, so here is a book he wants people to read rather than just own. I don't think he has anything to worry about; it is full of good advice and it really is fun to read.

I enjoyed this book a lot. It is both highly readable and entertaining and Jakob Nielsen has developed an impressive insight into web sites. Along with his wisdom there's a wry sense of humour and a sly self depreciation that helps the thing along. It has the most extraordinary layout though. The sections are divided up with coloured bits. I tried for ages to figure out what the colours meant but decided they were chosen for some reason I can't fathom. I did figure that there isn't any connection between the repeated colours – it's just the same ones used twice. It was ages before I realised that each section had its own index. My first encounter with these sub-indexes led me to believe I was looking at some bizarre mathematical ritual. There are also inset boxes, asides from the main text to expand ideas. I know that these asides have now become the craze and I don't want to be too critical because I've done them myself and have no desire to sharpen knives for subsequent reviewers, but some of these asides are getting to be longer than the text. I was often not sure when I should read them, though many were very informative, and their invasiveness is beginning to remind me of the difficulties of watching commercial TV when adverts break out just as stuff gets interesting. There is also a disconcerting habit of taking a sound bite out of the text and printing it large and in another colour. These seemed to be taking the idea of saying things twice and more loudly a little too far and I was left with the disconcerting feeling that Jakob Nielsen knows this is the Web industry's Mrs Beeton and has already decided which bits he'll be famous for. However, again I suspect that Nielsen's production team has done its market research and knows the sort of book that will appeal to those hoping to develop or amend web sites. This is a very different book from *Usability Engineering* even to the point that there is no referencing and the sketchiest of bibliographies. For all that it is a far more entertaining and readable book than *Usability Engineering*, which, worthy though it is, is always rather hard going for the less than avid reader.

This isn't a book for the uninitiated. Jakob Nielsen talks about JavaScript and web gobbledegook as if everyone now understands what it means though he did explain WYSIWYG in one of the asides. The book could do with a glossary for those who don't know what some of the techno speak means or have forgotten it. Nielsen has promised us a second volume. He thinks two volumes are better than one hefty

tome and I agree with him here. I hope someone from Pearson Education reads Nielsen's comments as I'd mentioned this as a possibility to them to solve the big tome problem and was delighted find that I now have Jakob Nielsen to confirm my beliefs. My last gripe is the price. At £35 (oh alright £34.99) it's a lot for students to pay. Nielsen argues that he has brought the price down by making his ideas available as two texts rather than one and this 'makes the book more affordable for students'. I can't help thinking that a £35 book is more affordable than a £70 book but since most (UK) students can't afford £35 then the whole thing is somewhat academic. But I guess that really Nielsen isn't aiming at the (UK) educational market. Again, as in the Spool et al. book, the price has been bumped up by the screen shots (colour this time) and all those coloured bits in between whose purposes still leave me puzzled.

The book is packed with useful information about web design. There are examples of good and bad design and some bad ones which Jakob Nielsen has then redesigned to make good. There are also examples of his own work that he admits are less than perfect. I liked that touch. It shows that the web is an area where learning is taking place and even the great and the good might not have all the answers just yet. I hope that every site I come across in the future has read and absorbed his advice. He is nicely opinionated. He says web pages should have attitude and 'The correct amount of attitude in a web page is: Not too much, not too little'. I wondered how much that might be but having finished the book, I know that like baby bear's porridge this one is just right.

And am I glad to have it on my shelf? Yes, I am. I'm even more glad to have read it. I still wish it wasn't so expensive as I'd dearly (no pun) love to recommend it to my students. Though I guess they'd be sensible and buy it from Amazon rather than the bookshop I got my copy from. It's well written, wise and very entertaining reading. I didn't have to resort to Terry Pratchett's latest novel on my two-hour train journey home so I can recommend it as a good read as well as an informative one. My copy is a bit raggedy looking as if the pages have been cut with the book industry's equivalent of a kitchen knife and I find myself slightly irritated by the odd layout – reminiscent of web pages. There is a lot of white space which is useful for jotting down comments in but makes the book bigger and heavier than it needs to be. When I finished it I found myself singing: 'New York! New York! So good they named it twice'. Yes, I think I'll read this one again and I am looking forward to volume 2 as much as I'm looking forward to the next Discworld novel. I guess that we can expect it just as soon as Jakob has got over the late nights and the teething stages of this one. No, Jakob, there's no fear that *Designing Web Usability* will end up dusty on the shelf. Nice one! And congratulations are in order methinks.

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HCI and Marketing: allies or adversaries?

***Tom McEwan* presents an ongoing debate and invites you to join the fray**

A recent online discussion started with an exploration of whether HCI and Marketing specialists were comrades in arms or diametrically opposed. I invited the participants to draft a paragraph or two on their positions: is it divisive – usability v prettiness, effective branding v academic theories, or can we all agree on the need to create a demand (?!) for customer-driven brands and products?

Alistair Kilgour, Interact'99 organiser and proprietor of RealAxis Consulting, and Gilbert Cockton, Research Chair in HCI at the University of Sunderland, project director of Digital Media Network, and Chair of HCI 2000, respond.

The purpose of many web sites is to deliver information – if they do this successfully, users will return and advertisers will be happy. My gut feeling is that in these cases at least, beyond a certain threshold the quality of the graphic design is unimportant – though I don't know of any research aimed at establishing whether this is really true.

It is hard to do such research – I supervised an MSc student project a couple of years ago which attempted to compare objective and subjective assessments of the usability of two versions of a simple address book and diary tool, one with 'good' (professionally improved) graphic design, and one with 'bad' (done by an unskilled amateur, i.e. the student himself). The results were inconclusive – the subjective assessment of the 'good' design was higher, as might be expected, but there was no measurable objective effect on usability. My suspicion is that any objective effects in situations like this would manifest themselves only after prolonged use – requiring a longer term study to uncover than an MSc project.

I also strongly suspect that words are more important than pictures. In recent user testing of a prototype web design for a small company providing an information service, users were puzzled by the word 'browse' on one of the buttons. Although the volunteers were not seasoned web users, anecdotal evidence suggests that even frequent users do not think of what they are doing as browsing (that's what sheep and cows do, after all), and may not even be aware of the generic description 'browser' for the tool they use to access the web. Though we haven't tested it, I suspect that replacing the word 'browse' by the word 'explore' would have a more profound effect on users' perceptions, and ability to use the site effectively, than any halo effect could ever achieve, however visually impressive.

The message that's emerging is that there is no single answer – the results are task-dependent, which is also what Steve Draper was saying, I guess, in suggesting focussing on the task of 'making a satisfactory purchase'. This is not a new lesson in HCI – but it does seem that it needs to be discovered anew by each generation of designers.

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Getting through the war between usability and aesthetics: beyond Freudian projection

For most HCI practitioners, multimedia and web delivery have been a great disappointment. Having worked so hard through the 1980s to establish user interaction as 'our territory', we find multimedia and the web has let in a hoard of unwashed designers who dump junk on the world on the basis that it's 'cool', 'persuasive', 'a unique user experience' and sometimes even 'beautiful'.

In HCI, we've learnt to hate these creatives more and more as the years drag on and they still haven't come to us begging for forgiveness and enlightenment. How can these people be so arrogant, insensitive and ignorant? Easy – they just copied us! Now we project our past failings onto them. Freud would have been proud of us.

In the 1980s, we were the young turks of the software world, sweeping geeks and nerds out of the way as we delivered well-structured displays and smooth interaction. Old hands in university departments and IT companies found that, despite a lifelong interest in end-users ('operators') and interaction ('dialogue'), they weren't up to it. They lacked cognitive psychology, experimental design experience, interview skills, observation skills and basic design knowledge about the main dialogue styles for user interfaces. They couldn't assess user needs, design user interfaces or evaluate user experiences. However, there was never a hoard of HCI stormtroopers, so the nights of the long usability knives were spread thinly and provisionally across the IT world.

In the 1990s, it was our turn to become the old farts. Despite a lifelong interest in usability and software quality, we weren't up to it. We can't draw, we can't edit digital images, we can't script video, we can't edit video, we can't animate and we can't enrich our interactions with cute cultural references. However, there are a horde of creatives streaming out of graphic design, industrial design, marketing, advertising, television, video production and publishing. What's more, they see multimedia as 'new media' and it's theirs!

What is to be done? Quite simply, we need to work in true partnership with new media creatives. This means that we cannot expect creatives to accept anything we hold dear on the basis of authority alone (and anyway, too many of them have already set themselves up as user experience authorities without ever reading HCI research – pop Nielsen, pop Norman and pop Laurel and that's the lot). However, all sensitive and open-minded creatives quickly learn that interaction is not their home ground. Existing print and time-based media is essentially passive. Interaction eventually undermines old values of graphic design and film theory. Once viewers and readers become users, they become more critical and searching. Initial impressions eventually wear off and are replaced by a critical understanding of what the interactive media actually delivers. At this point, sensible creatives come seeking help from usability experts. However, they expect to work in partnership and not be ordered around. There is little value, spite and revenge apart, in inverting existing power relations.

Working in partnership means that creatives need to accept our skills and orientations in the areas of audience research and user experience designand evaluation. It also means that we have to accept the skills of creatives in creating aesthetic experiences that exploit a range of cultural values and orientations. It is these skills that draw users in, that attract them to kiosks, that delight them on home pages and engage them in the initial screens of multimedia titles. Recent research in Israel (see forthcoming paper in *Interacting with Computers* – What is Beautiful is Usable) indicates that users attribute a range of qualities to interfaces with strong initial aesthetics, and that a halo effect endures in the face of poor usability. Conversely, good usability can only slowly compensate for poor initial aesthetics.

It is no wonder that digital media companies employ creatives in advance of usability experts. Creatives deliver from day one of their employment and minute one of user interaction. Usability experts can take months to really influence product quality and their impact on design is generally transparent. The mark of good usability engineering is that one doesn't notice it. That's why it's been so hard to give the hard sell.

Since my move to Sunderland, I have come into contact with creatives on two levels. I only teach part of one module, Multimedia Design within our BA in Interactive Media. However, the first cohort to reach the final year of this degree included Graham Mitchell, winner of the 1999 Europrix student prize with Burnie the Rocket. Graham produced this work on an Art and Design module after enjoying the benefits of Computing's teaching on the Level 2 Multimedia Design module. He began his Level 3 work with a good understanding of audience research and user experience design and married this very well with the values and orientations of Art and Design staff.

The citation for Graham's entry covers both audience appropriateness, and interaction design and aesthetics. Neither predominates in the citation for his shortlisted entry. There is a seamless blend of the two (including an alien zapping game based on Fitt's Law which generates aliens of different sizes at different distances from the cursor – Burnie the Rocket teaches very young children how to use the mouse).

I am also project director for the Digital Media Network (www.dmn.org.uk) a cluster support project for Digital Media companies in the North East of England. A tour around our members will drive home the creative talent that fuels the excellent firms in our region. None, however, are cavalier about user experience and usability evaluation. Where a home page is annoyingly cool, it's cool for a good reason and certainly is not impacting the bottom line of the firms concerned. On learning that we have a fully equipped usability lab at Sunderland, the leading firm in the region was eager to make good use of it, not primarily because their blue-chip clients require it, but because they simply would not now develop e-commerce sites without extensively evaluating user experience and performance.

In short, if HCI experts work in true partnership with creatives, then great things can and do happen. If we lecture them, they will lecture us back, and with good reason. While they may seem ignorant, stupid, arrogant and stubborn, so can we. After all, some of us remain stuck in the 1980s with nonsense notions of universal absolutes of usability, a value of everything and cost of nothing mentality, an aesthetic puritanism that would astound Oliver Cromwell, and a general do-gooder save-the-user mentality reminiscent of cub-scouts dragging old ladies over roads without checking first whether they want to cross.

The initial creative stranglehold on new media can only be good for us. It forces reflection and pragmatism. It forces us to be critical of many of our own unexamined ideologies. Once both HCI experts and creatives become able to negotiate, persuade and compromise, then truly great things are possible.

So stop moaning about marketeers and designers and learn to manage by influence rather than authority. Accept that HCI experts have been just as dogmatic and doctrinaire as creatives. Then take advantage of the e-business revolution and its ruthless ability to drive away users from unusable sites and its clinical recordings of the statistics of design failures. Effective creatives understand that (post-) modernist posturing is not enough to assure clients of design quality (ineffective ones are easy to find, but then so are naive usability practitioners). Creatives need HCI experts to provide audience research and user experience evaluation. And, approached with respect and understanding, they will accept all the reasonable advice and support that HCI experts can give them.

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Let's take this discussion on into the next issue of *Interfaces* and beyond – send your responses and rants to:
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Interactivity + e-Commerce = i-Commerce

Tom McEwan

The biggest opportunity ever to hit the interactive media industry and (at least some of) the HCI community is emerging. It is not hard to see that the barrier to increased adoption of e-Commerce – and all the financial benefits that this would bring – is the lack of valuable interactivity.

To quote from the HCI 2000 conference web-page:

> Major global computing companies such as IBM identify ease of use as 'the next e-business battlefield' where 'poor product usability becomes a serious liability'. An unhappy customer is someone else's customer, so it has to be right first time.

In e-business, a system's commissioners and developers, not its end-users, pay for bad design.

The press veer between panic-struck enthusiasm and excessive criticism. 'If you're not an e-business by 2002, you won't be in business', 'Amazon.com loses $4 on every book sale', 'online suppliers can't meet Xmas rush'. The AOL–Time Warner merger coverage was split between 'content is king' and 'the junk bond returns' (this last comment based on the fact that AOL was purchasing Time Warner with its own, presumably, over-valued stock.).

In the UK the debate never seems to get much beyond the ritual 'BT is charging too much for ISDN/Internet access/ADSL' as the barrier to increased e-Commerce adoption – as if car-parks and bus-fares were free for high street shopping! It's not dawning very quickly, but people are beginning to see, that if the online vendor can't give you all of the positive aspects of face-to-face purchase, and fewer of the negative, then why bother?

The Gartner Group suggested recently that 2002–2003 will see a major slump in e-Commerce, due to disillusionment with insubstantial e-ventures, followed by steady, strong growth in well-founded e-business.

Other commentators such as syndicated IT gossip columnist Esther Dyson have highlighted the poor interactivity and responsiveness of existing e-Commerce sites 'Like opening a shop with no staff'.

On the face of it, it seems obvious that no-one will buy online unless all the persuasive skills of the sales-person, window-dresser, shop designer find an online equivalent. The 'If you like that, you'll love this!' style of personal profiling demonstrates some of what is required. But this does not scale up to other product lines or markets. Second generation e-Commerce will need to be intelligent, interactive, intuitive, inspiring and information-rich, hence the term i-Commerce. Innovative and imaginative too (that's enough I-words).

I know that most of us would expect e-Commerce automatically to cover such ground, but when Scottish Enterprise defines e-Commerce as 'any business exchange or process conducted electronically using telecommunications networks', you can see how a bit of email and a one page web-site makes you an e-business. We need to differentiate. I've no idea if the term will prove useful – time will tell. There are some i-Commerce sites around the world (with or without hyphen, big I and little i) and the domain names have gone, so no fortune to be made there! But the I mainly seems to stand for Internet, not interactivity.

The intelligent database is a key component as well. *Computing* magazine recently carried the sorry tale of the country-music buyer who faithfully purchased his downhome CDs for eleven and a half months a year, only to find his profile (and resulting junk mail) underwent radical surgery when he bought his daughter a Spice Girls album for Xmas.

The dumb thing is that the knowledge is already out there. The oft-repeated story about the benefits of data-mining is that a supermarket chain found that by placing disposable nappies and six-packs of beer side by side near the store entrance they could meet the impulsive purchasing needs of a particular profile of 25–40 year old males. It doesn't take too much imagination to see that the check-out assistants (assuming they were awake and keen, two big ifs) could have told the same story, perhaps with more detailed analyses based on community gossip.

This publication has championed many of the enabling components.

Issue 40 explored the Active Web, and Jörding and Michel's description of personalised shopping in TELLIM shows how management of customer-related screen preferences can lead to more interesting and thus persuasive interfaces.

The recent papers from the BCS one-day meeting 'Affective Computing – the role of emotion in HCI' in issue 41 struck a chord in this respect. Claire Dormann's position paper on 'hedonic shopping experience' shows one direction. I followed this up to her web-site and her previous study of rhetoric. It is through this kind of seduction and emotive coercion that customers will actually buy online.

In the run-in to HCI 2000, we need to raise the temperature of this debate. There are still too many links to be made. Everyone in their narrow specialisms seems unaware of the big picture. The database specialist who is unaware of active webpage tools like Drumbeat2000 and Flash Generator from Macromedia. The HCI gurus that have lost the art of programming (if indeed they ever had it). INTERACT'99 was significant because at last we could see that, even if walls were not coming down, they were made of paper and we could see through them. Over the next few months we have the opportunity to go further.

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