

Hot Links and Cool Sites: How Do You Make an Electronic Journal Readable?

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Reading a paper publication and an electronic publication are very different experiences. Hundreds of years of development of the printed page has made reading paper publications an easy and pleasant experience.

Is there any chance that reading publications online will ever become pleasurable? If so, what are the issues involved?

In January 1996, the first electronic ACM SIGCHI Bulletin went online. SIGCHI is the ACM's Special Interest Group on Computer Human Interaction, and the Bulletin is their main publication. It was therefore of prime interest and importance to SIGCHI to address these issues before putting their publication online.

This paper presents the issues addressed in producing a pilot issue of the SIGCHI Bulletin, and the solutions arrived at.

About the author

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1. WHAT'S COOL?

Consider the Web page in Figure 1.

Just to make clear what this is, it is a page with a black background; the only other element is in the middle, where you see a blue underlined full-stop. This blue underlined full-stop is in fact a link to the real information that you actually wanted when you visited this page.

This is probably a cool site. Unfortunately, it is difficult to be sure, since it doesn't carry any of the logos granted by the self-chosen arbiters of all that



FIGURE 1. An example Web page

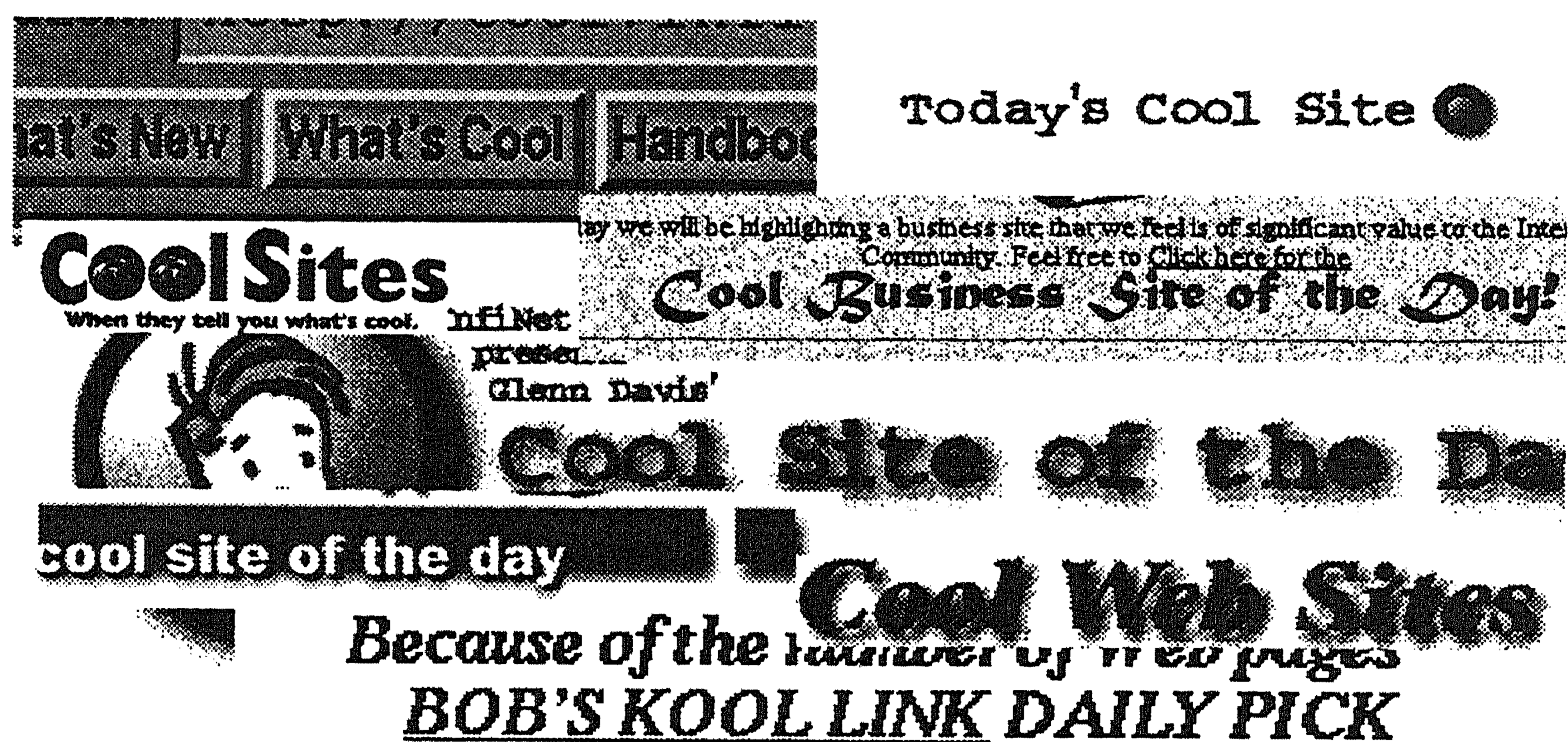


FIGURE 2. Arbiters of *All That's Cool*

is cool on the Web (Figure 2). Including one of the logos would of course spoil the minimal starkness of the page design, and so we are left guessing.

Consider now the Web site in Figure 3. This is the initial page of De Digitale Stad, a well-known Dutch Web site. The problem with this site is that even if you know what you are looking for, it can be extremely hard to find. If you don't know what you are looking for, then you're in great trouble. One of the elements on this page is marked Spel Regels (Rules of the game) which seems to suggest that the designers thought of it more as a game than an information site.

Luckily (at first sight) there is also a button marked plattegrond (map), which suggests may be a helpful tool in getting around the site. Unfortunately, pressing it, gets the page in Figure 4, which leaves the user just as lost.

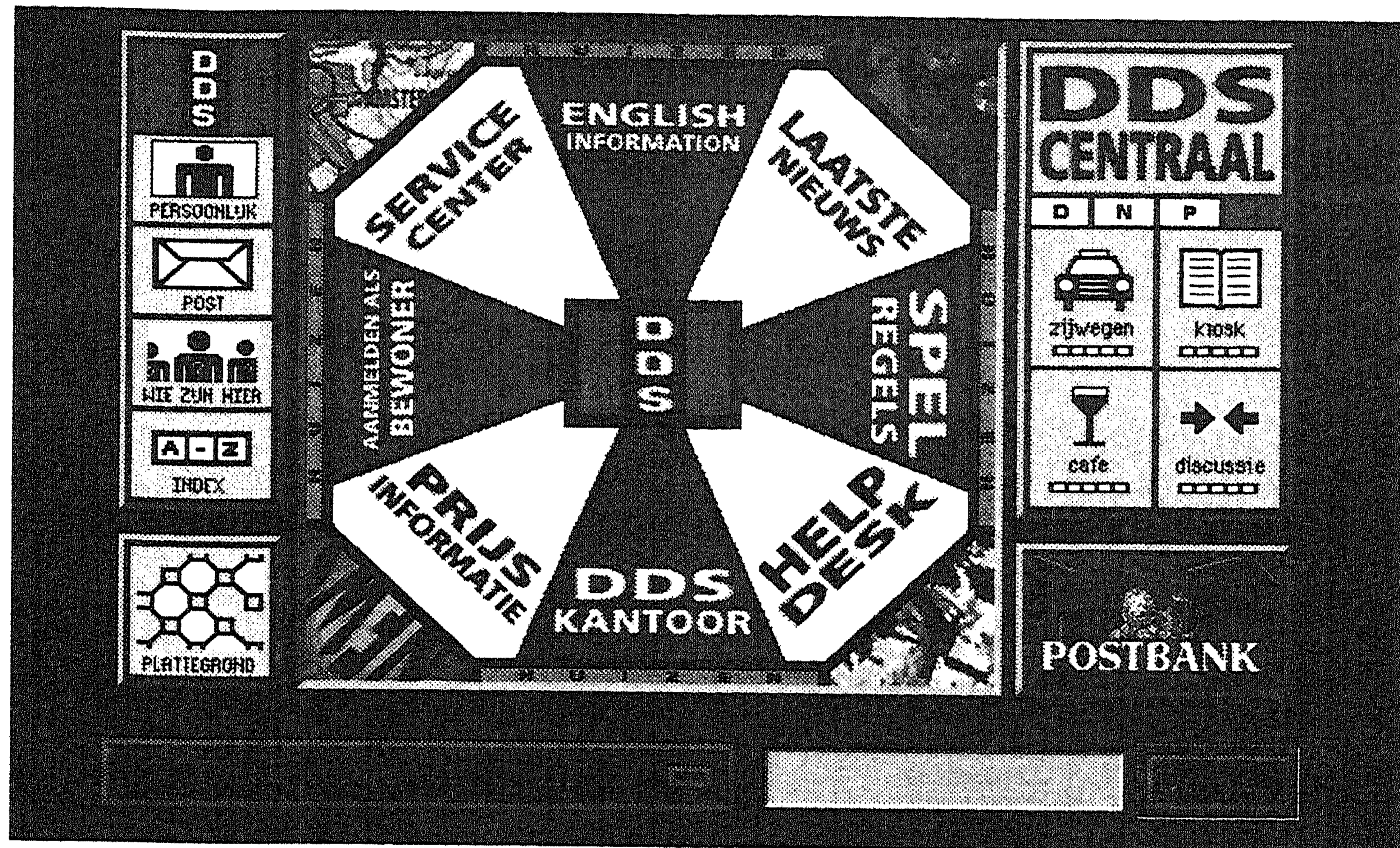


FIGURE 3. A Home Page

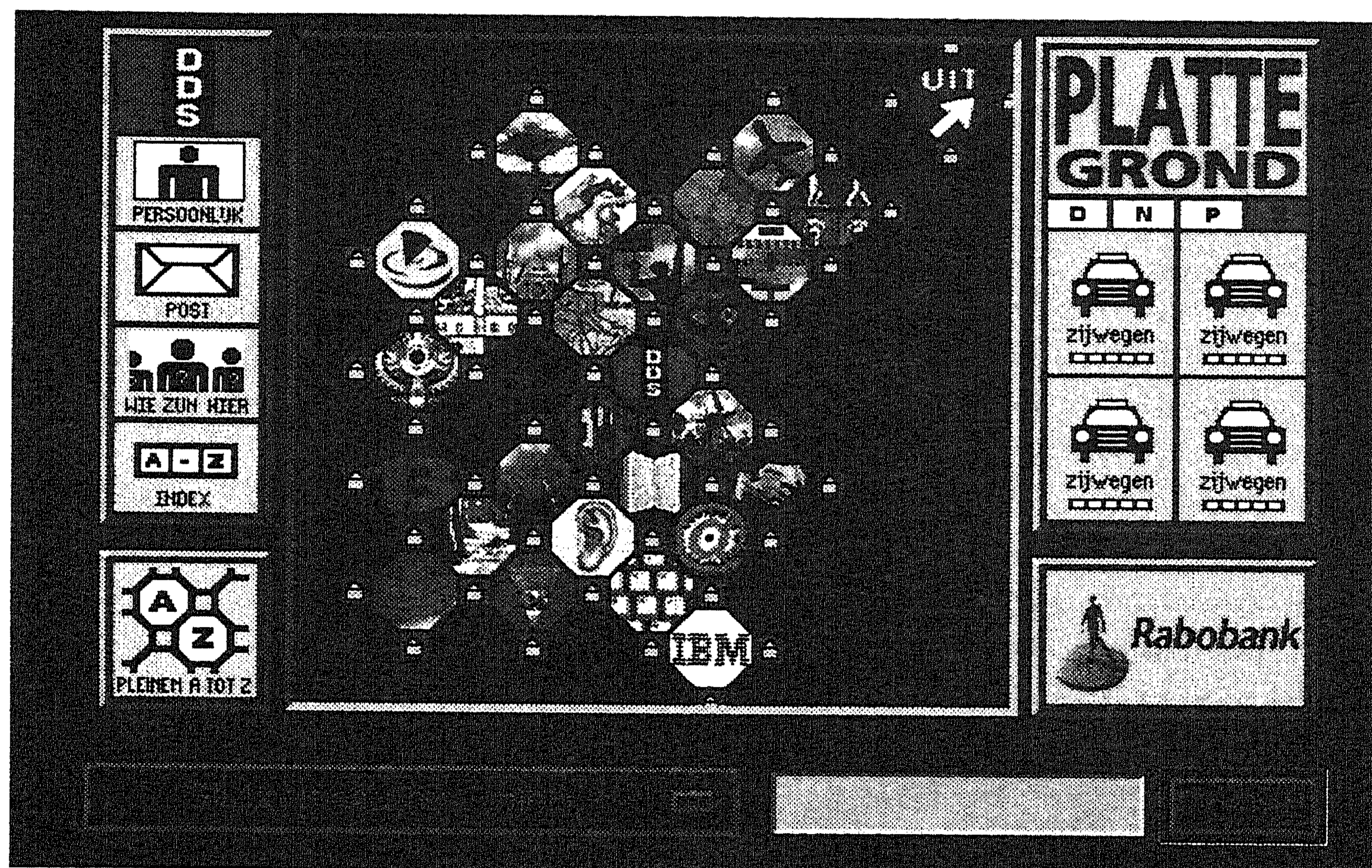


FIGURE 4. A map of a Web site



FIGURE 5. A list of the pages on a Web site

On this page, though, there is a button marked Pleinen A-Z (Squares A-Z), and clicking that gives you the page in Figure 5. This immediately gives you the information you need about what is available, and finding information from here is easy.

The problem is, Web pages are a human-computer interface, and they should be designed like one, with task and requirements analysis, user testing, and iterative design. Unfortunately, everyone thinks they can design a good user-interface, but few people really can!

The World Wide Web currently seems to be dominated by the question "What's Cool?". Too many WWW documents emphasise cool graphics (with their concomitant long download times) to the detriment of quality of content and usability. It was this problem that was one of the many that SIGCHI addressed when it decided to put its main publication, the SIGCHI Bulletin, online on the Web: the real question should be not "What's Cool?", but "What's Good?".

2. THE SIGCHI BULLETIN

The SIGCHI Bulletin is the main publication of the ACM's SIGCHI: The Special Interest Group on Computer-Human Interaction. It comes out quarterly, in issues of around 100 pages, and is distributed worldwide to SIGCHI's members,

to libraries and to other institutions.

Although the Bulletin is produced almost entirely by volunteers, and produced on a rather low budget (in order to keep its price as low as possible for members), it attempts to be a high-quality publication; for instance, it is entirely typeset, rather than being produced from camera-ready copy supplied by the authors.

The SIGCHI Bulletin is produced entirely electronically. Material is submitted by editors and authors electronically in a number of different formats (ASCII, Word, TeX, Frame, and others), via a number of different routes (email, ftp, floppy disk), and the Bulletin is laid out and typeset electronically in the Netherlands. Finally cameraready copy is produced on a 2400 dpi digital typesetter, and sent to the printers in the United States.

SIGCHI is an active, vibrant and forward-looking SIG, and considers it important to be at the forefront of developments in electronic publishing. As a consequence, it is supporting a number of experiments in electronic publishing, such as producing CD ROM and World Wide Web versions of the proceedings of its annual CHI conference [5].

Another of these experiments was to produce a pilot electronic issue of the SIGCHI Bulletin, to be accessible via the World Wide Web. The experiment aimed to find out how much work was involved in producing an issue, what resources were needed, and in keeping with the primary aims of SIGCHI – Computer Human Interaction – what is necessary to make using an electronic journal as pleasurable as possible, with an aim to begin publishing the Bulletin simultaneously on paper and electronically.

2.1. Electronic publications

Common complaints about electronic publications include that they are not as readable as paper publications (and there is research to back this up, for instance [4], [8]), that they don't feel so nice to use, and that you can't take them with you to read in the train [7].

Some of these complaints will disappear soon enough, and are only a function of technical constraints. Colour LCD displays of 300 dpi are already being made [6], and only have to drop in price to be usable on a large scale. It is easy enough to envisage a device the size of a paperback book with a display of a quality barely distinguishable from the printed page, using current or soon-to-be available technology.

However, there are advantages of a paper publication that are inherent in the medium: for instance you can see at a glance how big a publication is and it is easy to quickly scan through to get an idea of the contents.

On the other side of this coin are the undeniable advantages of an electronic publication, such as the ability to cross-link, and the ease of searching – and that the use of colour is effectively free.

So we approached the design of an electronic SIGCHI Bulletin with a central question: how do you make reading the Bulletin online as pleasurable

as possible and what can be done to make the perceived disadvantages more acceptable?

3. THE ANALYSIS

As any user-interface project should, we started with an analysis of requirements and tasks: what aspects of a paper journal are pleasant, that we would like to emulate, what aspects of using World Wide Web documents were undesirable, that we would like to avoid, and what does a reader require from a publication, whether digital or analogue?

3.1. Browsing and reading

There are many reasons a reader may approach a publication: for instance, maybe just to browse, to see what is there, and if anything looks interesting; to find articles on a particular subject; to find a particular article that has been recommended; or to read the publication serially from beginning to end.

It is important that any electronic publication support all these modes of access, and not give priority to any one of them to the detriment of the others.

The purpose of browsing, either an issue or an article, is to quickly get an idea of the size and content, so it should be easy to skim through an issue, and if possible with one glance get a feeling for the content of each article.

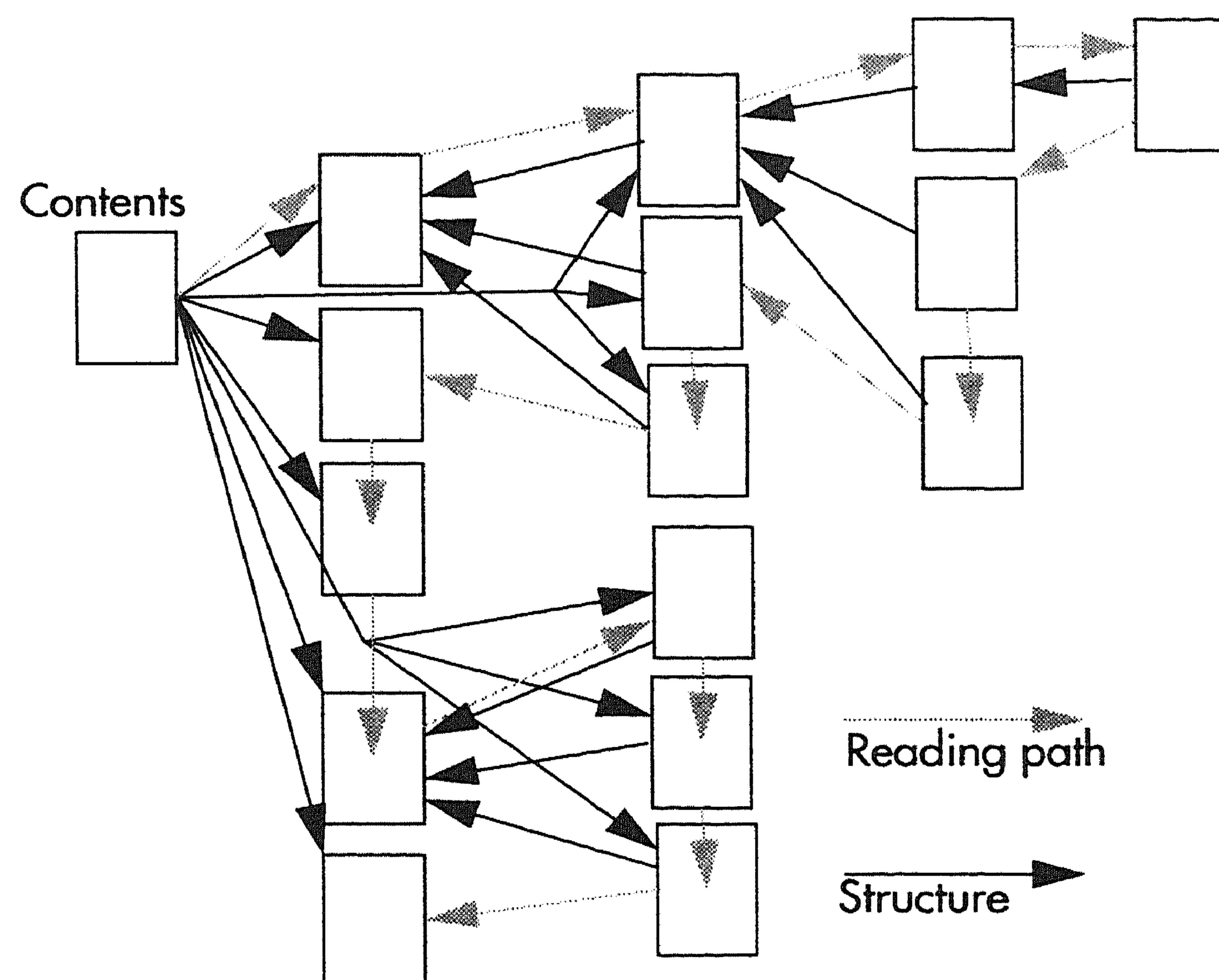
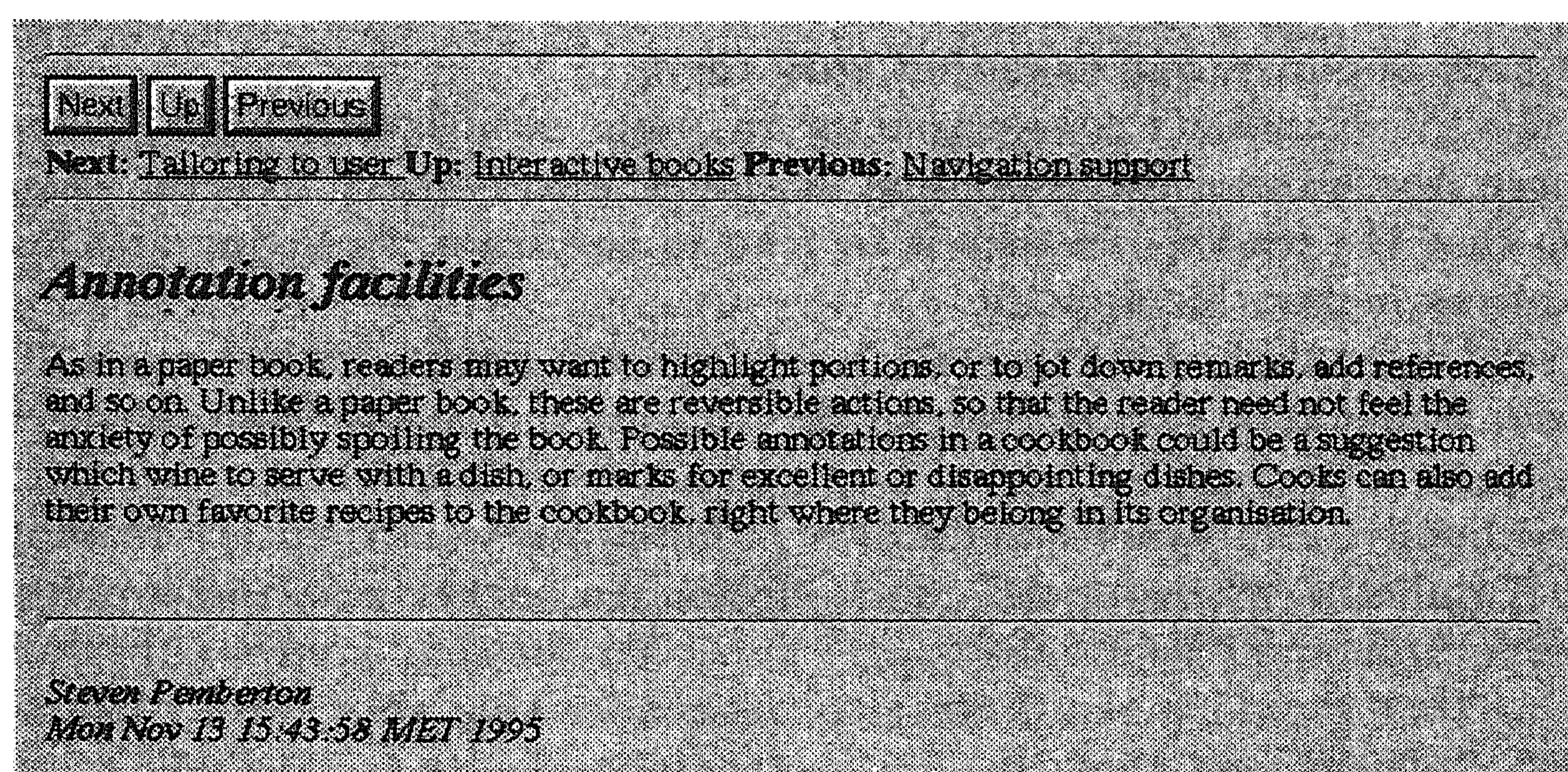
On the other hand, if someone wants to read an issue serially, it should be as easy as possible, without too many extra actions. An especially important point is that when reading an article the reader should never get lost and wonder where they are or how to get back – a well-known phenomenon in hypertext systems [7], [8]. There are many documents on the Web that are split into many little pages so that the reader quickly loses track of the organisation of the whole. For instance the default action of the package Latex2Html [2], [3] which converts Latex documents to HTML, is to split an article so that each section is a separate HTML document. A single document then becomes a network of cross links. Figure 6 shows an example of such an article, and Figure 7 a section from such an article. Readers are at a loss where they are, and how to get anywhere. Any section you are reading is isolated from its context.

This should be avoided, at the article level, but in general terms for the whole site as well.

3.2. Printing, threading and identifying

When designing a site, it should also be considered to what extent the information will be used by the reader at the screen, and to what extent the site is just a repository of information that the user will take away.

Consider the page in Figure 8, which is a description of how to travel to a research institute near Paris. It has been split up into several parts, how to travel to Paris from the airports, how to travel from Paris to Versailles, how

FIGURE 6. A \LaTeX document converted to HTMLFIGURE 7. A section from a converted \LaTeX document

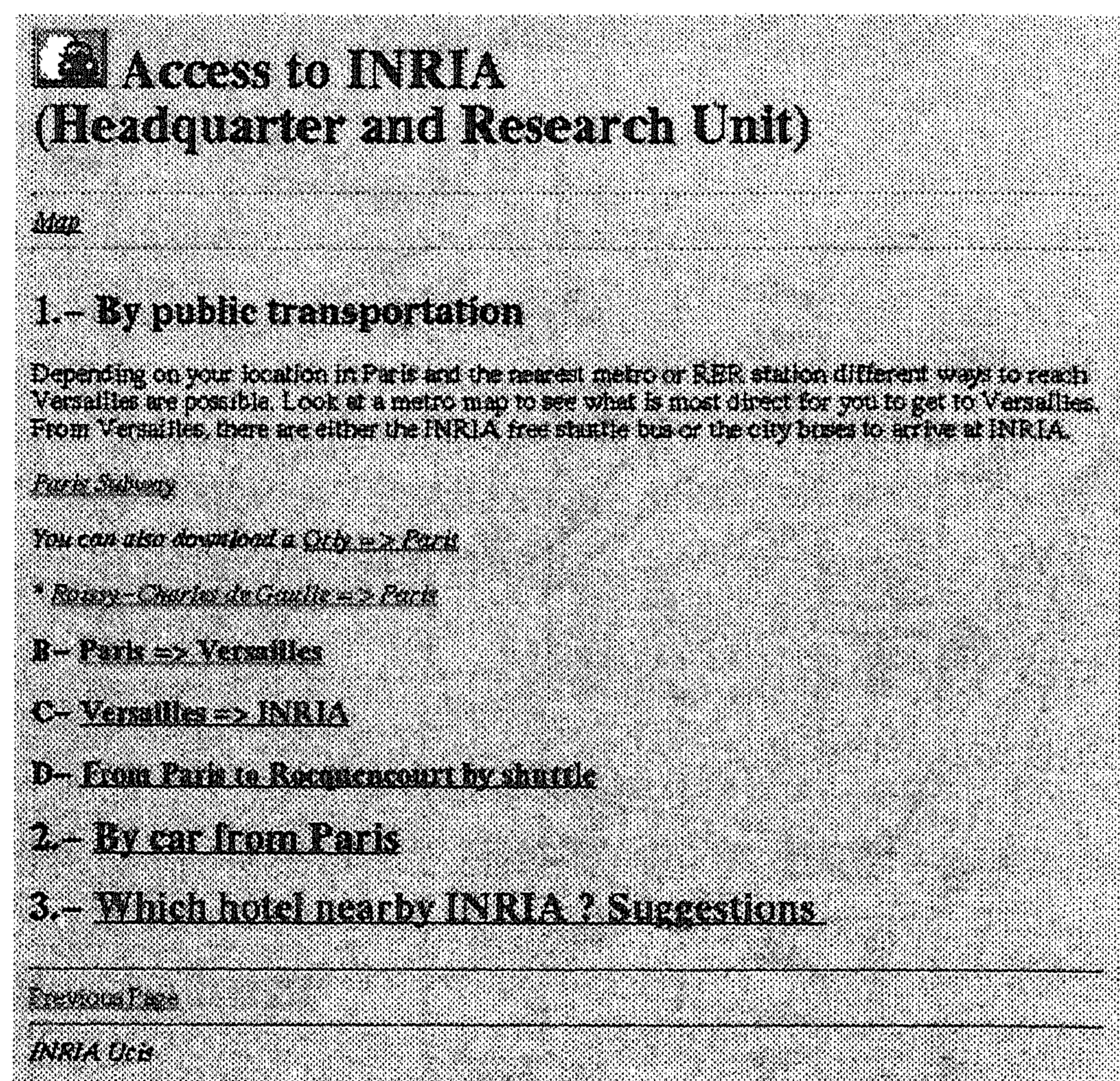


FIGURE 8. Travelling somewhere

to travel from Versailles to the institute. Each of these sub-descriptions are themselves split into several sub-pages, each describing a part of the journey.

But the fact of the matter is, the user of this information will nearly never want this information when sitting behind a computer screen. More likely will be that they have just stepped out of the plane at the airport and wants to know where to go next. That means that the user of this information has to visit each of the subpages in turn, and print them out, then reassemble them into a pack of paper, and take that with them.

While this point isn't so essential for an online publication, where the reader will often just browse articles online, it should also be easy to print an article out, so that the reader can take it to read in the train. Splitting articles into small pieces makes this difficult.

A reader should be able to easily jump between issues, for instance to follow a thread; it should be easy to read all the Education columns from all the issues, for instance.

And finally, the reader should always be aware that they are reading the SIGCHI Bulletin, wherever she come s from. An author may put a pointer to an article from their own home page, or as a reference from another article; following that should make it clear to the reader that they have come to the SIGCHI Bulletin, and that there is a structure involved. (Related to this, a page should never contain a link that says "Back to Home Page" or similar, since in the case that the reader has come from a different route than envisaged by the designer of the page: following that link may have a different effect than that expected by the reader.)

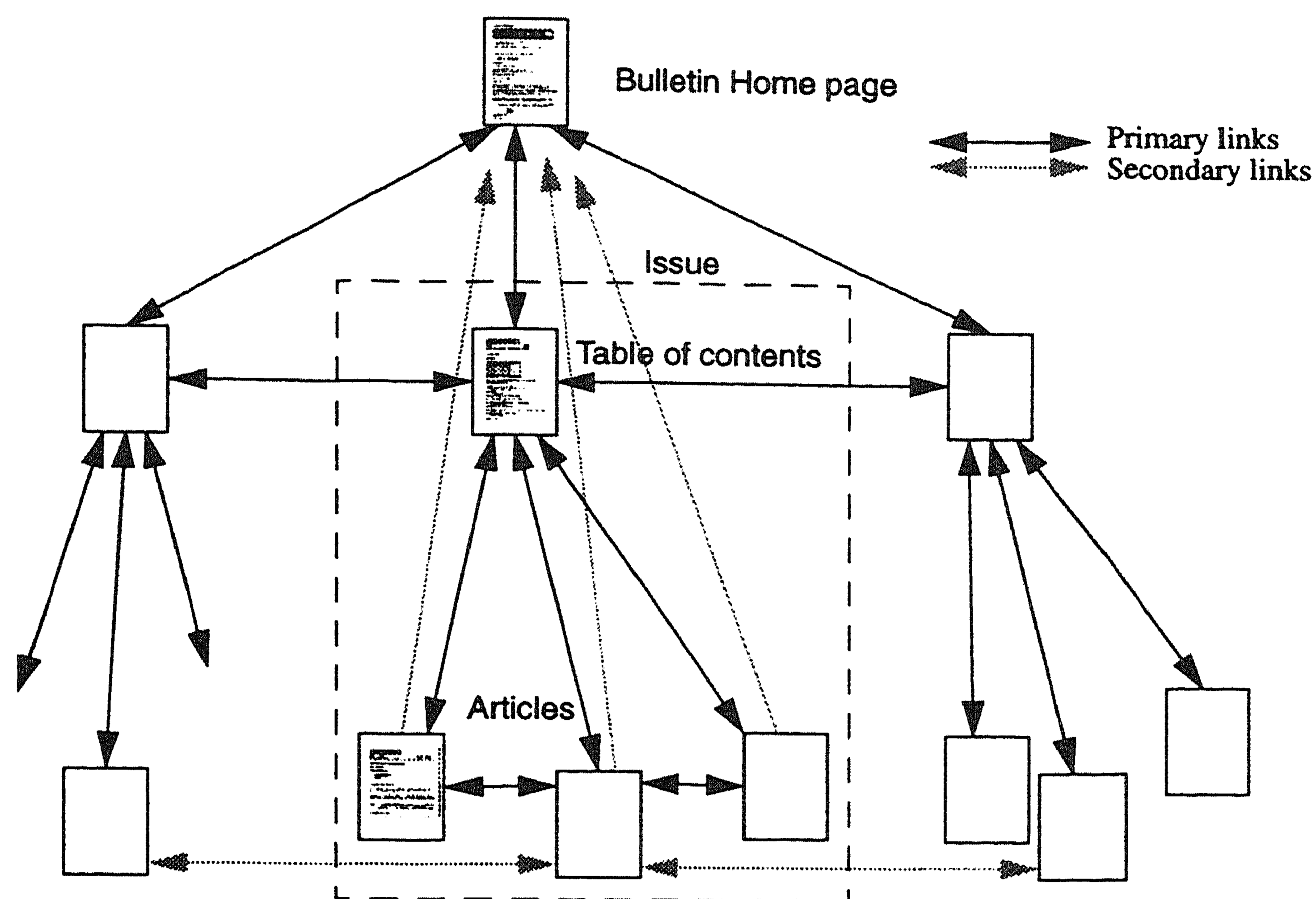


FIGURE 9. SIGCHI Bulletin global structure

4. HIERARCHY

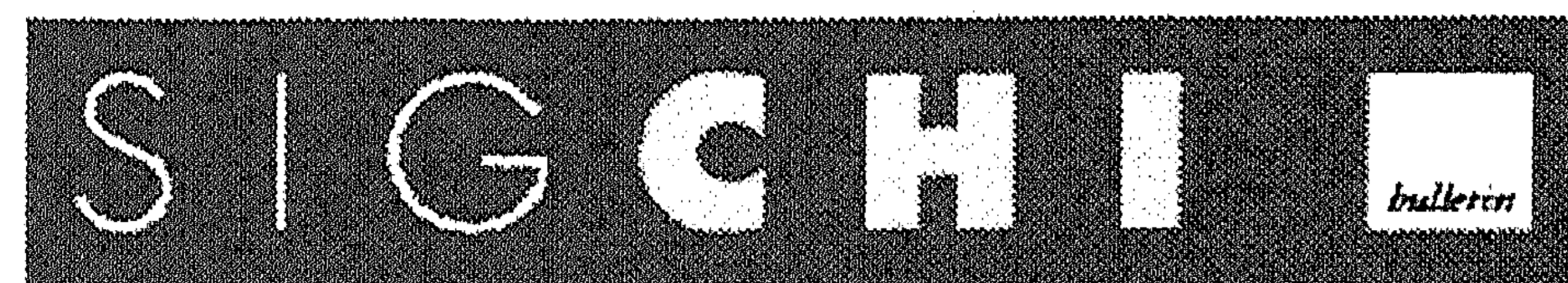
With these ideas in mind, we set about designing a hierarchy for the SIGCHI Bulletin online, and we ended up with a structure that resembles that in Figure 9.

An immediate advantage of this structure is that it is shallow: this reduces the chance of the reader getting lost, since the hierarchy exactly reflects the conceptual structure of a journal (series of issues, each issue of a series of articles, and no further subdivisions, although there is a structure imposed within each article).

4.1. Home page

At the top level, there is the Bulletin's home page (see Figure 10). After a short banner, there are immediate links to the online issues, so that regular visitors can get straight to the important information without first being confronted with all sorts of explanatory material. Only then comes the fixed material that occurs in each (paper) issue on the inside front and back covers: the purpose of the Bulletin, how to submit articles, lists of officers and local groups, email addresses, ACM and how to join, and so on.

The SIGCHI Bulletin



A Quarterly Publication of the ACM Special Interest Group on
Computer - Human Interaction

Editor-in-Chief Steven Pemberton, CWI, Amsterdam, The Netherlands

Tables of contents, plus an occasional article

- 1994 January, April, July, October
- 1995 January, April, July, October

Full issues

- 1996 January, April, July *

* Most recent issue is for SIGCHI Members only.
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The scope of Special Interest Group on Computer - Human Interaction (SIGCHI) is the study of human factors in the human - computer interaction process, including research, design, development, and evaluation of interactive computing systems. The focus is on human communication and interaction with computer systems. SIGCHI provides a forum for the exchange of ideas among computer scientists, behavioral and cognitive scientists, system designers, and end users, and it serves as a clearing house of information for the field of human factors and user psychology research and development.

The SIGCHI Bulletin (ISSN 0736-6906) is SIGCHI's main publication, and features columns, reports, articles and news on the subject of Computer - Human Interaction.

The Bulletin is published quarterly, and sent to all members of SIGCHI. To join, go to the [ACM Living Publications and Services Catalogue](#) or contact the ACM at acmhelp@acm.org.



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Links to issues

Fixed material

FIGURE 10. The Home page

4.2. Issues

Following a link to an issue leads you to the table of contents for that issue (see Figure 11). This contains a banner with links to the previous and next issues' tables of contents, and a link back to the Bulletin home page. These are here to facilitate quick browsing through a series of issues, for instance when in search of a particular issue.

Below these headers is a list of links to the individual articles, and then at the bottom a repeat of the links in the header: these are above all to aid serial scanning - you are searching for an article, so you go to the first issue, scan that (which may involve scrolling if it doesn't fit on the screen), and then you can immediately go to the following issue without first going back to the top of the page.

4.3. Articles

Clicking on an article title gives you something that looks like Figure 12. A principle property of an article is that it is essentially a single document (al-



Banner with links to previous and next issues and to home page.

January 1996

arCHive



The April 1982, July 1982 and April 1984 covers

SPECIAL CELEBRATION ISSUE: 50 YEARS OF ACM - A Look Back at SIGCHI

From the Editor: CHI as in arCHive

From the Chairs: 50 Years ACM, 14 Years SIGCHI

Mike Atwood and Guy Boy

The Early Years

Lorraine Berman

The Later Years: Interviews with Past Chairs

Steven Pemberton

The SIGCHI Bulletin: Interviews with the Editors

Steven Pemberton

The CHI Conferences: Interviews with Conference Chairs

Steven Pemberton

HCI Education: Past, Present and Future?

Jean B. Gerson

The Evolution of the Student Experience: Interviews with Stuart Card and James Foley

James E. Pirkow

Visual Interaction Design: Rites of Passage

Maria G. Wadlow

COLUMNS

NEWS

SIGCHI News

CHI '96: A Preview

CHI '96 Workshop

The Real World: Uppers and Downers

Lon Bayfield

Views and Feelings

Links to articles



Banner links repeated to aid browsing when scrolling is needed

FIGURE 11. An issue's table of contents

though images are represented as thumb-nails in the document itself, with links to a larger graphic if you need to see it in greater detail – this reduces initial down-load time, especially important if you are only browsing). Having the article as a single document has a number of advantages: on the basis of the scroll bar (at least in many browsers) it is possible to get an idea of how large the article is; being a single document means that it is easy to search with the browser's search facilities for a term within the article; and a single document is easy to print out, to take with you to read in the train.

Each article has a banner to identify the article's source, especially important for people who have reached it through a different route than the Bulletin's home page. Using the information that needs to be there anyway (name of pub-

SIGCHI

Issue Article [SIGCHI Bulletin : Vol.28, No.1] Article Issue

From the Editor: CHI as in arCHive
 Simon Pemberton

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 The Bulletin Online
 Omission

A Look Back at SIGCHI

Someone interested in HCI reads the SIGCHI Bulletin, but apparently only someone *involved* in SIGCHI knows how to pronounce it, and that's why we chose *Archive* as the title for this issue, so that everyone would know. CHI is pronounced like the chi in archive.

This issue marks the start of ACM's 50th Anniversary year, and to celebrate the start of the year this issue features a look back at the history of SIGCHI. Ever wondered how come there have been 27 volumes of the SIGCHI Bulletin, while HCI didn't even come into existence before 1980? Read on....

There are many activities within SIGCHI, and so for the retrospective we contacted many people who are or have been involved with SIGCHI to ask them how it was, and what their experience was. One remarkable constant through nearly all the comments is that they say that working in SIGCHI is great fun. Hopefully these comments will inspire future generations of volunteers to come forward and join in that fun!

The Bulletin Online

..... Also in the theme of celebrating the 50th Anniversary of ACM, this month, the SIGCHI Bulletin.....

Links to previous and next articles in current issue, and to linked articles in previous and next issues. Links are repeated at bottom of article.

Browser's scroll bar gives indication of length of article.

FIGURE 12. An article

lication, identification of issue date) there are links to the Bulletin home page, and the table of contents for the issue that the article is for (without the use of the words "Back to...").

Additionally there are links to the previous and next article in this issue, to make quick scanning through an issue easy. Finally, before coming to the article proper, there is a table of contents of the article as a nested list of hyperlinks of the headings of the article, making accessing subparts of an article easier.

A reader can then quickly scan through an issue, looking at the table of contents of each article, using the slider at the edge of the window to get an idea of how long the article is, to quickly get an overview of an issue.

Also in the header are links to the same article in the previous and next issue, should there be such things. So should anyone feel inclined to read all articles from the editor, for instance, they can quickly click from issue to issue.

Finally, as with the issue tables of contents, at the end of the article the links in the header are repeated: again to aid the serial reader, who can quickly and easily get to the next article, or to the issue's table of contents.

5. EXPERIENCE

At the time of writing, the Bulletin has recently gone online, at <http://www.acm.org/sigchi/bulletin/>. Consequently, experience is limited at

the moment to the small number of users who have used it during user testing. Of one thing we can be sure: since usability is a central interest of the readers of the Bulletin, we expect many comments from its users.

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