Commercial Web site Design Criteria

Title

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Introduction

There are many different topics to be considered in the designing of a successful Web site. The design of a large-scale Web site, as is required in the design of commercial Web sites, requires more than the talents of the graphic designer to create a pretty set of buttons and pictures. There are many other aspects to be considered, such as the structure of the site, how the user will journey through the site, what layout different pages should have, and how to use the new technology and means of communication the Web offers.

In researching this thesis, I discovered that many articles are written about Web site design from the view of the graphic designer, or from the view of an interface designer, or from an editorial viewpoint. What I wish to do in this thesis is to bring together the different demands that these various viewpoints place on a Web site in order to establish a set of criteria for judging the success of the design of a particular Web site.

In order to do this, I will first look at the limitations imposed on designers by this new medium. I will then look at the role of the designer in Web site creation and the idea of the designer having meta-control of a site (that is, creating an over-all design for a site rather than designing every page individually). It will then be important to attempt to establish the design criteria for assessing Web sites, and this will be considered under the following headings: surface design, structural design, software and hardware considerations, and use of new technology. Once a set of criteria is established, I will then analyse a commercial Web sites.

Commercial sites operate in different ways on the Web. Some sites sell directly to the consumer, like a retail store on the high street. Examples of these types of sites would be Amazon.com, which sells books, CDs and videos; or CDNow, which sells CDs. Others are used as a form of merchandising on the Web, promoting television shows or cartoon characters. Examples of these are Comedy Central's website, which promotes its television shows and cartoons; and Garfield.com, which promotes Garfield the Cat related products. A third type of commercial site is one that promotes a service, for example, the Webfactory's website that promotes their web design services. An example from one of these three different types of site will be discussed.

Evolution of the Internet

The Internet was created in the 'fifties during the Cold War. It was conceived as an emergency communications network that would survive a nuclear war. As the Internet developed and began to be used for other purposes, people at universities began to write interfaces to gain access to the information available on the Internet. In this way, the World Wide Web developed, with its conventions of pages; indices and links based on the conventions of print design. As the means of accessing pages is based on computer code, and the pages themselves are written in a code called HTML, there are many different ways of viewing the information. Peter Hall wrote about the lack of an established interface:

> Although it has already proven its widespread popularity, the Internet, a global web of computer networks, is in visual terms enough to make a designer take an X-acto knife to the computer cables. Online are about 15 million users in roughly 50 countries, along with a wealth of information, news free software and a fast, cheap, ecologically friendly mail service. But how do you access it all? Because the Net began in the Defence Department, and grew autonomously among research and government organisations, it has grown vast without yet establishing a recognisably designed interface. (Hall, 1994 pg. 76)

This situation has changed somewhat in recent years with the introduction of browsers, which are programs for view-

ing web pages. Approximately 95% of Web users use the two most popular, Netscape Navigator™ and Microsoft Internet Explorer™, and both display individual pages with little variation. This means that as the means of displaying the pages has been established, it is now possible to display quite complex pages without having to worry too much about how it will be viewed on different machines.

Definition of a Website

A website can be defined as "An electronic location providing information, pictures, graphics, videos and animation on the site owner's goods and/or services." (Lattimore, 1998, pg.26)

This, however, seems to be a very limited definition. A website is much more than a flashy, all-singing and dancing advertisement. It offers a whole new level of interactivity between the designer and the consumer, a whole new paradigm of communication. Web sites are much more than pretty pictures you view on a computer screen. There is a great potential for two-way communication, a more refined process that can be different for every single visitor to the Web site.

Increased popularity of Web sites

The Internet has undoubtedly become incredibly popular. Darcy DiNacci tells us that:

> The ease and the extremely low cost of publishing on the Web, along with the gold-rush mentality that has fired the medium, prodded more than fifty percent of America's top-selling 1000 companies to publish pages on the Web in its first year. (DiNacci, 1996, pg. 116).

The main economic advantage the Web offers in relation to design is that is very cheap to alter the design and content of a Web site. The site is held on a server, which is accessed and viewed by people visiting the Web site. This means that to alter what visitors to the Web site see, it is only a matter of changing what is on the server. When people visit the site, the new version will be seen. A simple analogy would be of having one brochure, which everyone on the world could read at any time. If you wish to change the content, only one brochure is changed.

Chapter 1 : Designing for the Web

Web site design is quantifiable

One aspect of Web site design is that it is effectiveness is quantifiable, i.e. by measuring the amount of visitor interest in the site a client can get very precise statistics about how successful a particular design is. A client can test several different designs for one Web site. The content of the site remains the same in the different designs. Therefore, the amount of time a Web site visitor spends viewing the site is solely influenced by the design. The amount of time someone spends on a site is measured using programs called *trackers*, which monitor how many times a page is accessed, how long a page is accessed for, and at what times of the day a page is accessed. This can create problems/challenges for the designer, as Wendy Richmond discussed in Communication Arts:

> Now we will have clients saying '2 MB (megabytes) is too big'. Or 'His design won because we clocked people and 91% stayed 9.5 seconds, whereas with the other design, people stayed only 3 seconds. (Richmond, 1995, pg.167)

Designing a document for the Web

Although the Web is a new and challenging method of communication, the problems of traditional design are still there. The main priority must be to make the information accessible. Many design elements that are used for designing documents, such as the hierarchy and organisation of information, and use of language to create clarity of meaning, still remain applicable.

Limitations of website design

Graphic control and design tools

Designing a Web site involves a great step backward for designers. The tools used to design Web sites are very primitive when compared to other design software. It involves a lot more time and effort to create a visually appealing site than it would to create a similar design for print. There are many limitations and restrictions, primarily that of file size. For a while to come, designers will have to keep file sizes to a minimum, which means restricting the use of animation, images and other elements. Another restriction is that of the file format of Internet pages. This format is known as HTML (Hypertext Mark-Up Language), and it limits the control a designer has on layout and typography. HTML is constantly being updated (it is currently on version 4.0), however the designer has to keep in mind that visitors could still be using browsers which only understand older versions of HTML. (Currently, approximately 30-35% of Web users has browsers that support HTML 4.0).

Screen resolution (detail)

The screen of a computer can only display a low level of detail, which on PC's is 72 dpi (dots per inch). This compares very unfavourably with magazines that have a resolution of 600 dpi. This means that the quality of pictures and type on computer screens compares very unfavourably with print. Also, different computer systems display images differently. The pixel shape of PC's is rectangular, while Mac's have square pixels and also have brighter screens, which means that a design will look slightly different on the different systems.

Colour palette limitations

Different computer systems also display different amounts of colours. The differing amounts are called bit-

depths. An eight-bit colour monitor displays a maximum of 256 colours, 16-bit gives thousands of colours (this set-up is the most common), while a 24-bit monitor can display approximately 16 million colours. Therefore a Web site designed to be viewed on a 16-bit display will look very different on a 256-colour display.

Typographical limitations

The computer's 72-dpi display also means that there is less detail in typography. Letters look very pixelated (i.e. they look as if they are made out of blocks rather than as a series of lines and curves). Another limitation is that browsers (the means of viewing web pages) display the computer's system fonts, i.e. they display whatever font the user specifies rather than the font the designer specifies, This has been partly solved with HTML 4.0 (also called Dynamic HTML or DHTML). This allows the typeface the designer specifies to be downloaded and shown on the screen.

Importance of speed

Very early on in the history of the Web, the World Wide Web became dubbed the World Wide Wait. For most users who are surfing the Web from home, it takes a relatively long time for a page to download. It becomes very frustrating to wait ten or twenty seconds for a page to download just to find the information is not what you wanted. Wendy Richmond tells how this is affected by the design of a site:

> This all has to do with how well a particular site's information is organised, how easy it is to navigate, how long it takes for content to display on the screen and how concise and compelling the content is. In other words, harvesting the fruits of the WWW has a lot to do with how well the Web sites are designed. (Richmond, 1995, pg. 167)

The two most important things about a Web site's design in relation to speed are that it is very fast to download, and that it stands out from everyone else's sites. Otherwise, people just won't wait. Jakob Nielsen, Ph.D., is a

user interface and Web site design consultant. He quantifies how long people are willing to wait as 15 seconds at most.

> Traditional human factor guidelines indicate 10 seconds as a maximum response time before users lose interest. On the Web, users have been trained to endure so much suffering that it may be acceptable to increase this limit to 15 seconds for a few pages. (Nielsen, 1996)

Economic limits to project size

The cost of having Web space on a server is so minimal that there is no economical limit on how big your site can be. The factor that makes a Web site expensive is not the physical size (i.e. the amount of space it takes up on a computer) but how long it takes to produce the site. The more interactive a Web site is, the more choices are on offer to the visitor. As Web site design software is still in its early stages, every time a choice is offered to the visitor about where they want to go, the designer has to provide a destination. When interactive games, multimedia tours, electronic postcards and so on are added, the designers can be left with a lot of work on their hands. In other areas of design, the cost of the medium a client is publishing on forms the basis for deciding on a budget. On the Web, because the cost of publishing is so minimal, the budget is based on the cost of the design.

Design questions to be asked

Despite the great differences between designing for the Web and designing for other media, the type of questions that the designer must ask before embarking on a project remain very familiar. In Eye magazine, Nico Macdonald reminds designers of these questions. He asks:

> Is the chosen medium appropriate? What is the client trying to say? Who is the audience? Others are more specific to electronic media: How technically competent and design aware is the client? Will they be able to maintain the product? What hardware and software will most users have? (MacDonald, 96, pg.6)

Chapter 2: Designer's role in creating Web sites

Navigation of Web sites

A designer is not just responsible for the visual appearance of a Web site. The designer is also responsible for the structure of a Web site, i.e. the order on which pages are viewed, and the way in which a visitor travels between the different pages. The means by which a visitor goes from page to page in a Web site is called navigation. Nico Macdonald, in an article in Print, describes the questions that a designer must ask when creating the navigational structure of a Web site:

> What might users want to do on a given page? Where might they want to go? Do they understand what kind of information or service is offered? How will they get feedback to indicate what they have done? (Macdonald, 1996, pg. 6)

Designers in a team

In order to successfully design fundamental aspects of Web sites, such as their navigational structure, the designer must be involved in the project from the earliest possible stage. This means that designers must work as a team in designing the site, along with the editor, programmers and other individuals involved in creating the site. Jessica Helfand, speaking in a debate on multimedia design in ID (USA), reckons that team work in Web site design is not happening at the moment, and this is resulting in badly designed Web sites:

> I think probably the reason so much design is so dreadful is that designers are being brought in at the last minute and asked to choose the colour palette instead of conceptualising a problem as it gets solved in a

team environment. (I.D. Magazine, 1994, pg. 40)

Designers' problem solving ability

One of the most important talents that a designer has to offer in designing Web sites is his/her problem-solving ability. Web sites are becoming increasingly sophisticated, with new technologies offering exciting new possibilities. It is becoming more and more important to have someone who can unite all the various elements of Web sites, (such as colour palettes, navigational icons, and multimedia), in order to create a coherent, inter-related, easy to navigate Web site.

Design and content

Designers must also be responsible for the content of Web sites. Studies conducted by Jakob Nielsen (which are discussed in greater detail further on) show that people read Web sites differently than they read magazines and books. Web users are particularly aggravated by content that is promotional and uninformative. It is the responsibility of the designer to ensure that content is written in a suitable format for the Web. Nancy Hectinger says in ID:

> Design and content are inextricable from each other in multimedia. Design cannot be applied afterwards or separable from the content. The issue is to get more content people who are design aware, or design people who understand content and technology at the deep level you need for multimedia.
> (I.D. Magazine, 1994, pg. 41)

Variable and constant content

Web site content is not tied to a weekly, monthly or annual publishing schedule. Content can be changed at any time the Web site owner wishes. This offers a new challenge for the designer, who must be aware when creating the initial design that the content can be altered at any time, and allowances must be made for change in the Web site's design.

Meta design of Web sites

The ability to have updated content is becoming more and more of a feature of the Web. Companies such as Microsoft, Netscape and Excite are offering services that give customised content to each visitor to their site. These services are called "Content Providers". "Cookies" facilitate this, which are small files contained on a visitor's computer, containing their personal preferences. By using cookies, a visitor can log onto Excite's "My Excite", and receive customised information. For example, a visitor from Dublin can receive a weather forecast for Dublin, stock information, customised news headlines, (both local and global), and local television listings.

As every visitor can have a different configuration, it would be impossible to design a different layout for every visitor. This is where meta design comes in. The designer creates a basic structure for the site, allowing for all the various options that a visitor can choose. This meta design accommodates all possible uses, while still retaining a consistent appearance. In this way, the designer creates every possible site, not just one site.

Similarity to corporate identity manuals

The creation of a meta design for a Web site can be compared to the design of a corporate identity manual. A corporate identity manual is a manual that contains rules and examples that show how a design is to be implemented, as an alternative to giving a design solution to every conceivable situation where a design might need to be applied. In the creation of a meta design for a Web site, the designer will give examples of how to lay out different types of pages, what typefaces to use, how to create icons and page titles that have the correct look and feel, and so on. Lori Neuman, corporate identity and design manager at IBM, tells how this is done at IBM:

> This is achieved at IBM, across multiple divisions and countries, by means of extensive style sheets *(design templates for Web pages)*, guidelines and examples as well as standard icons, an image library and tools to automate processes such as masthead creation. *(A masthead is typically the title of a page, incorporating type and graphics)*. (Macdonald, 1996, pg. 7)

Sony's Web site: The Station

New technologies and new divisions within its corporate structure led to the redesign of Sony's Web site. One of the main problems with the old design was that all the different divisions demanded equal exposure on the company's home page. This led to a design which was far too cluttered and which suffered from constant redesign due to pressure from the different factions within Sony.

In an article in Graphis, the vice-president of the Sony (US) Design Centre, Keiichi Totsuka, describes the set of guidelines which he has introduced to ensure greater consistency in Sony Web design. The guidelines he introduced are:

- Keep it simple, clean and bold.
- Minimise download times.
- Give equal coverage to all divisions of the company.
- Make "What's New" easy to integrate with "What Already Is".
- Keep designs dynamic and fresh, so that people will return.

(Lewis, 1996, pg. 21)

Of course, a manual is not the only means of co-ordinating Web site design. New York based designer Jessica Helfand is developing meta pages for Web sites. This consists of a single designed screen which, along with extensive documentation, provides the template for all other pages that will be in the site. This leaves the designer more time to work on the problem of designing the site, while the client has the laborious and repetitive task of creating the other pages. However, this process requires that the client has the facilities and know-how to actually produce Web pages.

Chapter 3: Layers of Web site design

Designing a Web site, like any other multimedia process, involves many different layers. In order to successfully analyse Web site design, it will be important to divide the design of a site into different layers.

Surface design

Surface design is the outermost layer of a Web site. This is the visual part of a Web site. It consists of:

- Colour
- Typography
- Gadgets and icons
- Multimedia

Structural design

The structural design of a Web site affects how a visitor travels through the site. It consists of:

- Navigation
- Layout
- Hierarchy of information
- Metaphor
- Content

Software and hardware

The use of software and hardware is also very important in the design of a Web site. The designer must take into account the type of hardware that a typical visitor of the site will have. If a designer creates a great-looking site that a typical user won't have the patience to download, then the design is practically useless. The type of software a designer uses is important as well. If the designer uses plug-ins (small programs which Web users can download to view certain types of files), it must be considered whether or not the average user will have the required plug-in.

Use of new technology

The designer, however, must also remember that Web users are more than willing to acquire plug-ins if they know it will be worthwhile. Exciting, entertaining sites, which make the most of new technology to entertain visitors, can greatly increase the number of 'hits' (visits) they receive. Examples of new technologies designers can use in Web sites include:

- Games
- Electronic postcards
- Free e-mail
- E-mailing lists
- Free gifts for the visitor's computer, e.g. screensavers/icons/sounds
- Personalised information service

Commercial design

The commercial design of a Web site, i.e. the way in which it sells products, is probably the most important aspect of a commercial Web site. The reason that the site is there is to sell a product, and if a site is unsuccessful in

doing this, then it has failed. A the commercial design of a Web site must be like that of a successful salesperson, extolling the virtues of the products available, making them easy to find, and easy to purchase.

Chapter 4: The surface design of Web sites

The creation of the surface design of a Web site is where the input of the graphic designer is most obvious. The different aspects of the surface design of a Web site will be analysed first, as they are the first thing that the visitor sees, and therefore make or break the success of a site. Many of the rules which apply to traditional design, in areas such as print, apply to the surface design of Web sites. Therefore, the different aspects will be analysed mainly in relation to their medium, i.e. the computer screen.

Colour

It is important for a Web site to maintain a constant colour palette throughout the site. This is so that every page in the site appears to be part of the whole. Using consistent colours for linking to different pages, or different parts of the same page, makes it easier for the visitor to navigate the site. The colour palette used must work coherently with the mood of the site. For example, using bright, cartoon colours for Garfield's site works well, but using these types of colours for Amazon's Web site would be unsuitable, as Amazon's site is aimed at a much older audience. The restrictions that the computer screen places on colour as discussed earlier must also be taken into account.

Typography

Typography is currently not very important in the surface design of a Web site, simply because the designer has so little control over it. Any type, except type that appears as a graphic file, will be set in the typefaces specified

by the visitor's browser. If the designer wishes to use a specific typeface, a list can be made, in descending order of preference, of the typefaces the designer wants to use. If the visitor has any of these typefaces on their computer, it will be used. If not, the default typefaces of the browser will be used. On PCs, these typefaces are Times and Courier. On Macs, the typefaces are Chicago and Courier. A specific typeface can be used in certain circumstances, if the type is displayed as a graphic file. Type used in this way takes longer to download, and therefore cannot be used for bodies of text. It is mainly used in logos, icons, page titles and so on.

Due to the nature of the Web, type cannot be laid out in interesting and complicated ways without resorting to creating graphic files. Exciting, dynamic use of type, as seen in Raygun and other such magazines is a long way from appearing on the Web. Therefore, typography on the Web at the moment can be judged mainly on its functionality, as it is difficult for designers to do anything else for it to be judged on, due to the nature of the Web.

Gadgets and icons

Gadgets and icons are catchall terms for the elements which make up the means of navigating a Web site. These include images a visitor can click on to go to different sections of a site, arrows which take the visitor back, forward, up and down through content, and ubiquitous "Home" (fig. 1) icon that takes the visitor back to the home page. Gadgets and icons also refer to any graphic elements which serve no real purpose but which can add to the appeal of the surface design of a Web site, including bullets, lines, and symbols.

Figure 1 : *Various "Home" icons*

Stephen Heller, in his book The Digital Designer, criticises the way in which current surface design appears to be separated from system design:

> The bevelled buttons, simulated high-tech dials and switches, and other such clickable gadgets that feature in current surface design, clichéd as they have become, are nonetheless looked upon as workable interface elements, when in fact they serve no real design purpose. (Heller, 1997, pg. XX)

Multimedia

Multimedia is a word that has been applied to so many different things that its meaning has become obscured. Multimedia, in the strictest sense of the word, is the mixture of different types of media, which is the definition used here. Web sites can incorporate different media, such as animation, video and audio with ease. A well-designed site, however, will use multimedia only where it is appropriate, and the appropriate use of different aspects of multimedia shall now be discussed.

Animation

Animations are moving images. On the Web, both graphics and text can be animated to catch the eye of the visitor. Jacob Nielsen, in an article titled Guidelines for Multimedia on the Web, described good uses for multimedia. These were:

- Showing continuity in transitions
- Indicating dimensionality in transitions
- Illustrating change over time
- Multiplexing the display
- Enriching graphical representations
- Visualising 3D structures
- Attracting attention

(Nielsen, 1995)

Many of these uses apply to Web site design. Showing continuity in transitions involves something that has two or more states animating from one state to another. A good use of this in Web site design would be in listing a series of items. Indicating dimensionality in transitions is useful in the design of the navigation of a Web site. Moving arrows or turning pages can be used to give the visitor a better idea of the directions they can go in.

Multiplexing the display means giving multiple information in the one space. A typical use of this in Web site design is in "rollover buttons", which are icons that can be clicked upon that can change when the mouse pointer is placed over it, allowing it to change colour, have a glowing outline, or change in some other way. This is useful because it makes it more obvious to the visitor what objects are for navigating through the site, and what objects are there simply for decoration or information purposes.

Attracting a visitor's attention using animation is something that should be used sparingly. A Web site which uses too much attention-seeking animation will end up being too distracting. Animation used sparingly, to draw attention to new or important information is much more suitable.

Video

The use of video is not very popular in Web design at the moment, as it takes too much time to download a video clip. Also, the quality of video with is achievable on the Web is very poor compared to the quality of video that can be found on CD-ROM. Jakob Nielsen recommends limiting video to:

- Promoting television shows, films, or other non-computer media that traditionally have used trailers in their advertising
- Giving users an impression of a speaker's personality
- Showing things that move, e.g. a ballet

(Nielsen, 1995)

Audio

The use of audio on the Web has, like video, been very much neglected. It is beginning to become popular as new technologies make it possible to introduce sound without excessively increasing download times. Audio is an-

other form separate from visual communication, providing a separate channel for the Web designer to pass on information.

One use of audio is music. It can be used to create a mood, or to make a greater impact. For example, a Web site promoting a cartoon or television show could play the theme tune from the programme. It is also easier to play a piece of music rather than describe it, and Web sites which sell CDs and tapes often have audio samples which visitors can listen to in order to encourage the visitor to buy.

Chapter 5: The structural design of Web sites

No matter how well designed the surface of a Web site is, a poor structural design will result in the visitor becoming frustrated and leaving the site. The structural design of a Web site should make it easy for the visitor to do whatever it is they want to do on the site.

Structure

The initial processes involved in designing for the Web are similar to the processes involved in designing for any other media. Darcy DiNacci, in an article in Print, discusses the different stages involved in designing a Web site:

> After you've determined what you've got to say, you figure out what logical groups that information falls into. Those are the chapters of books, the departments of a magazine, or the "sections" of a Web site. With the sections determined, a method of access to those sections must be provided Let's call it a table of contents. Snappy teaser lines describing selected contents "inside" let readers know that while the publication may not look the same as it did yesterday or last week, it's got new information they need to keep returning for. (DiNacci, 1996, pg. 120)

The methods outlined above, however, are the same methods used for designing for print. The term "Web page" is an unfortunate moniker, which dates back to the early days of the Web. There are great differences between designing for the Web and for print, and in order to develop a well-designed Web site the designer should make the most of the features exclusive to the Web to make the structure of the site easy to use and navigate.

Link colours

"Links" are words or icons that the visitor can click on in order to go to a different part of the Web site, whether it is a link to a different page, a different part of the same page, or a different site altogether. A convention established very early on in the development of the Web is that a link not used before is blue, and a previously used link is red or purple. Also, links have conventionally appeared as bold, underlined text. Unless there is a logical reason not to use these colours for links, it would make sense to follow convention, in order to make things as simple as possible for the visitor.

Navigation

A Web site should make it as easy as possible for the visitor to know where they are, and how to get where they want to go. Every page of a Web site should have a link back to the "Home", or starting, page of the Web site. This makes it easier for the visitor to return back to where they started. A site with many pages should also have a "site map". A site map is a page that displays the entire structure of the site, and allows the visitor to go to any page on the site. Another feature that Web sites can employ which is exclusive to the Web is a search facility. A search facility allows the visitor to enter a word, or string of words, which the search facility will then search the site for. This makes it easier for the visitor to find what they are looking for.

Structure

According to studies carried out by Jakob Nielsen, "Only 10% of users scroll beyond the information that is visible on the screen when a page comes up. All critical content and navigation should be on the top part of the page." (Nielsen, 1996). This does not mean that every page should be the height of a screen, only that the vital ele-

ments of a site should be at the top. For example, the results of a search should have the closest matching results at the top of the page, and the rest of the results appearing in descending order of how close they were to the search parameters.

Complex URLs

The URL (uniform resource locator) of a Web site is its computer address, that is, the address of its physical location. While knowledge of this address is not necessary to navigate within a Web site, research by Nielsen has shown that users will try and decode and utilise the URL of a site in order to navigate it. Therefore, Nielsen recommends that pages have logical URLs. Also, Web users often have to type in URLs to visit Web sites, for example, if a user types in "www.amazon.com" in the address toolbar of their Web browser, they will be taken to Amazon.com's Web site. Therefore, this address should be as easy as possible to remember and type this address, with as little room as possible for typing errors to creep in. Web addresses are also case-sensitive, so all URLs should be in lower-case to avoid any problems.

Metaphor

The use of a metaphor for the structural design of a Web site is a simple way to provide the visitor with a familiar, and therefore easily understandable, means of navigating a Web site. In an article that appeared in Print, Jessica Helfand discusses the use of metaphors in Web site design as a means of making sites easier to navigate:

> The metaphors that drive the design and editorial development of most of these Web sites are limited in scope, button-intensive navigation schemes ranging from simulated shopping malls to urban streetscapes, hackneyed metaphors intended to suggest a familiar social fabric with which multiple users can easily identify. Or they dutifully mimic the form and structure of a paper publication, which is its own restrictive model. ... Are these references not an attempt to mirror our existing culture to help us respond to an electronic one? In this new world ... the social patterns and behavioural ramifications of how, and why, users access this material will demand that we conceptualise time and space with more ambitious thinking, more

inventive models, and, undoubtedly, more inspired design than presently exist. (Helfand, 1995 pg. 105)

It would appear that the dilemma facing designers is that they must do two things. Firstly, the designer has to create a means of navigating a Web site that is familiar to visitors, making it easy for them to navigate the site. Secondly, the designer must also ensuring that the means of navigation uses all that the Web has to offer in terms of an enhanced, more interactive medium.

Multimedia versus Print design

One of the most common metaphors used in Web site design is to create a Web site similar to a printed publication, e.g. a book or magazine. This provides a familiar structure to the visitor, as any Web user would be familiar with the structure of books and magazines. A problem that faces the designer is that the print model can place many restrictions on a Web site if it is followed too closely, and if it is not followed closely enough, the underlying structure will disappear.

Conventions of book design

There are many conventions in book design, which have evolved over time. Darcy DiNacci, in an article that appeared in Print, summarises these conventions:

> A book has sequentially numbered pages, divided into chapters. If the book is long or complex, we can find the section we want by looking in the table of contents. If it's a particular idea we're searching for, we look in the index. (DiNacci, 1996, pg. 118)

The vast majority of commercial Web sites follow these conventions. Different sections are created, accessed from the "Home" page, which serves as a table of contents. The index is replaced by search facilities, which essen-

tially provide the same results.

Resurfacing of print metaphors

It seems strange that so many commercial Web sites are structured around this model. However, it must be remembered that these types of sites are only successful if the greatest amount of people can access them and are willing to return to the site. It can be argued that, at least for the short term, a successful commercial Web site can be judged on how its use of the print structure as a metaphor for navigation makes it easy to be navigated and understood.

An example of the use of the print metaphor in a Web site is Prodigy Online. Prodigy is a news provider that provides personalised news and information, much like My Excite. Prodigy underwent a major redesign when the introduction of new browsers such as Internet Explorer and Netscape Navigator allowed graphics as well as text to be used on the Web.

The different information categories in Prodigy were divided into ten distinct sections. These were News, Business/Finance, Entertainment, Sports, Communication, Home/Living, Shopping, Technology, Travel, and Books/Information. These headings are very similar to the way a conventional newspaper is divided. The screen was then laid out in a grid, which has a layout similar to a newspaper. Visitors can then click on the different sections to get more detailed information. They can also use a toolbar to reach the information in the site.

Alternative metaphors

The conventions of print design may not always be the best option for the structural design of a Web site. There are so many other metaphors that the designer can use, for example, an architectural metaphor. The Web site could be structured like a room, or a building or street. A virtual reality language for the Web, called VRML (Virtual Reality Mark-up Language) is still in its infancy, but will allow visitors to Web sites to explore a 3D environment which could be modelled on anything the designer deems suitable. Many other metaphors can also be used, limited only by the imagination of the designer and the suitability as regards the site itself. The only stumbling block is that if the visitor does not understand the metaphor, they will not be able to navigate the site, resulting in loss of potential customers. This is why designers still rely on the print metaphor as a means of providing structure to Web sites.

An example of an alternative metaphor on the Web was the original design for Sony's Web site. The Japanese version of the site used an architectural metaphor, by providing a clickable diagram of its Tokyo facility. Visitors could click on different sections of the diagram to find out product information and corporate information.

The National Geographic Web site uses another metaphor in its structural design, that of the passport as a means of navigating the site. However, Ken Coupland, in an article in Graphis, reports that:

> The site, even in its earliest iterations, displayed a visual variety that set it apart from the stultifying sameness of most megasites. Yet interface strategies like a ubiquitous passport are already showing signs of fatigue. Visitors apparently didn't understand the seemingly straightforward passport metaphor.
> (Coupland, 1997, pg. 18)

From this statement it seems that the designers are faced with the problem of creating an exciting structural design while still remaining familiar and easy to use.

Chapter 6: How people read the Web

Inverted pyramid structure

The way in which people read information on the Web is very different from the way they read information on paper. Michael Evamy, in an article in Design Week, quotes Rob Waller discussing the problem of how to lay out information in a Web site:

> On paper documents you can put the introduction and forward and all that blather at the beginning, and the real content only starts on page 10 – that's acceptable to people. On the Web that's totally unacceptable. People never get there. You need very strong relevance cues to show people what's in there, why they should read it, and where to go. (Evamy, 1995, pg. 17)

This way of writing is known as the inverted pyramid structure. In conventional writing, there is an introduction, a discussion of ideas, and a conclusion. On the Web, text should start with the conclusion and then work upward from that point.

Scannable text

Jakob Nielsen conducted a test on order to find out exactly how people read Web pages. He discovered that visitors scan pages, picking out individual words and phrases. The test results showed that only 16% of people read pages word by word; 79% of the test users always scanned new pages. The conclusions of the test were as follows:

Web pages have to employ scannable text using:

- Highlighted keywords (hypertext links serve as one form of highlighting; typeface variations and colour are others., e.g. **bold**, *italic*, CAPITALS.)
- Meaningful sub-headings.
- Bulleted lists.
- One idea per paragraph (users will skip over any additional idea if they are not caught by the first few words in the paragraph.)
- The inverted pyramid style, starting with the conclusion.
- Half the word count (or less) than conventional writing.

The success of a Web site in terms of writing style can be judged by analysing how well the writing style works within the criteria established above.

Chapter 7: The importance of content

In conventional design, the editor is responsible for the content and the designer then bases the design around the content. When designing for the Web, however, the content and the design are inextricably linked. The designer must take responsibility for content and ensure that it is suitable for the Web. Content and design can not be developed separately and then put together in successful Web site design, because the medium requires so much more from the union of content and design.

Designing content for the Web

Content that is placed on the Web, without altering it to take into account the Web's capability, is deridingly known as "shovelware". Web users frown upon this process, and any company that does this on its Web site will find itself receiving very few "hits" (i.e. visits). Ken Coupland discusses the problem of using content on National Geographic's Web site in an article taken from Graphis:

> National Geographic Online's in-house development team strives to integrate the conflicting demands of a small army of content providers from other divisions while juggling lead times, marketing to an unfamiliar demographic, and manoeuvring to procure Web-centric content. ... "I don't think folks want to read lots of text on a computer screen", Mark Holmes, the Web site's editor says flatly. "Content should be interactive and compelling. We're creating a multimedia product, not repurposing the ink-on-paper environment." (Coupland, 1997, pg. 18)

Content, therefore, should be integrated with the design of the site, so that the design and the content function as one. Content should not have the appearance of being "dumped" on the site, with no consideration for the unique way in which the Web is read.

Importance of updates

Another important aspect of content on the Web is the importance of updates. To update a Web site means to make the content more up-to-date. If a customer visits a Web site and continually finds the same content, they will be discouraged from visiting the site again. Web sites should be kept new and interesting, in order to encourage customers to come back and see what's new.

Defining user experience

Mark Holmes, editor of National Geographic's Web site, tells in Graphis how they integrate content with design in order to make the content more appealing to the visitor:

> We're trying to find developers who have the skill sets to create the kind of quality information that National Geographic is respected for, people who can make order out of chaos while using the latest technology to communicate the editorial message. The magazine, typically, tells a first-person story through the eyes of the author; our challenge is to go back and make that first person the end-user and let the audience have the experience.
> (Coupland, 1997, pg. 18)

By this process, National Geographic Online attempt to show content as it was experienced by the reporter, and thereby make the most of what the Web has to offer as regards content. A successful Web site should follow this example and integrate content and design to the maximum benefit of the visitor.

Chapter 8: Commercial Web sites

This chapter concerns the aspects of Web site design which are exclusive to commercial Web sites. The primary function of a commercial Web site is to sell a product, either directly, in the form of an online mail-order catalogue, or indirectly, by means of advertising and promoting a product or service. There are several elements that a successful commercial Web site should contain. These are:

- Intelligent questions
- Helpfulness
- A skilful sales method
- A means of convincing the buyer
- A way of targeting the market
- Personalization

Advertising on the Web

Before going into detail on the above, it is important to discuss the growth of advertising on the Web. Adverts can appear both on a company's Web site, and on other Web sites. The primary means of advertising on the Web are "banner ads". Banner ads are advertisements that appear mostly at the top of the page, in a standard size. When the visitor clicks on the advertisement, they are brought to the company's Web site. John Lattimore discusses the

growth of advertising on the Web in an article taken from The Irish Times:

> Advertising volumes on the Net have been growing at a rate of knots over the past few years, and look set to grow even faster in the future as word of its effectiveness gets around. ... Even the smallest advertising budgets can make good use of the Net, once certain guidelines are observed. The trick in getting the most out of the medium lies in analysing the statistics generated by each Web site and its associated advertising. (Lattimore, 1998, pg. 26)

Statistics of how many people visit a Web site, how long they stay and so on are generated by means of programs called "trackers", which are discussed in detail further on.

Failure of commercial Web sites

Henry Bar-Levav, in an article taken from the Web magazine InterActivity, discusses the mentality behind the majority of commercial Web sites, and the reasons for the lack of success of these sites. (Incidentally, e-commerce is a term used to describe commercial activity on the Web. The "e" is for electronic):

> Most e-commerce sites, big and small, are built on the specious assumption that if you make it easy for people to buy, they will ... the only tools needed for successful online commerce are marketing and technology. Unfortunately, this mode of thinking misses a critical point: Commerce itself is an interaction between buyer and seller. Whether it's delivered digitally or in the flesh, a lousy sales presentation won't sell much. (Bar-Levav, 1998)

Having the means to sell products over the Web does not mean that people will buy them. A successful means of selling products, specifically geared toward the Web, must be employed. A successful Web site is one that employs these methods.

Failure of commercial Web sites

In the real world of sales, a dialogue takes place between customer and salesperson. By having this dialogue, the salesperson can ask questions in order to learn more about the customer and provide a better service, thereby encouraging a sale. A Web site can also collect information, by means of "forms". Forms are online questionnaires, where the visitor fills in details such as name, address, e-mail, chooses from a list, ticks yes or no, and so on. By making the most of these forms, a Web site can gather relevant information about customers.

Web sites can also enhance the sales transaction by offering links to different pages based on questions. Pertinent questions to ask would be: is the customer a first-time buyer, or an experienced electronic shopper? Does the customer know what they want, or need help choosing a product? By acquiring this type of information, the sales process is speeded up, and the customer can find the product easily.

Cookies can be used to store information about customers, so that the next time that they visit the site, they do not have to repeat answering such questions as name, address and e-mail again. However, it must be remembered that other information about the customer, such as whether they know what they are looking for or not, may change the next time they visit.

Being helpful

A customer who has difficulty finding the product they want will simply leave and try somewhere else. It is a lot easier for a customer to go to different Web sites than it is to go to different shops. A commercial Web site can be compared to a shop on the high street, except there is the potential for every other shop on the street to be selling similar products.

Henry Bar-Levav compares gives an example of how physical shops are helpful to the customer, and how this

applies to Web site design:

> In a physical store, merchandise is arranged in sections, aisles, and displays. Unfortunately, on most commerce sites, merchandise is arranged as a list. Proper categorisation is important, as are clear indicators. Although still a widespread design element, icons usually aren't clear indicators. (Bar-Levav, 1998)

Figure 2 : Shopping cart icon

The designer's responsibility is to create the structure of the site in such a way that products are categorised so that it is as easy as possible for the customer to find what they want. Bar-Levav states that icons usually aren't clear indicators, however I feel inclined to disagree. An icon is simply a pictorial symbol, which people have been deciphering successfully for years. A well-designed icon would operate as well as any other means of communication. A good example of this is the shopping cart icon (fig. 2), which represents the place in which the products you have selected are kept.

Sales manner

The way in which the customer is guided through the sales process is what is meant by "the sales manner". The means in which attention is drawn to a product is important. It must not be so flash and showy as to discourage the customer, however it should attract the customer's attention. While in the process of selling the product, the customer should not be distracted by a multitude of other offers. Having an abundance of banners and other advertisements might encourage the customer to check them out, thereby ending a potential sale.

Convincing the buyer

A Web site should do its utmost to convince the customer that they should buy the product. In real-world shops, answering any objections the customer may have does this, however this is not possible on the Web. Therefore, a Web site should do its best to assuage any fears the customer may have in a proactive, rather than reactive way. A good example of this is Amazon.com's reader review section. The site displays critical reviews sent in

by readers of the book that the customer might be interested in buying.

Target market

Web sites are unique in a marketing sense in that a Web site can undergo constant market research. By analysing the patterns of visits that a Web site is receiving, the design and content of a site can be adjusted accordingly, to reach certain demographics. Examples of patterns that should be obvious and helpful are after-work peaks, weekend peaks, after-school peaks and so on. Henry Bar-Levav describes the advantage of analysing Web site traffic:

> Sites with the most thorough understanding of these customer patterns rely less on instinct and more on knowledge, which leads to a more targeted sales opportunity and a better chance that the site will offer what the customer might want to buy. (Bar-Levav, 1998)

A successful commercial Web site will analyse and react to the data it receives about its visitors.

How traffic is measured

Web site traffic is measured by means of counters and trackers. Counters are programs that work by displaying a graphic image, usually the number of times the page has been accessed. Each time the page the counter is on is accessed, the counter increases by one. There are three problems with counters. The first is that it is graphic based, and if a visitor has graphics disabled on their browser, the display will not increase. Secondly, if the visitor visits the site without accessing the page the counter is on, it will not increase. Thirdly, counters give no idea about when a visitor accessed a page.

Hours of the Day

00:00 - 00:59	214	3.29%
01:00 - 01:59	175	2.69%
02:00 - 02:59	162	2.49%
03:00 - 03:59	150	2.31%
04:00 - 04:59	150	2.31%
05:00 - 05:59	164	2.52%
06:00 - 06:59	206	3.17%
07:00 - 07:59	274	4.22%
08:00 - 08:59	269	4.14%
09:00 - 09:59	295	4.54%
10:00 - 10:59	301	4.63%
11:00 - 11:59	336	5.17%
12:00 - 12:59	354	5.45%
13:00 - 13:59	351	5.40%
14:00 - 14:59	341	5.25%
15:00 - 15:59	355	5.46%
16:00 - 16:59	345	5.31%
17:00 - 17:59	307	4.73%
18:00 - 18:59	365	5.62%
19:00 - 19:59	326	5.02%
20:00 - 20:59	315	4.85%
21:00 - 21:59	296	4.56%
22:00 - 22:59	240	3.69%
23:00 - 23:59	199	3.06%

Last 20 Visitors

04 Jan, Mon, 07:56:04	proxy.isholf.is	MSIE 5	Windows 98
04 Jan, Mon, 08:24:18	ti22a01-0062.dialup.online.no	MSIE 5	Windows 98
an, Mon, 10:31:21	207.30.255.67	Netscape 4	Windows 95
an, Mon, 14:30:03	tp-70-113.tm.net.my	Netscape 4	Windows 98
an, Mon, 15:36:51	ppp187.bits.net	MSIE 5	Windows 98
an, Mon, 15:39:57	198.14.88.7	MSIE 4	Windows 95
an, Mon, 16:01:31	temp.naviss.com	Netscape 4	Windows NT
an, Mon, 17:44:39	ip176.providence.ri.pub.ip.psi.net	MSIE 4	Windows 95
an, Mon, 18:51:29	212.112.3.220	Opera 3	Windows 95
an, Mon, 19:39:40	user___2.nf.sympatico.ca	Netscape 4	Windows 95
an, Mon, 22:13:13	spc-isp-edm-uas-14-29.sprint.ca	MSIE 3	Windows 95
			Windows 98
			Windows 95
			Windows 3.1
			Windows NT
			Windows 95
			Windows 98
			Windows NT
			Windows 95
			Windows 95

Summary Period: 341 Days

Daily Unique:		Totals:	
Today	9	Unique Visitors	6490 - 78.10%
Yesterday	14	Visits incl. Reloads	8309
Average	19	Reloads	1819 - 21.89%
Highest Day	55 / 14 Mar, Sat, 98	Visitors via Referrers	4787 - 73.75%
Weekly Unique:		Website Referrers	119
Current Week	23	Javascript Enabled	6198 - 95.50%
Last Week	110		
Average	129	Most accessed:	
Highest Week	257 / Wk 21, 98	Browser	MSIE 4.0
Monthly Unique:		Operating System	Windows 95
Current Month	74	Screen Resolution	800x600
Last Month	643	Screen Color	16 Bit (65k)
Average	499	Searchengine	Altavista
Highest Month	980 / May, 98	Keyword	counter
Highest Hour of the Day	18:00 - 18:59	Domain/Country	.net / Network
Highest Day of the Week	Wednesday	Continent	Unknown

Figure 3 : *Various Tracker outputs*

Trackers give a more detailed account of visits to Web sites. Fig. 3 shows various outputs from a tracker, to give an impression of the type of data that can be gleaned. John Lattimore, in article from The Irish Times, discusses what should be considered when analysing the results of trackers:

> Also important are the number of unique visitors, and the average duration of site visits. Thus, the number of individuals visiting is a better indicator of traffic than the number of times it has met human eyes (many users will "breeze" through a particular site or page without necessarily taking in its content or any associated advertising). A site that attracts a longer average visit is also more likely to deliver results. (Lattimore, 1998, pg. 26)

Personalization

Personalization is a means in which a Web site is customised towards a particular visitor. There are two means of personalization, computer-based and visitor-based.

Computer-based personalization involves the Web site gathering information about the visitor and then offering the visitor certain options based on this information. An example would be a site that sells books asking what type of books a visitor likes, and then offering them these types of books. This information can be stored as a cookie for subsequent visits.

Visitor-based personalization is slightly different. This method offers a series of options to the visitor, and by accessing these various options, the visitor finds what they are looking for. This approach requires an intelligent structural design, so that the visitor finds what they want with little hassle and inconvenience.

Visitor-based personalization is preferable, because the needs of a visitor can change from one visit to the next. In the above example of the book-selling Web site, a visitor could be purchasing a book as a gift, which the visitor personally has no interest in. The next visit to the site could bring them back to the type of book bought previously, whether or not the visitor wished. With visitor-based personalization, the series of options on the first visit will yield different results than on subsequent visits.

Personalization at Amazon.com

Jakob Nielsen gives an example of visitor-based personalization in use at Amazon.com, a book-selling Web site:

> Amazon also uses similarity data to include type text links between related books. Thus, when you are browsing the page for one book, you see links to three other books you are likely to want. This use of data is much better than personal recommendations list because the hypertext links are embedded in the context of the user's natural behaviour. When the user goes to a book page, that user will be shown recommenda-

tions that match his or her specific interest in that moment (as opposed to being derived from a generic model of the user's average interest). (Nielsen, 1995)

Amazon.com bases its references to similar books based on the following method. Sales are analysed, and books that are frequently bought by the same person are offered together. The assumption is that if a lot of people bought both these books, then someone interested in one of them will also be interested in the other.

Chapter 9: New technology

The Web is a direct result of advances in communications and computer technology. People are attracted to the Web because it offers rapid access to a vast array of information and entertainment that would otherwise be time-consuming to find. New technology is the lifeblood of the Web. People want Web sites to be faster, more exciting, and more interesting. Web sites that do not embrace new developments will find themselves losing to their competitors.

Reaching new audiences

Mark Holmes, editor of National Geographic Online, discovered that using new technology on their Web site enabled them to reach new audiences, specifically the 18-34 year old age group:

> "The Web site isn't being built as a promotional tool per se," Holmes maintains, "but the demographic of the Web does fit perfectly with a hole in our membership base we've never been able to fill before. We believe there's a pretty strong potential here if we can develop a compelling product that draws them in with Web-specific technology, so we can say, 'If you think that's cool, you should see what we're doing in the magazine every month." (Coupland, 1997, pg. 18)

Commercial Web sites can, just like National Geographic Online, use the Web and its intrinsic technology to attract customers that they haven't attracted before. This is just one use of new technology on the Web.

Examples of new technologies

There are more and more new technologies appearing on the Web every day. The key to success at the moment appears to be allowing the means of accessing the technology to be freely available. This has proved extremely successful for Macromedia, whose Shockwave player is currently being used by approximately 40%-50% of Web users. The Shockwave player is used to run Shockwave files. Shockwave files are small interactive programs that can be used on Web sites as a means of navigation, or as animations or interactive games. Users who download the free Shockwave player are able to run Shockwave programs on their computer. Macromedia then profit from selling the software used to create Shockwave files.

The other main type of technology is Javascript. Javascript is compatible with approximately 60%-70% of visitors' computers. This is mainly used to create to create dynamic interfaces, and for ascertaining what software a visitor has, e.g. what browser they are using. The two main browsers, Netscape Navigator and Internet Explorer, both display Web pages in slightly different ways. By knowing what browser the visitor is using, it is possible to display a page designed for that particular browser. This is just one use of Javascript.

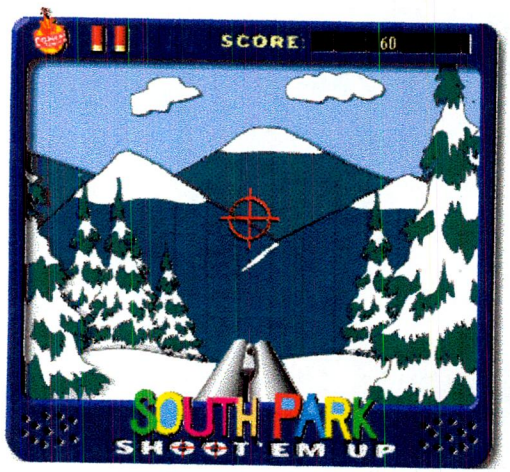

Figure 4 : South Park game

Games

Web-based games are an excellent way of attracting visitors. They are most frequently used on promotional Web sites, particularly on film and television programmes' sites. A site that makes great use of games is Comedy Central's Web site (www.comedycentral.com). The site promotes various shows by Comedy Central; the most popular of which is South Park. There are several South Park games to play, all based on characters from the show. One of these games, shown in fig. 4, is "South Park Shoot-em-Up", where the player must shoot anything except the four kids that are the stars of the show. This game was created using Shockwave.

Chat rooms and bulletin boards

Chat rooms are virtual rooms where people can communicate in real-time. Many sites host chat-rooms, where people can discuss whatever it is the site is about. Television shows' Web sites often host chat-rooms, where viewers can discuss the show. Chat-rooms can also be used to chat to famous people. Many television shows' Web sites offer specially arranged chat sessions with stars and writers from the show. Bulletin boards are similar to chat-rooms, except those visitors do not communicate in real time. Instead, messages are posted to the board, and people can then reply to these messages. These chat-rooms and bulletin boards help to create a sense of community, as well as attracting repeat visitors to the Web site, anxious to see what replies they may have received to messages they posted. This sense of community is what Mark Holmes wishes to foster at National Geographic Online:

> We're now prototyping bulletin boards and chat engines to give members the opportunity to communicate with the other members and participate in chats with our experts and really try to provide an experience for what we hope is going to be a pretty strong community. (Coupland, 1997, pg. 18)

Mailing lists also exist on the Web. By joining a Web site's mailing list, the visitor can receive news and special offers; all designed to encourage repeat visits to the site. As all information is sent by e-mail, the costs to the site are extremely minimal (e-mail is virtually free to send.)

Providing a sense of community on a Web site through the use of these technologies has a commercial use. The more times a visitor returns to a Web site, the more they are exposed to the site's product and advertising, which can only be a good thing for the site.

Free gifts

Web sites can offer free, computer-based gifts to visitors. Early in the history of the Web, sites offered screen-saver programs. Screen-savers are programs that are activated after a computer has been inactive for a set period of time. The screen-saver then displays a series of images, which animated in order to protect the screen from damage caused by having a static image displayed for too long. By offering free screen-savers, companies can have their product displayed for free on a user's computer.

Other free gifts include icons, wallpapers (images displayed on the background of a user's screen), sounds, and games. The advantage is similar to that of screen-savers, i.e. a firm product placement on the user's computer.

E-postcards

E-postcards are electronic postcards sent by e-mail. The sender visits a Web site that offers the postcards, chooses an image for the front of the postcard, and then writes a brief message and the e-mail address of the receiver. The receiver then gets e-mail, with a link to the Web site the card was sent from. By following this link, the are sent to the site and see their postcard and message. The advantage to have an e-postcards facility is that it results in even more visitors to the Web site.

Sony.com and new technologies

Sony.com is embracing new technologies in order to create an exciting Web experience on its new Web site, The Station. Richard Lewis, writing in Graphis, describes the philosophy behind The Station:

> The launch of The Station is no sudden occurrence; it is the final product of years of research and careful co-ordination of many facets within Sony. It is a milestone in the fulfilment of the "Digital Dream Kids" goal of

> Sony president Nobuyuki Iolie. His vision is an all-digital interactive communications/entertainment world, accessible to anyone, anytime, thanks to Sony. ... The Station will be the place where the company will integrate everything that is Sony – and a place where surfers want to keep returning to play. (Lewis, 1996, pg. 20)

The Station is intended to be a pioneer of new technology while still retaining accessibility to as wide an audience as possible. The factors that affect the design decisions are: the average user's modem speed, (a modem is the device that connects a computer to a telephone line), bandwidth capability (bandwidth is the amount of information that can be received at the one time), and hard disk storage space.

One feature of Web technology that has been in development for a long time without becoming very popular is VRML, which allows a virtual reality experience on the Web. The Station intends to use the new standard of VRML in its Web site, to create a more exciting environment for visitors:

> The "Moving Worlds" VRML 2.0 standard allows PC users to move through the 3D world on their screen with incredible realism and immersion in both the video and audio realms. Included are: direct, real-time interaction with objects and creatures encountered; distant noises that sound spatially accurate; and predefined animations that can actually be timed to play at specific moments. ... The ultimate goal is to define a "Virtual Society on the Web." (Lewis, 1996, pg. 20)

How well this will be received remains to be seen, however the success of Shockwave proves that if the result is worth downloading the required software, users are more than willing to do it.

To summarise, new technology attracts a wider audience. The ultimate goal of commercial Web sites is to make money and the more visitors a Web site receives, the more money it will make. Web users are by their nature interested in new and exciting technology, and any site that does not keep up with advancements will be left behind.

Chapter 10: Amazon.com Web Site

Using the set of criteria established for analysing the success of a Web site's design, I shall now use these criteria to analyse the design of a commercial Web site, namely Amazon.com (the address is http://www.amazon.com). Amazon.com is a Web site that sells books, CDs and videos via the Web. Its Web site serves as an online mail-order catalogue, through which people can order books. The site that is being analysed is based in America, however there is also a Web site based in England called Amazon.co.uk. The American site was chosen because it has more features and content and therefore is more interesting to analyse.

Surface design

The first aspect to be analysed is the surface design of the Web site. To recap, the surface design of a Web site is the visual appearance of the site, and covers the colours used, as well as typography, gadgets and icons, and the use of multimedia.

Colour

Amazon.com is divided into four sub-sections, which are "Books", "Music", "Video" and "Gifts". The four different have a distinct main colour that is used to distinguish the different sections.

Figure 5 : The "Books" section

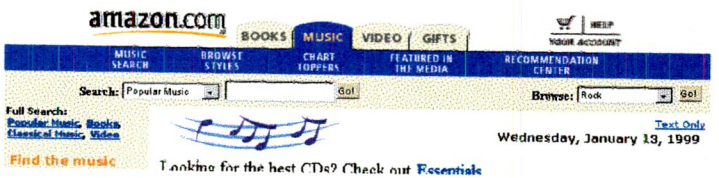

Figure 6 : The "Music" section

Figure 7 : The "Video" section

Figure 8 : The "Gifts" section

The "Books" section is mainly green (fig. 5), the "Music" section a royal blue (fig. 6), the "Video" section has purple as the main colour (fig. 7), and the "Gifts" section is an orange/brown (fig. 8). Each of these sections shares a creamy second colour. The headline type appears in the same shade of orange used in the logo.

The use of a main colour that changes helps to clarify and define the various sections of the site, while a consistent second colour helps to unify the site as a whole. This works well, as the visitor is aware that they are on the Amazon.com site no matter what section they are in, without getting confused about what section they are in.

The site does not use a lot of colours in the design of the site, which means that the site is fast to download and accessible to a wide audience. The only use of large amounts of colours is in displaying the covers of albums and in photographs, however these are not vital to the design of the site and it does not matter if they do not appear properly on some computers.

Typography

The Amazon Web site does not use of lot of graphic text (i.e. text which has been created as an image), which results in a speedy page loading. Headlines appear in a bold sans-serif typeface (this typeface will depend on the visitor's preferences). Plain text appears as a serif typeface, again decided by the visitor. The type used to indicate the various sections is of a sufficient size to be legible. Graphic type is used in the Gifts section as a heading to that section, and also in various sub-sections of the site, however this idea is not carried through in the other three main sections. The headings follow the typographic precedent set by the logo, by

having the first part in bold and the rest of the text set thin. The Web site offers a text-only version for visitors who have image loading disabled on their browsers, which means that these visitors will not miss out on any information that is in a graphic form.

As a whole, the typographic treatment of text in the site is well handled, within the limits set by the Web. However, the inconsistent use of section and subsection headings is something that should be re-examined.

Gadgets and Icons

The site does not make much use of gadgets and icons. The means of going to different sections are in the form of tabs, similar to dividers found in address books. The sections are indicated by text. Various graphics are used to illustrate different elements, for example a globe icon to indicate the links to the German and English sister sites. Icons are, however, used in a "top five" list on the home page for the top five albums (a musical note) and top five videos (a reel of film). The shopping cart icon is also used, and links to a page where the visitor can see the items they have chosen to purchase.

The problem of the inconsistent use of icons for music and video should be solved, either by using the icons in the section headings, or removing them from the top five list on the home page.

Multimedia

Multimedia does not feature strongly in the Amazon.com Web site. The only example of multimedia is in the Music section. Visitors can hear samples of various songs from albums available to buy.

This is a good application of multimedia, however there is scope for more. Multimedia trailers for videos that

are available to buy, or audio clips of an author reading a passage from their books are two examples that would be easy to apply.

Structural Design

Link Colours

Amazon.com partly follows the Web convention for link colours. Links previously not visited are blue and underlined. However, links that have been followed are coloured brown instead of purple, which is the Web convention. This does not create a problem, as links are the only text underlined in the site, making it obvious what text is a link.

Navigation

Navigation throughout the site is simple, due to the layout of the site. A search function makes it easy to find a certain product, while various other options makes it simple to browse through the site by means of various methods, for example: reader recommendations, in the media, best sellers, browse by subject. The main section icons appear consistently at the top of the page, allowing the visitor to return home easily.

There is little impression of the actual structure of the site conveyed to the visitor, due to the large amount of ways of travelling through the site. However, this does not affect the navigation of the site, due to the nature of the site itself. The visitor is either going to browse through the site or use the search option to find what they are looking for, rather than try to navigate to their intended destination.

Scrolling

The site adheres to the principle of keeping all vital navigational icons at the top of the page. There is a lot of information on the pages, which must be scrolled to be seen, however the information is not vital to using the site, rather it enhances the visitor's experience of the site. An example is the Home page, which opens on the Books section. By scrolling down, visitors can link to various featured books, read author interviews, and so on.

Complex URLs

The URLs (Universal Resource Locators) of the Web site are quite complex. For example, if a visitor wanted to go straight to the video section of the site without going to the home page first, they would have to type:
"http://www.amazon.com/exec/obidos/subst/home/video.html/002-6767087-7338047"
This is obviously a very complex address to type. While it is understandable that code numbers would have to be used on such a large site, the main sections and subsections should maintain a simple URL.

Metaphor

The site follows the print metaphor, with various sections and sub-sections, as well as headlines and call-outs that are used in magazine headlines. Perhaps the idea of a bookshop, or some other interesting and suitable metaphor, could have been explored. The way in which the site facilitated browsing to such a large extent is similar to the way in which people browse in a bookshop, by going to various sections, while various displays try to catch their eye. The content of the site follows the metaphor of a bookshop, rather than the navigational structure or lay-out.

Figure 9 : Search option

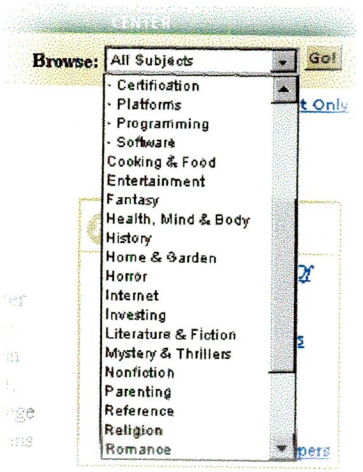

Figure 10 : Browse option

Readability

Bullets, brief paragraphs, and scannable text are all successfully used in the site, resulting in an extremely well written and Web-centred site. The reviews for the books themselves are divided into three sections: Amazon.com's review, a book description, and a synopsis. The reviews of the books are not written in a scannable way, however it could be argued that this type of information will be read and not just scanned, which renders any criticism invalid.

Content

The content of the site changes on a daily basis, however the site still retains a familiar look and feel due to its design around a grid system. This means that visitors will be encouraged to return frequently as there will be something new to see, while the site layout remains unaltered so that the visitor will be familiar with navigating the site. Content on the site has been designed to be viewed by two different means: browsing and searching. At the top of every page is a search option, where the visitor can type in a title, author or subject (fig. 9). There is also a browse option, (fig. 10) where a drop-down list allows the visitor to browse by a large variety of categories. The content of the various pages that feature various authors, artists or videos also encourage browsing.

Commercial design

The site does very well on a commercial level. It currently shares the number one position in the Web book sales market with Barnes & Nobles' Web site. The commercial design of the site appears to have a big part in the success of the site, because if the site made it difficult to buy books, then people would go elsewhere.

Asking Questions

The site is very helpful in this regard. On the home page there is an option for first-time visitors that explains clearly how to use the site, and how to create an account. The book search section allows the visitor to search for a book by various categories such as author, subject and title. There are also sub-sections for best sellers and featured in the media, which are helpful if someone is interested in a book they heard or read about recently but has little information about it. There is also a Need Help? section on the home page, giving information on how to return books, the help desk, and how to send e-mail. This simple question, Need Help?, is a good example of the way the site asks questions in order to make things easier for the visitor.

Being helpful

The large variety of ways of navigating the site that are presented to the visitor results in it being easy to find a product the visitor would be interested in purchasing. If a visitor had recently read a review of a book in a magazine, for example, they will find the book in the "Featured In the Media" section. There is also a "Recommendation Section" where the visitor can read reviews of various books sent in by previous visitors and customers of Amazon.com.

The site is divided into sections similar to that of a large bookshop, with books categorised into various sections. These different sections would be familiar to visitors to the site, it being reasonable to assume visitors to Amazon.com would have visited bookshops. The sections include a best-sellers list, books listed by subject, and award-winning books.

The fact that the site follows the conventions of bookshops, and that the experience of using the site is very

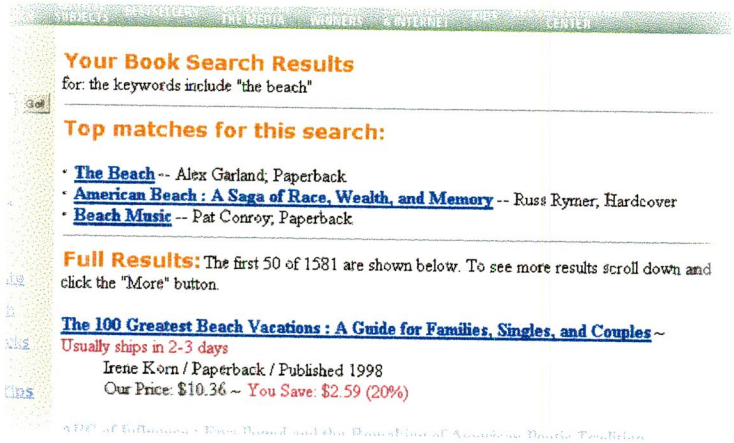

Figure 11 : Search for "the beach"

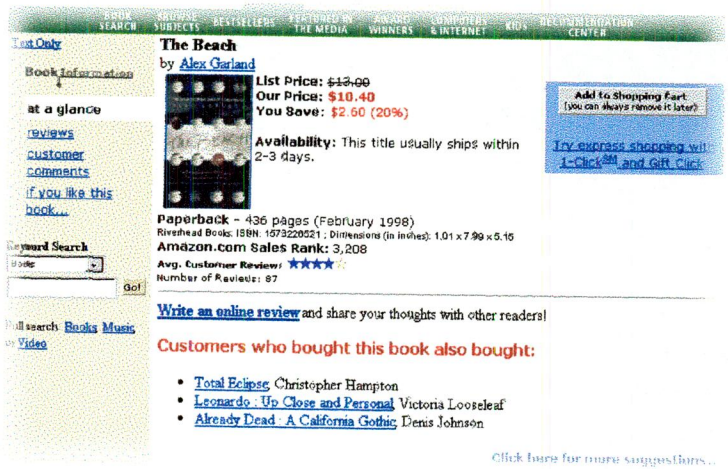

Figure 12 : The Beach's page

similar to that of visiting a bookshop, results in a very helpful aspect to the site. If you don't know what you want, the site makes it easy for you to browse. If you know what you want, the site will quickly find it for you.

The process of purchasing from Amazon.com is made very simple, in a step-by-step way. The site even offers to gift-wrap a purchase for a small extra charge. This small extra feature is a good example of how being helpful can help make a sale.

Sales Manner

Amazon.com has a lot of different books promoted on its home page, however when the visitor selects a book, there are very few distractions. As an example, the phrase "The Beach" was entered in the search section of the home page (fig. 11), with the intention of finding the novel of the same name, written by Alex Garland. A list of the top three books matching that phrase came up, followed by a list of the top 50 of 1,581 other books which met the search criteria. The first option linked to a page that gave information about the book, such as price etc.

One criticism of this page (fig. 12) is that directly below the book is a list of the top three books bought by people who bought The Beach. This could be distracting to a customer who is interested in buying The Beach, but is led off in a tangent by becoming interested in one of the other three books that are listed. This list of top three alternative books should appear further down the page, where it can be found by the browsing customer, but will be less distracting to a potential buyer of the book.

Convincing the buyer

Amazon.com go to great lengths to convince the customer to buy the book they are interested in. The site does this through mainly reviews of the book in question. The first part of the review section consists of reviews by Amazon.com, and other sources where available, in the case of The Beach reviews from the New York Times Book Review, Booklist and Kircus. Below these reviews are reviews both positive and negative, submitted by other Web site visitors. The inclusion of negative reviews gives the impression that Amazon.com really want the customer get a good book, and are offering as much information as possible to the customer to help them make up their mind, and that Amazon.com are book-lovers at heart. This impression of customer satisfaction being more important than a sale cannot help but reassure the potential buyer and encourage a sale.

Target market

The means by which Amazon.com offer other titles the visitor may be interested in when they find a book they like is a very clever and simple way of targeting the market. By using information gathered from previous customers, a profile of similar books is gathered for books on offer. In this way, the site can offer three other books that are likely to be bought by the customer when they select one book, a very good example of targeting the market.

Personalization

Part of the personalization used in Amazon.com has been previously discussed above. To summarise, Amazon.com's way of offering three similar choices for every book selected means that the visitor's needs at that point are anticipated.

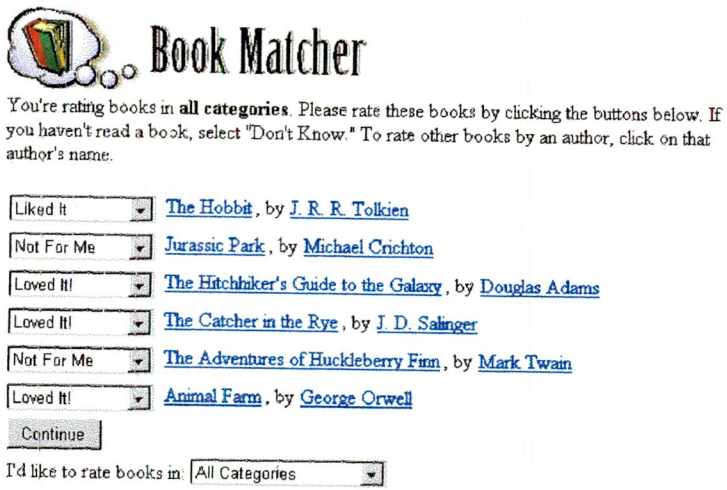

Figure 13 : The Book Matcher

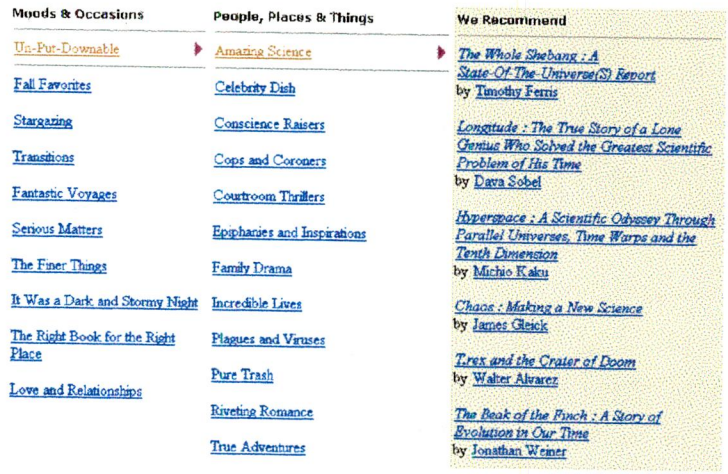

Figure 14 : The "Mood Matcher"

Another way in which Amazon.com uses personalization is in its "Recommendation Centre" section. Here a visitor can choose from a variety of options to help find a book they would like.

The first option is "Book Matcher" (fig. 13), where the visitor specifies what style of book they like (romance, sci-fi etc.), and then rates twenty books on a scale from "Don't Know" to "I Hated It!" to "I Loved It!" After this, the visitor enters their name and e-mail address, and is then given a list of books they might like. When the visitor returns to the recommendation "Book Matcher" again, they will not have to repeat the selection process, as their preferences will have been stored. When this facility was tested, the book matcher recommended seven books, four of which the tester had already read, and two that the tester would like to read. This option therefore proved to be quite useful.

The "Mood Matcher" offers a similar service to the "Book Matcher", except that it matches books according to a mood or theme rather than any preferences the visitor has. Fig. 14 shows an example of the "Mood Matcher" in action. Firstly, the Mood was selected, in this case, Un-put-downable. Secondly, the People, Places, & Things was selected, in this case, Amazing Science. This resulted in a list of recommendations, all of which seemed fitting to the options selected. The "Mood Matcher" is another good use of personalization, as it narrows down the amount of books to choose from to a list that corresponds to what the visitor would like to read at that time.

Another means of personalization is the "If you like this author..." section, where a visitor's preferences as regards authors results in a list of authors they would be interested in.

The recommendation centre is a great example of personalization. By asking a series of relevant questions, the choice of books available to the visitor is made more and more relevant to them. This is exactly what is required of personalization; i.e. to make content to the visitor's needs at that particular point in time.

Amazon.com also have a means of personalization, which is not strictly part of the site itself. There is an option available to people who have a Web site of their own to sell books through their site for Amazon.com, in return for commission. For example, if someone had a site on the topic of The Great Gatsby, they can place a link to Amazon.com on their site that will take people straight to the Amazon.com order form for that book. The commission is approximately 4/5 cents per book. In this way, Amazon.com uses other sites to attract customers. The personalization element in this is that potential customers are taken to the specific product they want at that time, simply by following a link on another, separate Web site.

Use of new technology

Amazon.com is does not use a lot of new technology, however what it does use is very suitable to the needs of the site. One use of Web-specific technology is its mailing list, which every customer joins when they first purchase from Amazon.com. The use of forms in the "Recommendations Centre" is another good example of using the Web to make it easier for the visitor to find the book they want.

There are no online games, which is unfortunate. A quiz with a weekly prize of an Amazon.com gift voucher would be a good way to attract repeat visitors. Another easy-to-implement facility would be online discussion groups, where people could debate about books and authors. This would help to create a sense of community, and to make Amazon.com a place where people both buy books and talk about books. If the site had people visiting it to discuss books, they would find it very convenient to buy books on the site as well.

Amazon.com: Conclusion

Overall, the design of Amazon.com is very successful, and meets a lot of the criteria set out in Chapters 4 to 9.

The surface design of the site is simple, and the use of a changing main colour and a constant second colour is an intelligent way of separating the different sections while still ensuring the site has a unified appearance. The use of a limited palette ensures that the site is fast to download, and the icons used to decorate the site are apt and succeed in attracting attention. The typography of the site works well within the confines set by the Web. The graphic text, used in some of the headline images, follows the scheme of the logo, giving a consistent feel.

One strong criticism is the inconsistency in the design of the headline graphics (the image that serves as the page title). In some cases this is made up of text and image, and in other cases there is just an image. A constant style, preferably both text and image, should be chosen. There could be more use made of icons in the site, and the use of icons should be more consistent. Multimedia is also greatly lacking, as it would be particularly useful on this site.

The structural design of the site is very successful. While it does not take on the metaphor of a bookshop in its structure, the visitor goes through the site as they would a bookshop, either browsing through various categories, or searching directly for a particular author or title. This impression applies also to the other sections of the site.

The structural design gives no impression of the visitor's location within the site's structure. While this would be a criticism on most sites, the way in which Amazon.com is navigated means that it is not necessary for the visitor to know exactly where they are. It is very simple to return to the home page, and also very simple to find a specific product, so it is easy for the visitor to find a previously visited page. The only criticism as regards structural design is

that the main sections should have simple URLs, so that the visitor can go directly to these pages.

The content of the site is well designed, and the main text is written in a Web-centric style, i.e. it is written to be scanned rather than read. The elements of the print metaphor used work quite well, and it is easy to see what parts of the text are links to other pages. The site retains a familiar feel despite the daily changing content, which is another good point.

The commercial design of the site is the most successful element of its design. Every element of the site has one purpose: to match the visitor with the product they want, and then make them buy it. The personalization feature is very good, as it offers many different ways of finding a book the visitor would like, and produces relevant suggestions.

The use of new technology is an area where Amazon.com is very weak. There are a lot of simple ways in which to encourage visitors to return to the site. Also, the subject of books is one people develop a passion for, and if Amazon.com could find a way to tap into this love for books on their site and develop a sense of community, the site would benefit greatly.

Amazon.com is a very well designed site, however if it cleared up the inconsistencies that appear in its surface design, and introduced some new technology to create a community on the site, it would become a better one.

Conclusion

The design of a commercial Web site has many different elements that must be considered. These elements cannot be developed in isolation and then assembled when everything is finished, because all the various elements are so integrated with each other. The future of commercial Web site design will see more and more of this integration, as only the well designed sites will be visited more than once. The vast majority of people who surf the Web are literate, skilled and relatively affluent people (otherwise, they would not have much access to computers.) Many of them will be regular readers of computer magazines, and the computer sections of newspapers. A well-designed site has a much better chance of being reviewed in these magazines, and attracting a bigger audience, much like a good movie review would increase box-office takings.

It is important for people to be visually attracted to a commercial Web site. People are much more willing to look at an attractive Web site than an ugly one. Also, people are much more easily distracted on the Web. It is very simple to go from one Web site to another, indeed far easier than going from one high street shop to another.

Once a visitor has entered the site, they should be able to find their way around. It is incredibly important for the visitor to find what they are looking for, and any Web site that has a confusing structure will discourage the visitor from staying at the site. This principle should apply to the commercial elements as well, i.e. the process of finding, choosing and buying a product should be as simple as possible.

New developments are constantly appearing on the Web. It is important for a Web site to keep up with these advances, in order to attract and retain attention. Using Web-specific technology makes a Web site and exclusive place, somewhere separate from a physical commercial enterprise. Offering more than the "real world" has to offer gives a commercial Web site a very strong advantage. Using chat-rooms and bulletin boards, Web sites can create a sense of community, encouraging repeat visits and more potential sales.

The rapid changing of content that the Web facilitates has resulted in a new type of design: meta design. Creating Web site templates into which an ever-changing content can be placed will become the designer's responsibility. Some sites, for example "My Excite" (www.excite.com) are taking meta design one step further, by allowing the visitor to customise the colours used on their personalised Web site. If the visitor is able to customise content and design, they can create a site that is based on their own interests and preferences. A portal site (i.e. a Web site that a Web user goes to first, invariably a search engine) has the potential of being accessed every time a Web user logs on to the Web. The better designed and more appealing to the visitor this site is, the better.

The set of criteria established in this thesis brings together the four main elements that make up the design of a commercial Web site. Web sites are becoming increasingly complex, involving more and more different parts. The designer's role is to co-ordinate all these different parts into a coherent whole. Only by being aware of all the different parts throughout the design stage can this be achieved. The future role of the commercial Web site designer will become akin to that of a film director, who has little involvement in the creation of the different parts of the film, but must bring everything together in a coherent, intelligent and appealing way.

Bibliography

BAR-LEVAV, Henry, "Media Babble - Buyer be Where?", InterActivity, October 1998, p. "www.eyemedia.com/backissues/1998/1098/babble1098.htm"

CARUSO, Denise, "Avoiding Extinction", I.D. (Usa), June 1998, pp.39-40

COUPLAND, Ken, "Growing the Megasite - National Geographic Online", Graphis, Vol. 53 No. 308, pp. 18

DINACCI, Darcy, "Paradigms of Navigation", Print, Vol. 50, No.3, May/June 1996, pp. 114-126

EVAMY, Micheal, "Weaving an Intriguing Web", Design Week, Vol. 10 No. 17, 28 April 1995, p. 17

HALL, Peter, "Navigating the Internet", I.D. (Usa), March/April 1994, pp. 76-77

HELFAND, Jessica, "A Flock of Ducks", Print, Vol. 9 No. 3, May/June 1995, pp. 98-105

HELFAND, Jessica, "Text that Grows", World Art, October 94, p. 1995

HELLER, Stephen & DRENNAN, Daniel, The Digital Designer, NYC, Watson-Guptill, 1997

I.D. Magazine, "Discussion on Multimedia", I.D. (Usa), March/April 1994, pp. 38-43

KRUSE, Kai, In Your Face, Rockport Mass., Rockport, 1996

LATTIMORE, John, "A highly effective advertising medium", The Irish Times, Tuesday November 10 1998, p. 26

LATTIMORE, John, "Learning to harvest business on the Internet", The Irish Times, Tuesday November 10 1998, p. 26

LEWIS, Richard, "The World of Sony Online", Graphis, Vol. 52 No. 306, November/December 1996, pp. 20-21

MACDONALD, Nico, "Go in at the Top and Redefine the Project", Eye, Vol. 5 No. 20, Spring 1996, pp. 6-7

MCMILLAN, Sam, "The Future of Publishing - the Direction is Digital", Communication Arts, Vol. 34 No. 6, November 1993, pp. 220-226

MURPHY, Paul, "Searching for Substance", Design Week, 16 May 1997, p. 13

NIELSEN, Jakob, "Failure of Corporate Web sites", Alertbox, 18 October 1998, p. "www.useit.com/alertbox/981018.html"

NIELSEN, Jakob, "Guidelines for Multimedia on the Web", Alertbox, December 1995, p. "www.useit.com/alertbox/9512.html"

NIELSEN, Jakob, "How Users Read on the Web", Alertbox, 1 October 1997, p. "www.useit.com/alertbox/9710a.html"

NIELSEN, Jakob, "Personalization", Alertbox, 4 October 1998, p. "www.useit.com/alertbox/981004.html"

NIELSEN, Jakob, "Top 10 Mistakes in Web Design", Alertbox, May 1996, p. "www.useit.com/alertbox/9605.html"