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Affordance and Affect in Promotional Websites

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Abstract

Guidelines for e-commerce website design deal well with the more objective aspects of page design, but have less to say about overall site structure and users' emotional responses. In this study we used a semiotic approach to investigate how several fashion websites provide affordances for navigation and produce affective responses. We gained some interesting insights into how users interpret these websites and, more importantly, we developed a method which could be useful in evaluating website designs.

Keywords

e-commerce, interface design, semiotics, emotion

Introduction

In today's society, e-commerce has become a significant way for organizations to conduct business. Organizations and individuals are building web sites to attract different people around the world for commercial purposes. Many online companies, however, have failed partly because they have not appropriately designed their web sites to focus on the needs of the customers (Becker & Mottay 2001). It is, therefore, important for organizations to develop web sites that are able to communicate efficiently with the target users.

Many researchers and web designers have recognized the importance of setting quantifiable usability goals and developing usability tests to analyse the performance of the web sites from the user's perspective (Calongne 2001). Many good web design features are proposed in the attempt to improve the usability of web sites and assist web designers in creating effective web sites for users (Spool et al 1999, Nielsen 2007). Most of these studies have concentrated on objective features of individual screens, such as colour, font, white space, link style and button placement. There has been less work on inter-page structure or on how design features can be used to attract users' attention or create an impression. Web persuasion as well as usability is an important aspect that determines the effectiveness of web site design. Web sites today can often be described as forms of electronic advertisements that 'inform and persuade' since companies use them to promote their products and services (Singh & Dalal 1999). Hence there is a need to determine whether the features that are used on web sites, in addition to affording navigation, can affect the emotions and attitudes of users.

In this paper we describe a pilot project where we developed a method that could be used to evaluate e-commerce websites in terms of affordance and affect. Affordance is defined by Norman (1988, p.9) as 'the perceived and actual properties that determine just how the thing could possibly be used'. A door knob affords turning, a button affords pushing, while the keys on a keyboard afford pressing. For efficient use, the perceived and actual properties of an object should coincide - what you see is what you get. This requirement is particularly problematic in website design, where there is a paucity of physical cues (such as tactile feedback), a wide variety of cultural assumptions (based on different national and technological backgrounds), and very limited social experience of highly fluid web conventions.

By affect we mean the emotional aspects of a response. Research on the affective aspects of interface design has concentrated mainly on the impact of colour, particularly on users from various cultural backgrounds (Udo & Marquis 2000; Becker & Mottay 2001). In our study we did consider affective response to colour, but also general responses of pleasure and arousal, as well as affective responses relevant to the specific content domain (in this case fashion).

In the following sections we discuss the semiotics of affordance and affect, and the use of persuasion on the web. We then describe our research method, give a taste of some of the subjects' comments, and discuss our interpretation of the findings. The conclusion mentions the significance and some limitations of the study, and suggests areas for further research.

Semiotics, Affordance and Affect

Theoretically our study is based in semiotics, particularly Peirce's triadic model of signs (Oehler 1987). A sign is defined as 'anything that stands for something else to some interpreter' (Peirce 1932; cited by Ferreira et al 2005). The sign has three components: the 'representamen' is the look of the sign, it is the particular sign itself that does the representing; the 'object' is the actual thing that the sign represents, the thing that is pointed to by the sign; and the 'interpretant' is the results or the thoughts that are brought to mind by the interpreter when they perceive the sign. Barr points out that the relationship between these three entities is that 'the representamen represents the object in a way that creates the interpretant in the mind of the interpreter' (Barr et al 2002).

In postmodern culture in general and in the virtual world of the internet in particular, it is often difficult to identify the 'object' of the sign (Underwood 2001, p.20). A common affordance related example in e-commerce is the sign of the shopping cart. The 'representamen', the icon of the shopping cart itself, has in a very few years become a nearly universally accepted sign, and the interpretant, at least from a pragmatic view, is very widely understood as 'click here when you are ready to pay'. The 'object', what the shopping cart is pointing to, is less clear. It could be some virtual place where the (so far) virtual purchases are being accumulated, but a more appropriate object might be some sort of process: the process of operating a shopping trolley in a physical supermarket, the process that will happen on the e-commerce server when the shopping cart icon is clicked, or the metaphor between the two. It could be argued that the "real" object is the server process, but few users have any understanding of this process; even the visible response to the cart click (the next screen) varies considerably from site to site, so it is difficult to establish this process as the 'dynamic object', one that is consistent from instance to instance of the cart sign. This reminds us of two aspects of affordance: the sign interpreter needs to recognise the sign as a thing that might be useful (almost guaranteed for the cart) and also to realise the consequences of their interpretive actions towards the sign (far more problematical for the cart).

The affective interpretation of signs is clear on holiday related sites. A sign of a beautiful holiday location is easily recognised (although it may not be clear whether it affords any immediate action) and it points (more or less truthfully) to an obvious physical object. The site designer hopes for equally obvious affective interpretants, such as longing, desire for luxury, relaxation and fun, although some interpreters may feel 'too expensive' or 'yuppie'. This issue is probably independent of the medium that carries the sign.

Persuasion on the Web

To attract audience to stay on the web site at their first visit, Sutcliffe (2002) argues that the aesthetics and the appeal of a website are more important than its operational usability. He claims that a web site that gives a better initial impression to the audience is more likely to be explored since it is able to persuade them to stay on the website. If the audience are persuaded to stay due to the attractiveness of the web site from the initial impression, web usability comes in as the next phase. If users stay to further explore the web site, it must be easy for them to navigate so that they are able to find the information that they need. Kent (1998) mentions that users will be more inclined to stay on a web site that is efficient to use and easy to understand. He suggests that users would also be more likely to return to a website if it is of value to them by providing the information that they require. Therefore it is important that the usability and the persuasion of a web site should be analysed so that organisations are able to develop effective web sites to serve their commercial purposes and attract the target audience. Thus, it can be seen that both usability and persuasion are important aspects that web designers should aim to achieve in order to develop an effective web site.

The other aspect that is also crucial in achieving effective web site design is persuasion. Persuasion in marketing terms (from answers.com) is defined as the 'act of inducing attitude changes and influencing a target market to action, by appealing to reason or emotion.' Persuasion is important in web design for companies to attract and appeal to the target market through their web sites.

This concept parallels Khaslavsky and Shedroff's (1999) ideas of seduction in technological product design. Although the authors claim that seduction is often connected with sex appeal, it actually has a different connotation when it comes to product design. The word 'seductive' as defined in Webster's dictionary refers to 'having alluring or tempting qualities' (Khaslavsky & Shedroff 1999). Therefore, in terms of designing products, seduction is a process to draw and sustain audience's attention to the products. Similar to Sutcliffe's writings, the authors state that the first step in this seduction process is to entice the customers in their initial contact with the product. When the product has caught their attention, it should make some kind of promise

such as providing something that is interesting and provoking, so that it holds the customer's attention and keeps their interest.

This same concept can also be applied in web site design. A web site can also be described as a product that has the purpose of attracting customers. Seduction can be achieved by the use of aesthetic and appealing elements such as dynamic media, unusual images, and humour (Dormann 2000) to improve attractiveness of a web site. Web designers should also aim to seduce the users by providing a good initial impression to grab attention and make them engage with the web site so that they will be persuaded to stay and explore. In addition, Sutcliffe (2002) claims that the effectiveness of the aesthetics qualities of a web site can strengthen brand image and assist corporate identify. Hence it allows users to be aware of the brand image that the company aims to convey and identify the type of products and services they provide.

According to Dormann (2000), emotions such as pleasure and arousal play a big role in web persuasion. In an online environment, users mainly focus on the images of products and the visual elements on the web site. This is especially important in web sites that provide online shopping because purchase decision is depended how the pictures convey the products and services. Therefore, web sites with images that are visually stimulating and surprising have a greater advantage over less visually engaging images (Dormann 2000). Users want to visit web sites that they enjoy browsing, and hence an appealing web site that makes them feel good and keeps their interest is crucial. Moreover, Singh and Dalal (1999) suggest that regardless of whether users will explore the rest of the web site, the homepage of a web site should be designed to give off a positive feeling and a favourable impression. By combining a positive feeling and impression with a moderate level of arousing elements in a web site, the designer can increase the excitement and interest levels of the users and thus encourage further exploration.

Research Method

The aim of this research is to determine how signs in web sites assist users in navigational affordance, portray impression and arouse emotive responses. In terms of navigational affordance, it is to discover whether the look and the placement of the signs enable users to identify its functions easily. As for impression, it is to determine how the signs affect users and how they are interpret the genre of the web sites and the brand image of the company that owns the web site. Finally, for emotive responses, it is to understand users' emotional experience while exploring the web site. The main focus is on non-text signs used on web sites such as web icons, pictures and photographs.

We decided to use promotional websites rather than sites that allowed completion of purchases, since it is impractical to have experimental subjects complete actual credit card purchases. The initial idea was to evaluate various web sites from different genres so that the results can be compared across the genres. On further consideration, it was decided that the results would be more effective and easier to compare if several web sites from the same category were chosen. Several genres were considered for study including travel web sites, university web sites, electronic products web sites and fashion web sites. During the initial analysis of these web sites, it was discovered that travel web sites that promote particular cities throughout the world are very similar in layout and structure; there are few striking signs or features that are used apart from the text and photographs of the cities. Since this investigation involved a comparison between web sites, it needed a genre that included significant variety. Similarly, university web sites around the world were also very similar in layout and lacked striking signs. Further analysis was done on consumer electronics and fashion websites. The consumer electronics web sites such as Sony and LG covered an extensive range of the different types of electronics, such as home appliances, entertainment systems and portable devices, appealing to widely different markets, so that it was difficult to identify a consistent look and feel to the site of a single company. Fashion web sites, on the other hand, focus mainly on clothing and accessories, with less product categories than the consumer electronics sites. Hence it was decided that fashion web sites would be used for this study.

Of the available fashion web sites, Quiksilver, Adidas, Levi's and Louis Vuitton were chosen, because each of these four sites have a very different layout and structure, and each has unusual signs and navigational features. Moreover, the companies offering these sites were expected to be known to most of our research subjects and have different corporate images from one another, so it would be interesting to determine the extent to which the brand image of the company is communicated through their web site.

The sites studied can be found at:

Quiksilver <http://au.quiksilver.com/index_main.aspx>

Adidas <http://www.adidas.com/campaigns/umbrella2007/content/?strCountry_adidascom=au>
then go to Respect ME by clicking on the girl with the green striped top

Levi's <<http://levis.com.au/>>

Louis Vuitton <<http://www.louisvuitton.com/>>

These sites were studied in November 2006. They have all been modified since, with the Adidas site undergoing particularly drastic changes. This creates a problem for reproducibility for this type of research; saving the sites is not an option since they are generated dynamically. There was an additional problem with the Quiksilver site, since it had a number of alternative home pages that were presented randomly, so we were not certain that every subject was commenting on the same page.

An online questionnaire was then developed which consisted of questions that were very specific to each of the web sites itself. The questionnaire was to be completed while browsing the sites. In order to determine the affordance of the signs, questions were constructed such as

Find out how many colours there are of the shoes called 'Trials'

which required users to perform tasks on the web sites so that they are able to report any difficulty as well as reflect on the navigational features.

Other questions were based on the feelings that the web sites portray to the users such as the initial thought that comes to mind when they first looked at the web sites, the impression that is perceived by the users regarding the company, and the target market of their products.

Users' overall emotional responses were reported through a tool called Self Assessment Manikins (SAM), which was originally developed by Lang and has been used in several studies of emotional responses to web sites (Morris 1995; Dormann 2001). The SAM model uses three scales: 'pleasure or displeasure', 'degree of arousal' and 'dominance or submissiveness'. In our study we used only the first two of these scales.

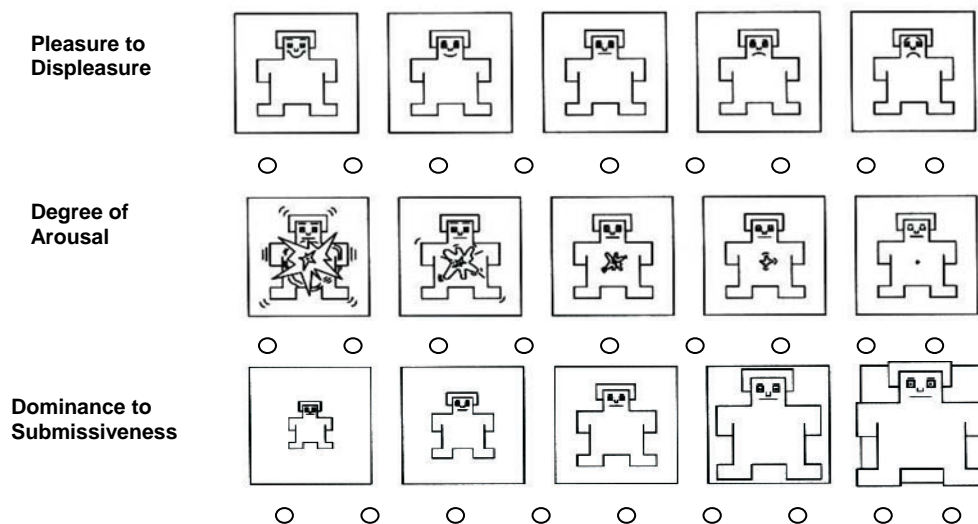


Figure 1: The SAM Model

For each site, after completing the rest of the questions, subjects were asked to respond to the site in terms of pleasure and arousal by marking one of the circles under the manikins. (When coding the leftmost circle was recorded as 1 and the rightmost as 9.)

The SAM is an example of an 'emotion space approach'. According to Grimm and Kroschel (2005) such an approach avoids the limitations of language in describing emotions. These limitations arise because humans are rather poor at labelling emotions and 'everybody has an individual understanding of linguistic emotional descriptions'.

Results

The twelve subjects for this investigation were mainly students because they are more likely to have previous online experience and they are one of the target markets of the chosen web sites. These users were asked to explore all four web sites and provide responses to the online questionnaires. The majority of subjects returned fully completed questionnaires.

The questionnaire had been divided into sections for overall impression of the site, navigation, image of the product, image of the company, and user behaviour, both while using the site and in terms of buying intentions. When analysing the data the responses were recorded in table which used these sections as one dimension and used a second dimension with the values 'affordance', 'surprise' (as expressed by the respondent), 'affect' and 'issues' (difficulties in using the site). An example table is shown in Appendix 5.

In the second stage of analysis these tables were inspected and 'style words', 'striking phrases' and 'colour-related words' were highlighted. These highlighted words and phrases were then related back to the web sites to interpret the users' reactions to the sites.

Due to space limitations we can only mention a few result highlights here. More details can be found in Leung (2006).

The first important result was that subjects were willing to experiment and make an effort to navigate the sites to complete their tasks. This may have been partly due to the fact that they were doing a research task, but for this type of site users are probably willing to spend some time browsing. Secondly, impressions of the products and companies, as well as levels of pleasure and arousal, seemed to depend more on the content, particularly images, than on the navigation structure (although, particularly with Flash sites, these were not easily separated).

Style words and audience focus were easily identified and fairly obvious: Quiksilver was surfing, active, young males; Louis Vuitton was delightful, classy but also surprising (because of the animated views of the products). Colour was not always noticed where researchers expected: Quiksilver didn't give an impression of colour because large areas of screen were occupied by (often blue) photographs; Levi's was strongly reported as black (which it was), perhaps strengthened by the fact that the 'black' was emphasised in the text; the dominant colour in the Adidas site was grey, but subjects reported blue and white (perhaps because this was the colour scheme of the home page, the only page with a noticeable background), and gold (there was a fair bit of jewellery present, reinforcing a 'classy' image).

Other comments indicated confusion as to the purpose of the sites, particularly Quiksilver, which was seen as promoting surfing events rather than clothes.

Discussion

The aim of this research was to discover the navigational affordance, impression, and emotive responses of the four fashion web sites. A summary of the findings in each of these three areas is given here.

Affordance

How the signs on the web sites provide navigational affordances to the users depends on previous user experiences. In other words, before a user explores a web site they have an expectation of the features that they should be able to see or use and a basic idea of how a web site should function, based on their previous online experience. Therefore, they could be surprised if it differs from their expectation, and may ignore features that they were not expecting. The Louis Vuitton web site has a simple text list catalogue that allows users to find the products easily by clicking the links, but many participants have the expectation that there is a search option available, and so use the search option as their first resort.

Unusual or "clever" navigation features can, however, be effective if they attract attention, there are no competing distractions, and they correspond to what the user is looking for. From a semiotic point of view, the user already has an interpretant in mind (e.g. 'something to get me to the next page) and will look for a representamen to fit this meaning. Unusual features can also improve user experience since, according to Dormann (2000) 'altering, rearranging, changing or redesigning a commonplace image can create a new impression to capture an audience's attention.' Therefore, having small proportion of images and signs that surprise users can sometimes be stimulating and avoids boredom. The cards menu in the Quiksilver's 'King of the Park 06' web page (see figure 2) might have an unusual appearance, but many users found it attractive and original, and fairly easily recognised it as what they were looking for. In contrast, the links that are the pictures on the wall of Adidas's Missy Manor page (see figure 3), do not provide good affordance since the pictures blend into the background of the web site. It was difficult to identify which ones are hyperlinks since the pictures that were hyperlinks were not particularly striking or eye-catching, although most users experimented until they found what they wanted.

Some metaphorical images for links were more effective than others. The Adidas Heritage home page has a small world map that leads to the global web sites of Adidas; users had no trouble interpreting this sign. On the other hand the Missy Manor page from the same company (figure 3) has a guest book (link) on the table, and this was often missed. It may be that in the first case the sign was interpreted in the context of web sites in general, whereas interpretation in the second case required embracing the whole metaphor of the room as the context.

Users identified that they were able to get these impression through the pictures of products and people, layout and the colour of the web site itself. All of these are signs that help to construct and communicate meaning to users.

Before exploring the web site of these companies, users also have expectations regarding the company. Since these fashion companies are famous and well known, users have a basic idea of the brand image, so they expect the web site of the company to offer the same image and could be surprised if the brand image on the web site does not meet their expectations. One example is the Adidas Heritage homepage having more of a trendy nature rather than a sports nature. Nevertheless, the web site is successful as it is able to convey the correct message of the product line image to the audience. Another example is that all users said that Louis Vuitton's products are expensive and target at people who are in the upper class and can afford the products. However, the web site of Louis Vuitton only provides pictures of the products that allow users to see it in different views or colours, but it does not provide prices of any of the products. Their impression that the products were expensive could be an interpretation of the images of the products on the web site but it could also be based on their previous knowledge; we were unable to test this.

From this research, it can also be seen that these fashion sites sell their brand image rather than particular products. Quiksilver, for example, mainly uses pictures of male athletes surfing to promote their focus on board sports, while Adidas uses Missy Elliot's popularity to portray the image of the fashionable and trendsetting Heritage product line; Levi's uses colour to make users aware of their product line name. Moreover, in the Adidas and Levi's web sites, there is no obvious catalogue that allows users to search for items of clothing; only minor pictures of clothes that give a basic impression of the product range are present on their web sites. Although Quiksilver does have a catalogue where users can search for the range of product and view the product in different colours, this is not really the main focus of the web site. The most eye-catching element, in other words, the most 'salient' element (Kress and van Leeuwen 1996), is the image of the surfer. Their navigational menu, where the catalogue is located, puts the same amount of emphasis on the other sections of the web site such as events, music, happenings of the company.

Although promoting company seems to have been the main aim of the designers, it may be that they have gone too far, since some users had difficulty identifying some of these sites as fashion sites. In some cases the signs that indicated 'fashion' were images of clothing or other products, many users were more reliant on text signs such as 'apparel', 'catalogue', 'fall and winter collection' and 'store'. Therefore, text signs can be used in conjunction with non-text signs to convey a better meaning to the audience.

Emotions

User's emotive responses regarding the web site are examined and evaluated by using the SAM scales of Pleasure to Displeasure, and the level of Arousal. The SAM responses were collated and averaged by using the following calculations: In the pleasure to displeasure range, 1 is rated for the happy SAM figure and 9 for the unhappy SAM figure and in the level of arousal range, 1 is for the excited SAM figure and 9 for the sleepy SAM figure. The results are presented in the following table, rounded to two decimal places. It shows the overall pleasure and arousal for each of the web site and is then separated to the averages for the males and females who participated in the survey. There were 12 subjects, 6 males and 6 females; 10 subjects were in the age range with age range 19 to 23, with the others aged 30 and 51.

Table 1: SAM Averages

		Quiksilver	Adidas	Levi's	LV
Pleasure	Overall	5.27	4.58	4.73	3.17
	Female	5.00	4.38	5.14	2.50
	Male	5.75	5.00	4.00	4.50
Arousal	Overall	5.55	5.17	5.82	3.67
	Female	5.29	5.00	6.29	3.13
	Male	6.00	5.50	5.00	4.75

Users rated Louis's Vuitton's web site as having the highest pleasure level, while Quiksilver had the lowest. For arousal, Louis Vuitton was again the highest (and Adidas was again second), with Levi's the lowest. From the literature it is not clear whether the two dimensions of pleasure and arousal are orthogonal. We might speculate that frightening sites would combine arousal with displeasure, while relaxing sites might give pleasure but low arousal. In our study it is possible that the 'classy' image of the Louis Vuitton site provided both pleasure and

arousal (except for one of the authors, who is old, male, and unfashionable). For our subjects, Louis Vuitton seems to have the best design, although we do wonder whether our subjects are really in the target market.

Although our sample may be too small to show significant differences between males and females, some of the results are suggestive. The biggest difference between the scores of males and females is the Louis Vuitton web site, which scored a pleasure average of 2.50 for females and 4.50 for males, and an arousal average of 3.13 for females and 4.75 for males. In contrast, males found the Levi's web site most pleasurable with a score of 4.00 compared with 5.14 for females, although males still found the Louis Vuitton site marginally most arousing.

These results can be compared with the answers to the question
what sort of people do you think would buy from the company?

Here respondents agreed that Quiksilver is targeted at males, Adidas Heritage is targeted at females, Levi's is targeted at both male and females, and Louis Vuitton is mainly targeted at females over males. The SAM results support these opinions in the case of Louis Vuitton and to some extent Adidas, but according to SAM male preference is biased towards Levi's rather than Quiksilver.

Conclusions

In this research, we analysed the reactions of a small number of subjects to the use of signs in four fashion web sites. The sites do not have the functionality to perform transactions with the customer; they mainly aim to strengthen and promote their brand image rather than to sell their products. The sites were chosen because they varied in style and in their use of signs. Signs were examined in their roles as a navigational tool, in creating an image of the company and its products, and in arousing pleasure and interest.

Overall, the Louis Vuitton site seemed the most successful. It combined a relatively conservative design, had simple navigation, made its purpose clear, and provoked positive emotional responses. It may have been helped by the image that subjects already held of the company and its products. There was some difference between emotional appeal for males and females.

The image created by the sites and their emotional impact depended on a balance of colours, text and images. Signs used for navigational affordance did not seem to have a strong influence on image and emotion.

The small sample used does not allow strong conclusions, but our method can provide a practical contribution to the testing of web site designs.

There are, of course, many avenues for further research. With a larger sample we could correlate answers to the questionnaire with SAM scores across respondents. More importantly, we need to identify, possibly through interviews, the influence of particular signs in the web site on questionnaire answers and SAM scores. Finally, we have restricted our attention to visual signs. All the sites studied also contained music, and we suspect that this may have had an influence on the SAM scores in particular.

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Appendix 1 - Quiksilver

Quiksilver is an Australian company and is one of the largest manufacture of 'surfwear and broadsports related equipment' in the world (Wikipedia 2006d). It was founded in 1969 where the main focus was on the selling of surf wear. Over the years, it also branched out to sell not only surfing related products but also snowboarding and skateboarding products (Wikipedia 2006d). The company sells apparel, footwear and accessories, which are targeted mainly at the teens and young adults markets (Stecyk n.d. & High Jump Software n.d.). They also sponsor many surfers, snowboarders and skateboarders around the world (Wikipedia 2006d)

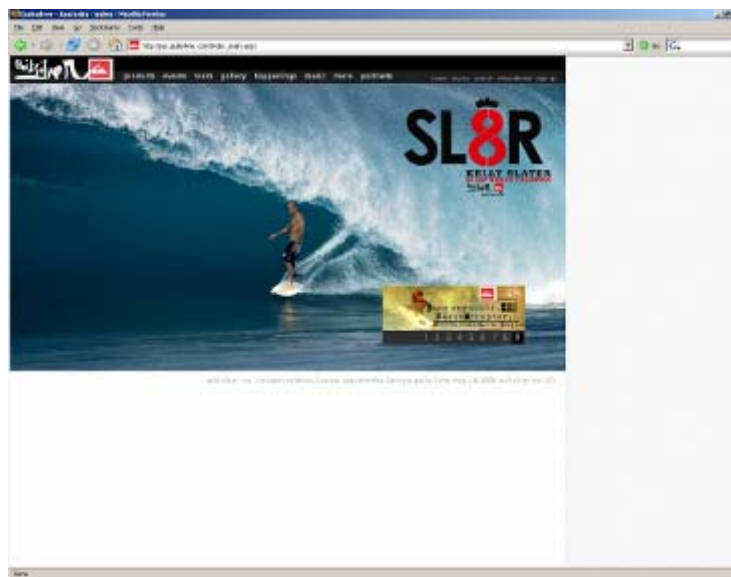


Figure 4: Home page of Quiksilver (assessed 23rd November 2006)

Appendix 2 - Adidas

Adidas is a German sport apparel manufacturer and is the second largest footwear manufacturer worldwide (Wikipedia 2006a). Adidas's mission is to be 'the leading sports brand in the world' (Adidas Group 2006) and provides three main clothing lines that are targeted at different groups of consumers: 'Sports Performance' is targeted at athletes who requires products that can meet high performance levels; 'Sports Heritage' is designed for trendsetters interested at street or authentic style products; and 'Sports Style' is aimed at consumers who desire stylish and fashion-oriented sportswear products. This research only focuses on the product line of Sport Heritage.



Figure 5: Home page of Adidas Heritage (assessed 23rd November 2006)

Appendix 5 - Sample Response Table (Adidas)

Respondent no: 2

Age: 19

Gender: Male

Degree: Computer Science

<i>Categories</i>	<i>Affordance</i>	<i>Surprise</i>	<i>Affect</i>	<i>Issues</i>
Overall site	2. Yes, Fall/winter collection 9. simple and easy to find		1. Usual company – pic of horse 3. different impression in pics: some darker, some lighter 6a. Word 'respect' reminds of mafia. Crown = royalty/monarchy	
Navigation	4. Correct 5a, 5b. Correct 6b. Correct 8. clicked on phrase 'Missy Manor' 8a. Correct 8b. icons not intuitive		8b. looks nice	
Product			C. Fans of Missy Elliot/rap	
Company			11. likes blue 11. sports people	
Behaviour	10. Wouldn't buy		SAM: Pleasure: 4 Arousal: 5	

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