MOTIVATING CONTRIBUTION WITHIN A NETWORKED COMMUNITY ENVIRONMENT

This thesis is presented in partial fulfillment of the degree of
Master of Design.

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ABSTRACT

To be successful, social network sites need continual activity to flourish and grow. One of the most important challenges faced by designers of social network sites, is to encourage contribution from community members. 'Self-sustainability' is critical to the survival of networked communities and is dependent on community members adding content in a sustained way over time. Motivating community members to take it upon themselves to freely contribute information is the key to the success of any social network environment (Powazek, 2002; Ling et al., 2005).

This thesis aims to investigate whether persuasion techniques can be used to inform the design process in order to motivate members of a social network community to contribute content.

While persuasion theories have been effective in influencing target behaviour outside of the online environment, traditionally they have not been utilised by digital media designers. With the advent of social media, the application of social psychology is becoming more valuable in the development of features and strategies for the online environment. Recently the field of Captology has begun to systematically investigate computers as persuasive technology. Within this field, this thesis has investigated using the 'Elaboration Likelihood Model' (ELM) as a strategic framework and 'Social Proof' as a motivating influence to develop peripheral elements designed to encourage user online contribution, and to design a site that is visually appealing and functional. This is essential in establishing the credibility of the site without which the influences of persuasion are unable to function.

This Masters 'research through design' project engages an existing community group of water sports enthusiasts in a trial of a live prototype website. The website was designed to utilise the internet as a medium and social networking as a tool, in order to gather individual knowledge, give it a context, and to create a self-sustaining collective knowledge base of locations, optimum conditions and user experiences. Users were divided randomly into two groups – the test and the control. Using ELM, the peripheral and central routes of processing communication were identified, and used to build the framework on which to develop the test environment. Both groups were exposed to the same fundamental design and functionality, however the test group was presented with additional peripheral elements designed using the principles of Social Proof.

The research charted user contributions over the course of 82 days, with a survey undertaken with both groups at the completion of the test period. Results indicated a significant difference between the two test groups with users exposed to the influences of Social Proof more motivated to contribute content and visit the website more often than users from the control group. The findings of this study show that motivating contribution can be achieved using ELM and Social Proof to design persuasive elements in a social networking environment.

The synthesis of graphic design, interface design and the theories of social science can guide designers in the creative process of developing networked environments for social media, and lead to a more engaging user experience.

ACKNOWLEDGEMENTS

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To Kate Brown for her ongoing support and encouragement. Thank you for the programming of the 'back end' of the project, for the extra set of eyes in editing this thesis and sheltering me from the daily chores of home life and childcare so that I could focus on this project.

I'd also like to thank the New Zealand windsurfing community for taking part so enthusiastically in the study.

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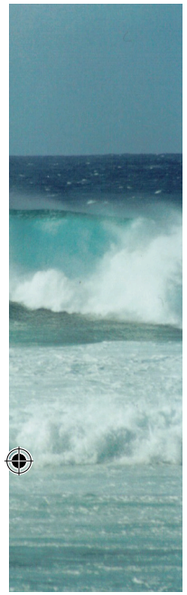

THE PROJECT SCOPE

I have windsurfed and surfed for over 20 years. It's great to get outside to harness the raw power of nature's elements whether it be in the surf, the wind or both.

One problem with participating in surf sports is that unless you're lucky enough to live close to the beach, it can be hard to find the right conditions ... it's the eternal quest of the surfer to 'find the perfect wave'. Add wind to the equation and a windsurfer's quest can be even more elusive.

Over the years windsurfers and surfers have taken careful note of what local conditions are like in relation to weather forecasts. They have had to mix forecast information with local knowledge in a way that can only be gained through experience. The first part of this equation – the forecast – is continually being refined by meteorological agencies such as National Oceanic and Atmospheric Administration (NOAA) in the United States and the MetService in New Zealand, which now offer fairly accurate global and regional forecasts.

However, the second part of the equation – the local knowledge of what the forecasts translate to on the ground in the context of a particular activity – is often securely lodged in the heads of a few local experts. If you're a visitor to an unfamiliar region it can be pure luck to find a particular location working well.

For this project, windsurfing was selected as the target group within the wider surf sports community. Access to a user base from this community was made available by *www.deepfried.tv*, a New Zealand based website dedicated to the sport of windsurfing. Designed and built by myself and Kate Brown in 2001, *deepfried.tv* is now the home to over 5,000 members

Taranaki. Author's collection.

who are passionate about the sport of windsurfing both online and offline. Through the experience of participating in this community it was found there was a need to know when and where we should go to participate in the sport. Information gathered over years of experience about where to go windsurfing and in what weather conditions, has been difficult to find and share beyond a very close network of friends.

Deepfried.tv was one of the first websites that was an international source of content specific to the sport of windsurfing. As time went on the number of New Zealand community members grew and the site became more nationally focused. In a 'ground up' process, the community began to use the tools available in their own way for their own purposes.

Local forums were initiated on *deepfried.tv* by the members themselves and were used to link to forecasts and to organise sailing sessions amongst members. Shortly after, people started to post reports about these sessions. As of June 2008 there were over 42,000 posts to the Wellington Session Logs thread alone. Very quickly it became clear that with so many threads the forum was becoming unwieldy and hard to find specific information on particular locations.

There are a number of windsurfing websites which also try to meet this need with varied success. Sites offering forecast information are wide spread and varied in presentation. While often reasonably accurate, what they fail to do is to provide a context to the forecast information and can often look intimidating.

Taranaki. Author's collection.

WWW.WINDGURU.CZ

One of the leading sites currently used by the wind sports community is *Windguru*. This site offers fairly accurate forecasts based on models from the likes of NOAA and they attempt to offer some kind of highlighting of information in the form of colour coding and stars rating. The only thing that can be gained from their data is the direction and strength of the wind and the swell direction and size. The star ratings and colour coding offer little in the way of a context to these forecast – Does this forecast translate to good windsurfing conditions at this location? *Windguru* offers the forecast information but personal knowledge is still essential to interpret it.

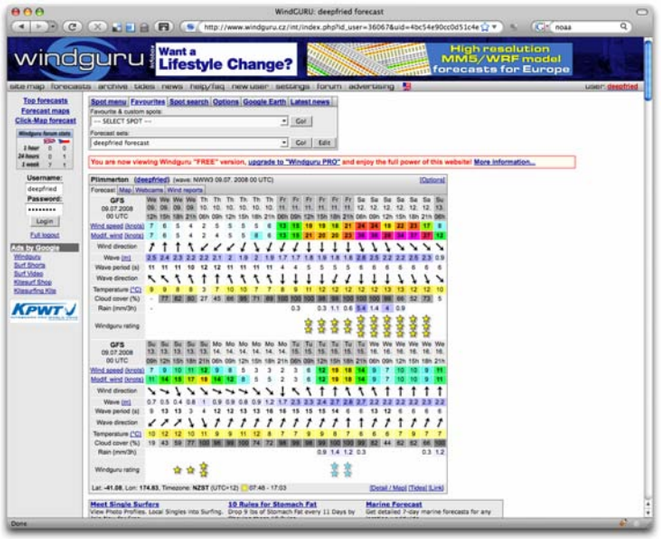

Fig A. Windguru showing a 7 day forecast for the Plimmerton region. Colour coding is based on strength alone with little real world quality context. While the graphs do display trends over time, they are daunting to view and take time to understand.

WWW.MARINEWEATHER.CO.NZ

A local New Zealand service takes things a little further in that they offer multiple visualisations of wind and swell forecast. The user is able to see animated graphics that show how the swell and wind will flow around large landmasses.

While this is a step in the right direction, the amount of local knowledge needed to interpret how these conditions will affect a particular location is still high. So again we do not have a context for what this information means.

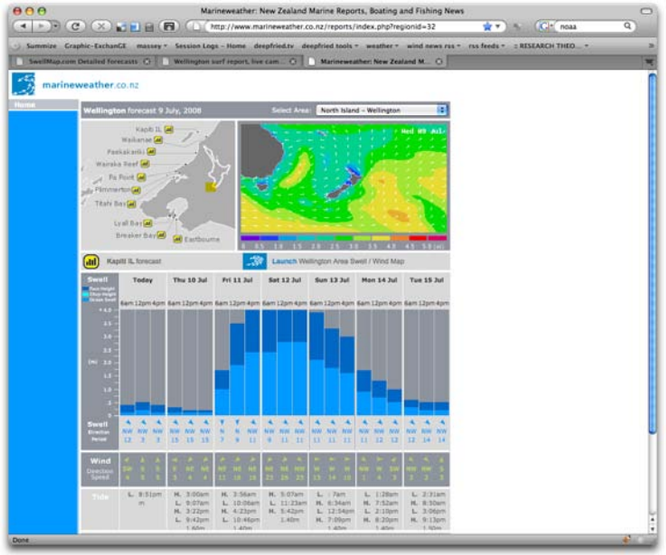

Figure B. MarineWeather takes a more visual approach in displaying the same information as WindGuru. MarineWeather shows a map of locations, a wider regional forecast visualisation and the same 7 day forecast as Windguru (based on NOAA data).

WWW.SOULRIDER.COM

Coming at the problem from another angle is *Soulrider*. This website has been set up to allow people to blog about their surf sport activities. While it doesn't have forecasts, it does allow people to talk about their general experience at a location. However this information is not utilised to its full extent and remains as individual posts and is only loosely based around a location. The interface, navigation and design of the site further compounds the issue by burying content deep within the site making it hard to find.

Figure C. Soulrider uses a blogging model to allow people to share their experiences. Aesthetics and interface design are significant hindrances in allowing contribution of this information within the Soulrider website.

WHAT'S MISSING?

Many of the current websites and services lack the ability to tap into the collective knowledge and experience of a community group, whatever the activity they perform might be. Many sites feature a 'published' guide as to what conditions are best at a particular location, however this is essentially the opinion of one person – the author, and therefore highly biased.

Another solution might be to allow for a wiki type publishing system where the entries can be updated and changed by the community. Unfortunately this often only leaves the viewer with the latest opinion posted to the system, which again might not be accurate for the wider community.

A better solution to the problem would be to gather information from the collective community group based on each individuals actual 'real world' experience. A system that would collect usage information every time a person went to a specific location, could start to build an accurate 'real world' pattern based on actual activity from multiple experiences by multiple individuals over a broad time period. This sort of information could then be used to filter other data and provide information on trends and specific usages at particular locations.

This thesis attempts to utilise the internet as a medium and social networking as a tool, in order to gather individual knowledge, give it a context and to create a self-sustaining collective knowledge base, or collaborative filtering, of locations, optimum conditions and user experiences.

As a building block for gathering this information various theories on community design, usability, user experience, visual and interface design have been used. These however are a means to an end and are not the focus of this thesis.

What this thesis will do is drill down to the core of the participation and contribution process. It will identify the points where motivation plays a part in an individual's decision making process, and asks if persuasion techniques can shift a user towards contributing knowledge and sharing experiences.

Persuasion techniques derived from the Elaboration Likelihood Model and motivation influences of Social Proof will be used to design the user experience and test features that encourage contribution within a self sustaining social network environment.

LOGGING ON TO THE TEST SITE

For evaluation purposes both test versions of the site can be viewed at this web address:
http://www.deepfried.tv/slogger

TO SEE THE A STREAM

Login: thesupervisors
Password: giveitanA

TO SEE THE B STREAM

Login: kpbTester
Password: kpbTester

FOLDOUT 5
MAIN SCREEN SHOTS

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1.0 WEB SOLUTIONS-THE RIGHT TOOLS FOR THE JOB

Lyall Bay, from author's collection.

The digital landscape has evolved past the world of Web 1.0, the first generation of the modern internet, which essentially performed as a broadcast and publish medium (O'Brien, 2007). After the 2000 dot-com collapse a shift towards what is now termed Web 2.0 occurred, where the internet moved towards a 'web as a platform' model (O'Reilly, 2005). Websites became more like applications, in that they offered not only information but also services.

The advent of Web 2.0 allowed for the development of networked community environments which could be maintained by the community itself in a 'bottom up' way and, in doing so, could more accurately reflect the community's own needs and interests (Hamza, 1999; Waldrop, 1994).

Under this new environment, user generated content is proliferating on the internet, such that the internet is now more than a library of pages and is rapidly becoming a digital record of our thoughts, ideas and experiences.

1.1 THE SOCIAL NETWORKING ENVIRONMENT

Social networking environments are online spaces where users can have a personal presence and make connections, or networks, within a wider community.

> *"A social network service focuses on building online communities of people who share interests and activities, or who are interested in exploring the interests and activities of others. Online social networking has revolutionised the way we communicate and share information with one another in today's society. Currently there are various social networking websites that are being used by millions of people on a regular basis — it now seems that social networking is a part of everyday life." ("Wikipedia," 2008)*

Social networking sites are becoming increasingly commonplace, taking the lead from one of the first of such sites – the *MySpace.com* website. What set *MySpace* apart from the traditional web log or personal site when it first launched, was their introduction of new functionality that stimulated the connection and networking of friends or acquaintances on the site.

According to Berkun (2008), users "have always been collaborative. Always been social. It's in our genes and it's what we have evolved to do well. Good technologies enhance our natural abilities, give us useful artificial ones, and help us to get more of what we want from life. Web 2.0 and social media make the process of collaboration and developing relationships more fun, efficient, powerful and meaningful."

We have always been collaborative. Always been social. It's in our genes and it's what we have evolved to do well. **(Berkun, 2008)**

Technological advances have begun to allow more room for experimentation with social concepts and functionality that allow people to do more things online and to share more information.

Evolving from *MySpace* there have been a multitude of other social media sites such as *FaceBook*, *Linkedin*, *Orkut* and *Bebo,* which have taken the concept further by developing new features and refining the social networking process.

With so many social network choices now available, having a personal online presence within a social network site has hit the mainstream. *Facebook* had over 80 million active members as of July 2008, was the sixth most-trafficked website in the world and the second most-trafficked social media site in the world after *MySpace* ("Facebook Statistics," 2008).

Fig 1.1 MySpace.com, the original social network site to hit the main stream.

Fig 1.2 FaceBook.com is one of the new up and coming social network sites following the lead of MySpace.

Fig 1.3 Bebo.com, while not as popular on a global scale as Facebook and MySpace, still has wide use in certain countries.

As a result of the success of current social media sites, we are now seeing a set of practices emerge across all social software that centres around a few core processes. Getting people started quickly, allowing for self-expression and engaging in real-life tasks, all of which also allow for flexible discovery and play.

One thing all social networking sites have in common is the passive collection of attention data as a side effect of user activity, or as O'Reilly (2005) puts it, utilising 'the intel inside'.

1.2 THE VALUE OF ATTENTION DATA

Attention data is loosely termed as "information on what you use and how you use it" (Meyer, 2006). More specifically it is a digital record that describes a unit of measure spent interacting with something or someone. Attention data can cover pretty much any activity which leaves behind a digital record.

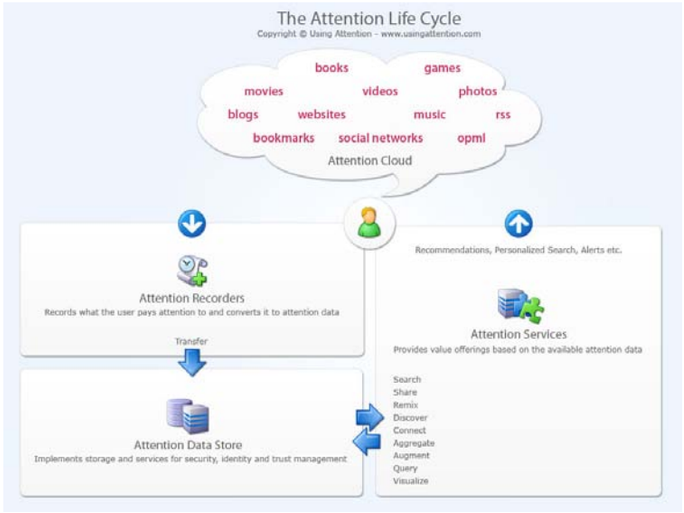


Fig 1.4 The Attention Life Cycle www.usingattention.com

1.3 USING ATTENTION DATA TO BUILD A BETTER USER EXPERIENCE.

Attention data can be used to improve the performance of a web service or as a means of determining the tastes or requirements of users. This information can then provide a basis for delivering a better user experience next time the action is performed.

Amazon.com gathers information on the purchase actions of their members and uses it to make suggestions and recommendations based on the purchases of like minded people. This can be seen in 'Customers Who Bought This Item Also Bought' suggestions in Fig 1.5.

Last.fm takes the use of attention data a step further, providing a high quality user experience around their music discovery service.

After downloading a small piece of software that plugs into a user's music listening applications, metadata on their listening preferences are automatically sent back to their site profile. From this, audio streams or 'stations' are created for them to listen to and share.

The beauty of *Last.fm* is its simplicity from the users point of view. By using existing attention data from the member's existing desire to listen to music, the site is able to offer up music selections based on the users previous listening preferences.

Not only do these stations offer playback of 'listened' tracks, but also associated tracks listened to by others with similar taste in music. For example if you listened to track A and so did others, and they also like tracks B, C and D then maybe you'll like them too. In addition, members are given

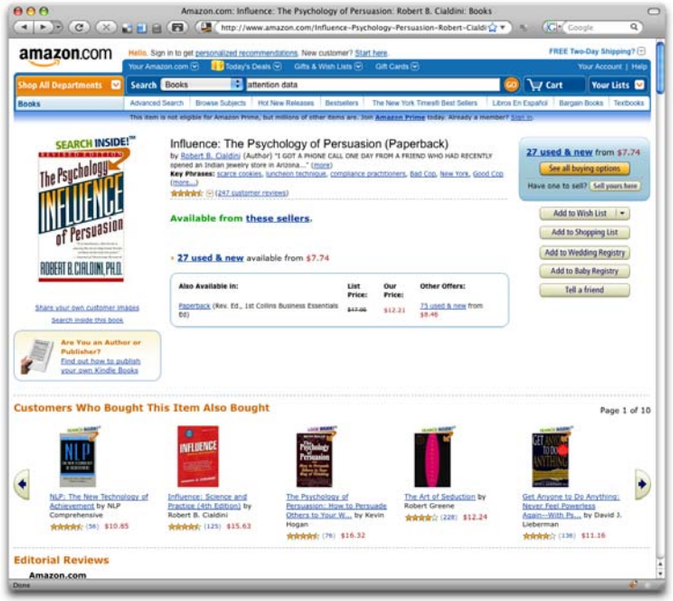


Fig 1.5 Amazon.com, suggesting books which users might also be interested in buying.

the option to skip tracks and to rate them as 'loved' or 'banned'. This further refines the attention data on their listening preferences – subsequently refining the selection in music presented to the user for future listening.

There is an issue with using attention data in scenarios such as *Last.fm*, in that attention data has a 'critical threshold' which must be reached before it becomes useful. The more attention data you have, the more useful it is. With

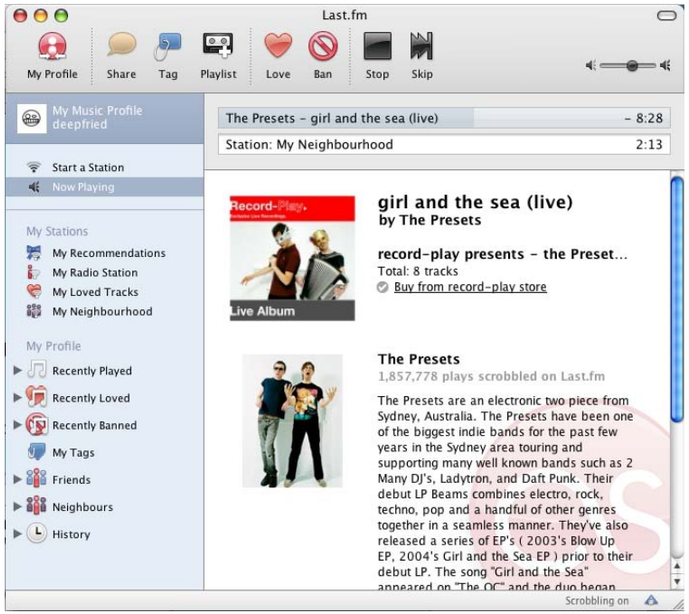


Fig 1.6 The Last.fm desktop application playing a track from the band 'The Presets'.

just a small pool of information, recommendations on music in the *Last.fm* site described above are a bit 'hit and miss'. When enough attention data has been collected on music preferences, more accurate recommendations can be made as to the members' taste in music.

When a member first joins a site, information on their behaviour and preferences will be at its lowest, therefore attention data dependent services provided by the site will be at their least effective. This is not to say that they will not be effective, but they will not be performing at optimum levels. There needs to be something else motivating the users to keep using the site when they first sign up, until sufficient attention data is collected for these services to become more effective.

The next generation of websites, web apps and networked services will use attention data, among other things, to deliver highly personalised content and services that improve the user experience. They will save the user time, suggest things which may be of interest to them and put them in touch with like-minded people.

So with all this attention data, the problem becomes how do we find and present useful information to the user base without overwhelming them ?

1.4 COLLABORATIVE FILTERING

Collaborative Filtering is defined as the process of filtering for information or patterns using techniques involving collaboration among many agents.

The main idea behind Collaborative Filtering is to automate the process of 'word-of-mouth' recommendations of products or services between users. If a user needs to choose between a variety of options with which they have no experience, they will often rely on the opinions of others who do have such experience. When there are countless options, as there are in the web, adopting a collective method of recommendation, rather than an individual one, makes the problem more manageable.

There are two basic principles involved in the concept of Collaborative Filtering. Both of these involve tapping into the collective knowledge of a community group.

The first principle, outlined in *The Wisdom of Crowds* Surowiecki (2004), suggests that as a community grows, not only does it make better decisions than a few individuals would, but the larger a community knowledge base gets, the better the decisions can be made from it.

The second principle of Collaborative Filtering suggests that in any such large community, with enough information on individual members activities (attention data) and on how the individual members collaborate or correlate with each other (social networking), predictions can be made about what these users will like in the future based on what their tastes have been in the past.

In the case of the online windsurfing community, a large pool of information on windsurfing locations sailed on specific gear and in specific conditions, coupled with a ranking for those conditions, could be used to provide information on the highest ranked (and therefore best) conditions for a location. Thereby providing vital local collective knowledge on windsurfing locations usually only available to those able to find out about them through personal experience.

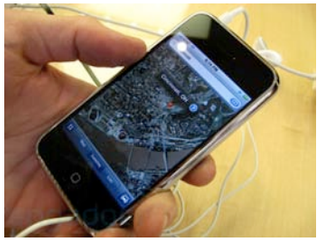
...as a community grows, not only does it make better decisions than a few individuals would, but the larger a community knowledge base gets, the better the decisions can be made from it. ***(Surowiecki, 2004)***

1.5 WEB OF LOCATIONS – THE ROLE OF GEOCENTRIC NAVIGATION

Berners-Lee (2007) speaks of how, in the *Semantic Web,* we are moving away from a 'web of documents' to a 'web of data', but the internet is also moving into a 'web of locations'.

In the recent past there have been a number of technological advances, which have made geo-locating more accessible to the web community as a whole. *Google* have developed, and made readily available to the web community, a number of comprehensive APIs (Application Program Interfaces). An API is a small script or piece of code, which lets a program communicate with another program, allowing it access to content from third party tools, websites or externally generated widgets. In the case of the *GoogleMaps* API, web developers are given access to *Google's* high powered mapping software.

Fig 1.7 The Apple iPhone displaying a GoogleMap satellite image. source www.engadget.com



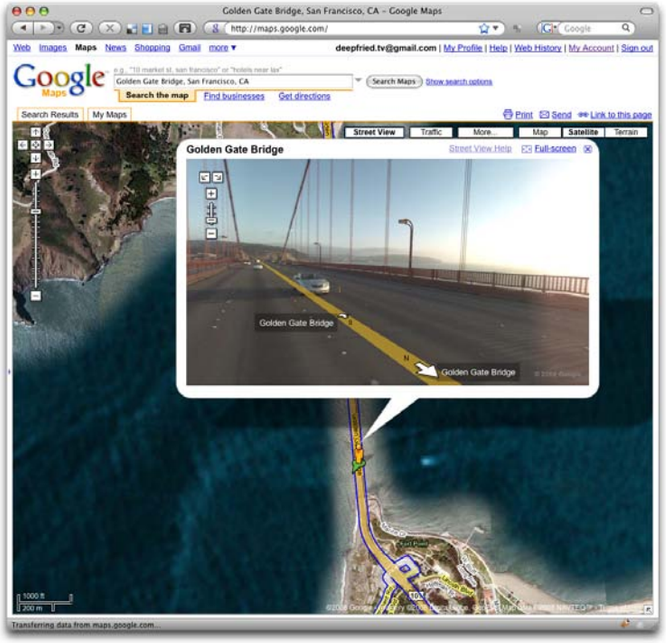


Fig 1.8 Maps.google.com showing the capabilities of the GoogleMap API.

This opens up a world of possibilities when coupled with advances in mobile devices such as the Apple iPhone which has already gained wide popularity within the global market. The iPhone, and similar hand held devices, have a range of important features such as portability, GPS capability, internet connectivity and image capturing capabilities to name a few.

With technological advances such as these we are now able to take computing power and networkability with us as we travel about. Instead of entering a web of data accessed by keyword searches, we are now beginning to see data being accessed by the context of a geo-location. Geo-coding and geo-tagging enables web users to assign location data (latitude and longitude co-ordinates) to the information they are storing online. With location aware devices and software, this process is becoming a seamless activity.

Websites are now allowing us to tag and browse information in unique and interesting ways. *GoogleMaps* lets us not only browse via topographic maps but also photographic maps that take us down to the city street level.

In the context of this thesis, the *GoogleMaps* API will be used to gather the GPS latitude and longitude co-ordinates of the specific location users are writing a windsurfing log about. While using the *GoogleMaps* API users will not even be aware of what the latitude or longitude co-ordinates of the location are, they simply drag the marker icon provided to a point on a satellite map where they windsurfed. The process is simple, non technical and easy to use.

We are moving away from a 'web of documents,' to a 'web of data', but the internet is also moving into a 'web of locations'. *(Berners-Lee, 2007)*

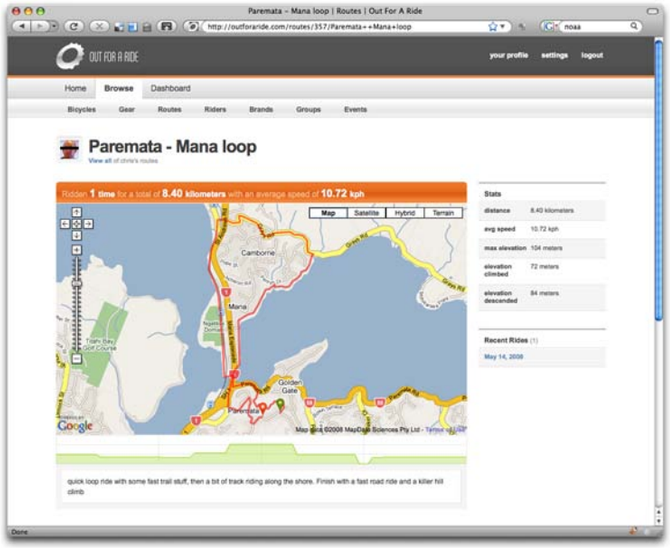


Fig 1.9 The outforaride.com website showing on a GoogleMap the route taken by the user on their latest bike ride.

This approach has been demonstrated already in a number of sites including *outforaride.com*, a community site based around the activity of bike riding. The main concept of the site is to encourage people to get out riding their bikes and as such offers the opportunity to log bike rides.

The interface uses the *GoogleMaps* API through which the user can plot the course of their ride. From this the elevation, terrain type and distance of the ride is stored, which is then used every time subsequent rides are logged.

1.6 BLOGGING. A QUICK WORD

Blogs, or Web logs, have been around in various forms for some time (McArther & Bruza, 2001). However it wasn't until an in-browser content publishing system was established at *www.blogger.com* that the web log concept really took off.

Fig 1.10 The www.blogger.com website made web logging simple and accessible to all.

> *"Give people a tool to update a web page quickly and easily, and you wind up with a lot of people talking about what they had for lunch. And while that may not be everyone's cup of tea, to the people doing it, it fills an important need for self-expression" (Powazek, 2002).*

As part of a number of strategies designed to encourage content contribution, the broader concepts of blogging and self publishing will be used to allow users to post regular content about their windsurfing excursions.

Some will not be drawn to the idea of keeping an online record of their windsurfing activity, but others will, and the addition of key motivational features on the site will aim to encourage further content contribution.

Give people a tool to update a web page quickly and easily, and you wind up with a lot of people talking about what they had for lunch. And while that may not be everyone's cup of tea, to the people doing it, it fills an important need for self-expression. *(Powazek, 2002).*

2.0 MOTIVATING PARTICIPATION

Plimmerton Beach, courtesy of wwa.org.nz.

Self-sustainability is critical to the survival of Web 2.0 concepts and is dependent on community members adding content in a sustained way over time. Motivating community members to take it upon themselves to freely contribute information is the key to the success of any social network environment, and until recently the core elements of how to achieve this were not clearly understood. (Powazek, 2002; Ling et al., 2005).

2.1 INTRODUCING CAPTOLOGY

In 2003 B.J. Fogg from The Stanford Persuasive Technology Lab published *Persuasive Technology – Using computers to change what we think and do*, in which he investigated how computers could be used as persuasive technology. Fogg's work opened up a whole new field of research, Captology.

Captology [is an] acronym based on the phrase 'computers as persuasive technologies'. "Briefly stated, Captology focuses on the design, research, and analysis of interactive computing products created for the purpose of changing people's attitudes or behaviours. It describes the area where technology and persuasion overlap." (Fogg, 2003, p. 5)

With the combined literature from recent Computer Mediated Communication (CMC) research and now Human Computer Interaction (HCI) research with a focus on Captology, resources are now available to develop successful solutions to networked community problems.
(Badre, 2002; Karvonen, 2000; Neilson, 1999; Norman, 2004; Powazek, 2002)

Captology focuses on the design, research, and analysis of interactive computing products created for the purpose of changing people's attitudes or behaviours. ***(Fogg, 2003)***

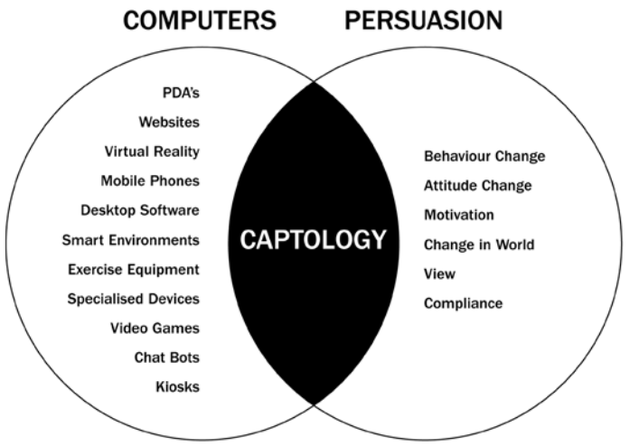


Fig 2.1 Captology describes the area where computing technology and persuasion overlap (Fogg, 2003, p. 5)

2.2 PERSUASION – IS NOT DECEPTION

Persuasion is often confused with deception or coercion and, while technology and media are often used to these ends, for the purposes of Captology persuasion is defined as "an attempt to change attitudes or behaviours or both" (Fogg, 2003) , without using coercion or deception.

Persuasive technology describes any interactive computing system designed to change people's attitudes or behaviours. From the speed limit signs that display your speed as you drive past, to computer games that help asthmatic children better treat their illness, any time any piece of technology influences

the decision making processes of a human, it can be considered persuasion through technology or persuasive technology.

Designers however must be up front and fully disclose their strategies when utilising persuasive techniques. Users of persuasive technology shouldn't be tricked or coerced into a course of action. Doing so will almost certainly lead to a negative outcome.

2.3 DO TRADITIONAL PERSUASION TECHNIQUES WORK IN AN ONLINE ENVIRONMENT?

Captology is a relatively new field with key research still being undertaken. Traditional behavioural theories have already proven flawed when applied to networked interactive spaces. One of the latest pieces of research identified six of the nine traditional social behaviour theories as either disconfirmed or not supported when applied to an interactive environment (Ling et al., 2005), showing that traditional psychology when applied to a digital environment is often not able to cope with the dynamics involved.

Preece & Maloney-Krichmar put this down to the fact that research into the field needs to further mine social psychology theories, which at present are unable to handle the vast amount of dynamic variables within a networked environment. More research into how the theories can combine with the design process needs to be undertaken.

> *"Perhaps its time to use these combined techniques to synthesise knowledge in the social sciences and package the knowledge for design."*
> *(Preece & Maloney-Krichmar, 2005)*

Perhaps its time to use these combined techniques to synthesise knowledge in the social sciences and package the knowledge for design.

(Preece, 2005)

2.4 INTELLIGENT PERSUASIVE DESIGN

For information to be communicated effectively in any medium, the viewer needs to firstly be attracted or motivated to actually read the content.

How this is done requires a convergence of persuasion and design. Firstly seduction initiates the process, promising reward, or payback for the audience's attention. Once drawn into the communications piece, the quality and relevance of the information takes over, engaging the viewer on deeper levels (McCoy, 2000).

Informing a windsurfer of your windsurfing website promises content which they may find interesting. Once they get to the website, if the homepage has sufficiently interesting content they may click on links to investigate deeper into the site. In the digital environment users can take the experience further by subscribing or 'signing up' to further services within the site. By doing so the mode of communication between the user and the site is extended in an interactive 'two way' process not available to traditional media.

Research by Khaslavasky & Shedroff (1999) outlines how the seduction process is broken down into three steps:

1. **Enticement** – attracts attention and makes an attractive promise.
2. **Relationship** – Provides progress with small fulfillments and more promises, which is a step that can continue almost indefinitely.
3. **Fulfillment** – fulfill the final promise and end the experience in a memorable and meaningful way.

There are several seduction process models, but Khaslavasky & Shedroff's model is particularly relevant when applied to the design of interactive and networked environments.

Work by Fogg reinforces the Khaslavasky & Shedroff model within a technology framework in his 2007 paper, *The Behaviour Chain for Online Participation*. Fogg outlines a series of steps that successful web services have begun to employ to ensure that key behavioural goals are met in order to influence users to contribute compelling content and evangelise the site or service.

Fogg's *Behaviour Chain* is broken into 3 phases: Discovery, Superficial Involvement and True Commitment.

In the Discovery phase a subject becomes aware of the product or service. This phase contains two target behaviours. The subject 'learns about the service' in a way that supports further target behaviours, or they take action and 'visit the site'. This could be through an email from a friend or from reading an article, blog or review.

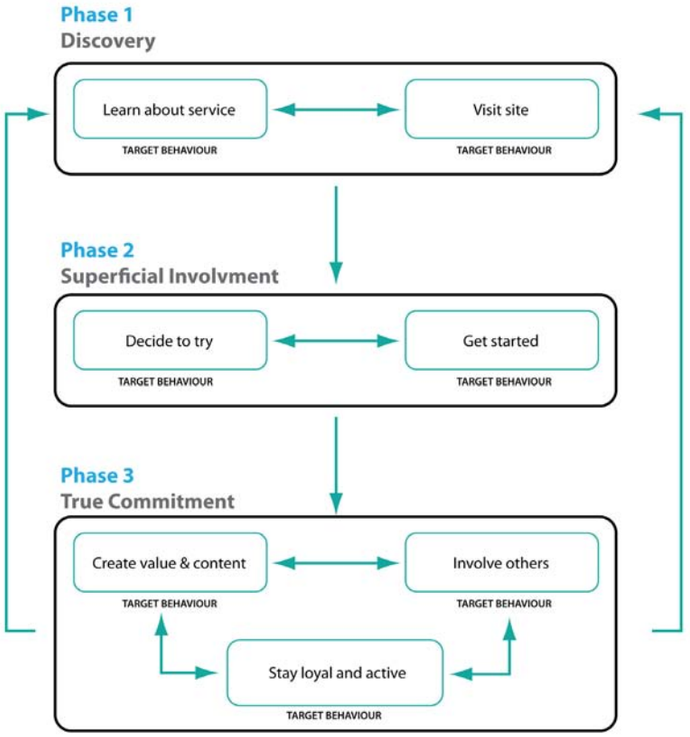


Fig 2.2 The Behaviour chain of online participation (Fogg, 2007, p. 202)

With the Superficial Involvement phase, simple non-committal involvement is asked for from the subject. Often a limited version of the service is provided with just enough functionality to entice the user to sign up, join or create a free account.

Phase 3 ,True Commitment asks for deeper investment from the subject in which they contribute value, involve others in the service and continue to be loyal and active users. Eventually it is hoped the subject will evolve into a "passionate user who is part of the tribe" that evangelise the service (Sierra, 2007).

Fogg's behaviour chain utilises a classic persuasive sales strategy dating back to the days of door-to-door salesmen. The 'foot in the door' strategy is one of a group of Sequential Influence Techniques as outlined by Perloff in *The Dynamics of Persuasion.*

Once the subject has made a commitment to decide to try if, at a later date say after the expiration of a trial period, a second 'continuation' request is made, it is then more likely that the person will comply (Chartrand, Pickert & Burger, 1999).

> *"if they could just overcome initial resistance—get a 'foot in the door' of the domicile—they felt they could surmount subsequent obstacles" (Fogg, 2007)*

Other Sequential Influence Techniques include Low Balling, That's-not-all, Reciprocity norm, Fear-then-relief and Disrupt-then-reframe also known as the Pique technique (Perloff, 2003, pp. 251-257). These techniques are traditionally used in sales but can be reproposed for the online environment, whether it is for sales or other purposes.

While these techniques can be useful in the hands of skilled persuaders, the use of the Sequential Influence Techniques requires the persuader to be able to dynamically adjust their strategy in response to the subject, often switching between multiple modes.

This is a difficult task in a digital environment where many communication cues are not available – eye contact, body language, non-verbal cues and tone of voice, to name a few.

However even without these non-verbal cues, there is other information available to the digital environment which can be used to adapt the use of persuasive approaches to the users actions. Click tracking of a users movement through the site, and attention data are just two such information sources. Recent progess in this area has been made by researchers at MIT's Sloan School of Management. They hope to make websites better at selling products by making them adapt automatically to each visitor. By tracking the way a user navigates a site they can adapt the presentation of information in a way that complements that person's style of thinking (Hauser, Urban, Liberali & Braun, 2008).

2.5 PERSUASIVE FRAMEWORK FOR DESIGN

There are a number of persuasion theory models in the field of psychology. The Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986) has been selected to provide a broad persuasive framework on which to develop persuasive elements for this thesis. At this time it is one of the dominant models in the field of psychology and offers a comprehensive framework that has generated considerable research.

2.5.1 ELABORATION LIKELIHOOD MODEL

ELM utilises a dual-process model in which understanding communication cannot take place without appreciating the underlying processes by which messages influence attitudes. The model describes two different mechanisms to affect attitude change, Elaboration and Likelihood. Elaboration is the extent to which an individual thinks about or processes the messages contained in a communication. There are times when individuals think carefully about content, and other times when they turn their minds off to persuasive communications and make decisions based on mental shortcuts.

Factors that are peripheral to the message arguments carry the day. These can include a communicator's physical appeal, glib speaking style, or pleasant association between the message and music playing in the background.
(Perloff, 2003)

2.5.2 ELM ROUTES

ELM also suggests that there are two routes of thinking that a subject can take in a decision making process. One route is called the 'central' route and the other is the 'peripheral' route, also called the central and peripheral processes.

The central route refers to careful and thoughtful thinking about the message content. The thought process is active, creative and alert, and the 'argument' is what is primarily processed. Central routes are characterised by longer cognitive conversations with lots of relevant content being consumed.

> *"When people process information centrally, they carefully evaluate message arguments, ponder implications of the communicator's ideas, and relate information to their own knowledge and values. This is the thinking person's route to persuasion." (Perloff, 2003, p. 129)*

The peripheral route, by contrast, is at the other extreme of the thinking process. Here the subject is not really thinking carefully and instead skims along the surface of ideas, often relying on simple 'cues' to help them take action. They are thinking enough to be aware of the situation, but they are not thinking carefully enough to catch errors or inconsistencies, and tend to have shorter conversations with irrelevant content.

> *"Factors that are peripheral to the message arguments carry the day. These can include a communicator's physical appeal, glib speaking style, or pleasant association between the message and music playing in the background." (Perloff, 2003, p. 129)*

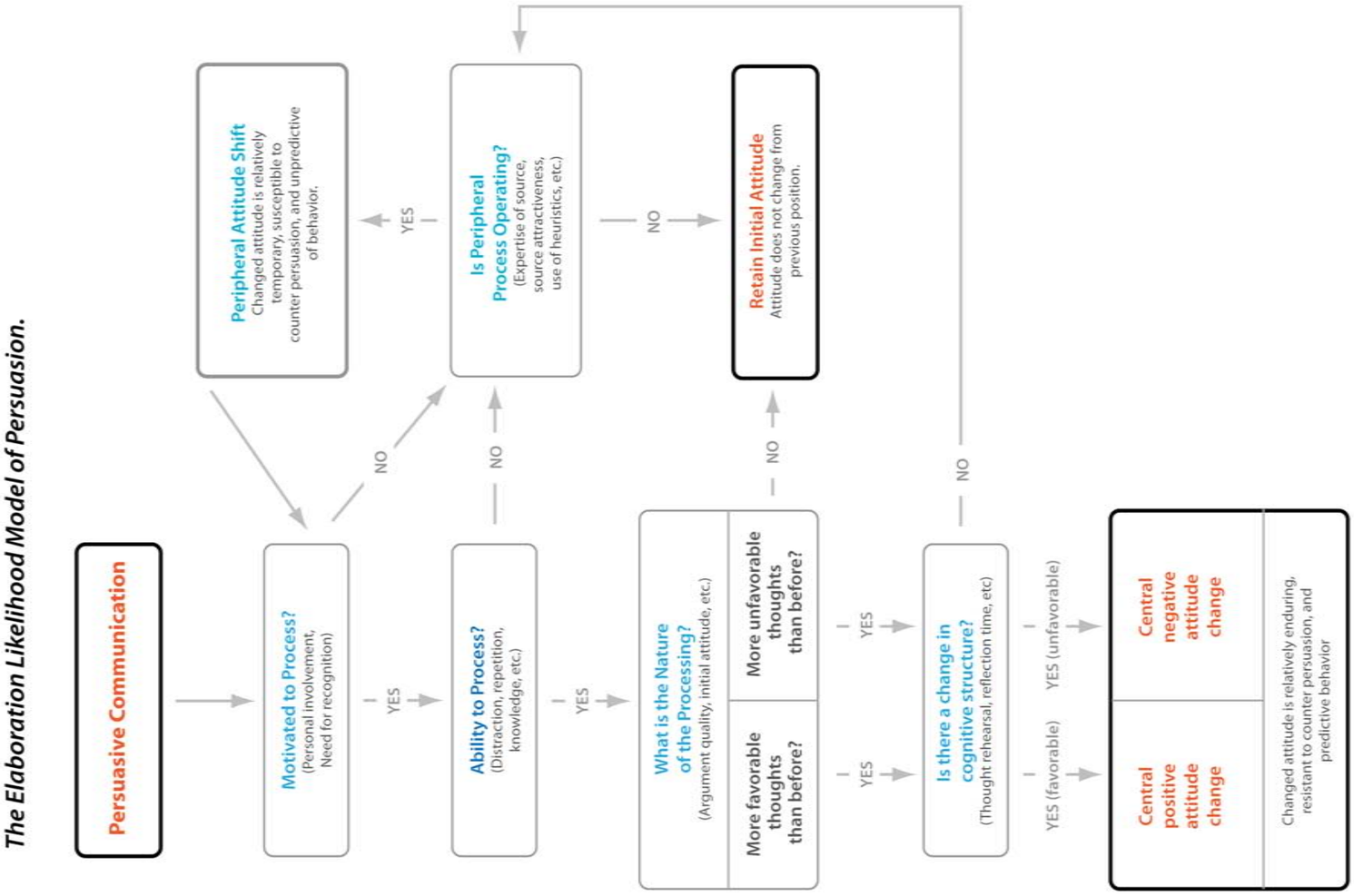


Fig 2.3 Elaboration Likelihood Model of persuasion. (Perloff, 2003, p. 131)

When processing peripherally, people often rely on simple decision making processes or heuristics. For example 'People who bought this also bought that', might be persuasive to someone processing peripherally.

ELM suggests that we all have constant conversations going on in our heads, which can be short or long, deep and analytical or plain and simple depending on the context. When these thoughts are about the persuasive situation, this internal conversation process is called an elaboration activity. To elaborate means to add, extend or go beyond what's being communicated to you. To invest more elaborative attention into a situation would indicate that the subject is more involved in the decision making process.

For example, when buying a bottle of wine you might go through a series of elaborative processes like, What's for dinner? Will red or white wine go with that dinner ? What type of red wine should I get ? What country is the wine from ? Is that a good wine making region? etc. You would be thinking down the central route.

On the other hand a shopper taking the peripheral route might make a decision based on superficial influences such as the colour of the label, the packaging, how it is displayed in the shop etc.

It must be noted however that people are flexible and they can swing between central and peripheral routes in subtle ways. Where we sit between the two routes is determined by a number of factors, the most important being motivation and ability.

> *"The key factors that determine processing strategy are motivation and ability. When people are motivated to seriously consider the message, they process centrally. They also peruse the central route when they are cognitively able to ponder message arguments." (Perloff, 2003, pp. 129-130)*

Within a web environment, as peripherally motivated individuals are not as engaged in the site and are superficially involved, the chance of them returning or adding meaningful content is low. Centrally motivated users however are engaged with the content, thoughtful in their input and, as an interested audience, more likely to return to the site. As contributing content and returning is vital to the success of social networking sites, it is in their interests to encourage peripherally motivated individuals to switch to the central route.

2.5.3 SWITCHING FROM THE PERIPHERAL TO THE CENTRAL ROUTE

We know central processors are driven by arguments while peripheral processors are driven by cues. Perloff also writes that if people who process centrally are influenced by an argument, they will show changes that are more persistent, resistant and predictive.

> *"individuals are high in involvement when they perceive that an issue is personally relevant or bears directly on their own lives. They are low in involvement when they believe that an issue has little or no impact on their lives" (Perloff, 2003 p.130)*

So if we want to increase the likelihood of people processing our communications centrally we must make sure that our target audience is motivated to process the information in this way. Central processing however takes more effort and concentration to perform, so to get people to work a little harder we need to motivate them.

2.6 PRINCIPLES OF MOTIVATION

Persuasion expert and author of *Influence: The Psychology of Persuasion*, Robert Cialdini, found that we tend to use mental short cuts based on our values, social norms, experience, knowledge and context in our decision making process (Cialdini, 2007).

We tend to use these shortcuts like a reflex when presented with choices in a decision making situation that can send us down the peripheral route.

2.6.1 SIX PERSUASION INFLUENCES

Cialdini (2001) has defined six principles that influence persuasion.

1. Reciprocation
Reciprocation is where people repay in kind, so this encourages giving what you want to receive. Central to the reciprocation influence is that people tend to return a favour. Examples of this can be seen in the pervasiveness of free samples in marketing.

2. Commitment and Consistency
If people commit to doing something, either verbally or in writing they are more likely to honour that commitment. Even when the original motivation is removed.

3. Social Proof
People follow the lead of others similar to themselves and will do things that they see other people are doing. The influence of Social Proof is based on the assumption that if other people are doing it then it must be OK for me to do it too, it must be good or right, it is the excepted social norm.

4. Authority
People have a natural disposition to obey authority figures, even if they are asked to perform objectionable acts.

5. Liking
People are more likely to be persuaded by someone they see as likeable or as similar to themselves.

6. Scarcity
People or products seem more important when their availability seems limited.

Perloff (2003) states that in everyday life we employ a variety of tactics to get our way and that "One-on-One persuasive communication includes many different elements. These elements intersect and interact complexly and emotionally" (p. 269)

As such, we can expect to see a full spectrum of positions between central and peripheral processes, and also a mixed use of Cialdini's persuasion influences in the communication and processing of persuasive messages. To what extent the bias towards either route or influence principle will be, is determined by a number of factors as outlined by Perloff including context,

> ***One-on-One persuasive communication includes many different elements. These elements intersect and interact complexly and emotionally.*** *(Perloff, 2003)*

knowledge bias, audience size, culture and physical environment and the communicator role or credibility (Perloff, 2003, pp. 161-165).

To simplify this complicated equation, for the purposes of this thesis one influence will be investigated in the development of the persuasive design elements – namely Social Proof.

2.6.2 THE INFLUENCES OF SOCIAL PROOF

The principle of Social Proof, also known as Consensus, is made up of a number of social behavioural norms.

- **Internalisation** 'its right and proper so I'll do it'.
- **Enforcement** 'do it or else'.
- **Consensus and support** 'we're all doing it so I'll do it too'.
- **Frequent activation** 'it came to mind (again) so I 'll do it (again)'. (Smith & Mackie, 2007, pp. 355–357)

Social Proof is involved with how an individual feels about their standing amongst others. It can influence the decision making of an individual based on the actions of the group – we are more likely to agree to something if we think many others have already done so.

> *" 'more doctors recommend a certain type of pain reliever than any other'... the advertiser is trying to convince you that the product must be the right choice, because so many other people have already done so." (Hamilton, 2007, p. 198)*

2.6.3 SOCIAL PROOF WITHIN A SOCIAL NETWORK ENVIRONMENT

Social Proof has been found to be most effective under two conditions. First, we are most influenced by Social Proof when we are unsure what to do. Second, we are more likely to be influenced by Social Proof when we see ourselves as similar to the person or people already doing it (Hamilton, 2007, p. 199).

As peripherally motivated users are only superficially committed to the argument, as discussed in the ELM routes earlier, they may be unsure of what to do, making them particularly susceptible to the influences of Social Proof.

Further to this, the influences of Social Proof seem well suited to the peripherally motivated individual who is already operating in an unengaged manner.

> *"Like the principles of Reciprocity and Commitment, the principle of Social Proof works, at least in part, because it lulls us into automatic, unthinking response. " (Hamilton, 2007, p. 198)*

Fogg has identified Social Facilitation, Social Comparison and the Principle of Social Learning as a set of mechanisms within which Social Proof can operate in a digital environment.

2.6.3.1 SOCIAL FACILITATION

Social facilitation states that an individual will perform to a higher level when they know there are others observing their activity.

> *"The principle of Social facilitation suggests that people perform better – more, longer, harder – when other people are present, participating, or*

observing. Connected products can leverage this principle by creating new opportunities to generate social facilitation effects." (Fogg. 2003, p. 197)

For social facilitation to have an effect the presence of others must be evident. In the internet environment this is often not explicitly designed for. Specifically designing mechanisms to emphasise the presence of others online would increase the influence of Social Facilitation.

2.6.3.2 SOCIAL COMPARISON

"People have greater motivation to perform a target behaviour if they are given information via computing technology, about how their performance compares with others. Especially others who are similar to themselves "(Fogg, 2003, p. 198).

Within a social network environment this implies the need for a system of ranking of community members based on their activity. Ranking could be based on content contribution, quality and frequency of contribution, number of social connections within the community or the quantity of time spent on the site, to name a few examples.

2.6.3.3 THE PRINCIPLE OF SOCIAL LEARNING

This principle states that a person will be motivated to perform a target behaviour if he or she can use computing technology to observe others performing the behaviour and being rewarded or recognised for it.

"If an observer notices someone being rewarded for his or her behaviour the observer is much more likely to perform that behaviour. People tend to observe and learn most when behaviour is modelled by others who are similar to themselves but somewhat older or more experienced" (Fogg, 2003, p. 201)

Like the principles of reciprocality and commitment, the principle of Social Proof works, at least in part, because it lulls us into automatic, unthinking response. *(Hamilton, 2007)*

In the context of social network environments the desired behaviour of its members is to contribute content and to communicate within the group. This can be achieved by allocating status levels within the community members, awarding higher statuses the more the desired behaviour is performed.

This is evidenced in many forum systems where members are given a status based on the amount of content they've contributed - such as newbie, intermediate, advanced and guru. This gives them an 'experience ranking' integral to the principles of Social Learning.

There are more mechanisms of Social Proof than those discussed here but they fall outside the scope of this thesis. Focus has been put on the mechanisms identified by Fogg for Social Proof as these are specifically relevant to the digital environment.

2.7 CREDIBILITY IN DESIGN

As part of the persuasion process, credibility of the communicator is essential.

Furthermore, credibility is not assured even once we have gained it. Credibility must be earned through continual and effective communication. It is at the core of all persuasive communication, so without trust any persuasive process or technique will most likely fail.

Credibility is defined as "the attitude towards a source of communication held at a given time by a receiver" (McCroskey, 1997, p. 87).

2.7.1 HOW CAN DESIGN BE DEVELOPED TO INCREASE CREDIBILITY?

A 2002 study conducted by Cheskin Research titled *Designing Digital Experiences for Youth,* found that within an online environment the design qualities were among the most prominent features that enhanced feelings of trustworthiness. However, those design qualities not only took into consideration aesthetics but also functional design.

Few studies have been undertaken into the influence of aesthetics on the judgement of user interface design. Usability is seen purely as a functional issue, aesthetic considerations are rarely seen as a solution to the problem. Laurel (1990), Tractinsky (1997) and more recently Norman (2004) began to assess the aesthetic elements of an object in relation to usability and simplicity.

Tractinsky outlines in *Aesthetic and Apparent Usability: Empirically Assessing Cultural and Methodological Issues*, that when a website or user interface is considered aesthetically pleasing in the initial phases of use, the user is likely to perceive a design as more easy to use, even after some time with negative feedback (Tractinsky, 1997).

However, in some cases users may be motivated to overlook the aesthetics in favour of other elements such as content and functionality. In this case aesthetics could be used as a cue leading to enticement, which would then flow onto the relationship and fulfilment phase outlined in Khaslavasky & Shedroff's theory in *Understanding the Seductive Experience* (1999).

Norman, in his publication *Emotional Design: Why we love (or hate) everyday things,* puts forward a case for greater use of emotionally sensitive design concepts in the development of new products, concepts and user interfaces. He argues that "the emotional side of design may be more critical to a product's success than its practical elements" (Norman, 2004).

An example of emotional design is the choice of colour palette for the *www.deepfried.tv* website, which was taken from the bleached tones of the New Zealand coastal environment. This colour palette has particular positive effect on the windsurfing community members of the site as it taps directly into memories of an environment they love.

The emotional side of design may be more critical to a product's success than its practical elements. *(Norman, 2004)*

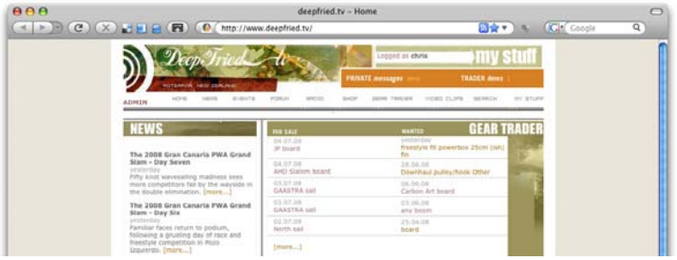


Fig 2.4 The www.deepfried.tv windsurfing community website, showing the colour palette used.

2.7.2 TONE AND LANGUAGE – ITS ALL IN HOW YOU SAY IT.

One other element, often over-looked and crucial in the communication process, is the tone of the language used which needs to be correct for the context.

Although some subject matter might appear to be best communicated in a dry formal manner, Kathy Sierra states that your brain will connect better with content if its communicated in a conversational manner.

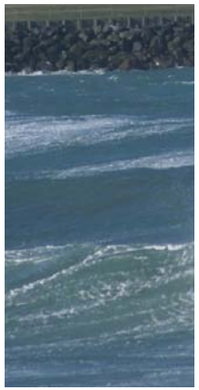
> *" When your brain thinks it's part of a conversation, it thinks it has to pay attention... to hold its end up..." (Sierra, 2005)*

What Sierra is essentially saying is that, if you use conversational language, the listener/reader's brain is tricked into thinking that it might need to reply so it has to keep paying attention.

When your brain thinks it's part of a conversation, it thinks it has to pay attention... to hold its end up... *(Sierra, 2005)*

This is also supported by Moreno and Meyer (2000), where they looked at the effectiveness of formal vs. informal learning styles in an education environment. Some students were presented with study material written in a formal style, while others had the same material written more conversationally. Exam results showed that students studying material written with the more personalised language that included 'I/we/you', performed 20% to 46% better than students who were presented with more formally written study material.

Fig 2.5 The error message displayed by the Last.fm website.



2.8 WHERE TO NOW?

A holistic approach to designing interactive products is the way forward. Issues such as core purpose, appropriate persuasion techniques, functionality, user base, communication tone, aesthetic design, interactive design and ultimately user experience all need to be carefully considered by the designer when developing an interactive experience for the internet.

ELM theory is one of a few broad frameworks that can be used to guide designers through this process. With a systematic structure for persuasive processing firmly established the development of interactive experiences can be consistently approached.

No one has yet performed a controlled study that documents how virtual representations of other people lead to social facilitation effects. But the research that exists suggests the effect is real. *(Fogg, 2003)*

Within the broader strategic ELM framework, more fine-grained influence techniques as outlined by Cialdini (2007), can be used as a basis for developing services, features and tools that influence attitude shifts. As a result information contribution can be made more effective, efficient and most importantly, a more enjoyable experience for the end user.

> *"No one has yet performed a controlled study that documents how virtual representations of other people lead to social facilitation effects. But the research that exists suggests the effect is real" (Fogg, 2003, p. 198)*

This thesis intends to investigate this further.

3.0 THE RESEARCH PROCESS

Lyall Bay, courtesy of wwa.org.nz.

The success of this site, and social networking sites in general, is dependent on user contribution of new content to increase the pool of attention data and to keep the site content dynamic, interesting and current - such that members will want to return to it. In the case of the test site for this thesis, user contribution in the form of adding windsurfing Session Logs is central to the success of the site. This is reflected in point 4 of the 9 *Google Social Design Best Practises* (Appendix C) which states:

> *"Make it Dynamic. Good social applications aren't only static badges of self expression; they dynamically change to provide an interesting experience... the day-to-day changes can help to keep an application interesting and desired over time."*

In other words if there is no reason to keep coming back, then users probably won't.

3.1 RESEARCH AIMS

The problem with online community contribution is that most people are extremely passive when online (Karau & Williams, 2001), where only about 10% are active contributors within the community environment (Joinson, 2002).

How can more of the other 90% be motivated to contribute content?

The focus of this thesis is to motivate information contribution within a self-sustaining social networked environment. ELM has been used as a broad framework inside which Social Proof influences have been utilised in the development of key persuasive features, geared to encourage participation.

After investigating a range of persuasive theories, ELM as a broad framework and Social Proof as a persuasive technique were selected for the development of the website.

3.2 THE TEST SITE

A social networking website was developed to enable members to add locations where windsurfing occurs to a New Zealand map, sailing session information to the locations and images and videos to both. Members were randomly allocated into two streams and shown slightly different interfaces to the site, one stream contained peripheral persuasive elements while the other did not. See Appendix B for full screen shots of both streams of the website.

3.3 THE PARTICIPANTS AND STUDY ETHICS

www.deepfried.tv provided access to its New Zealand member's database for the test purposes of this project. This provided the project with access to a group of individuals known to be active within the windsurfing community with at least some level of computer and internet literacy. There was no obligation to take part in the study.

As the existing users were already members of the *deepfried.tv* website, they were covered by the existing website privacy policy. Due to design logistics, and to remove foreign language variables from the study, only New Zealand members of *www.deepfried.tv* were contacted.

Members were sent an email informing them of the study and inviting them to take part. Only those who agreed to take part were contacted further regarding the study.

If members wished to participate they consented by visiting a website page and agreeing to be involved in the research. A description of the research and a privacy policy was shown on the acceptance page. Any personal information or data, including email addresses, was kept confidential during and after the completion of the project. Periodic updates on the research and status of the tests were sent to users by email if requested.

3.4 THE ELM FRAMEWORK

The design structure was developed based on the ELM framework where peripheral and central routes in the contribution process were identified in Fig 3.1.

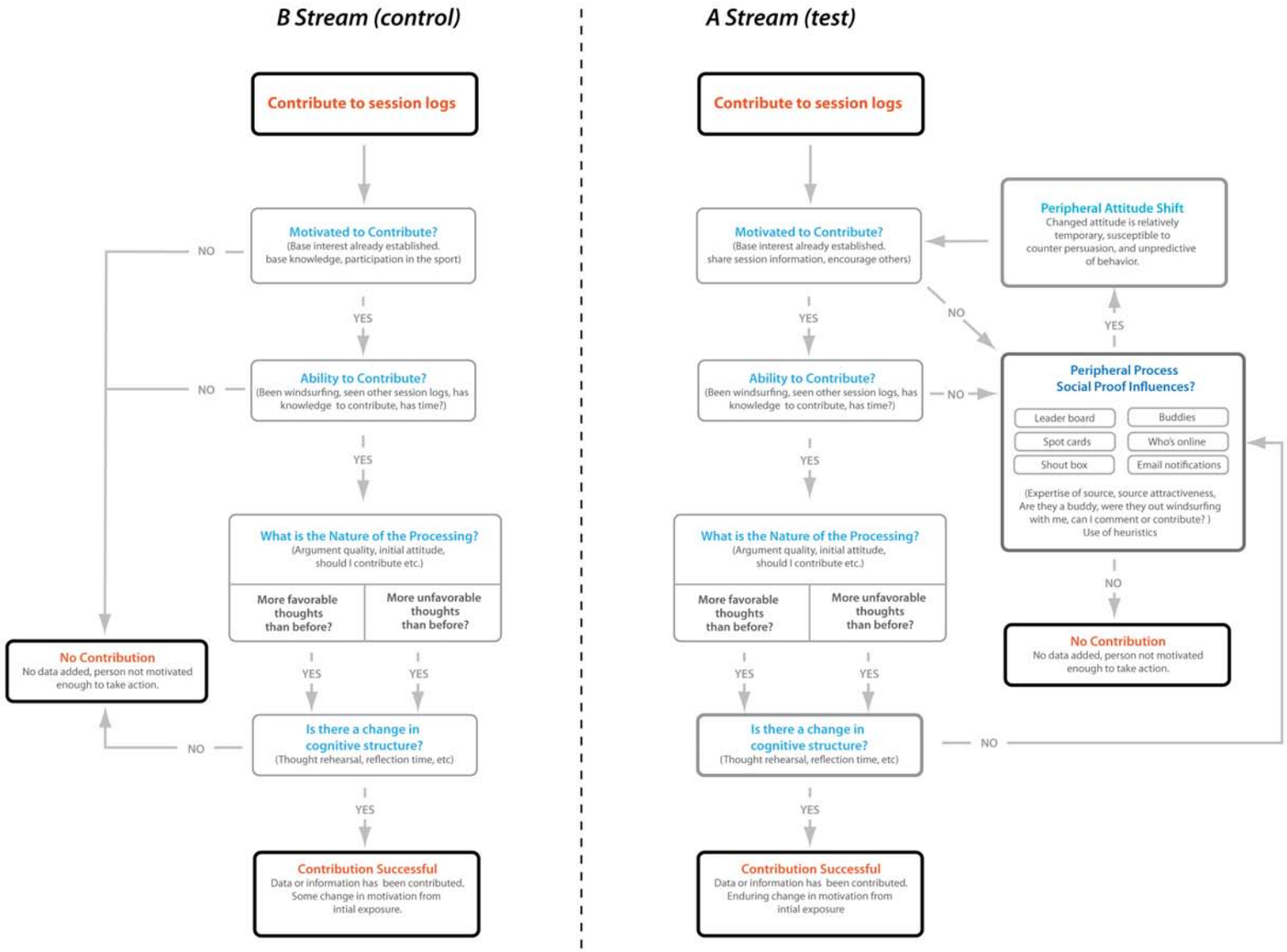


Fig 3.1 The strategic framework used to design the two test streams for this project was based on the Elaboration Likelihood Model. The A stream design included the additional peripheral influence elements that utilised Social Proof as a motivator.

As the participants of both streams were already active online contributors within the windsurfing community, they were considered under the ELM theory to already employ the central route of thinking. They were an interested audience.

Central to both routes is the process of contributing Session Logs, which is vital to the success of the site. The A stream participants were given additional peripheral routes of engagement which the B stream users were not. This thesis investigates whether adding the peripheral route containing elements of Social Proof would increase contribution of the A stream users.

3.5 A/B STREAM ALLOCATION

Using the processes above, a test scenario was developed to investigate the influence of peripheral persuasive design elements on user motivation.

In order to assess the influence of these design elements, participants were split into two streams, the A stream (the test) and the B stream (the control). The first time they accessed the site they were randomly allocated into one of these streams and this information stored in a database. Each time a member visited the site, their stream information was retrieved from the database ensuring that they were always presented the same 'stream dependent' interface.

Each stream was presented with the same 'base' design, with the same look and feel, and the same interface for adding content. However, the A stream design included additional peripheral design elements developed using the techniques of Social Proof.

3.6 THE SEED GROUP

A pool of 30 members with an established history of high contribution to the *deepfried.tv* website was selected as a 'seed group' and invited to join the study ahead of the remaining *deepfried.tv* members. Individuals in this 'seed group' had a proven level of activity on *deepfried.tv* and showed enthusiasm for the sport of windsurfing online. As such they were an ideal group to seed the site with content, thereby 'kick starting' the processes of Social Proof before the remaining members were informed of the site.

100% of this initial 'seed group' joined the study, and they enjoyed one week in the study before the remaining 1200 *deepfried.tv* members were invited to join.

Inviting these 'active' users to join the study first also ensured that there was an even distribution of them between the A and B streams.

3.7 MEASURES

Quantitative research took place throughout the duration of the test schedule. Metrics, website statistics and usage activity was tracked for both streams as the sites were running. This was done through the use of internal proprietary usage statistics, *Google Analytics* and Heat Map tracking.

Qualitative research took place as a balance to the usage statistics in the form of a user survey. The survey was administered after the test schedule had run for 82 days and was done through a 3rd party survey service *www.Surveymonkey.com*.

The survey contained two versions, one for each test stream. The survey for stream A contained extra questions specific to the elements that were being tested. Full survey results can be found in Appendix G.

4.0 THE DESIGN PROCESS

Windsurf sail, from author's collection.

In order to gather the collective knowledge of the community group, Web 2.0 ideologies and interface design conventions were employed to build a social network system that promotes the contribution of information through persuasion techniques.

Based on the ELM framework an A/B test structure was developed. The control B stream relies on pre-existing motivators while the test A stream implements Social Proof as peripheral motivators.

To ensure that any differences in the amount of content added to the site between the two streams was due to the design features seen in the A stream, it was important that all other differences between the streams were kept to a minimum. Therefore the site was designed to be consistent between the streams, giving an almost identical look and performance. The design process common to both streams is discussed in this section.

4.1 THE GRID STRUCTURE

An overall grid design was established throughout the site to provide a consistent look and feel.

Using established web design methods, the main test elements were placed in the prime screen real estate area or in the area 'above the fold'. This space takes up the top half of the page and is the area that is visible without scrolling when the page first loads. Contained in this area is the main navigation, search, the main test elements, the map and the first row of the new content.

The 'test elements' block was the main area that changed out between the page design of both streams.

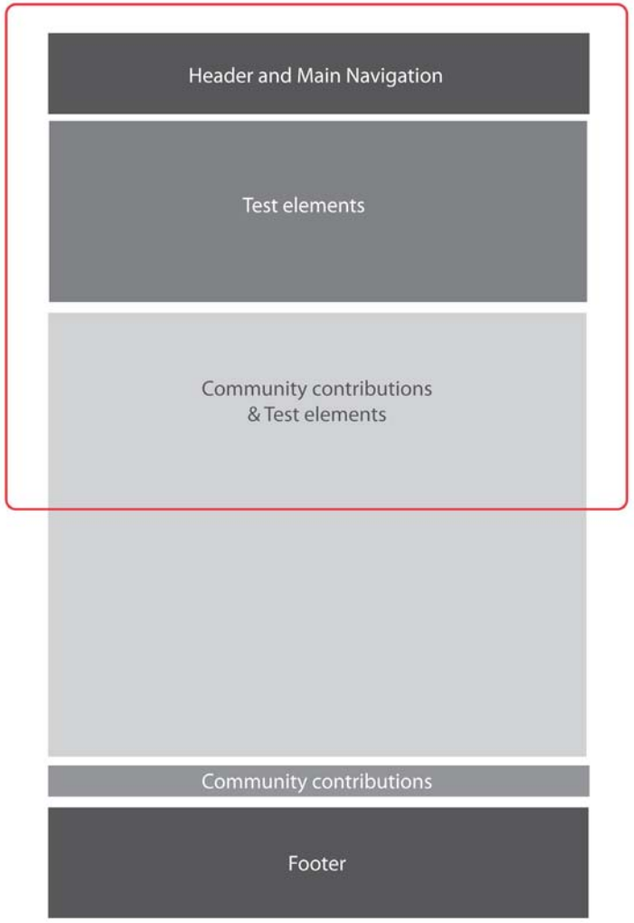


Fig 4.1 The main content for the site was placed in the area 'above the fold'

BLANK BACK OF FOLDOUT I.

FRONT OF FOLDOUT I.
B STREAM HOME PAGE

FRONT OF FOLDOUT 2.
A STREAM HOME PAGE

BLANK BACK OF FOLDOUT 2.

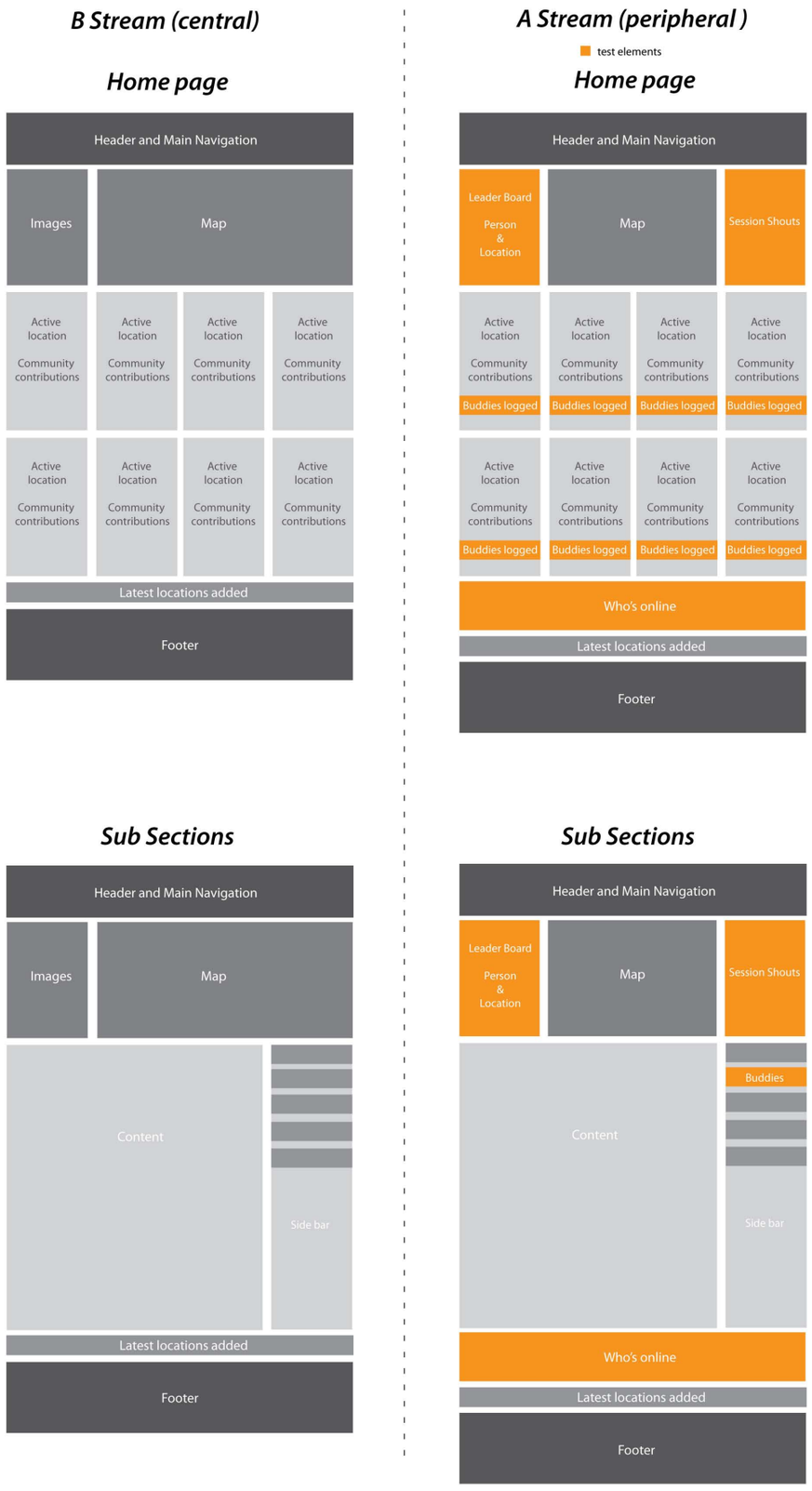


Fig 4.4 Layout block structure for A/B stream pages. The areas in yellow show the elements only displayed to A stream members.

4.2 WHY USE ROUNDED ELEMENTS?

Throughout the design certain elements feature rounded corners. Generally these are elements that require direct user interaction, such as buttons, tabs and side bars.

The default HTML buttons available when developing websites are limited in their styling, as such most browsers display them as square/rectangular buttons.

On a subconscious level we are more attracted to natural looking things, objects that look like they won't hurt us with sharp or hard edges. Ziade (2005) talks of how Apple looked to nature when designing the original iPod and how they wanted it to look like it grew on a tree rather than coming from a factory.

> *"They went to great pains to conceal the machine-like characteristics that would typically hold a device together (screws, etc.). The result is a smoother feel with very few edges or hard angles to be found. This 'smoothness' not only speaks to usability but also fosters an emotional connection with the device. Some of our earliest memories are tied to objects and things that are far less than perfect and rife with right angles. Corners say 'go away.' At the risk of sounding hoaky: smoother, rounder surfaces say 'hold me.'" (Ziade, 2005)*

With this in mind, elements that were designed to be 'touched' or clicked on were given a softer look and feel.

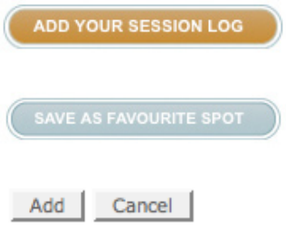


Fig 4.5 Buttons that perform a core function critical to the Location and Session Log functions use rounded corners and subtle shading on the fill colours, this creates a softer more organic feeling as opposed to the default 'square' HTML buttons.

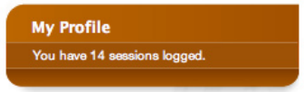


Fig 4.6 Sidebar tab, when closed, features a text based overview of the content enclosed.

Rounded corners give a softer interface feel while still allowing the elements to conform to the grid structure.

Fig 4.7 The sidebar tab, when opened, still features the text based overview of the content enclosed.

The sidebar tab expands when clicked to display the content inside.

The top and bottom elements retain the rounded corners, as do any buttons within the content area.

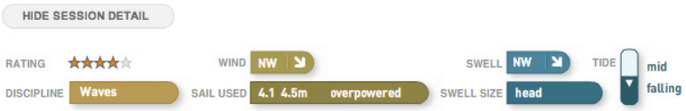


Fig 4.8 Session Log statistics also employ the rounded corner and shaded fill styling.

4.3 ICONS AND PERSONAS

The self-selected icon cards for each member held a visual indicator of how many sessions they had posted. The session bars are indicated in blocks of five sessions logged and the colour values range from grey for 0-4 sessions, green for 5-9 sessions, yellow for 10-14 sessions, orange for 15-19 sessions and red for 20 or more sessions. Getting 'hotter' the more sessions the user has logged.

Fig 4.9 Again rounded corners were utilised to add a more organic feeling to the icon cards.

The ability to choose one of 256 characters allowed users to personalise their online presence and reflects the suggestion in point 3 of the *9 Google Social Design Best Practices* Enable Self Expression. See Appendix C. The icons were sourced from the *pixeljoint.com* website.

4.4 THE STAR RATING SYSTEM

The rating system used throughout the site is based on stars. The use of the 5 star rating system is well established in the Hotel industry and has been adopted in the interactive environment by the likes of *Amazon*, *Netflix*, *Ebay*, *iTunes* and iPod just to name a few. The 5 star rating system has been so widely used in the interactive environment that it has become the defacto standard for rating items.

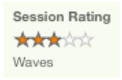


Fig 4.10 Individual Session Log quality rating

Fig 4.11 Location quality collective rating

4.5 COLOUR PALETTE

The colour palette used throughout the site was inspired by the colours within the environment that windsurfing takes place in. The main colours used in the design were taken from the colours of the New Zealand coastline, specifically the sea grasses, seaweeds, water and sky.

All images from author's collection.

Wherever possible, the design attempted to subtly reflect these elements to tie back to the environment and subtly connect with windsurfers on a subconscious and emotional level.

Fig 4.12 The colour palette sourced from the windsurfing environment

All images from author's collection.

4.6 COLOUR CODING

Colour coding has been used throughout the design as a subtle reinforcement of the functions within the website.

Orange was used for activities that were related to tasks or features relevant to an individual, as described below:

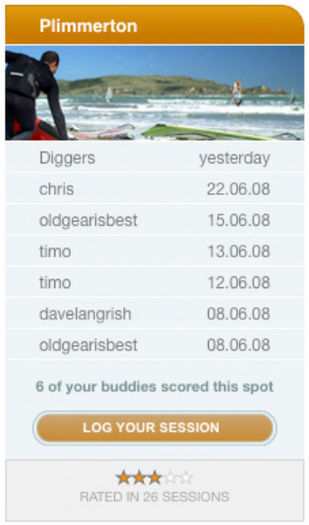


Fig 4.13 Favourite Location Cards. If a member indicated that this location was one of their favourites the card would be displayed in orange.

Once set as a favourite location the Card would display a button to 'Log Your Session' also in orange.

Fig 4.14 'Add Your Session Log' buttons displayed in orange in both streams.

Fig 4.15 The Leader Board displayed to A stream members.

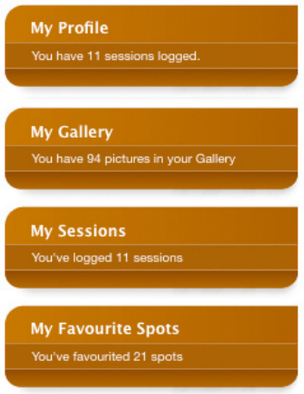


Fig 4.16 Sidebar Sub Navigation tabs in the 'My Sessions' page and 'My Gallery' page.

The colour Blue was used in objects relating to location activities. As displayed in Figs 4.15–4.19:

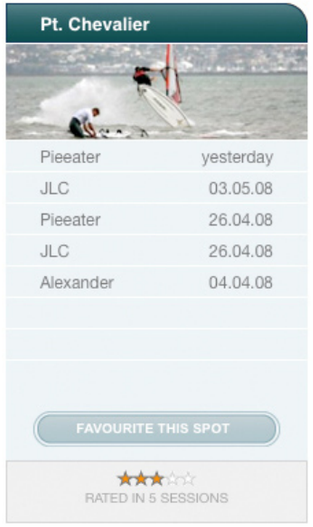


*Fig 4.17 Location Cards displayed if a member **had not** indicated that the location was one of their favourites.*

The 'Add Your Session' button is replaced with 'Favourite This Spot'.

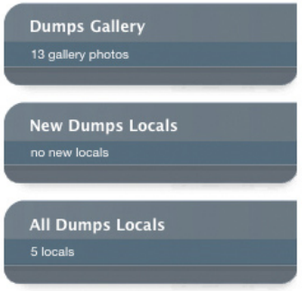


Fig 4.18 Sidebar sub navigation tabs when viewing the sessions logged for a location or gallery of a location.

Fig 4.19 'Save As Favourite Spot' buttons displayed in both streams.

Green was used when viewing the profile of another site member.

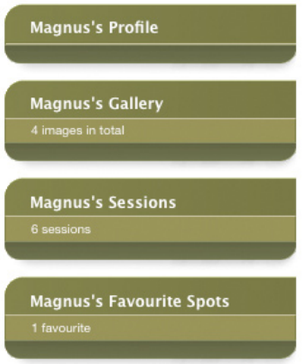


Fig 4.20 Sidebar Sub Navigation tabs when viewing the Session Log or gallery of another site member.

Other functions within the site used three levels of communication to explain the purpose of the button, these were colour, image and text. Within the use of colour in the button system there are also three further levels, red, green and yellow which refer to basic semiotic principle of "codes without articulations" as outlined by Noth (1990) in the *Handbook of Semiotics* (p. 215).

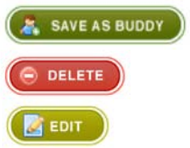


Fig 4.21 The function of the buttons can be inferred by the colour, image and text.

4.7 LANGUAGE AND TONE

The tone and language used in certain places throughout the site has been made more conversational where possible. As identified by Kathy Sierra (2005), conversational language can communicate more effectively than formal language. As a result an attempt was made to inject a less formal tone of language in areas that require greater attention from the user.

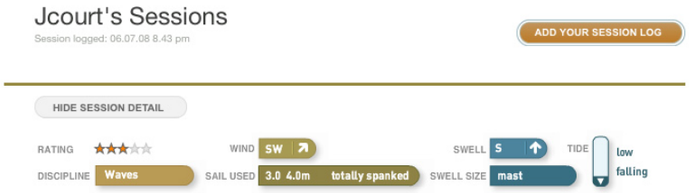


Fig 4.22 Session Log statistics showing language targeted to the community group.

The term 'session' comes from the vernacular used within the community group. A session is used to describe a time when a person goes out windsurfing.

> *"This was my first session at Sandy Point on completely new equipment and I'm stoked. I've been dabbling with speed on my fast slalom board and I haven't ..." (deepfried.tv, 2008)*

Other terms used such as 'totally spanked' refer to going out windsurfing in hugely over powering winds, doing so often sees the windsurfer quickly return to shore to await a lull in the wind – to be 'spanked and sent packing'. The word 'spot' has been used as an alternative to location, for example the term 'spot x' is often used for a secret location or one without a name.

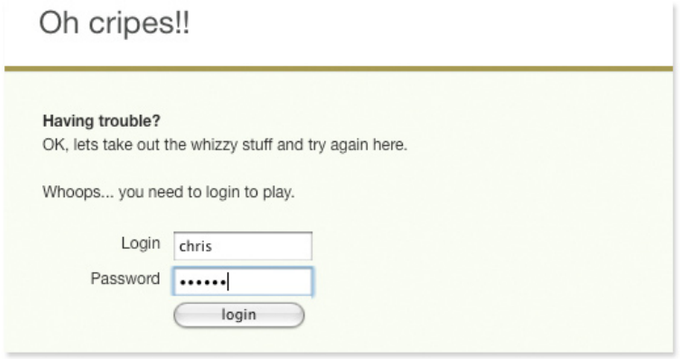


Fig 4.23 An alternative sign up screen for when members were having problems with the modal login window in the main site design. Conversational language is used to make the member feel at ease.

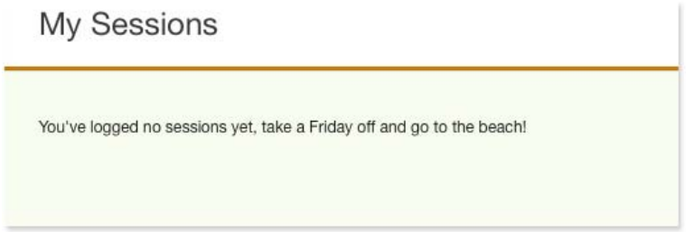


Fig 4.24 Default text for a members Session Log page when they hadn't yet contributed a Session Log.

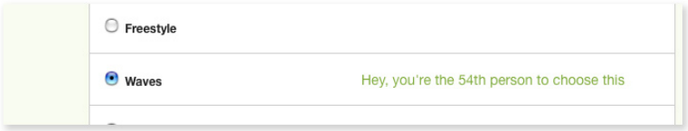


Fig 4.25 Text was used in the profile set up page and lets a member know how many other members have chosen the same discipline option.

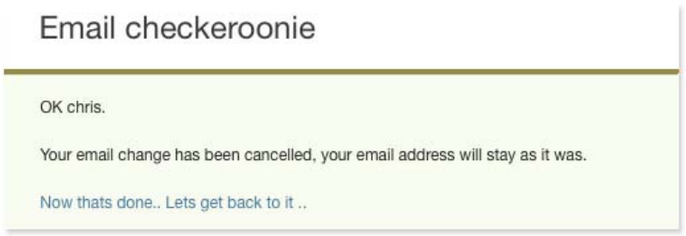


Fig 4.26 A response message to a change of email address in a members account.

Fig 4.27 The login modal window that appears once a person has logged out of the site also uses a casual tone.

Fig 4.28 The button for when requirements for a content adding process have been completed – in place of the more common 'OK' or 'Submit' button text.

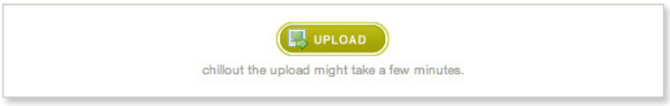


Fig 4.29 Text used to inform about the image upload process.

4.8 THE CONTRIBUTION PROCESS - ADDING A SESSION LOG

To encourage contribution, the site was designed with multiple access points to add a Session Log, all of which were available to both streams identically. The Home page, the Favourite Spot Card, the Location page, the Gallery pages and the Session Log pages all had button links to 'Add Session Logs' (Fig 4.30). In all there were eight buttons throughout the site that took users to the 'Add Session Logs' page. All buttons for this process were coloured and styled in the same way across the streams. In addition to this the A stream had another set of access points through email notifications.

Adding a Session Log was the crucial step in the contribution process, so this page needed to be not only easy to access, but also as easy to use as possible. To help with this process 'intelligent defaults' were designed into the features and functionality where possible (Hoekman, 2007, pp.130-133).

For example, dates would default to the current date. The location lists would display the users favourite locations first, and as there was a high likelihood the user returned to the same spots, the last used location was set as the default.

Another interface technique used was that of progressive disclosure (Hoekman, 2007). Here the input form is broken into 3 sections that contain a selection of information fields (see Fig 4.31). As each section is completed, the following section automatically appears helping to keep the screen uncluttered and information overload to a minimum.

The design techniques described here were available to both A and B stream members when adding a Session Log.

4.9 DESIGNING THE PERSUASION ELEMENTS FOR THE A STREAM ONLY

With the basic functionality, look and feel of the site developed for both streams, the persuasion elements displayed only to the A stream had to be designed. This design process included in-depth iterative cycles to develop technical, usability and design wire frames for the core and peripheral Social Proof features. See Appendix A for details.

The test elements described below have been developed around the principles of Social Proof. By increasing the presence of cues from other community members, the expectation is that these elements would provide a peripheral cognitive trigger motivating individual A stream members to contribute more data than their B stream counterparts.

Most of these persuasion elements were placed on the home page and in the test elements block in the prime screen real-estate area at the top of the screen. The test elements block was then displayed consistently in all main sections throughout the site.

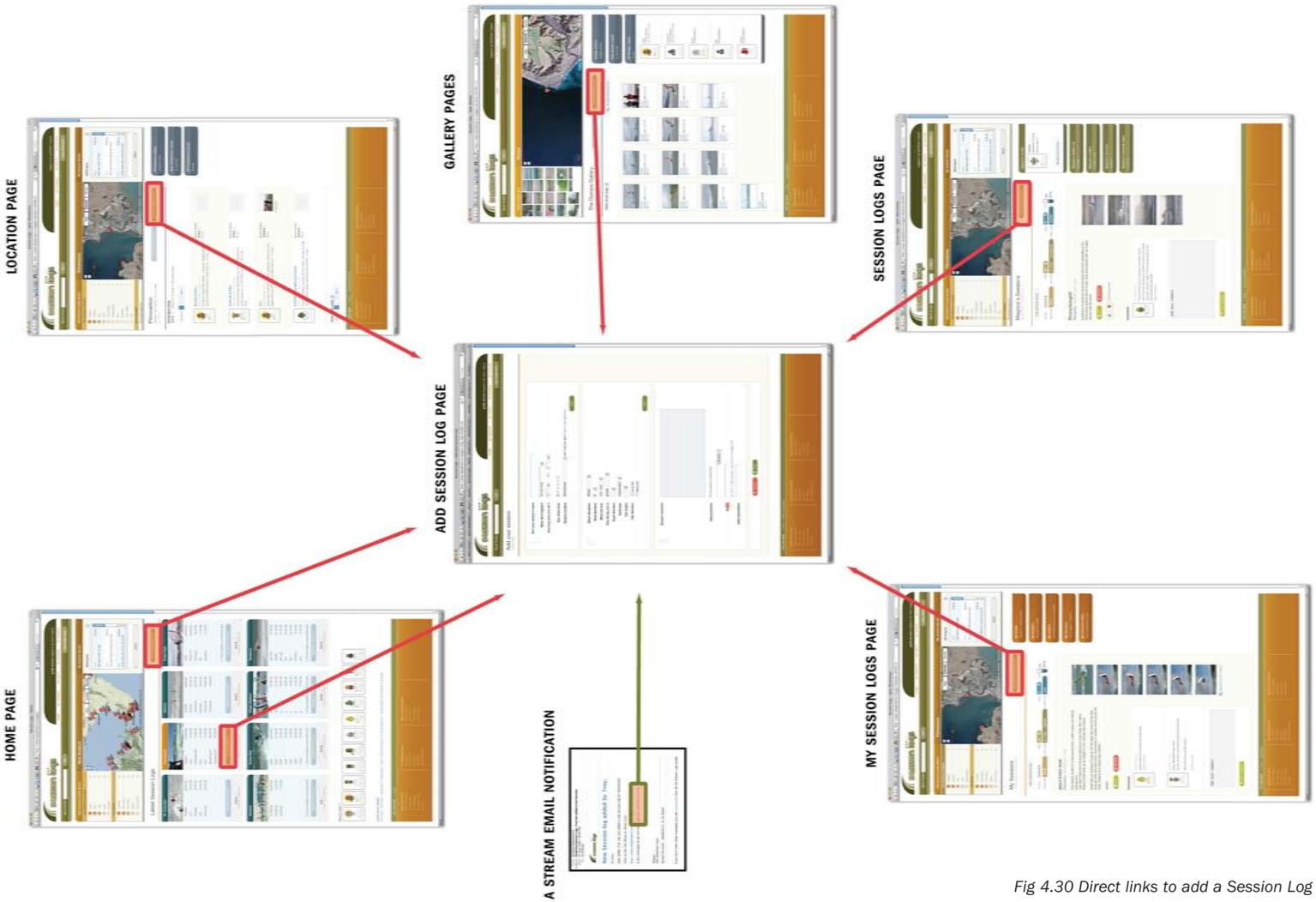


Fig 4.30 Direct links to add a Session Log

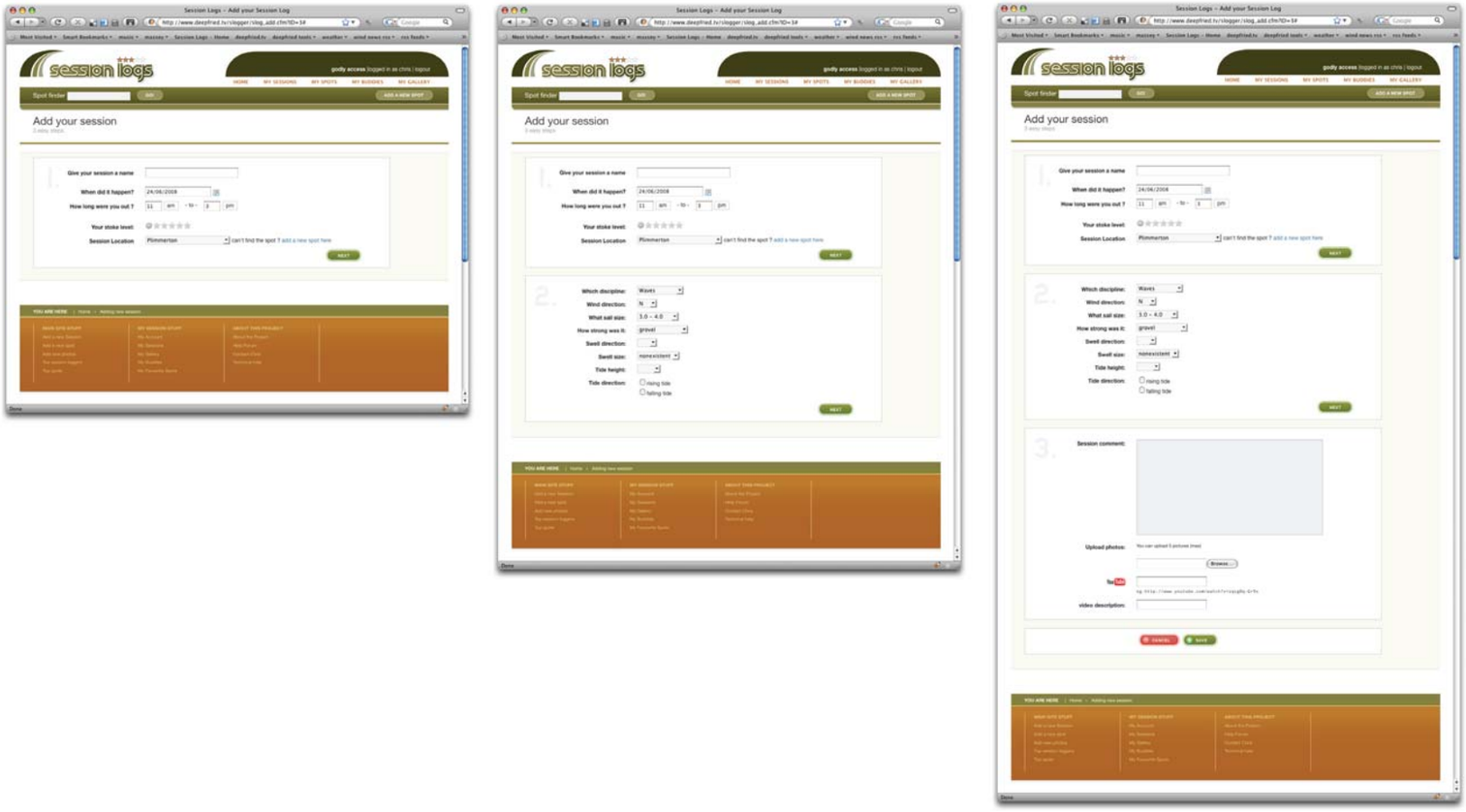


Fig 4.31 The progressive disclosure of the Add Session Log form.

The form is broken into chunks of 'like' information starting with:
1. General Session information, date, time, location, overall quality rating.
2. Conditions data
3. Commentary, personal comment, images or video.

4.10 THE BUDDY SYSTEM

To enhance the community presence on the site for A stream members, they were provided with a 'Buddy System' which allowed them to tag other site members as someone of interest.

When an A stream member wrote a new session log, an email was sent to all their A stream buddies informing them of the new content. In the side bar, A stream users had an additional block listing all their buddies and providing fast navigation to their buddies' Session Logs through links in the side bar. The A stream members also had access to a buddy management system which allowed them to view all the members on the site and send buddy requests to other site members.

Buddies could be requested by A stream members throughout the site to facilitate the buddy making process.

This functionality was included in the site to enhance the visibility of other members and their activity, central to the principles of Social Proof.

...going along with a belief or behaviour because it looks like many others are doing the same thing. *(Hamilton, 2007)*

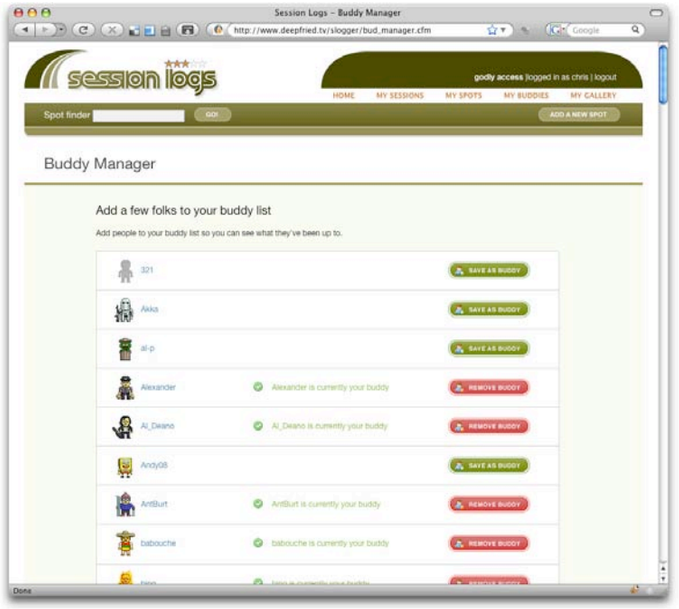


Fig 4.32 The Buddy Manager.

Plimmerton Beach, water based photography from author's collection.

4.11 THE PERSUASIVE ELEMENTS

A stream view of the website home page with the features visible to A stream users only highlighted is illustrated in Fig 4.35.

The home page is the best page to see all of the persuasion elements in one place, as it was designed to be the entry point of the site and displays an overview of the latest content.

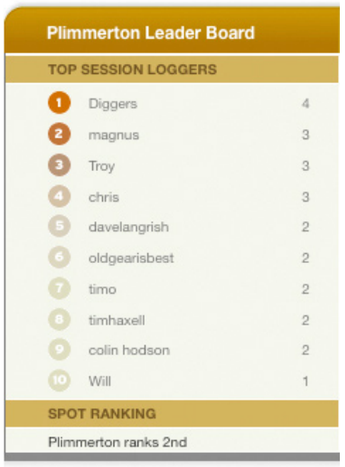
Each element has been designed with the influences of Social Proof in mind. The site has also been designed with progressive disclosure of social comparison in mind.

4.11.1 THE LEADER BOARD

The leader board (Fig 4.33 & 4.34) displays a ranking of site members based solely on their contribution of Session Logs. As members add sessions the site keeps track of how many sessions they have added overall as well as for each location. In doing so, it sets up a competition of sorts where there is recognised proof that others have been contributing content. This in essence is Social Learning in action – providing A stream users with a means of observing others adding Session Logs and being rewarded for it.

When a member sees themselves on the leader board the influences of Social Comparison come into effect – how do they compare to others?

1 *Fig 4.33 The top five session loggers of the entire site are displayed on the home page.*



1 *Fig 4.34 This increases to the top ten session loggers of a location when viewing the location page*

FOLDOUT 3
PERSUASIVE ELEMENTS ON HOME PAGE
FIG 4.35

BLANK BACK OF FOLDOUT 3

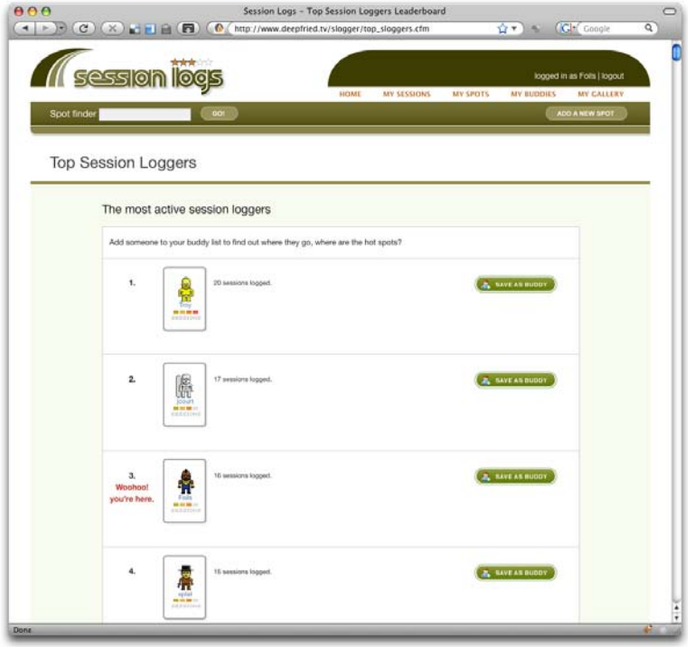


Fig 4.36 Linking from the Leader Board, the Top Session Loggers page provides an opportunity to see a member's standing within the whole community.

So Social Learning is the initial motivator in establishing the social norm of the site – adding content. Once a member has started adding content, the influences of Social Comparison begin to have more effect as their ranking within the site increases.

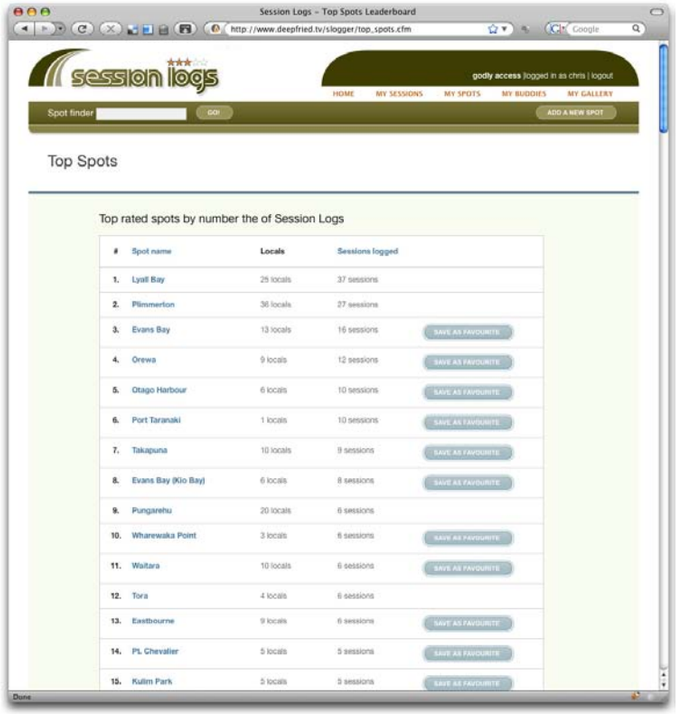
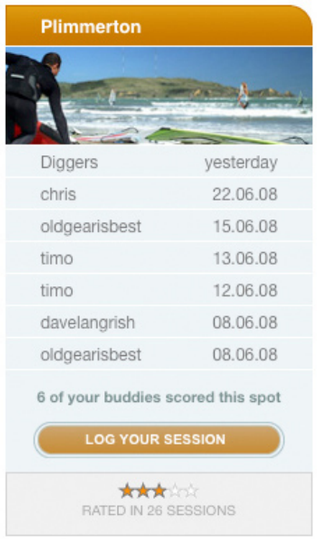


Fig 4.37 The Leader board, Top Session Logger page and Top Spot page were available only to the A Stream members.

The top spots page has a list of all the locations in the website ranked by the number of sessions logged at each location. This sets up influences of Social Comparison at a community level, playing on the local pride of members as a whole. They want their spot to be seen in a positive light – popular, a great place.

2 *Fig 4.38 Session shout box*



3 *Fig 4.39 Buddies on the location card*

4.11.2 THE SESSION SHOUTS

The Session Shout Box (Fig 4.38), visible in the A stream only, is designed to offer communications between members before they go out windsurfing.

It offers a higher level of proof of activity (Social Facilitation) by enabling live conversations with other site members to organise sessions or to leave messages for others. The posts in this area only last for 24hours, so are relevant only to the activity of that day.

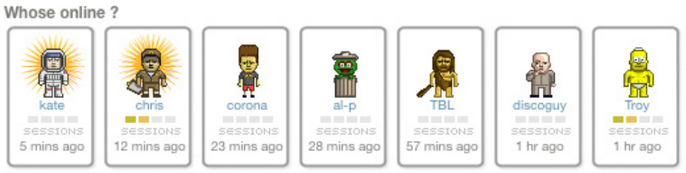
4.11.3 BUDDIES ON A LOCATION CARD ON THE HOME PAGE

This simple line of text "6 of your buddies scored this spot" lets a member know how many of their buddies have had a session at this location in the last seven days (Fig 4.39). While not an immediate indication of how many have contributed today, it does give an indication of social activity over a medium time period.

4.11.4 WHO'S ONLINE

While members may not be contributing content they might still be visiting the site. This small feature (Fig 4.40) allows all A stream users to see who has been on the site and when, even if they aren't contributing. It also opens

4 *Fig 4.40 Who's online bar*



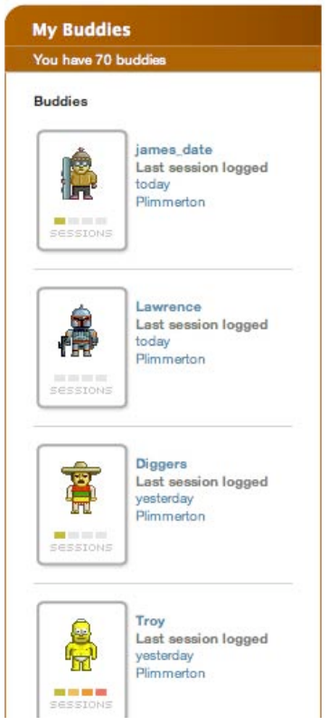
FOLDOUT 4
PERSUASIVE ELEMENTS ON SLOG PAGE
FIG 4.41

BLANK BACK OF FOLDOUT 4

up the opportunity for live session shouts. Through the influences of Social Facilitation this feature allows all members to see a real-time indication of the presence of others.

4.11.5 THE BUDDIES SIDE BAR

The side bar navigation for the A stream group included an extra tab – the Buddies tab (Fig 4.42). Within this tab a member can view all their own buddies and when looking at another member's page they can view all their buddies too.



5 *Fig 4.42 Personal buddies list in the side bar*

The buddy side bar element was designed to reinforce the influences of Social Facilitation by acknowledging and strengthening the social connection between members of the site.

Next to each buddy icon are details of the buddy's most recent activity on the site. Links to the buddy's last session log and to the last sailed location provide a shortcut to information on their stated buddies. This gave members of the A stream proof of activity of their close network over an extended period of time as outlined in the concept of the Social Graph. The Social Graph is a representation of our relationships on social networks.

This is important in establishing and reconfirming relationships between like minded people which is integral in the effectiveness of Social Proof (Fogg, 2003, p.198).

Browse the Graph

Exposing the activities of friends is one method among many for passively browsing the social graph. Users are often interested in low-effort interactions like viewing a friend's most recent activity, comparing content and choices, and indirectly interacting through their own activity. In supporting this style of interactions, it's essential to make it easy to browse what friends are doing.

Point 6 in 9 Google Social Design Best Practises (Appendix C)

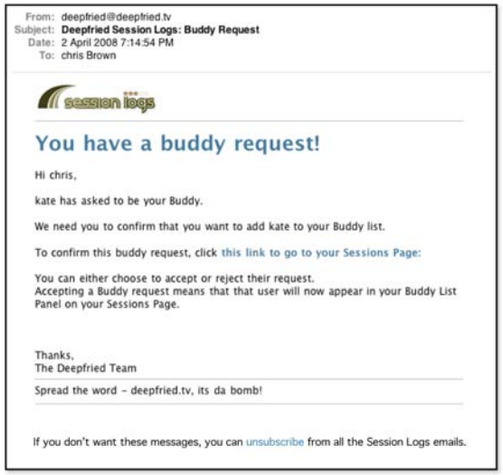
4.11.6 EMAIL NOTIFICATIONS

The final persuasion element is the use of emails to notify only A stream members of activity on the site by their buddies. These were used as 'long range' influences for when people weren't physically on the site. The email notification was designed to reach out and draw users back into activities within the site. This extends the range of Social Learning by providing evidence to off-site members of the target behaviour being performed by their peers.

All these emails contained links directly back to the website to facilitate the return of the email recipient.

4.11.6.1 BUDDY NOTIFICATION EMAILS

Buddy notification emails were sent out whenever another member of the site had added a user as their buddy. It was designed as acknowledgement of social connection and let members follow, or be alerted to, each other's activities. As such it was a primary tool in building local networks.


From: deepfried@deepfried.tv
Subject: **Deepfried Session Logs: Buddy Request**
Date: 2 April 2008 7:14:54 PM
To: chris Brown

session logs

You have a buddy request!

Hi chris,

kate has asked to be your Buddy.

We need you to confirm that you want to add kate to your Buddy list.

To confirm this buddy request, click this link to go to your Sessions Page:

You can either choose to accept or reject their request.
Accepting a Buddy request means that that user will now appear in your Buddy List Panel on your Sessions Page.

Thanks,
The Deepfried Team

Spread the word – deepfried.tv, its da bomb!

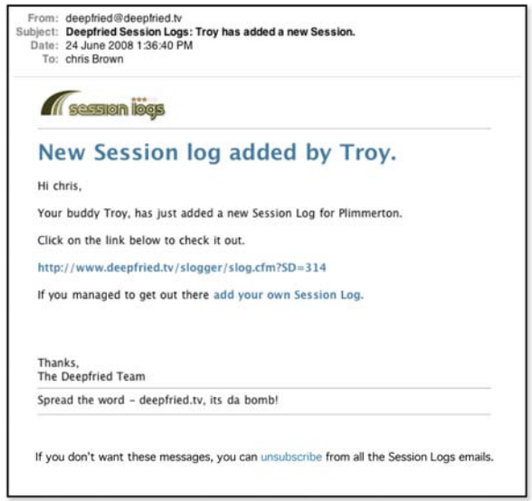
If you don't want these messages, you can unsubscribe from all the Session Logs emails.

Fig 4.43 Buddy request email.

4.11.6.2 SESSION LOG NOTIFICATIONS

Session Log notification emails were sent out to all the buddies in a member's buddy list whenever they added a Session Log. This email was designed to be a prime motivator using the Social Proof influences to trigger three responses:

1. To get members to visit the site and to read the Session Log (which would then display the members name in the 'who's online' bar) .
2. To get the member to possibly comment on the Session Log.
3. To remind the member to add their own Session Log.


From: deepfried@deepfried.tv
Subject: **Deepfried Session Logs: Troy has added a new Session.**
Date: 24 June 2008 1:36:40 PM
To: chris Brown

session logs

New Session log added by Troy.

Hi chris,

Your buddy Troy, has just added a new Session Log for Plimmerton.

Click on the link below to check it out.

http://www.deepfried.tv/slogger/slog.cfm?SD=314

If you managed to get out there add your own Session Log.

Thanks,
The Deepfried Team

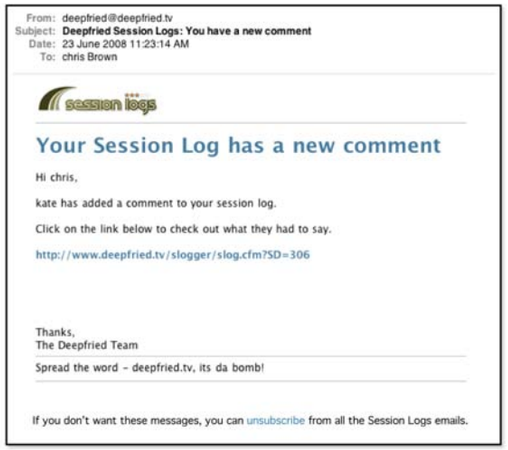
Spread the word – deepfried.tv, its da bomb!

If you don't want these messages, you can unsubscribe from all the Session Logs emails.

Fig 4.44 Buddy Session Log notification.

4.11.6.3 SESSION LOG COMMENT NOTIFICATION.

This email notification was designed as an alert that a message had been left on a members Session Log by another member.


From: deepfried@deepfried.tv
Subject: Deepfried Session Logs: You have a new comment
Date: 23 June 2008 11:23:14 AM
To: chris Brown

session logs

Your Session Log has a new comment

Hi chris,

kate has added a comment to your session log.

Click on the link below to check out what they had to say.

http://www.deepfried.tv/slogger/slog.cfm?SD=306

Thanks,
The Deepfried Team

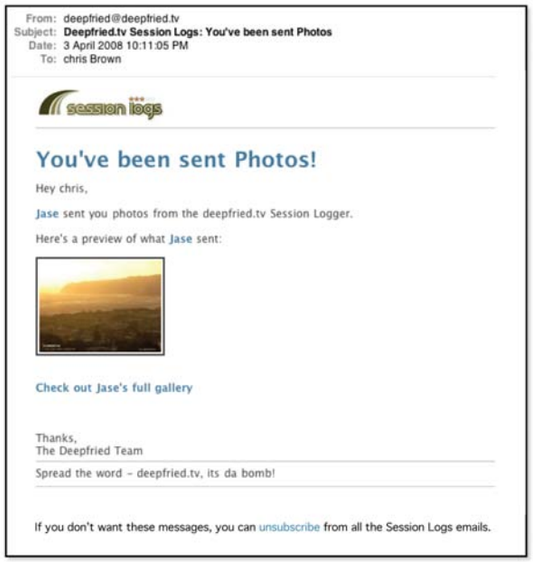
Spread the word - deepfried.tv, its da bomb!

If you don't want these messages, you can unsubscribe from all the Session Logs emails.

Fig 4.45 Session Log Comment notification.

4.11.6.4 YOU'VE BEEN SENT PHOTOS NOTIFICATION.

As it is virtually impossible to take photos of yourself while windsurfing, you are reliant on others doing so. This feature allows members to send each other photos within the site and to give photos context through location, date and subject.


From: deepfried@deepfried.tv
Subject: Deepfried.tv Session Logs: You've been sent Photos
Date: 3 April 2008 10:11:05 PM
To: chris Brown

session logs

You've been sent Photos!

Hey chris,

Jase sent you photos from the deepfried.tv Session Logger.

Here's a preview of what Jase sent:

Check out Jase's full gallery

Thanks,
The Deepfried Team

Spread the word - deepfried.tv, its da bomb!

If you don't want these messages, you can unsubscribe from all the Session Logs emails.

Fig 4.46 You've been sent photos notification.

5.0 RESEARCH FINDINGS

Taranaki Wave Classic 2007, courtesy of William Davenport.

5.1 GATHERING THE DATA

The test ran for 82 days from 11th April through to 25th June 2008. There were a total of 157 *deepfried.tv* members that signed up to be part of the test. 78 members where assigned to the A stream and 79 to the B stream – a near 50:50 split.

The ability of a site member to add a Session Log was highly reliant on their ability to go out windsurfing. Unfortunately, shortly after launch of the site, New Zealand was becalmed for 5 weeks with unseasonably windless weather. This essentially took up nearly half of the 82 day test period. Despite this a total of 253 Sessions were logged in the site.

Information about the activity and content added by both A and B stream members was collected in a number of ways throughout the test period.

Internal site statistics tracked how much and what type of data was contributed by A and B stream members. Information was gathered on how much content was added and of what type by both streams, and on the frequency of visits by members of both streams. Refer to Appendix D for the full set of site statistics.

ClickDensity statistics service was used to gather a visual representation of where the users clicked on a page. From this information a map of click hot spots could be produced for each stream. Information was gathered on each stream as a whole, not on an individual level. Refer to Appendix E for the full set of heat map images.

Click Tracking. Click tracking provides information on how individuals interact with elements within the site and was carried out by the *Google Analytics* service. This technique allowed for specific elements to be tracked and the number of times they were clicked on recorded. Refer to Appendix F for full details.

Survey results. At the conclusion of the test period, all site members were sent an invitation to complete an online survey on their experiences. A survey was set up for both streams using the *www.surveymonkey.com* surveying service. 44 members from each stream completed the surveys and the full survey results are detailed in Appendix G.

5.2 SUMMARY OF THE RESULTS

5.2.1 OVERALL CONTENT CONTRIBUTION

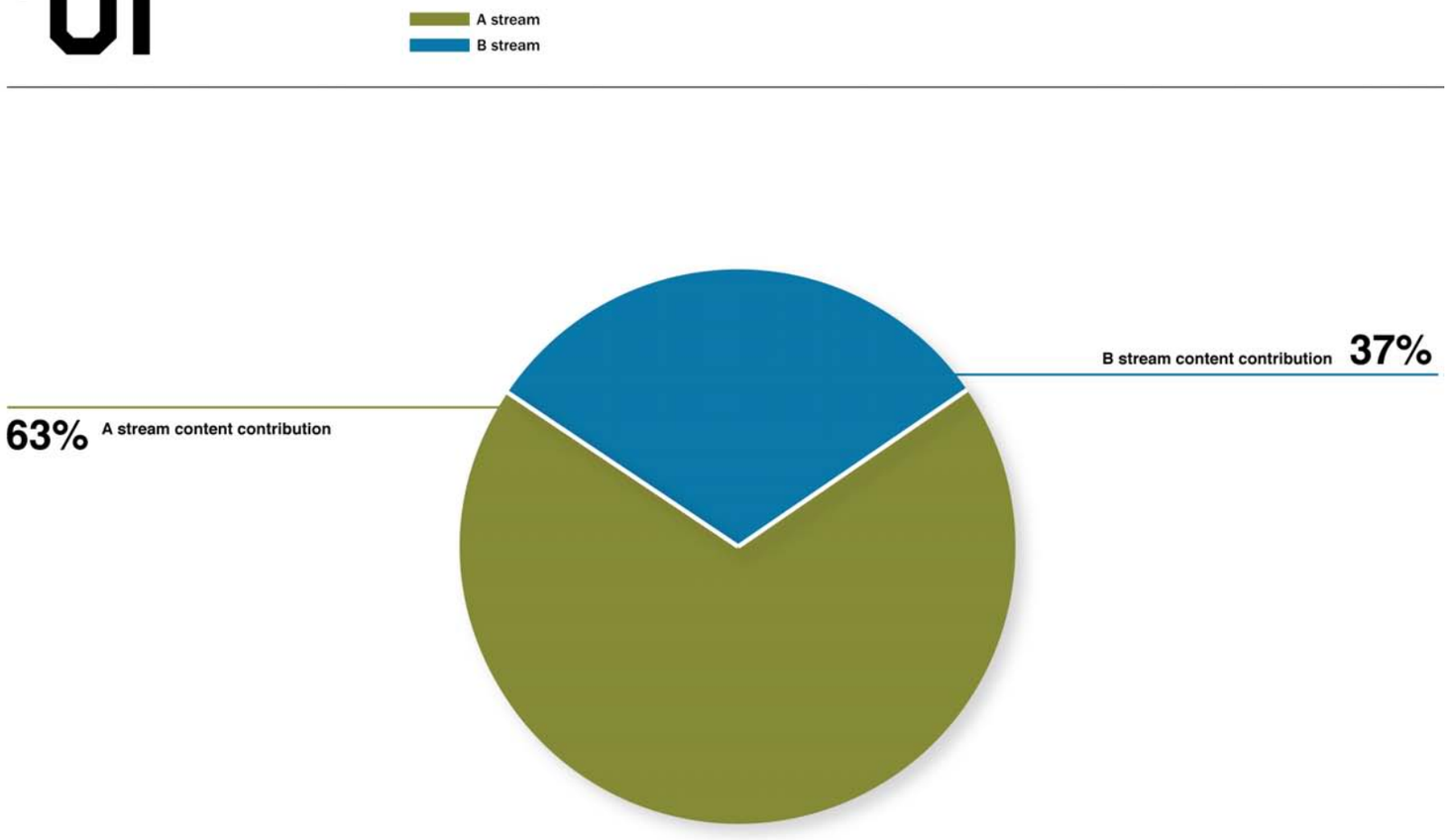
Table 01 shows the split between the A stream and the B stream in the overall content added to the site.

The results clearly show that more content was added by A stream members – who were exposed to the peripheral motivators of Social Proof. A stream members added 63 % of all site content, contributing more content of all types – Session Logs, new locations, comments, images and rating Session Logs of others.

Table 02 shows the percentage of users contributing content in both streams. 60 % of all A stream members contributed content of some kind during the test period, compared to 48% of B stream members.

T01

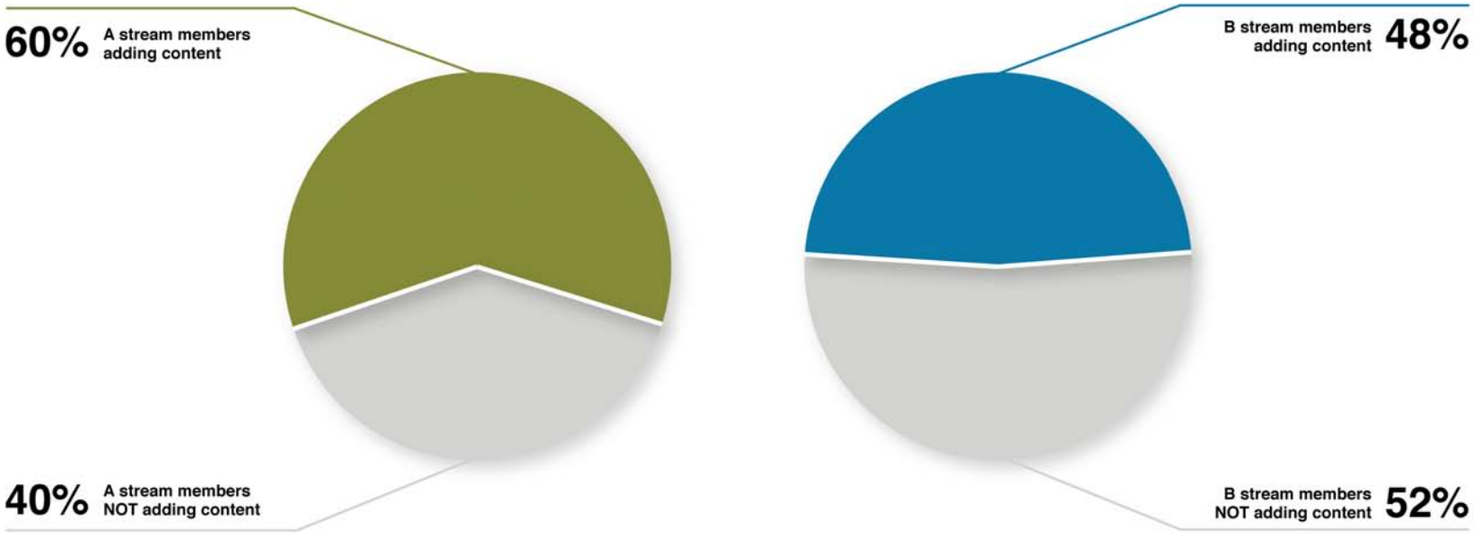
Total content added by test streams



T02

Content contribution conversion by stream members

A stream members adding content
B stream members adding content
A or B stream members not adding content



This result shows that a larger number of B stream members were passive users of the site, reading content but not contributing or not returning to the site. This indicates the A stream members experienced a higher rate of conversion from passive user to active contributor.

Further to this, results showed that of those members actively contributing content to the site, the A stream members were contributing more content per member than in the B stream. Refer to Appendix D for content contributed per active member statistics.

This shows that not only were there more A stream members adding content but that on average they were adding more content per user than was occurring in the B stream.

5.2.2 TRENDS IN CONTENT CONTRIBUTION

Table 03 details the content added by both streams split by type of content contributed.

This shows that the A stream added more content of every type. However, the greatest difference between the content contribution of the two streams was not in the core content – Session Logs and new locations – but in the supplemental content specifically the comments and the ratings.

The relatively small difference in number of sessions logged in each stream could be explained by the fact that both streams were made up of centrally motivated individuals, all being interested in the sport of windsurfing and already active in an online windsurfing community website. This would mean that members of both streams were already highly motivated to add the 'core content' of Session Logs and locations.

Session Logs and locations could be considered 'core content' because the site can't function without them. A windsurfing Session Log can not be added without the location of the session being added first. Other types of content were secondary in function, and the biggest difference between the streams was seen in adding this type of content.

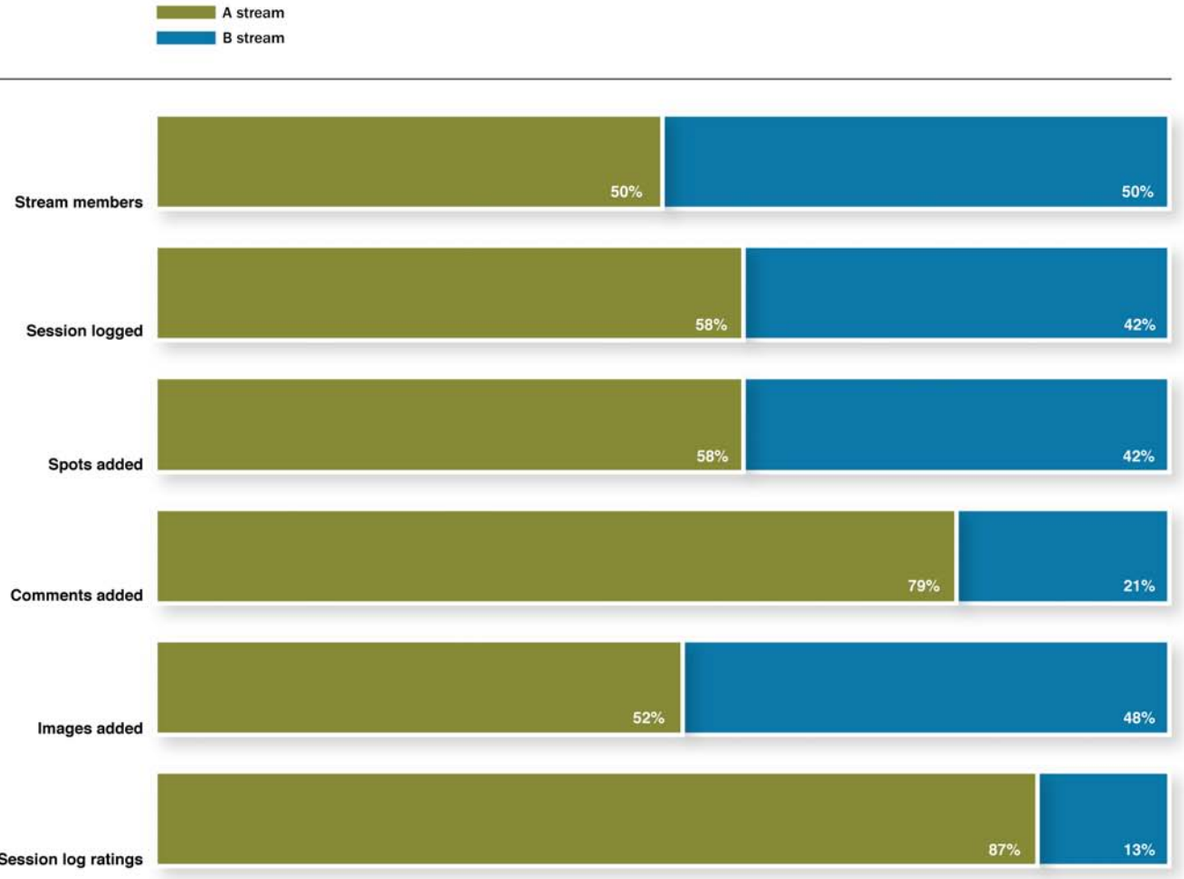
Commenting on and rating another's Session Log was one of the few mechanisms for communication between community members. Both these mechanisms were available to both streams, and both these mechanisms were used far more by the A stream members as is illustrated in Table 04.

This appeared to show a much greater willingness by the A stream members to contribute to the community network environment. Being exposed to the 'Buddy System' increased the A stream members exposure to the presence of others on the site. It also enabled them to create smaller networks within the wider group. This increased familiarity between members appeared to have the effect of encouraging communication between them.

Survey responses further highlight the differences in perceptions between the two streams in regard to the social norms around commenting and general community connectedness.

T03

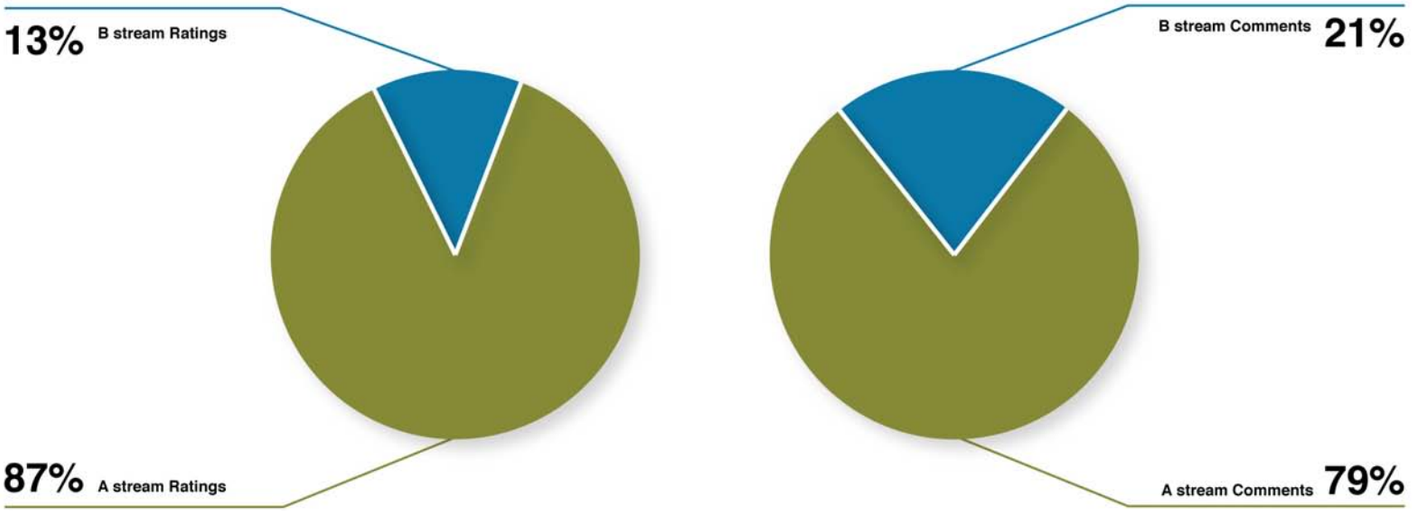
Content types added by test streams



T04

Ratings added by stream. And Comments added by stream

A stream
B stream



Survey Question 16. As you used the site and read other peoples Session Logs, how motivated were you to rate the Log 'Up' or 'Down' and to add a comment to a Log ?

A stream survey comments

"didn't see the need to rate other peoples sessions, though it was interesting to see others comment, I would probably comment on a buddies log from time to time."

"Let other people know that I am actually interested in what they have to say. This might mean they spend more time on the water and generally enhance the sport."

"...Adding comments to others session logs is excellent banter and enhances the windsurf community experience."

"Communication is good :-)"

B stream survey comments

"... I haven't really spent much time on the water with other sailors to rate the sessions or comment on a log, but I would like to comment on sessions and logs. I always txt my friend about his logs, I should comment on the site really, maybe I'm a bit shy online? I always like to read everyone else's comments, especially top sailors, its makes you realise why they are so good seeing how often they get on the water, it definitely motivates me to get out there and sail as often as I can get a pass out! also tempts me when I can not!"

"Enjoyed reading the comments but don't often comment.."

"Might have done if I had been there as well"

61% of all visits to the site were by the A stream members.

5.2.3 RETURN VISITS TO THE SITE OVER TIME

Each day the number of A and B stream members who had visited the site was recorded internally by the website. This was not a count of page views but a daily record of visits to the site. The intention was to use this information to identify whether one stream was returning more than the other, and the results are displayed in Table 05.

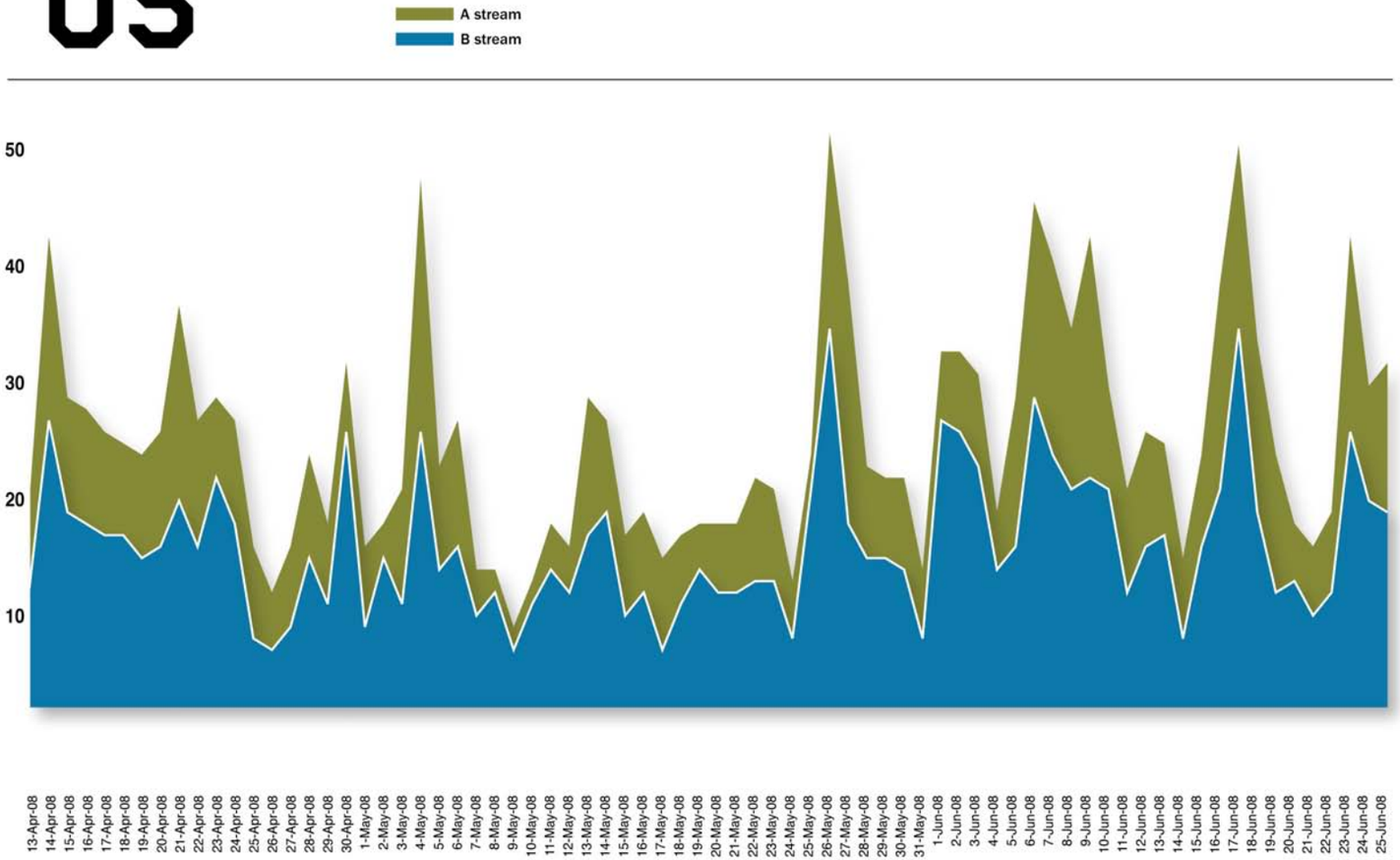
The table shows that consistently more A stream members visited the site than B stream members. Over the entire test period the A stream members visited the site 1056 times while the B stream visited 680 times – resulting in 61% of all visits to the site by the A stream members.

It is interesting to note that both the A and the B streams followed a roughly similar pattern in returning visits to the site. It would be interesting to overlay information on the wind experienced by the country to see how this influenced the pattern of return visits, however gathering this information was not within the scope of this thesis.

As is displayed in Table 05 the A stream experienced much larger peaks, indicating the number of returning members to the site. This could be due to the effect of Session Log emails being sent when A stream members log their sessions, drawing their buddies back to the site.

T05

Daily individual visits by A and B stream members



5.2.4 WHY DID A STREAM MEMBERS ADD MORE CONTENT THAN B STREAM MEMBERS?

There are a number of possible explanations for the increased content added by the A stream.

1. Only the A stream members returned and used the site after initial sign up. This is clearly not the case, as B stream members are shown in the results in Table 5 to consistently return to the site throughout the test period.

2. A stream members were more prolific content contributors to start with. By seeding the experiment, as described earlier, both streams were allocated an equal number of the most prolific and best quality contributors of the *deepfried.tv* site members. After which further allocation of site members to streams was random.

3. The influences of Social Proof provided to only the A stream members through the design elements acting as peripheral motivators, influenced the A stream members to contribute more content to the site. The main difference experienced by the A stream was clearly the addition of key elements designed using the principles of Social Proof, with all other design and functionality of the site kept as consistent as possible between both streams. This is the most likely explanation for the increased content added by the A stream members.

5.3 THE EFFECT OF THE PERIPHERAL ELEMENTS

5.3.1 THE LEADER BOARD

A stream members were asked in the survey whether they felt the Leader Board had encouraged them to add more Session Logs, increase their ranking, increase a location's ranking or compete with others. The results are displayed in the graph for Q 21.

These results show that in general A stream members did not feel they were encouraged to perform any of the first four tasks by the Leader Board.

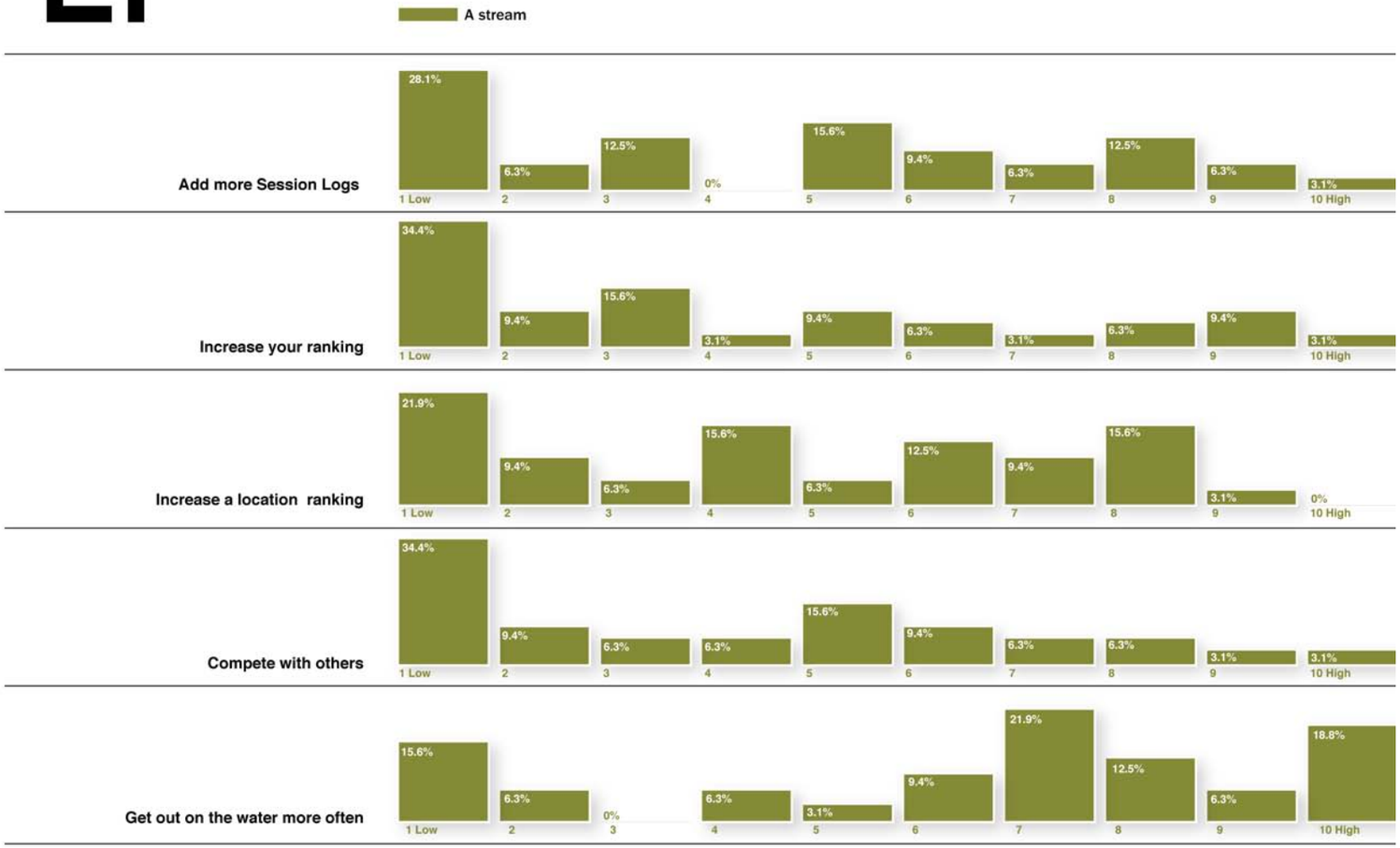
However, when asked to rank whether 'the Leader Board encouraged them to get out on the water more often' from 1 (no encouragement) to 10 (very encouraged), 59.5% of A stream members surveyed indicated a ranking of 7 or higher.

In survey question 11, 42.8% A stream members indicated that once they had been for a windsurf they were motivated (to a ranking of 7 or higher) to then add a Session Log to the site.

These results show that the strongest effect of the Leader Board was to encourage A stream members to go out sailing more through the process of Social Learning, and once a member returned from windsurfing they showed high motivation to then add a session log to the site. This indicates that the Leader Board had a positive influence on content contribution and acted as a strong peripheral motivator.

Q21

In your experience, how much did the Leader Board encourage you to:



Responses to the A stream Survey bear this out.
Q 21. In your experience, how much did the leader board encourage you ...
Comments *:*

> *"Normally this is a big motivation - I want to be getting my fair share of sessions so if I know others are racking them up then it would motivate me to get out there more"*

Q 22. How would you rate your experience of using the Session Logs site?
Comments:

> *"Also motivated me to try and get out more, though the wind has been pretty average unfortunately"*

Q 29. As time went on, did your motivation to add a Session Log change?
Comments:

> *"need to keep in front of troy"*

ClickDensity maps were recorded for the leader boards displayed on the home page and on the location page. It can be seen from these *ClickDensity* maps (Figs 5.1 & 5.2) that A stream users did click on the Leader Boards, and the highest density of click activity is over the highest ranked members. A similar pattern of dense activity can also be seen on the highest ranked spot on the Leader Board.

"Normally this is a big motivation - I want to be getting my fair share of sessions so if I know others are racking them up then it would motivate me to get out there more"

responses to survey question 21 Appendix G

Fig 5.1 ClickDensity map of Home Page Leader Board.

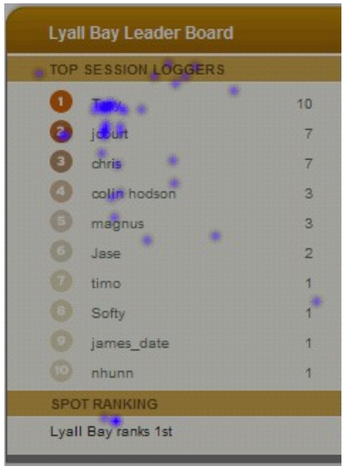


Fig 5. 2 ClickDensity map of the Location Page Leader Board.

Of the two Leader Boards on the Home Page, the Top Session Loggers appear to have the most click activity indicating that there was greater interest in the people on the Leader Board than the locations. This is supported by the Click Tracking results displayed in the Table 06, showing that 'Top Session Loggers' was clicked 109 times, while 'Top Spots' was clicked 71 times.

The peripheral effects of Social Proof in the form of evidence of other members participating in the sport, was motivation for them to get out and participate in the sport themselves, after which they then felt motivated to add a Session Log.

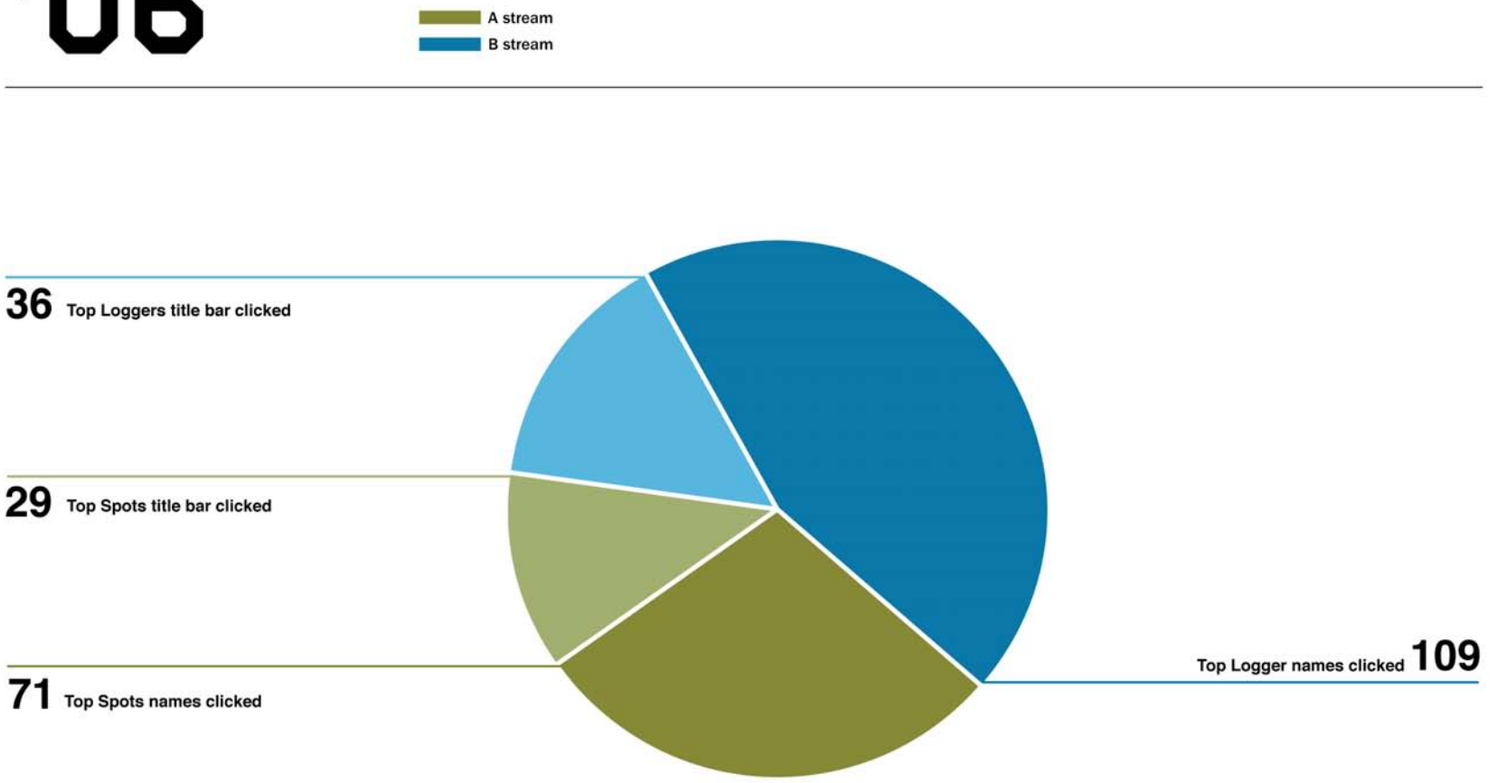
Once this process was initiated members were more likely to repeat the process in the future due to an attitude shift as outlined in the ELM process. After some experience with the process, and when seeing themselves listed in the rankings, the more direct influences of Social Comparison began to come into play.

> *"Damn, had to write a material culture paper about how the objects of windsurfing interact with the sailors... now I'll probably drop off the leader board on slogger for the most sessions, and I was in second equal place too..."*
> *Posted by splat*
>
> *"Splat, just remember that your place on the slogger leader board is not important.....as long as I am at the top!"*
> *Posted by Troy*
>
> *("deepfried.tv forum," 2008)*

"Splat, just remember that your place on the slogger leader board is not important.....as long as I am at the top!" **Posted by Troy.**

T06

Leader Board element clicks



5.3.2 SESSION SHOUT BOX

The Session Shout box didn't appear to be a major contributor to the motivation process running on the site.

Administrators observed days at a time without any shout activity. A total of 8 members posted to the shout box over the test period, posting in total 231 shout messages, averaging 28 shout posts each. For the most part this feature was unused by the site members and seemed to remain a novelty rather an integral part of the site usage.

This could possibly be put down to the inexperience of site members with other wide spread chat or micro blogging tools such as *MSN chat*, *Skype* or *Twitter* as illustrated in Q 03.

Fig 5.3 Session Shout Box

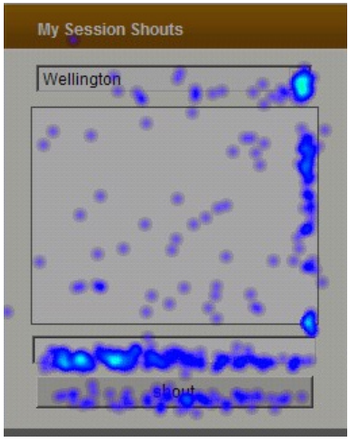


Fig 5.4 Session Shout Box heat map

The heat map for the shout box does show click activity however (Fig 5.4). This could indicate that the shout box was viewed by more members than contributed shout messages.

Low usage could also be due to the design of the shout box, which required user interaction before it started to work and members could see activity. In order to display session shouts, the user had to first select the region of interest from the combo box. If, once they had selected their region, they found no session shouts already in progress, users may have ceased using the shout box as they may not have wanted to be the first to post a shout message.

Q03

Could you indicate how often you use any of the following web services

5.3.3 THE EFFECT OF HAVING BUDDIES

The buddy system was critical to the functionality of a number of peripheral elements on the site, such as email notifications and buddy activity indicators in the side bars and on the location cards.

The site statistics show that during the test period there were 298 buddy requests by 73 A stream members, giving an average of 4.8 buddies per A stream member.

The more buddies an individual member had, the more they experienced the following:

- notification emails of buddy activity
- the appearance of the buddy specific information on the location cards
- viewing their own icon in the buddy list of another member
- the benefits of the buddy sidebar shortcuts
- the greater the feeling of connectedness to the social network group.

As a result, members with more buddies had greater exposure to the influences of Social Proof.

Survey Q 29. As time went on, did your motivation to add a Session Log change?
A stream comment:

> *"buddy's adding sessions encouraged me too, and wanted to let everyone know how my session was"*

The top session loggers appeared to be the most 'popular' in terms of the number of buddies they had. Of the five most 'popular' members, four of them were the overall top session loggers for the site. Having active session loggers with large numbers of buddies had the effect of increasing the overall number of session log notification emails being generated by the site.

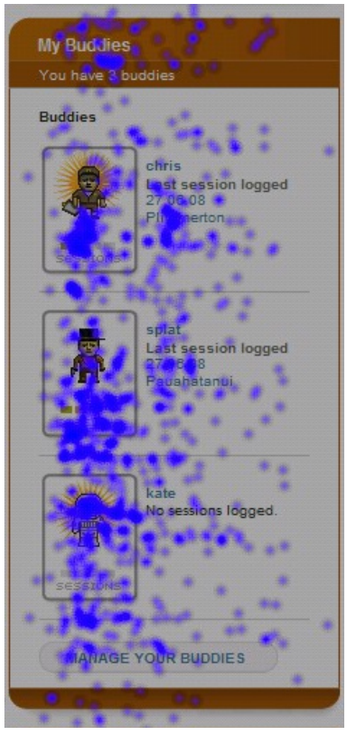


Fig 5.5 Buddy side bar heat map.

The heat maps showed dense click activity on these buddy side bars indicating a strong interest in the activity of the closer social group (Fig 5.5).

5.3.3.1 DID HAVING BUDDIES INCREASE FEELINGS OF CONNECTEDNESS ?

In both surveys, members were asked about their feeling of connectedness both locally and nationally, before, during and after their involvement in the site.

As is illustrated in Q 07, Q 09 and Q 23, both streams reported increased feelings of connectedness within the windsurfing community as a result of using the site.

Survey Q 22. Thinking back, what elements attracted you back to the Session Logs site?
A stream comment

> *"feeling of connectivity with the local/national windsurf community. Quite often don't' get to talk to people at beach because their leave pass expires and they rush home. Session logs provides chance for that after session chat over a virtual beer."*

"...Session logs provides chance for that after session chat over a virtual beer."
"Good to come home from a sess and see who else around the country scored."
"To actually record the feeling that you get when you sail so you can remember the epic sessions."

responses to survey question 27 Appendix G

This unexpected result could be down to the level of need for this type of site by the windsurfing community and to the site members overall enthusiasm for the project as a whole. It could also be due to the influence of Social Facilitation elements present within both the A and the B streams.

In both streams the spot cards provided evidence of the presence of others and of their activities, and the session rating bars under the user icons could have provided an influence of Social Comparison for both site members. In hind sight, the user icon rating bars could have been removed from the B stream design to remove their influence and clarify results.

5.3.3.2 BUDDY EMAILS

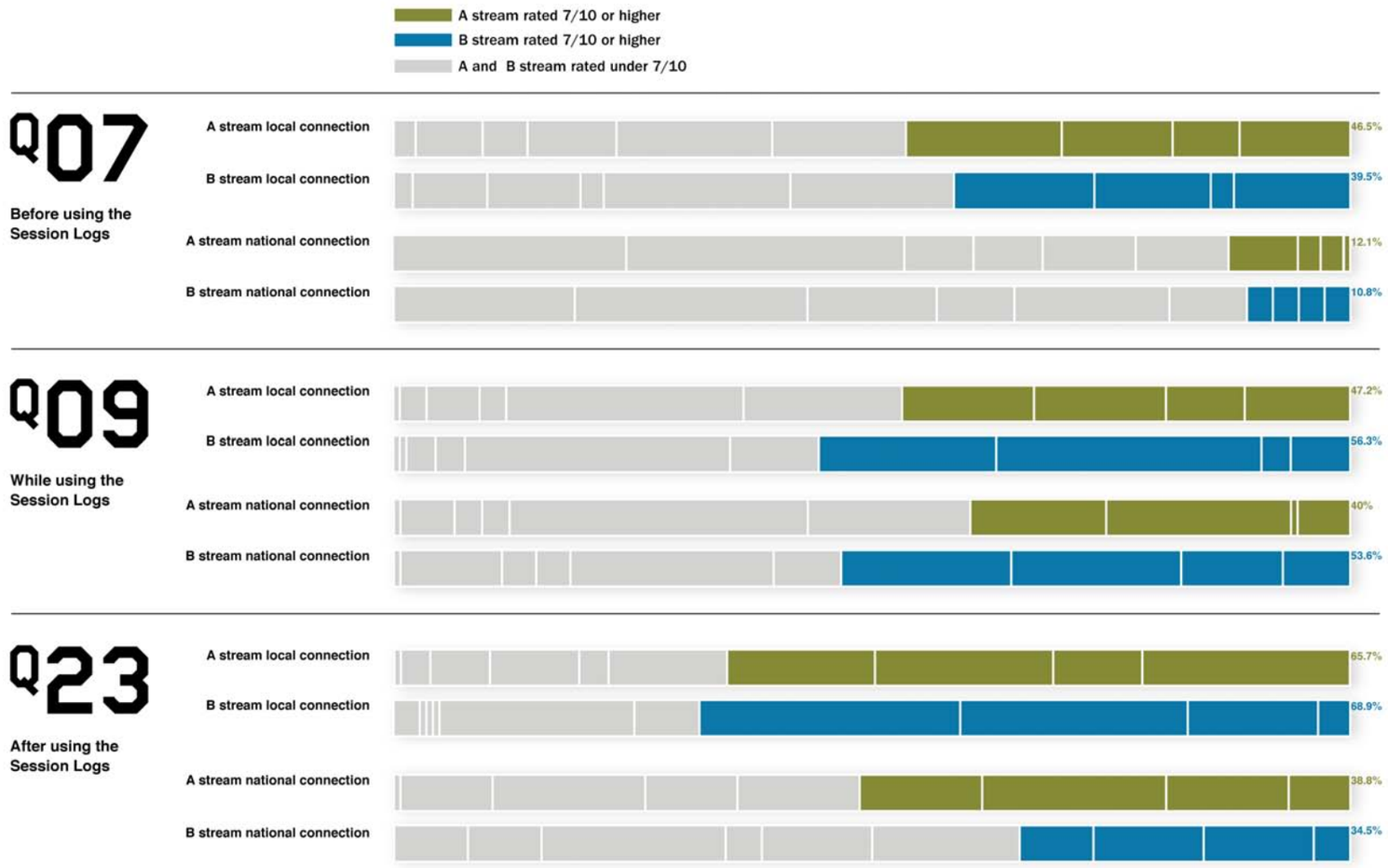
Question 20 of the A stream survey asked "When you received a buddy log email notification, how motivated were you to perform certain actions within the site." Those surveyed were asked to rank their responses from 1 (low motivation) to 10 (high motivation).

A stream members indicated an increase in motivation (to a rating of 7 or higher) as follows:

63.2 % more motivated to view the session log of a buddy
51.6 % more motivated to go windsurfing so they could add their own log
40 % more motivated to add their own session log

Further to this, 53.1 % of A stream members surveyed indicated that Buddy request notification emails influenced them in returning to the site.

Feeling of connection within the community



From these results it can be seen that while they did not having a direct influence on motivating contribution to the site, the buddy lists did act as peripheral motivators, in that they provided mechanisms to display evidence, or Social Proof, of activity. The buddy lists enabled members to make connections both within the site and externally through the email notifications that facilitated further contribution.

5.3.4 EMAIL FEATURES

In the A stream survey, users were asked whether receiving email notifications was a strong influence in them returning to the site.

The results are displayed in Q 27 graph which shows that members identified emails as strong influences in returning to the website.

While the email notifications didn't reach out to the wider community, they were used to target smaller groups in order to influence and encourage further participation on a personal level. Through email notifications, these smaller community networks were strengthened and the proof of social activity within these groups highlighted.

The key to this technique was the fact that close peer activity could be witnessed beyond the boundaries of the website. Once drawn back to the site by the evidence of this activity, the other persuasive influences could take over and encourage further content contribution.

Figs 5.6 and 5.7 overleaf allow comparison of the click density between the A stream and B stream on the Session Logs page. This indicates greater viewing activity by the A stream than the B stream.

This could be due simply to the greater number of returning A stream members to the site. It could also be due, at least in part, to A stream members being able to access this page directly through email notifications – a route not available to the B stream members. Unfortunately the statistics weren't configured for gathering this information

"buddy's adding sessions encouraged me to, and wanted to let everyone know how my session was"

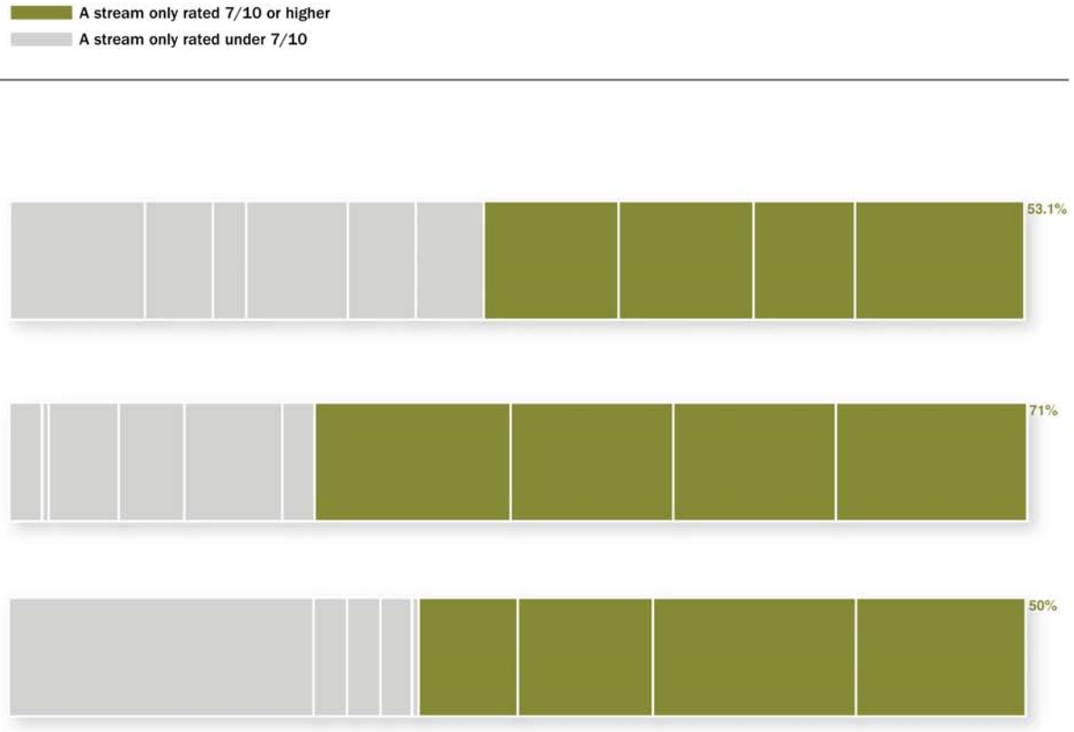
response to survey question 29 Appendix G

:..I used the site whenever I had a session to log, or got an update.."

response to survey question 32 Appendix G

Q27

How did receiving the following emails influence you in returning to the site



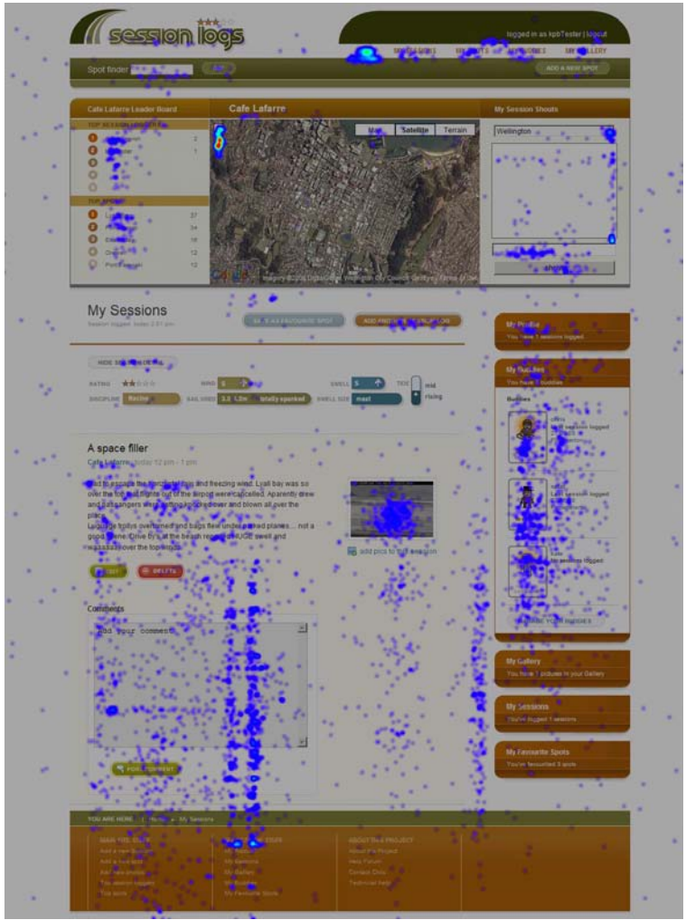


Fig 5.6 Heat map of A stream Session Logs page

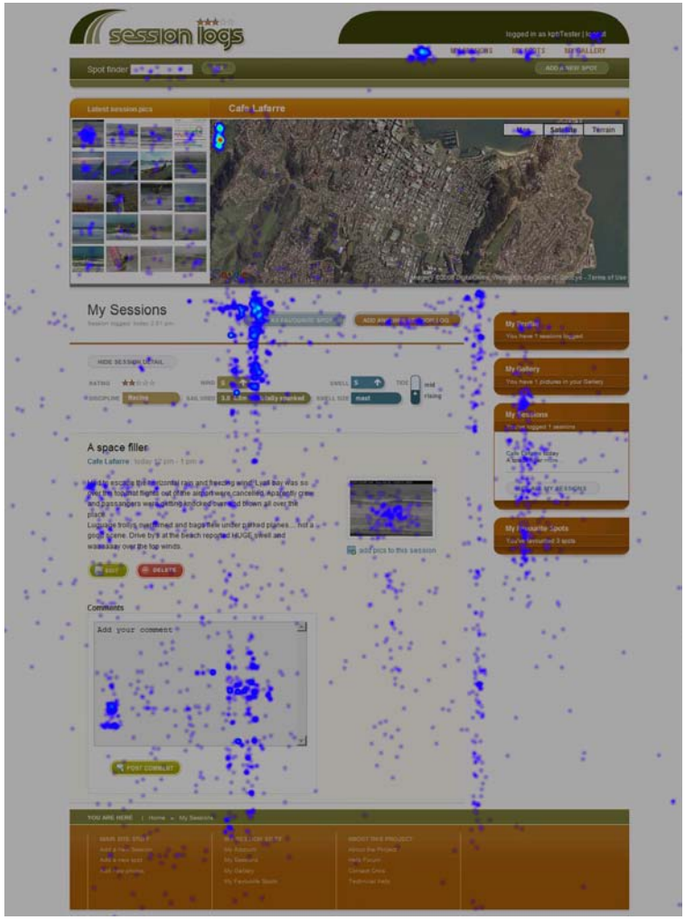


Fig 5.7 Heat map of B stream Session Logs page

5.4 FINDINGS SUMMARY

These findings indicate that the combined influences of all of the peripheral features available to only the A stream resulted in an increased conversion of passive users to active contributors, as well as an increase in the amount of content contributed.

The buddy system provided A stream members with a mechanism for establishing more intimate social network groups, fostering familiarity and connectedness between site members.

Emails played a pivotal role in bringing A stream members back to the site to once again come under the influence of peripheral motivators, and in extending the reach of those motivators beyond the site itself.

By enhancing the visibility of others and their activities on the site to only the A stream members, they were more exposed to influences of Social Facilitation, Social Comparison and Social Learning.

Q 26. Do you believe your windsurfing activity has changed since using the Session Logs site?
A stream Survey comments:

"The logs motivate me to get more time on the water, but can be frustrating if there is little or no wind."
"Sail more and Harder"
"I am more motivated, but that doesn't mean the wind has obliged... I need to move to Taranaki!"
"Has motivated me to get out even more."
"Its also very hard working now! Thanks!"

In future studies, running over a longer time period and tracking statistics on email returns would further clarify the results.

5.5 MAKING SENSE OF THE ATTENTION DATA.

Having motivated members to contribute content has resulted in the gathering of collective knowledge of the community group.

The information which can be gleaned from the attention data using collaborative filtering, will only improve with a growing user base and longer run time. An example of how the information gathered can be put into context for a particular location is illustrated in Fig 5.8.

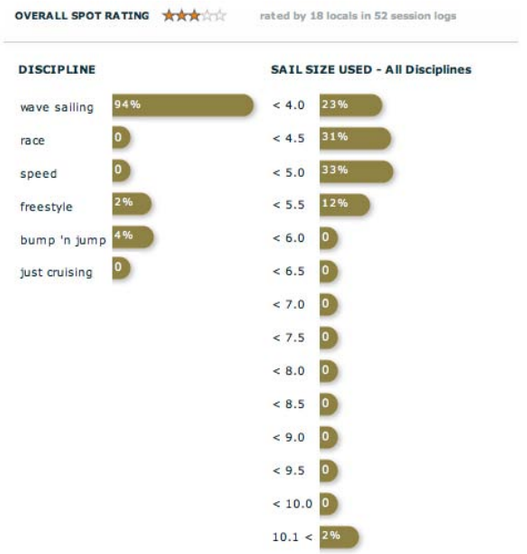


Fig 5.8 Location and context specific statistics gathered through user Session Logs.

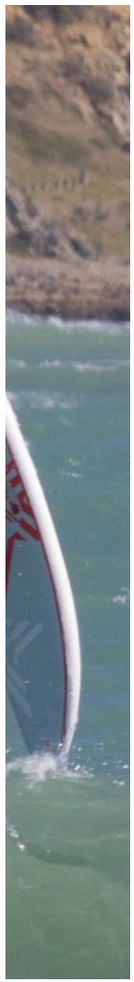


Fig 5.8 shows a graphic display of the information gathered from Session Logs at a particular location. It is easy to see at a glance which windsurfing disciplines are most performed at this location, as well as the equipment used. This builds a picture of the location in terms of the sort of windsurfing experienced there. This is just one example of how the information gathered can be filtered and displayed back to users to give context to the location data. There is potential to develop this much further in the future.

5.6 LOGGING ON TO THE TEST SITE

For evaluation purposes both test versions of the site can be viewed at this web address:
http://www.deepfried.tv/slogger

TO SEE THE A STREAM

Login: thesupervisors
Password: giveitanA

TO SEE THE B STREAM

Login: kpbTester
Password: kpbTester

6.0 CONCLUSION

The findings of this study show that motivating contribution can be achieved using ELM and Social Proof to design persuasive elements in a social networking environment.

The A stream members of the test project were exposed to peripheral elements designed to increase their exposure to the influences of Social Proof by enhancing the presence of others and their activities. 63% of all content added to the site was done by members who were exposed to these influences.

The statistics gathered showed that A stream members – with greater exposure to the presence of others – visited the site more often and added more content. This is in line with Fogg's principle of Social Facilitation (2003), which "suggests that people perform better - more, longer, harder - when other people are present, participating, or observing" (p.197). In addition, survey results showed that emphasising the activities of others on the site to the A stream members, had the effect of increasing their motivation to participate in the real world activity represented by the site – to go windsurfing.

After completing their windsurf, the A stream members were motivated to return to the site to further communicate with other members – to debrief:

> *"Session logs provides a chance for that after session chat over a virtual beer."*
> *Survey Q22 A Stream Comment*

The research found shows that designing elements for peripheral influence is a strategy which works effectively to motivate contribution within a social network environment, providing a content stream which keeps the website

Plimmerton Beach, courtesy of wwa.org.nz.

dynamic and sustainable. Collaborative filtering techniques also provide valuable context to information gathered from the wider community knowledge base – a process which will only improve over time as more attention data is collected and the site membership grows.

The collective user experience of multiple elements all working towards a common goal, provided a broader and more effective persuasive experience to the A stream group. The differences shown between the two test streams in this study has proven that targeting peripheral users using persuasive influences is a successful design strategy in motivating participation.

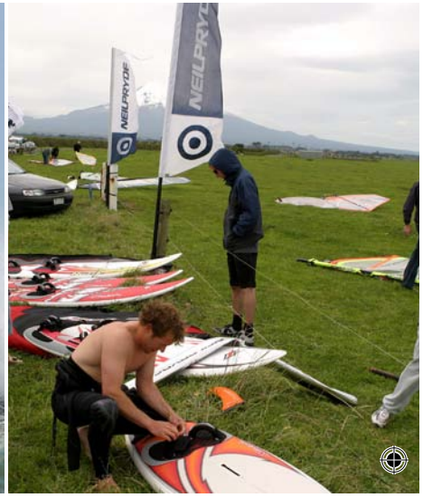
Although the principles of Social Proof do provide an effective persuasive influence in a social network environment, there are other persuasive techniques which might also be useful in motivating contribution. Further studies need to be undertaken into Captology and the influence of persuasion theories and how they can be effectively employed in the design of social networking environments.

6.1 THE FUTURE

In this study, recognition of user activity was heavily website based and relied on a physical presence or a visit to the site for the influences of persuasion to take place. Email was used to notify members of peer activity and to broaden the means of communication within the community. Mobile connectivity could be used to further this reach and tie users closer to the activities of the community members. Micro Blogging via SMS text messaging directly to the website and providing interfaces for mobile devices are just a couple of possibilities that could broaden the reach of the site and its functionality.

With GPS capabilities becoming more wide spread within mobile devices, so location awareness can be worked into the system to further simplify usability.



Taranaki Wave Classic 2006, courtesy of William Davenport.

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