OrangeGrove
The Neuro Web Agency

Neuromarketing for the web

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Introduction

If you look around the web at any B2B or B2C website you'll notice one thing; the constant use of the word 'we'.

Websites across the world are so caught up in selling their wares or talking about themselves, they forget that it's a real human on the other side of the screen, using, interacting and choosing them.

There's barely any relationship building, no human-touch, no compassion, understanding or empathy on the web, and the experience for a user is nothing but transactional and emotionless.

This isn't how we do successful business face to face, so why do organisations think it's ok to be different online?

The user's experience should be pleasurable and to that end, it needs to be acknowledged that buying and deciding is an emotional process.

We want to transform the way websites interact with their users for better engagement, conversions, and relationships with their users.
This white paper looks to delve into why the approach to web design and optimisation should change and how exactly it should change.

In essence, we want to alter attitudes to website creation and make the web a better, more accessible place for users and a more successful place for organisations.
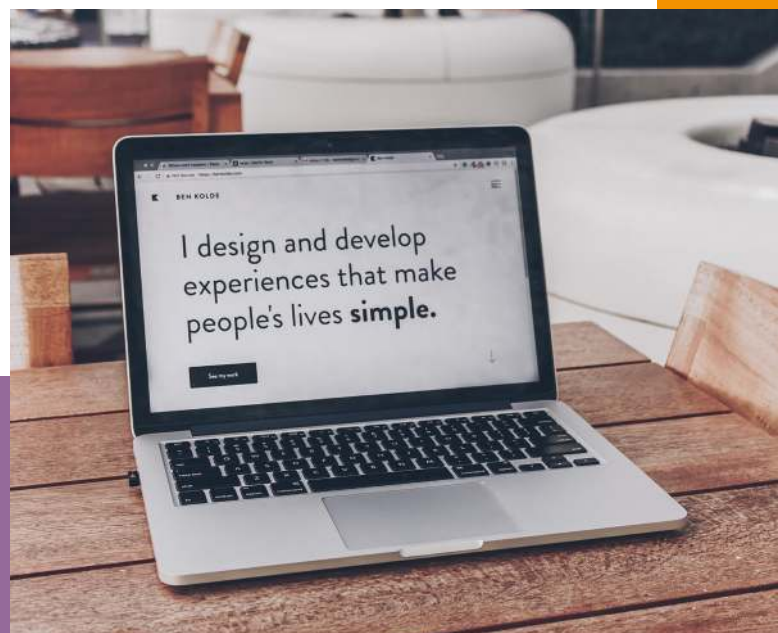
Decision making

We make around 35,000 decisions every day.

Every interaction on a website is tied up with making a decision. Whether that's a seemingly minor decision like which piece of text to read next, whether to scroll etc, or whether it's something bigger like committing to a purchase.

By realising and appreciating this, we are able to see the importance of understanding the decision-making process.

Why is it important that we understand how people make decisions?

- Understanding on a neural level, how we make decisions and the processes we go through, helps us to then apply the most appropriate solutions to the problems we face.

Understanding the decision-making process will, amongst other things, help us to:

- Influence a course of action e.g. Clicking on an advert or signing up for an event

- Persuade our audience of our credibility i.e. prove we're not going to scam them

- Behavioural change e.g. Encouraging users to buy a different product in place of one that has been default until now.

Understanding exactly how website users make their decisions, allows us to create the smoothest of user journeys by applying nudges where we understand them to be most appropriate, in order to encourage them to the desired outcome.

Our subconscious vs conscious

95% of the decisions we make are subconscious

Daniel Kahneman, a Nobel prize winning Princeton psychologist, proposed that humans spends most of their time in 'Fast Thinking' mode.

He wrote that our brains rely on two systems to process information and make decisions.

One is the automatic (or emotional) and the other is controlled (cognitive). He called these **System 1 and System 2.**

System 1 (thinking fast)

Operates below the level of our conscious awareness – it is the level where we undergo different emotional states. These states can even affect our ability to learn and the goals we choose to pursue. These are the same processes that motivate us to approach or avoid something – key life decisions.

System 2 (thinking slow)

Is more analytical, rational and deliberate. We call on it to reason about the world. It's what we'd use when analysing data for example. It's a very lazy system and we only call upon it when we absolutely need to as we are simply unable to analyse every decision.

In summary, system 1 is in charge and makes the vast majority of decisions for us.

It does this by referring to our past experiences and, as such, can be prone to bias, but on the whole it works pretty well. Have you ever kicked yourself for not listening to your gut instinct?

If we're looking to drive a decision on a website, we must focus on keeping System 1 engaged. If System 2 kicks in, the likelihood is that the user will think themselves out of committing there and then and instead leave the site, planning on returning at a later date. If that happens, there's an increased chance that they will not return at all or turn to a competitor.

Decisions are made emotionally

Traditional usability testing and activities like focus groups can be prone to inaccuracy.

Why?

Our thoughts are strongly influenced by our feelings, so when we're asked to explain why we have made a certain choice, we default to post-rationalising our decisions, meaning that the resulting feedback is inaccurate.

The emotional systems in our brain appears to have strong connections to our cognitive systems, which is why our emotions have such a great influence on our thoughts.

Emotions of any kind influence how we think and behave. For example, if something makes us sad, we're likely to recall sad memories and perceive risks as threatening, but make us angry and we're much more likely to take risks in the belief that they will pay off.[23]

All of this occurs in our subconscious, that is, without our conscious awareness.

Here's an example of an experiment by a group of neuroscientists which illustrates decision-making an automatic, subconscious process.

Setting the scene

You're walking down the street and a new model of car passes by on the other side of the street. You're not paying attention to it as you're thinking about and looking at something else, so is it still possible that your brain has formed an opinion on what it already feels about that car?

The subsequent experiment involved showing a group of people images of cars, each for only 2.4 seconds whilst their brain was being monitored in an fMRI scanner.

Half the group were told to look at the cars and rate how attractive they thought each one was.

The other half were exposed to the same cars whilst they were performing a task requiring then to fixate their eyes at a point away from each car. They were not asked to rate the cars.

Afterwards, both groups were asked to imagine they were now faced with the decision of buying a new car; they were shown each of the previous car photos and asked for each one whether or not they would want to buy it.

When the researchers analysed the brain data of the participants, they found that by looking at their brain activity at the time the car images appeared on the screen they were able to predict whether they would subsequently want to buy the car or not, no matter whether they had actively looked at the car or whether it had merely appeared within their field of view whilst

concentrating on something else. This shows that our brain can make automatic decisions about whether or not we would want to buy something, even if we see it both very quickly and don't even actively look at it or think about it.[3]

"Where thought conflicts with emotion, the latter is designed by the neural circuitry in our brains to win"

The brain

The region of the brain we're particularly interested in when it comes to neuromarketing and decision-making is the Frontal Lobe

The Frontal Lobe acts as a convergence zone for the abundance of sensations, emotions, and thoughts. But in terms of functions, the frontal lobe can be very much seen as a region implicated in all walks of decision making, notably[2]:

- Consumer choice execution

- Long-term planning of actions

- Impulse control (or lack thereof)

- Hedonic experience - the pleasure / displeasure perception - of products, events, services, brands etc.

In understanding the decision making process, these are the areas of the brain we are most interested in when it comes to neuromarketing studies.

What is Neuromarketing?

The term "neuromarketing" is believed to be first coined by Ale Schmidts, now a Full Professor at the Department of Marketing at the Rotterdam School of Management in Holland.

It studies the effect of marketing stimuli on consumers' sensimotor, cognitive and affective (emotional) responses.

Today neuromarketing is used to gather neuroscience insights so that companies can better understand consumer responses to their marketing efforts.

In terms of the web, neuromarketing helps us to uncover and interpret the subconscious (system 1) thoughts and feelings whilst a user is browsing a site and completing a task.

It helps to fill the gap that traditional usability testing and focus groups are unable to cover.

Neuromarketing Tools

There are a number of tools in the neuromarketers toolbox. The tools detailed in this paper are the ones we would utilise in our neuro usability testing.

Eye-tracking

Eyes are the window to our brains. By tracking the user's gaze we can gain valuable insight such as sticking points, detracting elements, important information that is only skimmed over.

It is one of the most commonly used neuromarketing research tools, sometimes even found in traditional market and user research areas. By using infra-red light to track eye movements, eye-tracking analyses the visual attention of the user, and researchers correlate this with the cognitive and emotional responses to identify patterns of visual fixations that can be identified as positive or negative (Zhao & Koch, 2013). Through the measurement

of gaze, duration, movement, dilations and blinks, the nuances in eye-activity are thought to reflect the overall cognitive load that behaviours and tasks require (dos Santos et al., 2015; Wang et al., 2014; Jacob & Karn, 2002).

The most common and typical measures of eye movements used in neuromarketing and usability studies are fixations and durations (Velasquez et al., 2011). First formulated by Fitts, Jones and Milton (1950) using eye-tracking information of pilots in a training simulation, fixation frequency reflects the importance of a display, and fixation duration is a measure of difficulty of information interpretation and extraction.

Eye-tracking can provide a part of the story, but it needs to be used in conjunction with one of the following tools for a complete picture of emotional response to the stimuli.

GSR (Galvanic Skin Response) / EDA (Electrodermal Activity)

This tracks the participant's perspiration levels throughout the test - an external indicator of emotional response.

Skin conductivity is regulated by the autonomic nervous system, which controls a number of bodily processes that can influence cognitive and emotional behaviours. EDA / GSR serves as a valuable index of emotional arousal as it offers insights into a respondent's underlying physiological and psychological processes.

The sensors are worn on the hand while the test participants are performing the tasks set for them and the resulting data is analysed in conjunction with eye tracking data for focus reference.

EEG (Electroencephalography)

Electroencephalography (EEG) is a non-invasive neurological tool that measures the overall brain activity by recording brain waves through multiple electrodes across the scalp. The electrical signal can be decomposed into frequency bands. The five widely used are: gamma (ɣ) 30-50Hz, beta (β) 13-30Hz, alpha (α) 8-13Hz, theta (θ) 4-8Hz and delta (δ) 0.5/1-4Hz.

Each frequency band has different characteristics that carry a variety of information which determine the cognitive and affective state that the brain is currently in. For example, a dominance of the delta wave indicates that the person is in non-REM (rapid eye movement), or stage three of sleep (Niedermeyer & da Silva, 2012; Abhang et al., 2016). As sleep is associated with memory consolidation, delta frequencies are also related in forming biographic memory, skills and information (Farnsworth, 2019).
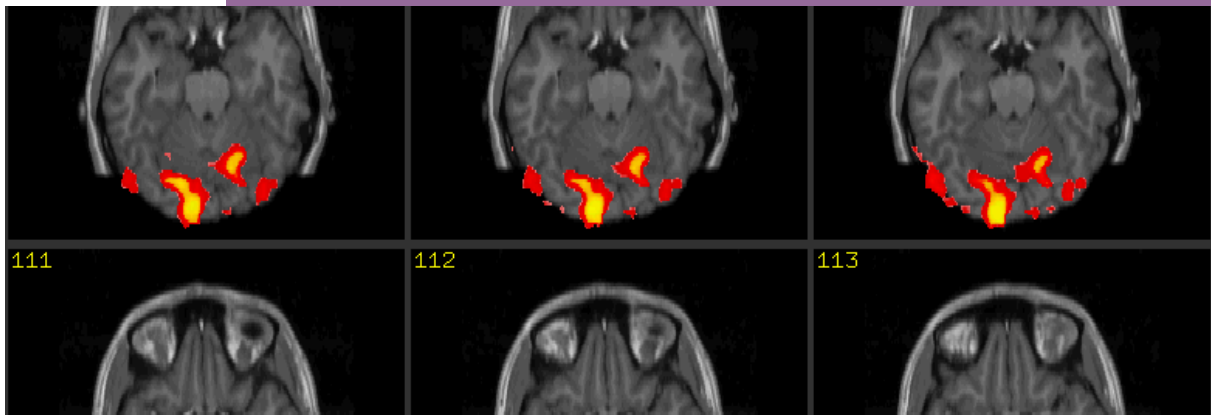
Compared to functional magnetic resonance imaging (fMRI), EEG has very high temporal resolution, meaning it can pick up the rapid reactions of the brain that happen at the speed of milliseconds. That allows it to sync very accurately in regards to what happens in the brain and in the environment.

EEG data is collected non-invasively. By comparison, electrocorticography requires neurosurgery to place electrodes directly on the brain's surface.
Compared to behavioural testing methods, EEG can detect covert processing (processing that does not require a response).

- There is no physical danger around an EEG machine. fRMI and MRI are powerful magnets which are prohibitive to patients with metallic aids or implants, such as pacemakers.

fMRI (Functional Magnetic Resonance Imaging)

This is another tool in the neuromarketer's toolbox, but one we don't currently use mainly due to the prohibitive costs.

It uses similar technology to an MRI scanner you'd find in a hospital, but differs in that participants are able to perform tasks whilst having their brains monitored for activity.

OrangeGrove Neuro Case Study

In the following example, the test participant was observed performing various tasks in order to identify possible areas of friction, on this e-commerce website, with the view to optimising it and improving conversion rate. Eye tracking was used in combination with GSR, and the participant was questioned about their website experience.

The video shows the participant browsing the site with relatively low emotional response until they reach the filter functionality.

The eye-tracking alone just tells us they are focusing on the filter tool, but that's to be expected.

The useful insight comes from the GSR data shown at the bottom of the screen. We can see it steadily increasing at the same point in the participant's journey, possibly
indicating an increased level of stress.
In the discussion with the participant after the test, they reported no issues with their experience of the site.

In summary this test shows that the participant's emotional state gave away

more than they were consciously aware of and guided us to an area of key friction on the site we would potentially look to

"As cognitive scientists have emphasized in recent years, cognition is embodied; you think with your body, not only with your brain."

- Daniel Kahneman, Thinking Fast, and Slow

Behavioural design

Behavioural design is concerned with how design can shape or be used to influence human behaviour.

Without knowing who you're targeting, their circumstances or the underlying emotional state they're experiencing, it's difficult to apply the most effective or most applicable techniques to influence their behaviour.

So by going through the neuro usability testing as well as other user research such as neuro user journey map and persona workshops in order to empathy map, we start to build a picture of what techniques will resonate and work most effectively when it comes to the optimisation process.

Using the FIRO theory and the Mindspace framework as a starting point, it's possible to interpret the users' circumstances, emotions, thoughts and feelings and translate them into workable suggestions for improvements to a website.

FIRO is a motivational psychology model that looks through the lens of how we experience the world. It works on psychological drivers; contextual, rational and emotional.

Contextual

Our concern with how we interact with the world, what we leave as a legacy, how we are perceived by others.

Emotional

The gut feel instinctive reactions, the deeper feelings rather than thoughts.

Rational

The way we think about things, reasoning, and facts. The narrative we put on why we do what we do.

Mindspace

Mindspace framework is a mnemonic for the nine effects on human behaviour and aids us in the application of behavioural science to website UX.

Messenger **M**

We are heavily influenced by who is communicating information

Incentives **I**

Our responses to incentives are shaped by predictable mental short cuts, such as the strong desire to avoid losses.

Norms **N**

We are heavily influenced by what others do.

Defaults **D**

We "go with the flow" of pre-set options

Salience **S**

Our attention is drawn to novel things that seem relevant to us

Priming **P**

Our actions are often influenced by subconscious cues.

Affect **A**

Our actions can be powerfully shaped by our emotional associations.
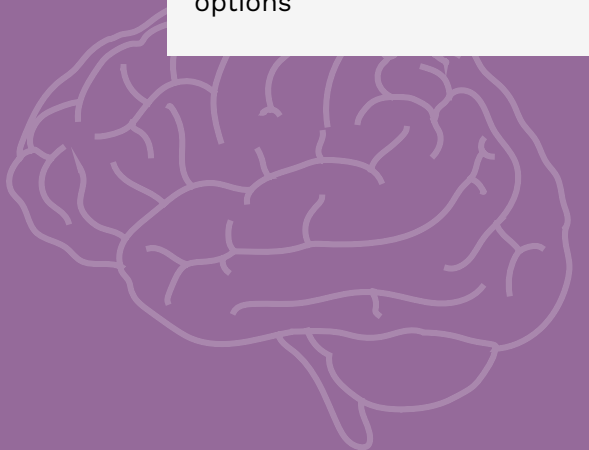
Commitments **C**

We seek to be consistent with our public promises and to reciprocate actions.

Ego **E**

We act in ways that make us feel better about ourselves.

The application

Here are some simplified examples of application of the outcomes from the FIRO theory and Mindspace framework and other psychology theories.

Messenger affect

As this affect outlines that we're heavily influenced by who is communicating the information, in circumstances where building trust is important, all or specific parts of the website content could be re-framed to help communicate the messaging through the voice of a person in authority, such as a doctor, healthcare advisor, a well-known expert in a certain field etc.

Norms

Being heavily influenced by what others do, we can use markers to show popularity of a product, or in another use context simply just adjust the copy to make sure the user knows they're not alone in how they feel or the situation they're facing.

Ego

Playing to ego is a strong persuasive tool. Ie. talking directly to the website user, such as 'You can support...', 'You can stay in control'.

Psychology principles

In terms of general ways to guide the user's attention to specific areas on the site, we will use theories like the following:

Visual depiction effect

This is a simple theory which says that we're more likely to purchase items that are accompanied by a person interacting with that product. It works because it helps us visualise ourselves owning / using / wearing / eating it.

It simply makes the product or service more relatable, real and relevant.

It's the same theory that works in shops - clothes modelled by mannequins are more likely to fly off the shelves.

So if you sell food for example, do what deliveroo did and many others by photographing a hand holding the food or a spoon in soup or holding a glass of wine etc. If you're a service business think about how this same effect can be captured.

Theory of Implied Motion

Movement catches our eye, that's obvious to most. But what we don't want is a whole tonne of moving parts to our websites as this will result in cognitive strain.

So if you want to pull the user's eye to a particular part of the page, perhaps a button / link or form, it's worth considering an image of implied motion. Perhaps a drink being poured, or someone running.

It doesn't even have to be a photo, it can be an illustration of some sort of motion, text in italics, or even simply the use of arrows.

"we are malleable, impressionable creatures, whose behaviours can be heavily influenced by our situations and surroundings, without us even being made aware of it." - Natalie Nahai, The Psychology of Online Persuasion

9.1

9.2

Photography can also have a huge impact in this context. Take this example AB test performed by ObjectDigital.com where visitors who saw figure 9.2 consistently engaged more deeply with the content on the page than they did with the content on the page shown in 9.1. Why? Because that's where the baby was looking.

We can also use theories like the Scarcity effect to influence behaviour. This is where we value goods that are in short supply over those abundantly available. It's the aversion to loss - we don't want to miss out.

It encourages them to make a decision and commit sooner than otherwise they might have.

"Only 5 left in stock"

"Only space for one more training session this month - book now so you don't miss out"

Only 2hrs left before this offer closes

Expected Results

A science-based approach to optimising websites can be used to increase the success of websites beyond traditional user testing, CRO and UX.

The outcomes can be easily summarised by the following:

User-centric websites

Higher conversions

High engagement

Reduced bounce rates

Reduced early exit rates

Better customer relationships

More brand advocates

Get in touch

Do you have website that is simply not performing? Get in touch to discuss our variety of web solutions including:

User Research

Heuristic audit

User testing

Persona workshops

Narrative workshop

Neuro user journey workshop

Implementation

UX design & build

UX optimisation

Format

Research Only

Sprints

Full Website Redesign

Continuous improvement

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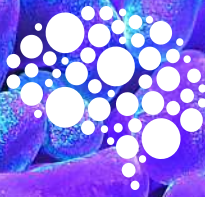
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