“There is enough negativity in the world, instead of contributing to it do something productive.”

~ Jared Leto (1971 - present)
# Table of Contents

“No man understands a deep book until he has seen and lived at least part of its contents.”

~ Esra Pound (1885 - 1972)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>4</td>
</tr>
<tr>
<td>Foreword</td>
<td>5</td>
</tr>
<tr>
<td>Prologue</td>
<td>6</td>
</tr>
<tr>
<td>Graduation company</td>
<td></td>
</tr>
<tr>
<td>The experience</td>
<td></td>
</tr>
<tr>
<td>The foundation of this thesis</td>
<td></td>
</tr>
<tr>
<td>I. Introduction</td>
<td>8</td>
</tr>
<tr>
<td>I.1. The problem</td>
<td></td>
</tr>
<tr>
<td>I.2. The case</td>
<td></td>
</tr>
<tr>
<td>I.3. Target definition</td>
<td></td>
</tr>
<tr>
<td>II. Emotions</td>
<td>9</td>
</tr>
<tr>
<td>II.1. What are emotions?</td>
<td></td>
</tr>
<tr>
<td>II.2. Overview of emotions</td>
<td></td>
</tr>
<tr>
<td>II.3. Cause of emotions</td>
<td></td>
</tr>
<tr>
<td>III. Memories</td>
<td>14</td>
</tr>
<tr>
<td>III.1. What is a memory?</td>
<td></td>
</tr>
<tr>
<td>III.2. What do we remember?</td>
<td></td>
</tr>
<tr>
<td>III.2.a. Short-term memory</td>
<td></td>
</tr>
<tr>
<td>III.2.b. Long-term memory</td>
<td></td>
</tr>
<tr>
<td>III.3. From short-term to long-term</td>
<td></td>
</tr>
<tr>
<td>IV. Emotional Memories</td>
<td>17</td>
</tr>
<tr>
<td>IV.1. What is an emotional memory?</td>
<td></td>
</tr>
<tr>
<td>IV.2. Why emotional memories?</td>
<td></td>
</tr>
<tr>
<td>IV.3. Controlling the emotional charge</td>
<td></td>
</tr>
<tr>
<td>IV.4. Emotional memories and web applications</td>
<td></td>
</tr>
<tr>
<td>IV.5. Emotional memories, a recap</td>
<td></td>
</tr>
<tr>
<td>V. Feeling Obliged</td>
<td>25</td>
</tr>
<tr>
<td>V.1. Emotional manipulation</td>
<td></td>
</tr>
<tr>
<td>V.2. How to manipulate?</td>
<td></td>
</tr>
<tr>
<td>V.3. Can we be manipulated to feel obliged?</td>
<td></td>
</tr>
<tr>
<td>VI. The Call to Action</td>
<td>29</td>
</tr>
<tr>
<td>VI.1. How to become loyal?</td>
<td></td>
</tr>
<tr>
<td>VI.2. The Hierarchy of Needs</td>
<td></td>
</tr>
<tr>
<td>VI.3. The final call to action</td>
<td></td>
</tr>
</tbody>
</table>
Abstract

“It is better to know some of the questions than all of the answers.”
~ James Thurber (1894 - 1961)

This thesis contains a research about emotional memories, what are emotional memories in web applications and what is the power of them? This thesis describes how emotional memories can help a web application become a more engaging and connecting tool between the company and the users and what effects this can have.

Besides that it describes how the emotions of the users can be influenced by the web application and what advantages this has for the company behind the web application. Also it instructs how to trigger the users of a web application to perform an action and shows examples of emotionally engaging web applications that have proven themselves and web applications that are about to prove themselves.
Foreword

“Gratitude is not only the greatest of virtues, but the parent of all others.”

~ Cicero (106 B.C - 43 B.C)

I’d like to thank a few people, without them I wouldn’t achieve what I have.

Norman Lorch for giving me the opportunity to do my graduation at his company modularite. It was a new, fun and mostly educational.

Sandra Hekkelman for supporting me during my last three years at the Rotterdam University of Applied Sciences as my career coach and helping me in the search for what I want and wanted to achieve.

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My friends and co-students Alex Meijer, Jorrit Pels and Niels Koole for being able to talk about anything, to be distracted during difficult times, help each other out with work (school or private) and working together.

Saskia Sträter, my girlfriend, for distracting me when I need distraction, supporting me during difficult times, helping me to stay creative, inspiring me and just being there for me always.

And at last but most certainly not least, my parents for always being there for me and help me follow my dreams, no matter what. Everything I have and am today is because of them. And I am endlessly thankful for that.
Prologue

“If we knew what it was we were doing, it would not be called research, would it?”
~ Albert Einstein (1879 - 1955)

This thesis is part of the study Media technology at the Rotterdam University of Applied Sciences. It contains a research about designing and developing web applications based on neurological evidence to improve the user experience and usability.

Graduation company
The company where I did my graduation is called modularte, located in Germany on a 15 minute drive from Frankfurt am Main. modularte is a small company, which is part of an initiative called Kreatives Kollektiv. This is a group of three companies, with each their own specialty, that together provide digital solutions. The companies in Kreatives Kollektiv are specialized in design, development, print and text. The specialty of modularte lies in designing and developing digital solutions, two specialties that, in my opinion, form a really strong combination.

modularte is founded by Norman Lorch, a designer and web developer who travelled around the world for 6 years as a scuba diver. Or, as he says it himself: “I've lived on bare feet, 2 shorts and 6 shirts for 6 years”. The experiences he had in those 6 years are being expressed and extended in the project MEERABENTEUER.DE, where we have been working on and what has been the foundation of this thesis.
The experience
MEERABENTEUER.DE is a website that offers exclusive adventure trips, for example dive safaris. Because these trips are exclusive and unlikely to be found somewhere else, there is a price tag tied to them. This price tag has as result that the age of the users will be between 30 and 60 years old, since most German people of that age have a solid income and are more likely to spend a certain amount of money on an exclusive trip. Because people of this age aren't likely to 'fall' for a website because it's using new techniques or has a special design it requires a psychological solution to bind the users of the website to MEERABENTEUER.DE.

The foundation of this thesis
During the last two years of my study I’ve been thinking a lot about what I wanted to do after Media technology. Doubting between starting my own company, working full-time, traveling or trying to complete another study wasn’t easy. The thought of doing another study surprised the people around me, but for me it wasn’t such a strange thought since I’ve been always really interested in psychology and emotions. That was for me the reason to doubt to do another study, for example Psychology. After some considerations I knew that I really liked the study Media technology and that this is the section I want to work in after my study. That was the time I realized I needed to do my thesis about psychology in combination with web design and development.
I. Introduction

“A problem is a chance for you to do your best.”
~ Duke Ellington (1899 - 1974)

Did you ever visit a website or web application that you just had to tell everyone about? Or got someone that told you something like “You got to use this website!”? I’m pretty sure you have experienced that. Everybody with access to the World Wide Web has. Why do people want to share that website or web application (hereafter web application)? If you ask yourself why you shared that web application you come to conclusions such as ‘the web application simply works the way it should’, or ‘the web application looks amazing’.

I.1. The problem
The problem is, as a web developer, you want to be able to create this effect all the time. You want your web application to be a success, to have people talk about it, have people use it and share it. But with conclusions named above you have no solid structure to understand what is causing this effect. Even the users themselves don’t know what is causing this effect. This effect is that the users build an emotional connection with the web application. In my research I try to understand what causes this emotional connection and how to use this emotional connection in favor of the goals the owner of the web application wants to achieve.

I.2. The case
The web application MEERABENTEUER.DE aims to offer the users an environment where they receive more than just information and provide them with a positive, emotional memory. How is it possible to manipulate this memory so the users (almost) feel obligated to share MEERABENTEUER.DE with their social environment?

In order to do research to the obligation of sharing on psychological grounds, research is required based on other, more specific questions.

1. What makes the mind create a positive, emotional memory?
   a. What is a positive, emotional memory in a web application?
   b. How can an emotional charge for an emotional memory be controlled?

2. How can a person be manipulated to feel obliged to do something?
   a. What feelings ensure that a person feels obliged to do something?
   b. How can these feelings be triggered?

3. How is a person (discreetly) triggered to perform an action?

I.3. Target definition
The science described in this thesis is no magic formula. It won't make any web application a booming success. This thesis describes the science to make a (potentially) good web application better to a level that its users become emotionally engaged with the web application.
II. Emotions

“Feelings are really your GPS system for life. When your supposed to do something, or not supposed to do something, your emotional guidance system lets you know.” ~ Oprah Winfrey (1954 - present)

II.1. What are emotions?
To find out what emotional memories are, understanding of the words ‘emotion’ and ‘memory’ are required. Emotion is, as described by the New Oxford American Dictionary, the following:

emotion | iˈmōSHən |
noun
a natural instinctive state of mind deriving from one’s circumstances, mood, or relationships with others: she was attempting to control her emotions | his voice was low and shaky with emotion | fear had become his dominant emotion.

- instinctive or intuitive feeling as distinguished from reasoning or knowledge:
  responses have to be based on historical insight, not simply on emotion.

Basically an emotion is part of our instinct. It is pre-programmed in our brain to help us survive. Every emotion has its own purpose, for example fear has as purpose to be scared and avoid the cause of the fear. If we get scared, our body creates adrenaline which causes multiple effects for example it speeds up the food conversion so your muscles get energy faster. Because of this effect we are able to run away faster when we are in fear.

II.2. Overview of emotions
Based on the Geneva Emotion Wheel there are 20 emotions clear enough to be measured, these emotions can be categorized ‘positive’ or ‘negative’. Because some emotions are more positive than others they can be sorted on positivity or negativity. In the image on the right (figure 1.2.1) these emotions are displayed in the Geneva Emotion Wheel, with on the right the most positive emotions and on the left the most negative emotions. To be able to find out what causes these positive emotions it’s important to know what they mean.

Figure 1.2.1

1 Figure 1.2.1 or Appendix A, based on K.R. Scherer’s Geneva Emotion Wheel, published in “What are emotions? And how can they be measured?”, 2005.
List of positive emotions sorted on controllability, descending

1. Interest
   a. Interest is an emotion that makes us wanting to know or learn about something or someone. This is also called *curiosity*.

2. Amusement
   a. Amusement is the emotion that makes us feel entertained or enjoyed. This can be shown by laughter.

3. Pride
   a. Pride is an emotion that contains pleasure or satisfaction for own achievements or achievements of close associated others.

4. Pleasure
   a. Pleasure is a form of happiness, just in a less broad view. Pleasure is a part of happiness, but happiness isn’t a part of pleasure, happiness is more than pleasure. Pleasure often is found in the ‘little things’ such as enjoying a good meal or a nice warm bath.

5. Happiness
   a. Happiness is a state of being happy. According to psychologist Martin Seligman (1942 - present) humans seem happiest when they are having pleasure, engagement, relationships, meaning and accomplishments. Due to this, happiness ‘uses’ pleasure to lift itself to a more positive emotion.

6. Tenderness
   a. Tenderness is the feeling of deep affection for someone or something.

7. Wonderment
   a. Wonderment is an emotion that gives us a stated of awed admiration or respect.

8. Relief
   a. A feeling of reassurance and relaxation as a release of anxiety or distress.

9. Surprise
   a. Surprise is an emotion caused by an unexpected event, fact or thing. This causes a mild shock.

10. Longing
    a. Longing is an emotion of desire for a person or an object.

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List of negative emotions sorted on controllability, descending

1. Anger
   a. Anger is an emotion that gives a strong feeling of displeasure or even hostility.

2. Contempt
   a. Contempt is a feeling that someone or something is beneath consideration or worthless.

3. Disgust
   a. Disgust is an intense disapproval caused by something unpleasant or offensive.

4. Jealousy
   a. Jealousy is an emotion caused by the fear of losing someone or something that one is attached to.

5. Regret
   a. Regret is feeling sad or disappointed over something that has happened or has been done.

6. Remorse
   a. Remorse is deep regret or guilt for something wrong that has been done.

7. Shame
   a. Shame is a painful feeling of humiliation, often caused by wrong or foolish behavior.

8. Fear
   a. Fear is an emotion that causes an unpleasant feeling by belief that something is dangerous or harmful.

9. Sadness
   a. Sadness is feeling an emotional pain.

10. Pity
    a. Pity is an emotion that contains the feeling of sorrow for the suffering and misfortunes of others.

The emotions described above are based on the descriptions given by the New Oxford American Dictionary mixed with own experiences and interpretations. The purpose of these short descriptions is to give a short overview of what emotions there are, according to the Geneva Emotion Wheel, and to explain what they are.

II.3. Cause of emotions

To learn how to trigger certain emotions it is necessary to understand what causes emotions can have. An emotion can have a lot of different causes, and those causes might differ per person. To obtain usable data to base the further research on, it is necessary to generalize the causes of emotions and take the most common causes.
Interest
A person being curious causes interest. The function of interest, or curiosity, is to motivate learning or gaining knowledge. Because the human mind is capable of abstract thinking we mix this with our interest and that way we are able to fantasize and imagine.³

Amusement
Amusement is often caused by finding something funny, to be entertained. Because everyone has a different sense of what they find funny or entertaining, the cause of amusement is really difficult to describe in detail.

Pride
The emotion pride is caused by positive self-evaluation⁴. This means that the emotion is caused by a positive feeling about own accomplishments or from close associated others.

Happiness
There are many known causes of happiness, for example “seeing a significant other”⁵ or “encountering unexpected positive events”⁶. In general a lot of things can make someone happy. It differs per person and situation. Colors are also known to be able to make people happy, but this depends on the thing a person thinks of when seeing a color. For example when a person has a happy relationship with someone whose favorite color is green, it might be possible that that person thinks of the happy relationship when seeing green. This doesn’t mean everybody will feel that way.

Pleasure
The causes of pleasure are equal to the ones causing happiness, the difference is that pleasure is a milder form. Therefore it requires less than happiness.

Tenderness
Tenderness is as stated before a feeling of deep affection or love. The cause of this emotion is not really proven and the diversity in what kind of affection you are feeling is extremely diverse. This makes it difficult to tie a conclusion to the cause of this emotion and neurobiologists are yet to find a proven cause of affection.

Wonderment
A feeling when perceiving something rare or unexpected in combination with curiosity often causes wonderment. This could lead to a drive to intellectual exploration.

Relief
Feeling released from anxiety or distress causes relief. Relief is often described as the feeling like a burden is lifted, a lighter feeling.

Surprise
Surprise is caused by an unexpected event. If something happens that is not expected, surprise is often the result. Surprise is mostly felt as a neutral or slight positive emotion.

Longing
Longing is caused by the desire to obtain a certain object or person. Most often this is caused by greed, lust or envy.

As said before, emotions are very unique per person and very difficult to describe and to understand. Though it is possible to evoke an emotional response. The most important part about evoking this response, for the purpose of creating emotional engagement with a web application, is that the emotion is positive. The users have to see the web application as a human being instead of a computer program or an application.
III. Memories

“Anyone who conducts an argument by appealing to authority is not using his intelligence; he is just using his memory.”

~ Leonardo da Vinci (1452 - 1519)

III.1. What is a memory?
There are lots of opinions of what a memory is, one of them comes from a friend and co-student:

“A memory is a tiny piece of crap you carry with you, until you just lose it out of the blue.”

~ Alex Meijer (1989 - present)

This is based on personal experiences and isn’t a realistic reflection of the truth for everyone, however there is a chance some can relate to this citation. The New Oxford American Dictionary describes a memory as the following:

mem•o•ry | ´mem(ə)rē |
noun (pl. memories)
1. the faculty by which the mind stores and remembers information: I’ve a great memory for faces | my grandmother is losing her memory | the brain regions responsible for memory.
   ● the mind regarded as a store of things remembered: he searched his memory frantically for an answer.
2. something remembered from the past; a recollection: one of my earliest memories is sitting on his knee | the mind can bury all memory of traumatic abuse.
   ● the remembering or recollection of a dead person, esp. one who was popular or respected: clubs devoted to the memory of Sherlock Holmes.
   ● the length of time over which people continue to remember a person or event: the worst slump in recent memory.
3. the part of a computer in which data or program instruction can be stored for retrieval.
   ● capacity for storing information in this way: the module provides 16Mb of memory.

In short a memory can be seen as a way the mind stores information so this can be remembered in a later stadium of time. Memories are stored in the brain, and just like a hard drive in a computer, the brain can be ‘full’. That is the reason we don’t remember everything that happens to us, some information is not relevant enough to be stored in our ‘hard drive’.

III.2. What do we remember?
The human memory knows two variants, short-term memory and long-term memory (figure 3.2.1). As the name says short-term memory is memory that is used over short periods of time, for example trying to remember a phone number you heard from someone so that number can be called. Long-term memory is used over long periods of time, this contains previous experiences, knowledge about the world, how to develop a web application et cetera. Actually, the previous metaphor that the brain is some kind of hard drive is not completely accurate. The
long-term memory is more like a hard drive, while the short-term memory can been seen as Random Access Memory (RAM).

III.2.a. Short-term memory

Short-term memory has a few names; some call it quick memory, some working memory and other short-term memory. I’ll stick with short-term memory since that describes, in my opinion, the functionality of the memory with the most precision. To define short-term; short-term memory is memory that you need for less than a minute⁷.

According to “100 Things Every Designer Needs To Know About People” (reference 11), short-term memory has a capacity, its limited. Besides that, it also is easily filled with information you might not want in it, but subconsciously you adapt that information. That’s the reason why the most people don’t have a really strong short-term memory, because it’s easily filled to capacity, even with thing we might not need. For example when you’re trying to remember something and people start to talk to you, you can’t concentrate and you won’t store the information you want. This is because short-term memory is linked to the ability to focus attention. So in order to store the information you want, attention is required.

According to ‘one of the most highly cited papers in psychology”⁸, “The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information”, the short-term memory is capable of storing approximately 7 objects. However, a recent study⁹ has demonstrated that actually the short-term memory is capable of storing 3 or 4 objects. Trying to remember more is not totally impossible but will be significantly harder to accomplish. On the other hand, long-term memory doesn’t seem to have a limit of information storage.

“I suffer from short-term memory loss. I forget things almost instantly. It runs in my family... at least I think it does. Where are they?”


III.2.b. Long-term memory

“The Magical Number Seven”, the one that’s actually 3 or 4, can also be used for retrieving information from the long-term memory. George Mandler (1924 - present) showed in 1969 that people could retrieve information in categories perfectly from their memory, but only if there were 1 to 3 objects in a category. When a category had a number of objects that was bigger than 3, the number of objects recalled dropped significant. If the number of objects per category was between 4 and 6, the recalled objects was around 80 percent, while when there were 1 till 3 objects per category it was around 100 percent.

⁷ S.M. Weinschenk, “100 Things Every Designer Needs To Know About People”. Published in 2011.
Even though the long-term memory doesn't have a maximum capacity of information, the memory recall isn't unlimited. Even though recalling information from the long-term memory isn’t unlimited, it’s much more reliable than the short-term memory and therefore more important in this particular scope of research.

Figure 3.2.1: A diagram with the different kinds of human memory. Diagram by Luke Mastin (www.human-memory.net).

III.3. From short-term to long-term
In order to recall information from memories effectively, it is important that the information is stored in the long-term memory, since the capacity of the long-term memory is unlimited. Storing information in the long-term memory is achieved by repeating the information.

Another way to move information from the short-term memory into the long-term memory is to connect it to information that is already in the long-term memory. To easily recall information from our long-term memory, we think in schemata (more than one schema). For example if we have to describe the word *car*, we name things like *wheels*, *chassis*, *engine*, we do this because of the four-object rule (see III.2.a.). The long-term memory exists out of a lot of schemata, so to move information from our short-term memory to our long-term memory we can link it to an existing scheme.
IV. Emotional Memories

“During the 1960s, I think, people forgot what emotions were supposed to be. And I don’t think they’ve ever remembered.”

~ Andy Warhol (1928 - 1987)

What is so special about an emotional memory, why do we want to create an emotional memory? But before answering that, it is required that there is clarity what an emotional memory is? Is it a combination of emotion and memory, is it a memory of an emotion or an emotion of a memory?

IV.1. What is an emotional memory?
An emotional memory is a memory with an emotional content. For example the memory of winning an award for something precious to you. That event will have a positive emotional content, and when remembering that event, the emotions will be remembered and influence the current mood you are in.

In order to create an emotional memory, an emotional event is required. This emotional event will cause a reaction in the sensory memory (figure 3.2.1) that will send a signal to a part in the brain called the amygdala. This is how an emotional memory is created (figure 4.1.1).

![Figure 4.1.1: A diagram of how emotional memories are created and retrieved.](image)

IV.2. Why emotional memories?
As said before, an emotional memory has the strength to influence the current mood when remembering a memory with an emotional charge. This can have a chain reaction as a result. For example, if MEERABENTEUEER.DE is (part of) a positive emotional memory and the people with that memory are reminding MEERABENTEUEER.DE (for example through an advertisement) their mood will change more positively. This gives the memory of MEERABENTEUEER.DE a bigger positive emotional charge and the next time the mood...
change will be stronger, positively speaking. Because this emotional memory will bring a more positive mood, the ‘need’ to share this feeling grows for most people, after all, most of us do have some need to socialize (most of the time).

IV.3. Controlling the emotional charge
Now we have a clear view what an emotional memory is, a memory with an emotional charge, it’s important to find out what makes an emotion memory positive? What emotional charge creates the strongest positive feeling when remembering something? From the 10 positive emotions named in chapter II, the ones with the highest controllability are the most important to this research to be able to create an accurate result on how to control the emotional charge. An exception to this might seem to be the emotion *surprise*, but in web application, to be able to surprise the users of the web application they need to be visiting already. And if they won’t come back after the first time it won’t be possible to surprise them since it will be part of the first impression.

**Interest**
If we look back to chapter II.3. we see that the emotion *interest* is the positive emotion with the most controllability. This means it is the most controllable (positive) emotion. The reason why this emotion is so controllable is because it’s in our nature\textsuperscript{10} to be *curious*, another word for the emotion interest (see II.3.). It’s in our nature to be curious, to explore the unknown. We have a certain attraction to things we don’t know, think about what happens in the deeps of the Mariana Trench. Who doesn’t want to know what happens there? This is human curiosity and it can be easily controlled by knowing what causes curiosity.

Curiosity is caused by getting interested in something and being held back. This can be done by giving certain information (or anything else, but for now let’s call it information), but not everything. If not everything is provided but enough information to stimulate interest, the information is not that will stimulate the curiosity. Curiosity works by not getting what you want immediately, but to search or work for it. Finally it must not be too difficult to obtain the information, because of the high demand of web applications and information.

A good example of interest in a web application is the landing page from Shipment (figure 4.3.1) where there practically is no textual information given what the app precisely does, just a way to get more information.

**Amusement**
After interest the most positive emotion with the most controllability is *amusement*. As written in chapter II.3. the cause of amusement is hard to describe, that doesn’t mean that it’s hard to evoke. Though, the problem with amusement is, that everybody has different ‘amusement triggers’. But after that barrier is conquered, the result is in most cases a positive, emotional memory. Just give the user of the web application something to enjoy using the application.

MailChimp has done this on a nice way (figure 4.3.2) with their logo, or mascot, all over their pages.

Pride
Pride is a difficult emotion to implement in a web application, even though it has a high controllability, because pride is about the person itself or about close associated others. And since the user of the web application is themselves it’s really difficult to make them feel proud, unless the web application can become some kind of close associated other.

Figure 4.3.1: The homepage of Shipment doesn’t give any textual information what the app is about, just a way to obtain more information.

Figure 4.3.2: When signed in on MailChimp their logo, or mascot, tells you something nice or funny to keep the page diverse, unique and to provide a positive, emotional memory.
IV.4. Emotional memories and web applications

If a web application can create a positive, emotional memory it can be a very powerful marketing tool without too many extra costs. To be able to create a web application with a positive, emotional charge, it is important to understand the 3 ‘levels of visual design’ (figure 4.4.1), described in Don Norman’s book, Emotional Design.

As described in a blog post by Sabina Idler, information designer and writer at an usability company (called Usabilla) located in Amsterdam, written on Smashing Magazine:\footnote{The blog post can be found at: \url{http://uxdesign.smashingmagazine.com/2012/04/12/building-emotion-into-your-websites/}}:

1. Visceral Level
   This level is all about the first impression, this is the level of precociousness. This means, it happens before we realize it. This level works from our instinct, we get emotions caused by our surroundings. A good visceral level causes the user to feel something, get excited or become happy.

   An example of the visceral level is the header from Vimeo (figure 4.4.2), here you can see that the header of the website has no purpose besides that it adds an ‘eye-catching’ element to the page. This increases the emotional engagement of Vimeo. Another example can be seen in the homepage from MEERABENTEUR.DE (figure 4.4.3).
Figure 4.4.2: The header of video website Vimeo has as (only) goal to draw attention and get you to sign up to its service.

Figure 4.4.3: The slider in the MEERABENTEUER.DE website draws attention with the use of unique, eye-appealing pictures and almost mysterious descriptions.

2. **Behavioral Level**

Behavioral, behavior, the name already says it. The second level is about how the product (in this particular case a web application) works. That it avoids human mistakes or prevents extra actions, make it as easy as possible.

By having a good behavioral level, it makes the use of the product easier which leads to a more positive emotion, which is important to create a positive, emotional memory of the product. By making the product easier to use, it makes it more likely the product will be used again. A good example is the keyboard from the most Macintosh computers (figure
4.4.4). The reason why this is a good example is the Caps Lock key, when this key is hit on accident it will not be activated, only when the intention is there (the key is a fraction longer pressed). A web example can be a feature in the MEERABENTEUFER.DE pages, for example the media library (figure 4.4.5).

Figure 4.4.4: The caps lock key on Macintosh keyboards only works when pressing the key slightly longer to avoid the activation of caps lock when the key is hit on accident. Photo by A.J. van der Gugten.

Figure 4.4.5: When opening an item in the media library from MEERABENTEUFER.DE, the window automatically scrolls down so the user has just the item in their screen.
3. Reflective Level

Finally the reflective level, or the top level, is about the overall impression of the web application and is capable of a high level of emotions and cognition. This means that the reflective level is based on the understanding of the web application, the reflection and the interpretation.

An example of the reflective level is the webpage of Nest, a smart thermostat (figure 4.4.6). In MEERABENTEUEER.DE the reflective level is found by creating overview and recognition, this means using the same elements everywhere. Same heading styles, same shadows, same kind of images and the same writing style.

![Nest webpage](image)

*Figure 4.4.6: Nest uses the same style of its page everywhere, the same rounded corners, the same text style and the same kind of images.*

To create a positive, emotional memory, it’s important that all levels are ‘working together’. Balance is not really important because all three levels are always perceived, because of this it is important that all the levels are addressed.

A short recap, the visceral level is the first impression and the visual design. The behavioral level is how the web application works and how it behaves. And finally, the reflective level is about the overview and long-term impact of the web application, design wise speaking.

Combining these three levels can lead to a positive, emotional memory. However it should be combined with other aspects of a ‘good’ web application in order to let it be a success.
IV.5. Emotional memories, a recap

As described in the previous 3 chapters, emotions, memories and emotional memories are complex terms and very difficult to describe accurately for every person. The power of these 3 terms is that they are so unique for every one, though that’s also what makes it so difficult to describe them, but I’ll do my best.

**Emotions**

Emotions are pre-programmed in our brain and are a part of our instinct. They give us the power to react to certain events without first thinking about it, therefore we can respond faster. Emotions in web applications are important, because people use their emotions everywhere, also on the internet, if they want to or not. It’s part of our instinct.

**Memories**

Memories are pieces of information stored in our brain. We can recall this information to ‘relive’ moments from the past and learn from them, not make the same mistakes again or do things smarter than we used to do them.

**Emotional memories**

Emotional memories are memories with an emotional charge, remembering these memories will bring the emotional charge with it and therefore change the mood. For example, by remembering a very positive, emotional memory will change the mood in a positive way, make you a little happier.

1. **What makes the mind create a positive, emotional memory?**
   a. **What is a positive, emotional memory in a web application?**
      A positive, emotional memory in web applications is a positive experience obtained by using or seeing the web application that contains that positive, emotional memory. Remembering or being remembered to this web application will therefore change your mood in a positive way and increase the positive, emotional charge.
   b. **How can an emotional charge for an emotional memory be controlled?**
      The emotional charge for an emotional memory is build up with 3 different levels, the visceral level, behavioral level and reflective level.

      The visceral level stands for the first impression, which can be caused by an eye catcher or a certain title that makes people curious or gives them pleasure.

      The behavioral level is starting when people start using the web application, this level is about features that make a better UX (User Experience). Such as scrolling to a point where the user wants to go.

      The reflective level is about the overall impression of the web application. Combining these three levels can lead to a positive, emotional memory. However it’s necessary that other aspects of good design are applied.
V. Feeling Obliged

“Are you trying to manipulate me? It's working.”
~ Bridget Moynahan (1970 - present)

Now we know how people obtain positive, emotional memories. And we can use that knowledge to make the users of our web applications a little happier and give them a better user experience. However, as the owner of a web application we want to reach a certain goal. For example, to get our users to share the web application with their social environment. A way to reach that goal, is to use our recently achieved emotional connection with our users to ask them to share it. Ask them in a way they can’t refuse.

V.1. Emotional manipulation

Emotional manipulation is a way to get other people to do what you want by manipulating their emotions, ‘play’ with their feelings. The term manipulating (often) has a negative charge, caused by abuse of manipulating in society such as emotional blackmail. Fact remains that emotional manipulation is a very normal and everyday occurring event. Think for example about psychiaters that help people get over depressions, this is (partially) done by emotional manipulation.

Emotional manipulation can be used to persuade the users of your web application to perform a certain action. Emotional manipulation can use negative or positive emotions. For example, as Art Bell said, fear is a great motivator. This doesn’t mean it’s the best motivator.

“If people are good only because they fear punishment, and hope for reward, then we are a sorry lot indeed.”
~ Albert Einstein (1879 - 1955)

For example, doing things you love works way better than doing the things you hate just because you’re afraid of the consequences. First of all, you’ll enjoy doing it, second of all, you don’t have to worry about the consequences that you fear which results in less pressure. I believe that positive emotional manipulation works better than negative, especially since we don’t want our users to feel abused.

V.2. How to manipulate?

The purpose of emotional manipulation is to achieve a certain goal by persuading the user of our web application through positive emotions. For example, to reward the user by sharing our web application with their social surroundings. The web application Creative Market (figure 5.2.1) does this by rewarding the people who attracted new users with currency that can be spend in the web application. The costs for the web application are low (they own the currency) and the profit is high (more users, more potential income). This will give the (new) users a satisfying feeling, gives them pleasure, makes them surprised and curious (people must be crazy to give away money for free).
Creative Market

Invite Friends, Earn Cash!

Send a $5 credit to your friends, and earn even more for yourself when they join.

*Figure 5.2.1: Creative Market rewards users who attract more members with currency that can be spent on the web application itself.

The shoe selling web shop Avance Shoes manipulates people to ‘Like’ their Facebook page by offering a €10,- discount voucher if they do (figure 5.2.2). This gives them the feeling of pleasure, people enjoying to get gifts (or actually it’s a reward).

*Figure 5.2.2: Avance Shoes rewards potential customers with a €10,- discount voucher if they like the Avance Shoes Facebook page.

Another example is Microsoft’s search engine Bing. They reward their users with credits (figure 5.2.3) which can be used to buy items such as a discount voucher for Starbucks, or free Skype credits etc. Just as the manipulation from Avance Shoes, Bing gives their users pleasure by giving away rewards. Users will feel appreciated and will get a stronger emotional connection with the web application.
Manipulation in web design and development happens (most of the time) with the power of rewards. Of course, emotions have their influences on the reaction of the users, but it’s the reward that pushes them over the edge of signing up or sharing the page with their social network. This doesn’t mean that the only way to manipulate users of a web application is with rewards, reverse psychology is also a way to manipulate users to perform some kind of action. The web shop from Photojojo (figure 5.2.4) is a good example of reverse psychology. By saying “Do Not Pull” (which will show the product description), most of the users are feeling the need to click.

Manipulation is a good way make the users perform a certain action. However, if the emotional aspect of the web application is absent, the manipulation won’t work since the user has no reason to stay on the page if there is nothing catching his attention. Therefore it’s important to see the difference between the emotional part (chapter IV), the manipulation part (chapter V) and the ‘call to action’ part (chapter VI). Each play a different role in reaching the purposes of the web application.
V.3. Can we be manipulated to feel obliged?
Shortly, no. However it’s a little more complicated than that. It’s practically impossible to make every user feel obliged to do something, and it’s good that this is not possible. Who knows what would happen if this knowledge would be in the hands of the wrong people. So manipulate the users to feel obliged is practically impossible, however it is possible to make the users of the website perform an action. Such as sharing the web application on their social network or sign up for an account.

1. How can a person be manipulated to feel obliged to do something?
   a. What feelings ensure that a person feels obliged to do something?
      There are several feelings that will make people more likely to do something, since feeling obliged is practically impossible to achieve. These feelings vary from positive to negative.

   b. One of the most effective (positive) emotions for manipulation is pleasure; making the users feel better will create a stronger emotional connection with them, which will has as a result that users are willing to do something back.

      Another often used emotion is interest or curiosity; humans are curious, it’s in our nature, therefore when a small chunk of information is thrown at us, and it will catch our attention, we will be searching for more. And if this search will give us what we are looking for, we will remember it better, and feel satisfied.

   c. How can these feelings be triggered?
      These feelings can be triggered in lots of ways, depending on the targeted user group and the kind of web application. However, a method that (almost) always seems to work is rewarding the users. But even with rewarding there are different ways in which this can be done.

      For example, establish an emotional connection by making them feel unique and special, this can be achieved by rewarding them with something unique and giving them a personal thank you after performing the action. The possibilities for triggering these emotions are limitless; just let the imagination do the hard work. Common sense, imagination and a good, thorough look at some examples can be a good start.
VI. The Call to Action

“Action is eloquence.”

~ William Shakespeare (1564 - 1616)

Triggering an action from the users is an important piece of the web design and development puzzle. As the owner of a web application you (usually) want the user to perform some kind of action. For example, fill out the contact form or share the web application with their social networks.

At first this might seem difficult to achieve, and sometimes it is, but it can also be fairly easy. Users, most of the time human, have (normally) an emotion that is called ‘loyalty’. Loyalty is an emotion that gives the feeling of support and allegiance. Due to this emotion users can be easily triggered to perform an action when they become loyal, besides the ‘reward’ method described in chapter V.

VI.1. How to become loyal?
Loyalty is an emotion that causes the feeling of faithfulness or devotion to something, most of the time a person, a country, a group or a cause. But loyalty for a company or a web application is absolutely not rare. However this is often called (heavy) emotional engagement rather than loyalty, this is, theoretical, not true but how the term is used in practice it is correct. What this means is that loyalty is (very often) a result from emotional engagement.

VI.2. The Hierarchy of Needs
The key to get the user emotionally engaged with the web application is, as said before, to make the user see the web application as another person instead of an object. The reason why most web applications don’t succeed in being emotionally engaging can be explained with Abraham Maslow’s ‘Hierarchy of Needs’ (figure 6.1.1).

![Maslow's Hierarchy of Needs](image)

*Figure 6.1.1: Maslow’s Hierarchy of Needs shows the needs of human beings.*
Every ‘level’ in the Maslow’s diagram describes a certain kind of needs. Every level builds up on the next; the bottom level is the level that has the biggest priority. So has every human physiological needs, these are the most important needs, after that comes the need for safety and so on. Now this diagram can be altered into a diagram with the needs of the users from the web application (figure 6.1.2).

![Diagram](image)

*Figure 6.1.2: The Hierarchy of Needs by Abraham Maslow, altered for the needs of the users of a web application.*

The physiological need is the basic need of the human being, in a web application a good functionality the basic need. The safety can be ‘translated’ reliability or security of a web application. This however is build on top of the functionality. After the need for reliability it’s important that web applications are usable for the users. Therefore is the need for usability.

The problem with most web applications is not those first 3 levels; the first 3 levels are needed for a web application to be good. But it’s the 4th need, pleasure, that’s usually missing, and it’s that need that’s important to make the users emotionally engaged.

**VI.3. The final call to action**

The call to action isn’t very difficult once the users of the web application are emotionally engaged. Simply just tell them what you want to achieve and most likely, because of loyalty, they will do so. For example, web shops just tell their customers to ‘buy’ with big buttons saying things like “Buy Now!”, websites ask their visitors to share the website on their social networks etc.

The issue isn’t the call to action. Even though getting the users to perform a certain action seemed the most difficult part, it can more be seen as a result of the emotional engagement. The emotional engagement is the key to success.
VII. In practice: MEERABENTEUEUR.DE

“Have no fear of perfection - you’ll never reach it.”
~ Salvador Dalí (1904 - 1989)

As said before MEERABENTEUEUR.DE is a web application that offers exclusive adventure trips to locations all over the world. Before the realization of the web application it was important that the web application was able to tell the users what a great experience it would be to travel with MEERABENTEUEUR.DE. To achieve this we needed to make the users emotionally engaged with MEERABENTEUEUR.DE, this was really important due the target group.

VII.1. The target group
The target group of MEERABENTEUEUR.DE is basically everybody who is interested in exclusive adventure journeys, for people who want to see the world and experience it in a way they dreamed about. Because MEERABENTEUEUR.DE travels are really exclusive and not likely to be seen somewhere else, the price for a MEERABENTEUEUR.DE travel is (most of the time) not the most cheap travel you can find. Therefore, the main target group is minimized to people between the ages of 30 till 60 years old (people who have a successful job and can afford a travel with a little higher price). Because these people are (usually) more used to ‘old fashioned’ (design from a few years back, much text on the website, etc.) web applications it wouldn’t be the design or techniques of the web application that would make the users emotionally engaged with MEERABENTEUEUR.DE.

VII.2. The goals
The goals of MEERABENTEUEUR.DE can be divided in two sections, primary and secondary goals. The primary goals are goals needed to achieve no matter how. The secondary goals are the goals that are important but must lead to the achievement of the primary goals.

VII.2.a. Primary goals
The primary goal for MEERABENTEUEUR.DE is to offer guided, eventful dive safaris and adventure tours throughout diverse regions of the world.

“Our passion for diving and our passion for the wonders of nature have driven us to this project. Our tours are prepared and made with love. Selected locations with a unique character give every journey a special flair. Faithful to our motto - diving with friends - we give our full commitment to make every trip a memorable one.”

That is the inspiration behind this primary goal.

VII.2.b. Secondary goals
Besides offering these tours, MEERABENTEUEUR.DE has also a few goals that must lead to completion of the primary goal.
List of secondary goals:

● Give the users of MEERABENTEUEER.DE the ability to dream and fantasize about exotic and adventurous journeys and experiences. And give them the opportunity to make this reality.

Why?
By giving the users of MEERABENTEUEER.DE the ability to dream and fantasize about exotic and adventurous journeys the emotion ‘longing’ gets stimulated, this makes the users more emotionally engaged. And by making the users emotionally engaged they’ll feel a certain kind of loyalty or connection to MEERABENTEUEER.DE which will lead to mouth-to-mouth marketing which eventually will lead to a completion of the primary goal.

● Offer more than a web application that ‘just’ offers journeys, but instead offer a web application that is a platform containing everything that is connected to exclusive and adventurous travels.

Why?
By accomplishing this goal it makes the experience of MEERABENTEUEER.DE more unique and more likely to remember, especially if the experience of the users is positive (see chapter III.2.). The more people remember MEERABENTEUEER.DE the easier it is for people to talk about it, and if people talk about it, it’s (free) mouth-to-mouth marketing which will (most likely) lead to more sold journeys (the primary goal).

VII.3. Triggered memories and emotions
To test if MEERABENTEUEER.DE is capable to create a positive emotional memory it was important to know what people would easily remember from the front page, since that is the first thing they’ll see in most scenario’s. To be able to test this, a ‘Memory Test’ would provide answers to the question; “What will be remembered after visiting MEERABENTEUEER.DE?”.

VII.3.a. What will be remembered?
From the test results (Appendix B) can be concluded that 85%\(^1\) remembers the content of the big image on the first page (slider or also called ‘eye-catcher’). That means that the purpose of the ‘eye-catcher’ is effective.

The memory created by the ‘eye-catcher’ is even lasting for a longer period of time. After confronting the people with the website again, this time with a different image in the ‘eye-catcher’, the response was equal (just with different terms) and the question “Isn’t this the website with the diver on it?” was heard a lot.

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\(^1\) This result is not achieved by the number shown in the test result, since the application that is used not always works how it should and groups answers together that have nothing to do with each other.
VII.3.b. The emotional triggers
To test emotions felt by using MEERABENTEUEUR.DE, it was important to know what people were feeling. There were no good (and in time/financial budget) tools available to measure emotions. One of the solutions could have been to study micro expressions, a long and very difficult process, to be able to tell what emotions people feel when looking and using something. An other solution, the one that’s been used, was to trust people to describe their emotions themselves. Before the test subject was able to do this in the best way possible it was really important that he or she was feeling comfortable and knew that this test was about MEERABENTEUEUR.DE and now about the test subject.

From the test results (Appendix C) can be concluded that the emotions triggered by MEERABENTEUEUR.DE are most often ‘Interest’ and ‘Longing’. This is most likely caused due the general wish to go away on a vacation to a location far away where it’s warm and exotic, exactly the kind of locations the journeys from MEERABENTEUEUR.DE are going to.

A conclusion per test subject is written below every test result, this was necessary to explain emotions felt per person. Because, as said before, emotions are different for everyone. What is important is that there were only positive emotions displayed when using MEERABENTEUEUR.DE, and even when using the web application for a longer period (instead of 5 seconds) the positive emotions increased or stayed the same. This means that the emotional memory (if one is created) will not be negative (100% of the test subject had a positive emotion when using MEERABENTEUEUR.DE).

VII.4. The elements of MEERABENTEUEUR.DE
MEERABENTEUEUR.DE contains a lot of different elements which all have a purpose to achieving the goals. Below is a description of the elements, in no specific order, with an explanation why these elements hold such a value for MEERABENTEUEUR.DE.

Community
Community is one of the key elements of MEERABENTEUEUR.DE. The community is so important because of the emotional engagement people get from being connected with a brand and ‘fellow travelers’ (see chapter IV.2.).

Images
Images are really important to MEERABENTEUEUR.DE, as the memory test (see chapter VII.3. and Appendix B) showed, images really tell more than a thousand words. Besides that, images are more easily remembered than words (words are processed by the left half of the brain with a speed of 40 bits per second, images are processed by the right half of the brain with a speed of 11 million bits per second13).

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33
Music
Music is for a lot of people something that they like to share with their environment, something that they can connect with. People turn on music to change their mood or they listen to music that fits their mood. MEERABENTEUEER.DE offers its own music. Giving the users something they can connect with and something that will improve the emotional engagement with the web application.

Journeys
The journeys are one of the most important elements of MEERABENTEUEER.DE, they’re part of the primary goal. The journeys is what it’s all about, it’s the dream and vision of MEERABENTEUEER.DE.

Recipes
Everybody needs food, even if you’re on a journey with MEERABENTEUEER.DE people need food. With recipes from culinary delights from all over the planet, MEERABENTEUEER.DE connects with its users through the stomach. Teaching them to cook delights from far places in their own home.

Travel stories
Stories from fellow travelers create a more personal connection with the users and will increase the emotional engagement the users of the web application have towards MEERABENTEUEER.DE.

News
Spreading news about everything that is connected to MEERABENTEUEER.DE will result into a more complete platform that is about more than just offering journeys (see secondary goals).

Support
The difference between MEERABENTEUEER.DE and traditional travel agencies that offer travels in the same category is the contact with the people. The traditional travel agencies want as less contact as possible, MEERABENTEUEER.DE want to be in contact as much as possible and pleasurable. This so MEERABENTEUEER.DE can offer the best support possible. This so the connection between MEERABENTEUEER.DE and its users gets more personal which will lead to more emotionally engaged users.
VIII. Conclusions

“I think and think for months and years. Ninety-nine times the conclusion is false. The hundredth time I am right.”
~ Albert Einstein (1879 - 1955)

Positive, emotional memories are memories with an emotional charge. This charge is caused by emotional events or experiences that refer to that memory. These emotional memories can arise from anywhere, web applications, difficult decisions or small choices made as a kid.

To control the emotional charge of an emotional memory with a web application it is important to know how certain emotions can be triggered and to work this out in a web application. There is no magic formula to create a web application that can make the user emotionally engaged. No certainty can be given that a web application can ever do this. However, it is possible to make it very much likely that this will happen. Though the base structure for a good web application is necessary for this, as described in chapter IV.

Web applications can manipulate emotions and the feelings of it’s users, however it’s not possible to make anybody feel obliged, there is just no magic formula that will get this result because every person is different and therefore will respond different. Though it is possible to make the user of a web application get emotionally engaged with the web application. Because of the emotional engagement the user will feel a certain kind of loyalty towards the web application and will therefore more likely do things the web application asks of him.

1. What makes the mind create a positive, emotional memory?
   a. What is a positive, emotional memory in a web application?
      A positive, emotional memory is a memory that contains an emotional charge (everywhere, so also in web applications).
   b. How can an emotional charge for an emotional memory be controlled?
      The emotional charge can be controlled by triggering certain emotions that make the user emotionally engaged with the web application.

2. How can a person be manipulated to feel obliged to do something?
   a. What feelings ensure that a person feels obliged to perform a certain action? There are no feelings that can ensure a person will feel obliged to perform a certain action. However it is possible to create an emotional connection with a person that will make it more likely that he will perform an action.
   b. How can these feelings be triggered?
      An emotional connection can be created by many different techniques such as making the user feel special, giving them a reward, surprise them etc. (see chapter V).

3. How is a person (discreetly) triggered to perform an action?
   A person can be triggered to perform an action by establishing an emotional connection with the person and than simply ask them or reward them to do so (see chapter V & VI).
References

“The secret to creativity is knowing how to hide your sources.”
~ Albert Einstein (1879 - 1955)

Appendix

“It comes from saying no to 1,000 things to make sure we don’t get on the wrong track or try to do too much.”

~ Steve Jobs (1955 - 2011)

Appendix A: Geneva Emotion Wheel, by K.R. Scherer
Appendix B: Test results ‘Memory Test’

The most remembered words and phrases for your webpage:

17 **Duiker** (diver, water, Header met een grote foto er in, Meerabenteuer, dier met slurf, Die cenoten op de header, Duiker op de header, Slider in header, take a look het test screenshot and remember, diver against green background, Diver underwater green background, meren)

3 **Green** (Green & Blue)

3 **Blue** (Blue Logo, blue / white page)

3 **Social Media**

The ‘Memory Test’ is based on a screenshot from the first page of MEERABENTEUEER.DE (Appendix D).
Appendix C: Test results ‘Emotion Test’

Explanation of colors:

Emotions felt after seeing the web application MEERABENTEUEL.DE for 5 seconds.

Emotions felt after seeing the web application MEERABENTEUEL.DE for longer than 1 minute.

A color in between in used to display a slow, linear change of emotion.
Test Subject #1: Sabine Sträter, 46 years old
Bio: Passion for birds and nature, contains a (short) history of traveling to exotic locations.

Conclusion: Subject #1 showed in the beginning immediately a strong feeling of happiness. Most likely this is due the (positive) emotional memory subject #1 has from her history of traveling. She also showed some longing and interest in the beginning, with a severe increase of interest, and a slighter increase of longing after visiting the website for longer period.
Test Subject #2: Axel Sträter, 51 years old
Bio: Extreme fascination for Egypt and technology, a (short) history of traveling to exotic locations.

Conclusion: Subject #2 showed, just as his wife (subject #1), immediately a strong feeling of happiness. In combination with the result from subject #1, it's safe to assume this is due the (positive) emotional memory subject #1 and subject #2 have from their history of traveling. Besides the feeling of happiness the feeling of interest grew linear the longer the web application was visited.
**Test Subject #3:** Jörg Helmer, 44 years old  
**Bio:** Works for an international taxi company, very social and spontaneous.

**Conclusion:** Because subject #3 works for an international taxi company it’s near impossible for him to get free for a whole week. There is a chance that this causes the strong longing feeling, because it’s very difficult for him to go on a MEERABENTEUER.DE journey.
**Test Subject #4:** Manfred Gallus, 53 years old  
**Bio:** Likes nature and cities, and loves to travel. His dream is to on a safari one day.

**Conclusion:** Immediately a strong feeling of longing and interest were present after the 5 seconds of looking at the web application. This has (most likely) a lot to do with the dream to go on a safari one day. After looking at the web application for a longer period of time, both emotions just became heavier.
Test Subject #5: Julia Müller, 36 years old

Bio: Works in an office and makes a lot of city trips/adventures, not particularly interested in nature, but open for new experiences.

Conclusion: After a few seconds watching there was a strong feeling of happiness and pleasure, most likely due (positive) emotional memories from city trips or other adventures. Also longing and interest are high after a first impression and grows after a longer period of time.
**Test Subject #6:** Saskia Sträter, 18 years old

**Bio:** Student, interested in nature, travelling around the world and exploring new things everyday.

**Conclusion:** The first impression gives subject #6 some pleasure and a strong feeling for nostalgia and interest. After a longer period on the web application the longing increase, possibly because she is not able to go (not enough money or school duties) and that makes her even longing more to go on a journey.
Appendix D: Screenshot from the first page of MEERABENTEUEER.DE