# Designing a cruiser boat with focus on emotional value

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**ABSTRACT**

Many cruiser boats on the market today are very uniform in both their design and overall solutions, and there is a tendency to put too much focus on current fashion rather than on innovation. A human centered design approach (anchored in emotional design) was used to create a new boat, named Akavari as part of the work leading up to the writing of this paper. There are certain key professionals within the field of emotional design and their theories and methodologies will be discussed in this paper. These theories and methodologies have also been applied in the creation of Akavari. The cruiser boat was designed to promote specific emotions that would make it unique compared to the other cruiser boats on the market. A survey was conducted to verify if the Akavari made a bigger emotional response compared to a selection of typical boats. An evaluation of the study uncovered that the Akavari did not get the highest score within desire and satisfaction. However it created a very high level of fascination and joy compared to the other boats. These emotions were very much intended during the design process. The results justified the choice of design method and confirmed the potential that lies within applying emotional design in development of cruiser boats.

**KEYWORDS:** Attractiveness, design, pleasure, emotion, methodology of design, aesthetics, cruiser boats, catamaran, PrEmo.

## 1. INTRODUCTION

The field of emotional design has gained global attention since the annual International Conference on Design & Emotion was established in 1999 [1]. The importance of the emotional aspect when interacting with products is fundamental for the user experience. Usability and utility are significant contributing factors as well, but excitement, joy, fun, and also anger, anxiety and fear, are all essential emotional parts of our experiences in life. According to new scientific advances in our understanding of the brain, emotions also have a powerful influence on the cognitive system as well as on our judgmental system. Donald Norman believes that everything we do and think is embedded with emotion, and much of it is subconsciously. On the other hand emotions change the way we think, and serve as constant guides to appropriate behavior. Norman also states that the emotions will steer us away from bad, and guide us towards good [2].

When purchasing a product the emotions will aid us in the decision making. The real value of a product is not just to fulfill the functions it performs, but to meet the people's emotional needs [2]. When we feel an attraction towards a product, Desmet argues that this follows as a result of appraisal. Arnold states that an appraisal is a direct non-intellectual, non-reflective and automatic judgment of the meaning of a situation [3]. This appraisal arises when the stimuli from the product interacts with our concerns or needs, which again will lead to an emotional response. Even though the emotional aspect of the human mind is something

often looked upon as intangible, there are methodological frameworks for designing products that will promote specific emotional reactions. The result can be a product where learning is improved by positive emotion. Also the perceived usability will be improved and lead to a more human sustainable world which is not driven by technology as stated by Desmet [4].

This paper has a twofold purpose. The first section will discuss and explain emotional design, as well as highlighting some of the most important contributions to the field. Even though the experts agree on many areas, there are still some differences in what they value as important. As we will see, Hekkert and Desmet focus on the methodology on how to specifically aim the design to create certain emotions. Hekkert is particularly interested in evolutionary traits that are common ground for all mankind and that trigger certain emotions. Norman focuses more on the psychology behind a product experience. Together these approaches make a complete picture on how to design to evoke specific emotions.

The second section of this paper will target the importance of designing a cruiser boat with focus on applying emotional value, and show the potential of using emotional design to discover untapped areas of boating design. The cruiser boats on the market today look very similar, and they tend to follow the same trends with respect to the lines of the hull and the interior solutions. A cruiser boat was designed by me and a fellow student Martin Dahl to promote joy and fascination for the user. The hypothesis was that this boat would generate a stronger response for these emotions than other typical boats on the market today. The previously discussed theories and methodologies were applied when designing this boat, named "Akavari".

## 2 PRODUCT INTERACTION AND EMOTION

### 2.1 Appraisal theory

The "Appraisal theory" is an essential part of emotional design, and is useful to keep in mind when studying other work within this field as it establishes an underlying understanding of the user's emotional response to products. Multiple professors from the University of Delft have made a framework for achieving specific appraisals. The term appraisal was picked out from the field of psychology by Desmet and Hekkert and placed suitably in relation with product design. Appraisal is a reaction that happens when our concerns interact with the stimulus emitted from a product[5]. We may then appraise the product as e.g. novel. This appraisal happens at a cognitive level and leads to an emotion being triggered.

Hekkert and Desmet's model proposes concerns consisting of goals, standards and attitudes. The goals are event related concerns, and might be looked upon as things we would like to achieve, or things we want to get done. The goals can be closely related to human-product relationships, as a person might purchase a product in order to help him accomplish something. A boat can meet our need of transportation as an example. The goals are mainly anchored in our personal well-being. The standards however are usually socially accepted norms, learned through culture and are connected to the preservation of social structures. Finally, the attitudes represent the concerns involved with taste and our own perception of what we like or dislike with particular objects [4,5].

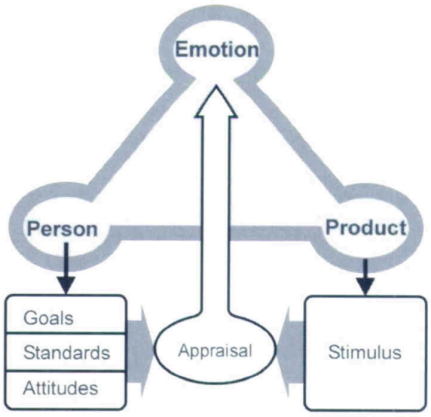


*Figure 1: Desmet and Hekkert's model [3].*

### 2.2 The three components of product experience

Norman argues that the product experience consists of three major components which also are fundamental to our behavior. These components or levels are the visceral, behavioral and the reflective level respectively [2].

#### *2.2.1 The visceral level*

*The visceral level* is in short the everyday cognitive information we receive through our senses. It also includes cognitive reactions that affect our body such as the feeling of speed or falling. The visceral level is efficient at assessing situations quickly and for making assessments about situations as good, bad, dangerous or safe [2]. Quick evaluations of aesthetics also fall into this category. Hekkert postulated four principles that together fully describe the cognitive aesthetic process. In other words these principles are general in human nature, as a result of evolution. The principles complement Norman's theories. The first evolutionary principle by Hekkert is to create maximum effect with minimum means. In short the senses prefer to operate as economically as possible. We desire to hear, see, smell and taste faster with less effort. This is beneficial from an evolutionary point of view as well, in order to keep the brain capacity and energy consumption low and manageable. It pleases the senses when we get the info quickly through a simple design that delivers a wealth of info [6]. Norman however argues here that rich and complex aesthetics might be more pleasurable. He believes that rich and complex aesthetics is everlasting, because you can only focus on parts of the object at the same time. In other words you need to pay attention to see the beauty. I believe that we don't have time to do this with every product we come across. I would be an overflow of information. But does this mean that we fail to notice beauty in our everyday life? The simplicity in design is a delight when it delivers meaning efficiently, I think. If you make the design ambiguous as well it could allow for more than just one interpretation. This can be a way of creating a more sophisticated design without compromising the simplicity. In fact this could contribute to enhance the beauty of the product, I believe. As shown below in Figure 2, a spray bottle designed by me was associated with a number of animals, such as a penguin, a duck and a swan, as well as a vase. These associations might serve to increase the beauty of the aesthetics in a more profound way than to just create complexity.

*Figure 2: Spray bottle.*

Principle 2 by Hekkert promotes the importance of unity in variety. Because of the constant flow of information our senses receive, we like to categorize and create order in chaos. So the product should be easy to identify [6]. Norman states that it is easier to grow tired of the aesthetics if the product has no secrets to reveal, so it should keep our attention with some mysteries [2]. It can be argued that both are right, it should be possible

to categorize, but still offer novelty. This brings us to the next principle. Principle 3 involves the term MAYA (Most Advanced Yet Acceptable). This is an interesting one because this is where our personal taste matters. According to Hekkert we prefer the most typical product from a category that we have been exposed to repeatedly. This leads to a reduction of risk of the unknown but at the same time we enjoy original things to overcome boredom [6]. I want to emphasize how important it is to remember this when designing. You need to know your audience and explore their specific needs. This is where a human centered design approach might prove useful. Desmet states that an unexpected feature can give a pleasant surprise that helps create a "Wow" effect [5]. The last principle is "Optimal match", and is about the significance of making sure that the product emits the same message to all our senses. As Hekkert states, "This contributes to an elevated identification of the product [6].

#### 2.2.2 *The behavioral* level

The behavioral level is the level of the brain, which deals with most of our everyday behavior, and is mostly associated with our automatic use of products. An example as such can be driving a car. Norman compares this level to a trance that the user slips into when interacting with a product without being fully aware of the use. I believe this is where the designer must concentrate on the unarticulated and unexpressed needs of the user by thorough study. It is often hard to point out such flaws. As Norman says, we often blame ourselves and not the product when inserting the key upside down, or when locking the keys in the car. The user might not be aware and point out these mistakes as a result of design flaws [2]. Failing to meet the utilitarian needs can result in anger and frustration as stated by Chitturi. These needs are considered morally superior to the hedonic needs and are an obligation to fulfill. However the hedonic needs are important to consider as well in order to create arousal and excitement, he argues [7]. Overbeeke emphasizes the importance of making the mechanics of the product visible and inspire to more interaction. His reasoning is that we understand the world of moving mechanics since we consider to a certain extent our own bodies to be mechanical machines [8]. Making all the technology hidden is something that might lower the trust in the product, which is essential. Therefore, revealing the functions and making them accessible for interaction is a clever way of keeping the user's attention and increase the usability. I think however that if this is exaggerated, the product might give away all of its mysteries that we like to explore. We all enjoy a good puzzle to stimulate our curiosity. There is a fine balance here that needs to be established when designing. The curiosity is important to stimulate in order to maintain interest in the product, as documented by Hekkert [6].

#### *2.2.3 The reflective* level

*The reflective* level of the brain is probably the most difficult part to target with design. It can override both the behavioral and the visceral level of the brain and also reflects upon matters in our daily life. In a way it controls our daily behavior. This is also where the product attachment can be made, for example by creating memories together with the product. In retrospect one might overlook plenty of bad experiences and poor features with a product because of the many good memories you have with this object [2]. As an example you might have a boat that you have been on several adventures with together with your family. As you look back at the times when you had dinner around the cozy table at the back of the boat during sunsets, you tend to forget the problematic times when you had to squeeze yourself past the oversized table every time you had to go and fetch something in the cabin. These experiences tend to fade away because of the numerous good times you had on the boat. Norman even claims that the boat

or product can serve as a keeper of bonds between family members when not all of them are present at the boat. You might take the boat out for a trip by yourself, and still feel the presence of your family even though they are not there.

The concerns in the appraisal model from Desmet and Hekkert, can lay a fundament for how our reflective part of the brain operates. Our goals, standards and attitudes will differ from one person to another and thereby make us unique. This is one aspect that makes the reflective level difficult to target with design, because of the user's uniqueness. It can also be said that the behavioral level might differ from one person to another as to how skillful they are at using the product, but this is measurable and less intangible than the reflective part [2,3,4]

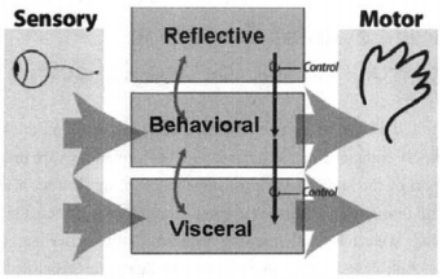


*Figure 3: How the three levels interact [2].*

As shown in the figure a human behavior might result from a so called top-down approach, when the process is thought driven and the reflective part of the brain is initiating an act. It can also be a Bottom-up process where perception is the starting point, affecting the behavioral and reflective part. A siren picked up by the hearing sense can be such an initiator, as an example of a bottom up process. This will be discussed later in relation to boating experience and is highly relevant to consider in the emotional design process [2].

### 2.3 The PrEmo

Desmet has created a tool that can be used as a product emotion measurement instrument, called PrEmo [9]. This instrument was applied in the experiment later presented in this paper. The PrEmo is designed to make it easier for the test subjects to express their feelings in an unarticulated way. Furthermore PrEmo uses animated cartoon characters to simulate emotions, together with a sound when clicked on. These characters make it easier for the users to report their feelings.

With the expressions shown in Figure 4 the emotional response becomes less tangible. Still the cards serve only as assistance and not a restriction, as Desmet points out. The results can then be placed in a diagram to map out the different emotional responses. The PrEmo has been used successfully by many big companies such as Toyota, Philips, Energizer, KLM, Microsoft and so on [9]. Therefore it has received a lot of acknowledgement. It also proved to serve as an effective instrument in this paper. Still I believe that not all of these cartoon figures are equally important for any products. As an example, the cartoon with a crying face is not very relevant for evaluating boats. The most relevant emotions are represented in the PreMo to measure any kind of product. Therefore it is up to the personnel who use the instrument to choose which ones of the cartoons that need special attention and which ones do not, in relation to a specific product being tested.

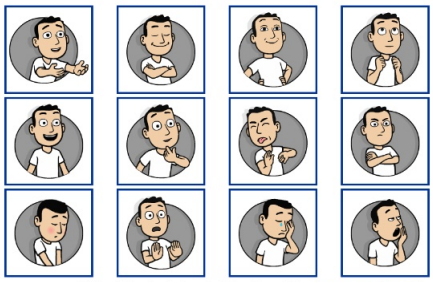

*Figure 4: Product Emotion measurement instrument (PrEmo) [9].*

## 3. CRUISER BOAT WITH DESIGNED EMOTIONAL VALUE

### 3.1 The status on today's cruiser boat industry

The design in relation to boating industry changes very slowly, in fact so slowly that it is noticeable roughly every twentieth

year. It seems that every 20 years the lines of the hull change slightly. In 2010, the lines of the hull are going back to a combination of the ones from the 1920 and 1950, seen in figure 5 [10]. These can be considered as minor changes and are mostly due to aesthetic purposes and trends. Imagine that almost a century has passed and yet these lines have changed only slightly. The basic idea of the hull design is still intact, as if this is the ultimate shape that meets all of our concerns. It should be mentioned that the hull beneath the water level has been improved to reduce resistance and increase grip in the water, but the changes still do not eliminate bouncing and general discomfort during high speed [10]. There have been some major advances in boating designs over the years like the catamaran. The catamaran is a multi-hulled watercraft consisting of two parallel hulls of the same size [11]. Its stability in water is far superior to that of the traditional hull and it will travel with less consumption of fuel [10]. Also the hull offers plenty of new areas of innovation that might benefit the user's needs. There have been other technological advances as well, but it seems as if the traditional and conservative industry tend to ignore them and continue with the same hull as always, except for some new tweaks now and then.

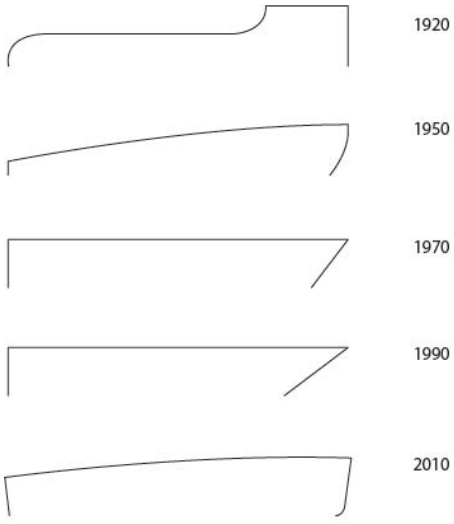


*Figure 5: Hull trends from 1920-2010 [10].*

So if the industry is not driven by technology then what is the evolving strategy? The traditional hull bounces up and down with increasing speed, creating discomfort and unnecessary anxiety to the passengers on board. Yet one can argue that handling the raw forces of nature can still be looked upon as a bottom up experience where owners take pleasure in the visceral sense of fear plus high arousal, and end the experience with a reflective feeling of pride and accomplishment [2]. However not all owners of boats are such thrill seekers. Families might have other priorities as an example. The experience should in this case be top down, where you use the reflective part of the brain to reduce the speed controlling the behavioral level, without the discomfort of the bouncing.

The interior of the boats have also incrementally changed over the years since fiber glass was introduced in the 1940`s, thereby industrializing the production of boats. Together with this revolution came rounder edges and more integrated forms, but the changes since then have been small [12]. Is the boating interior in cruiser boats so user friendly that no mentionable changes have been needed over the years? I believe not. Still there have been some changes like how equipment can be concealed within sitting areas, as well as new ways of converting sitting areas for different usage. But in general these are minor changes. There should always be a drive towards further improvements. Experimenting with bold attempts to shape new interiors is one way to follow up on Hekkerts MAYA principle [6]. Yet no one seems to dare to stand out in the market and try to do something unique, especially in Europe. The interior layouts on today's cruiser boats are almost all the same with a few variations [10]. It seems that the manufacturers watch out for the trends out there and then start immediately with the processing of ideas. I have experienced this phenomena first hand when I did a design project for a highly

known boating company in Norway, to design a 24 foot boat in autumn 2014. They asked me to focus on the trends as a starting point and create a suggestion for a new concept boat. The lack of new innovative designs might derive from this way of thinking at the initiation of the design process.

### 3.2 Examples of ideas anchored in emotional design

Emotions influence the way we solve problems, for example by changing the way the cognitive system operates. Furthermore it has been scientifically proven that being happy will facilitate creative thinking and broaden the thought process [2]. In the opposite way, anxiousness will narrow the thought process and increase the focus on the problem at hand. The latter being a useful attribute if facing danger. However, too much anxiousness and we get tunnel vision, where the ability to solve problems decreases dramatically [2]. In relation to boating, the boat could behave differently when used in different settings, to enhance happiness or to slightly enhance anxiousness. For example an alarming pinging sound could signify that the people on board need to put on their safety vests. The sound represents a threat-like situation. In a way the different behaviors could contribute to making the boat be perceived as a living object, which Jordan points out as one of the top priorities when designing products [13].

### 3.3 Akavari

In order to see whether or not the boats on the market today really are as uniform in their design and emotional appeal as I argue, a 26 foot boat was designed through the combined use of design principles by Hekkert, Desmet and Norman. Hekkert's model was applied early in the design process and the concerns (goals, standards and attitudes) were chosen as well as the corresponding stimulus the product should deliver, as shown in figure 5. The target group we aimed towards likes to use the ocean frequently for pleasure and like to create intimacy with the people onboard. Furthermore they welcome new playful solutions. To meet these concerns the boat needed to offer new adventurous solutions and increase the level of contact between the user and the sea. It should also be a platform for relatedness, as illustrated in figure 5. When the intended set of stimuli from the product meet the concerns of the target group, I believe they will appraise the boat as novel and including as an instant reaction to the boat. In turn the appraisals will lead to the emotions of Joy and Fascination as they see what the Akavari has to offer. The elements in this model (see Figure 5) was carefully picked out and related to each other through discussions with a fellow student Martin Dahl as well as with professor Trond Are Øritsland. The focus during the design process was then directed towards how the boat could radiate the stimulus previously mentioned. Together these stimuli should meet the users' concerns by responding to their visceral, behavioral and reflective levels respectively.

The final concept became a 26 foot engine driven catamaran called "Akavari", a day-cruiser (figure 6). In order to create the feeling of joy, we wanted to maximize the surface area in order to fully take advantage of sunny days and also create more ways of enjoying life onboard the boat. The most efficient way of doing this was to go with twin hulls.

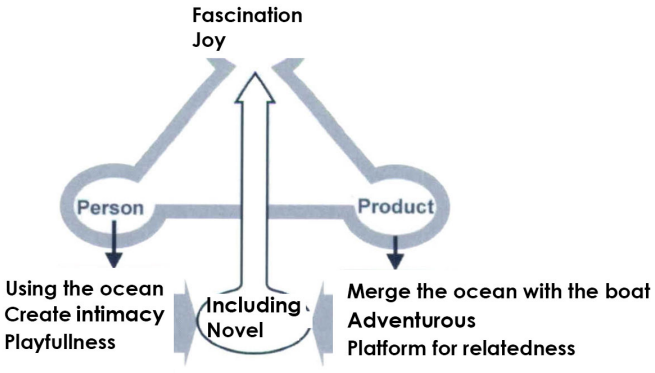


*Figure 5: The appraisal model behind Akavari.*

The twin hulls created a big opportunity to merge the ocean with the boat by having a huge net in front. Not only will the net bring the users closer to the ocean. This feature is also expected to appeal to the reflective part of the brain. You might feel as if being on an adventure while the boat cuts through the waves and occasionally splash some water through the net. The twin hull itself will provide a smoother ride through the waves with a high level of stability. In addition there are foldable sun beds at the back of the boat together with a foldable bathing platform. The table can also be lowered and a firm pillow can be placed on top, creating a cozy and intimate environment, adding to the relaxation onboard. The catamaran is 4.20m wide and this opens up for the opportunity to seat as many as 7-8 people around the table (the back pillow at the driver seat can be flipped to create two additional spots). This is a remarkable capacity for a 26 foot boat, and invites the users to build and strengthen relations through social activities onboard.

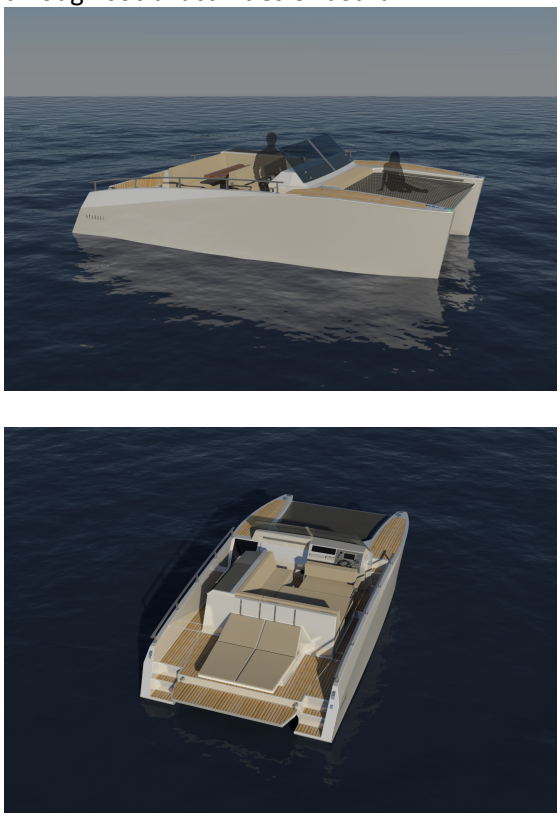

*Figure 6 Akavari (3D-model).*

### 3.4 The hypothesis

The hypothesis for the following experiment is that Akavari, which is designed by methods derived from emotional design will create a bigger emotional impact on the users than the average boat in this market segment today of day-cruisers. I expected this to happen because Akavari is created to build lasting emotional bonds with its users. The cruiser boats today have reached a certain point in their development that in many cases make them hard to distinguish from each other [10]. The technology advancements and implementations are reaching a point of perfection (with the current overall hull design). Therefore I believe that the human centered approach for making a boat might present an advantage and create a unique concept that will appeal to specific emotions for the users.

The following experiment is meant to serve two purposes. Firstly, to confirm that cruiser boats today are very uniform. Secondly, to prove that a boat designed from methodology derived from emotional design will give a larger emotional response than the current ones on the market.

## 4. METHODOLOGY

### 4.1 Selecting representative boats for survey comparisons

The first step in the experiment is to pick out well-known and representative cruiser boats on today's market (Figure 7). The names of the cruiser boats will be kept anonymous but boat B and D is well known in Norway. Boat A is Swedish and is made by a famous designer. I believe these three boats with their differences, cover today's product spectrum in a good way. Boat A is comfortable and contains a cabin, lots of interior to interact with, such as a dining area and a kitchen. Boat B is stripped of all excessive features, giving it a simple design and is made for high performance. Boat D is somewhat in between boat A and B. It is built for high

performance, yet it also offers an advanced and comfortable interior. Because the Akavari (boat C) is a bit different from the other cruiser boats with its twin hulls, we wanted to add another catamaran to the survey. Boat E was the closest boat we could find to match with the Akavari, as there are very few small sized engine driven catamarans that exist today. All of the boats were neutrally presented with a 3D model (except boat E), and placed in a neutral grey/white studio. It was important not to give any of the boats an advantage e.g. by being set in nice surroundings.


*Figure 7: The cruiser boats used in survey.*

### 4.2 The PrEmo was applied

Next the PrEmo, explained earlier, was used as an online survey. Each boat got labeled with it's own character and the brand was not revealed to the survey participants. It was also kept a secret that we had created one of the boats. It was desirable to test the emotional response to the design of the boats and the PrEmo was the easiest and most efficient way of doing this. During the test each participant had to rate all 12 emotions from a scale ranging from 1-4. Furthermore we carefully selected our survey participants. We wanted to primarily test people above 40 as they are most likely established and have probably considered purchasing a boat at some point.

## 5. RESULTS

28 participants initiated the survey, but only 12 finished (due to technical problems with the survey application, unfortunately). 3 of the participants were in the age between 20-30, 1 person between 40-50 and 8 were between 50-60. All of the participants recognized at least one of the reference boats. One of the questions in the survey asked about the level of interest the participants had concerning boats, and it was very clear that the older the participants were, the higher the interest.

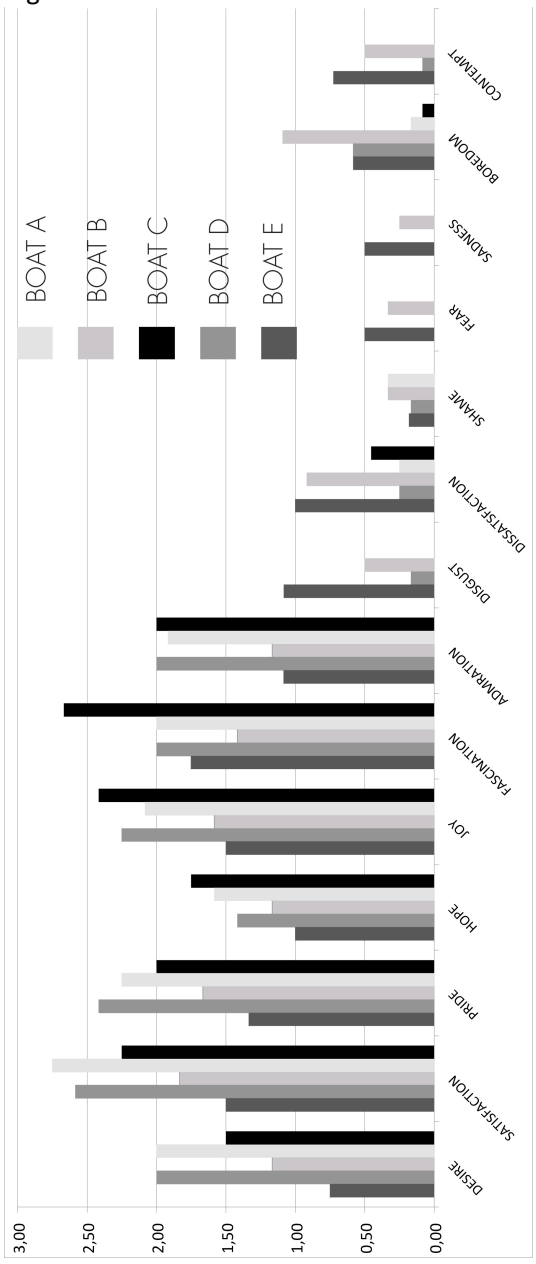


*Figure 8: Results from PrEmo presented in graph. Emotions are rated from 0-4 on Y-axis, and the emotions are listed on X-axis.*

The graph in figure 8 displays the results from the survey where boat A and B have the highest scores on Desire, Satisfaction and Pride. Akavari achieved the highest score in Hope, Joy and Fascination. Akavari and boat D are equal with the best scores for Admiration. The negative emotions have low scores in general, but it is worth mentioning that boat B and E have the highest scores for these.

## 6.DISCUSSION

The Akavari was designed on principles derived from the field of emotional design. The aim of this experiment was to determine whether or not this methodological approach would trigger a higher score on selected emotions than other cruiser boats. As it turned out, the Akavari did not get the highest score on the emotions of desire, satisfaction or pride. Many of the participants in the survey recognized several of the boats with their corresponding manufacturers. The brand can have a powerful impact on these three emotions (desire, satisfaction, pride). Boat A and D are the most exclusive and expensive boats in the survey, and they both did well in relation to the three mentioned emotions. The brand affects the reflective part of the brain, creating a top-down response as Norman would argue [2]. Boat A and D would fulfill the need of being accepted and maybe also admired by others. In other words, it would further establish a desired self image that can be displayed to the world. This can also be looked upon as fulfilling a goal in the appraisal model (figure 1).

The Akavari is almost a new breed within boating. It is unusual for people to see an engine driven catamaran with only a length of 26 feet. As one of Hekkert's evolutionary principles states, people prefer the most typical product from a category that we have been exposed to repeatedly [6]. I believe this to be true and that the phenomenon was demonstrated in our survey. Following the MAYA principle (most advanced yet acceptable) it can be said that the Akavari might have been a bit too unique. The catamaran's shape can create insecurity because the potential buyers do not know how the people in general will react to the boat. This can affect the emotions of satisfaction, pride and desire, and might explain why the Akavari did not get the top score here.

However, the designing process behind Akavari was directed towards making the boat generate a strong feeling of joy and fascination. We believed that some emotions would have to be sacrificed in order to fully succeed with these two. As indicated in the results, the Akavari was acknowledged as the boat which received the most fascination. The catamaran hull shape, together with it's relaxing, adventurous, and including features has clearly made an impact. Akavari was on top with respect to the emotion of hope as well. I believe this comes as a result of the appraisal of novelty in our model (figure 5). I would like to think that Akavari was appraised as novel, just as we intended. Therefore the boat might be perceived as future-oriented and create hope for a future with more kinds of boats to select from. The Akavari was equally admired with boat D, with the same top score, and this might follow as a result of the same argument as for the emotion of hope - people admire products that are innovative and aim for the future.

It is interesting to notice that the emotional responses to the boats in general are split in two. The hypothesis that all the boats except the Akavari and boat E (because they both are quite unique) would generate very similar emotional response seems to only be partially true. Boat A and D have very similar results as seen in the graph. They both offer more luxurious interior and features than boat B. They have almost the same score with small variations for all the positive emotions. Boat B however, got generally low score on the positive

emotions and high on the negative ones. A contributing factor for this phenomenon might be how the boats are presented in the photos (in the survey). Boat D has a smoother high quality render with a different orientation of the boat than boat B. Still I think that boat B has a very simple design, and it delivers all the information it needs as to how it functions and so on. Therefore I would have suspected it to be a pleasing sight for the senses as it is very economical to process for the brain, as Hekkert would say[6]. However, the design lacks ambiguity and novelty and therefore might be perceived as dull. As argued earlier the boats need to keep some secrets to maintain the interest among the users. Boat B has few secrets and reveals it all at first glance. Boats A, C and D stimulate curiosity as they all have functions partly concealed. You might for example wonder how the interior works at the front of boat D or how the bathing platform operates on the Akavari. Because the participants only see the pictures, they will start to wonder about the mysteries of how the boat functions. These mysteries are important, and I believe that boat B would gain plenty of score points if some features were added to stimulate the imagination.

Because of the fact that only 12 participated and completed the survey, it is not enough to make a complete picture of how the emotional response would be in general. However, our experiment might still give an indication of how the responses actually would have been with a more representative number of participants.

We got feedback from some participants that the PrEmo provided an alternative and fun way of doing a survey. Due to the fact that this survey was done online, it was not possible to see how the participants reacted to the boats with respect to body language and facial expressions. It would have been desirable to let them take the survey at a neutral location with us present. In this case we could have asked some follow-up questions as to why the participants responded the way they did and maybe identify some of their concerns. When mapping out their concerns we could provide an explanation as to why they felt some emotions or not. In relation to the Akavari some of their concerns might have collided with the boat's stimuli, thereby creating different appraisals and emotions. Also the stimuli from Akavari might have been interpreted differently by the participants. For example, we wanted the net to be looked upon as adventurous and fun, but some might have considered the net to be dangerous and scary. Therefore as mentioned, a follow-up interview would have further clarified how the participants actually felt and perceived the Akavari. Then we could have compared this interview with our appraisal model, figure 5. Due to geographical distances it was difficult to meet the participants face to face. Still we believe the results were satisfying and as mentioned earlier the Akavari did very well on joy and fascination, which were our intended emotions to stimulate.

## 7. CONCLUSION

The cruiser boats on the market today are very similar both with respect to their overall lines of the hull, and in relation to the interior solutions [10]. This is particularly the case in Scandinavia and Europe. There are some manufacturers who try out new ideas, but these boats are usually very luxurious and are produced in limited numbers. This paper was done to shed light on new ways of developing boats, with a more human centered approach. Methodologies and theories from the field of emotional design were discussed and used to create a 26-foot catamaran for recreational use, called Akavari. The Akavari was designed with the intention of provoking the emotions of fascination and joy, and it came out on top for both in the performed survey. There were only 12 participants who completed the survey,

so it is hard to draw a conclusion based on these numbers. However, it could give us an indication as to how the boats will be perceived if tested on a larger group of respondents. I believe this paper could provide inspiration for designing cruiser boats that can promote different emotional responses from users. Some cruiser boats may be designed to promote pride and others to promote satisfaction or other emotions, thereby creating a greater variety of cruiser boats to choose from within this market segment. Each emotional response for every boat will be unique, as they are specifically designed to stimulate certain emotions. To summarize, I think that emotional design can set focus on the user's concerns in a more fundamental way. In our design experiment we demonstrated that this methodology could provide new cruiser boats that will stimulate lasting emotional attachments. The results justified the choice of design method and confirmed the potential that lies within applying emotional design in development of cruiser boats. I also believe that the methodology used in this paper can be applied to the development of any other product as well.

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