A design process from a collaborative point of view

Exploring the importance of collaboration between designers and clients

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Abstract

This essay studies the design process from a collaborative point of view. A literature study has been carried out with focus on design processes and collaborative design, where important concepts and notions are presented. A practical design process was carried out where the project was to create a station identification for Swedish Channel 9. The process was then retrospectively analyzed and broken down into a time-line describing the whole process from amongst other a collaborative point of view. Collaboration between designers and client is found to be very important for the final design. Constraints are considered important to force creativity and the ability to convey abstract thoughts over long distance channels such as e-mail is found to be important in order to overcome the spatial barrier that exists in many design processes today.

1. Introduction

Communication and collaboration between designer and client has always existed and been an important part of the design process. Over the last decade, tools for communication have developed rapidly. This has in turn resulted in a greater possibility for collaboration over large distances. This type of collaboration places higher demands on both client and designer since abstract thoughts and ideas might be harder to convey over distance (Olsson & Olsson, 2001).

The purpose of this report is to analyze how collaboration between designer and client affects, shapes and constrains the final design. We have tried to achieve this by evaluating a design process retrospectively from a collaborative point of view. Further we have constructed a timeline that describes the relationship between prototype development and the collaboration that has taken place between designer and client.

Can such a model help answer how the final design is influenced by the interaction and collaboration that takes place between two designers and one client? Is the constraints the client sets an advantage or a disadvantage for the final result? Can communication aids such as e-mail act as acceptable substitutes for face-to-face meetings when there is a long spatial distance between designer and client?
2. Related research

2.1 Collaborative Design

A design process is often so complex that it is impossible for an individual to implement (Stolterman, Löwgren, 2004). Even if the designer works alone, there is usually a client that provides instructions and restrictions to what is to be designed. In this paper we define Collaborative Design as a collaborative design process between several designers and / or between the designer and client. Therefore, we distinguish Collaborative design and the concept of Participatory Design, which refers to a design process where the final user is involved in all stages (Schuler, Namioka. 1993).

2.1.2 The spatial barrier

Today, thanks to globalization, a designer has greater opportunity to work with other designers and customers located in other cities or countries. This places demands on new ways for the designer and the employer to communicate. Fischer (2004) presents five barriers that must be overcome to implement collaborative design successfully (Table 1).

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Core Limitation</th>
<th>Addressed by</th>
<th>Media/Technologies</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial</td>
<td>Participants are unable to meet face-to-face; low local density of people sharing interests</td>
<td>Computer-mediated communication</td>
<td>E-mail, chat rooms, video conferences, local knowledge in global societies</td>
<td>Achieve common ground; behavior needs to be adjusted to the limitations of the technology</td>
</tr>
<tr>
<td>Temporal</td>
<td>Design and use time: Who is the beneficiary and who has to do the work?</td>
<td>Long-term, indirect communication; meta-design</td>
<td>Group memories, Organizational memories</td>
<td>Design rationale, reflexive computer-supported cooperative work (CSCW)</td>
</tr>
<tr>
<td>Conceptual within domains</td>
<td>Group-think</td>
<td>Communities of Practice, legitimate peripheral participation (LPP)</td>
<td>Domain-oriented design environments (DODEs)</td>
<td>Innovation</td>
</tr>
<tr>
<td>(different expertise levels)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptual between domains</td>
<td>Establishing a shared understanding</td>
<td>Communities of Interest; boundary objects</td>
<td>Environment and Discovery Collaboratory</td>
<td>Common ground; To bridge different domain semantics, different ontologies</td>
</tr>
<tr>
<td>Technological</td>
<td>Requires fluency in interacting with digital media</td>
<td>Distributed cognition, socio-technical environments; meta-design</td>
<td>Agents, critics, simulations</td>
<td>Formalization; support human-problem-domain interaction</td>
</tr>
</tbody>
</table>

Table 1. Overview of the collaborative barriers (Fischer, 2004).

In this paper, we restrict ourselves to one barrier which we believe are of most interest to us, the spatial barrier. The spatial barrier appears when participants in a design process are not able to meet face-to-face (Fischer, 2004). The problem is partly solved by e-mail, chat rooms, video conferencing and other computer-based communication. Olsson and Olsson (2001) claims that issues with trust and problems of less concrete nature remains despite these aids.
2.2 The dynamic design process

In Stolterman and Löwgren (2004) the design process is divided into three abstraction levels: vision, operative image and specification. Stolterman and Löwgren (2004) argue that these three elements are linked with each other and that the designer constantly jumps between them during the design process (Figure 1). It is thus not a linear design process they argue for, but a fully dynamic process. The dialectical relationship between the different levels forces the designer to think creatively and to see both the details and the whole process.

![Diagram showing the dynamic design process](image)

Figure 1. The dynamic design process according to Stolterman and Löwgren (2004).

2.2.1 Vision

The first abstraction level is vision. Stolterman and Löwgren (2004) argue that visions occur when the designer meets the new design situation for the first time. It is thus a very early stage of the design process. At this stage the vision does not appear as a deliberate and conscious decision of the designer.

"Rather it is an intuitive and immediate reaction to the situation that is available"

- Stolterman and Löwgren (2004, p. 24)

The vision is contradictory; its nature is abstract and concrete, diffuse and detailed. Stolterman and Löwgren (2004) argue that these conflicting conditions are the vision’s strength. It gives the designer the opportunity to deal with very complex situations where the potential properties of the artifact are to be determined.

2.2.2 Operative image

Step two is the operative image. Stolterman and Löwgren (2004) argue that this part of the design process in several ways is the most important. The designer now sifts through the visions, refining good ideas and rejects the worse. The ideas contained in this stage are still mostly in the form of simple sketches and thoughts. The aim is to specify the still abstract vision. As the designer devotes more time to the design situation and thus increases his or her understanding about it, it often leads to restrictions of technical, economic or other nature.

2.2.3 Specification

Eventually the operative image turns into a concrete specification of for an example, a digital artifact. Now start the construction process. During construction of the artifact
new problems will arise and new smaller design processes that follow the same pattern occurs. (Stolterman, Löwgren. 2004)

2.3 Design constraints

To give an idea how complex a design process may be we have borrowed the term Design Complexity from Stolterman (2008). Stolterman (2008. p.57) defines design complexity as the "complexity a designer experiences when faced with a design situation." This complexity can be overwhelming even for an experienced designer because most design situations consists of numerous choices, opportunities, requirements, etc. (Stolterman, 2008). Stolterman argue further, that this complexity can’t be simplified by using techniques borrowed from the fields of science. We will, however, leave that discussion and instead just note that the design process is extremely complex. The design process could be even more complex if it wasn’t constrained by a variety of factors. Stolterman and Löwgren (2004) argue that the image of the free designer without reins is romanticized and that a situation of that kind would not be desirable. The designer is constrained by economic, social and organizational conditions amongst others. It is, therefore, the designer job based on those limits and prerequisites to pursue a design of good quality (2004).

3. Method

The first step for this essay was to execute a design process from beginning to end. In collaboration with Channel 9, we produced a station identification. During the design process we created a process blog in which we took notes on the design situation, our thoughts and the ideas that emerged. The process blog has since been the basis for a retrospective reflection of our design process. We discuss the design process on the basis of the framework Stolterman and Löwgren presents in (2004).

A timeline outlining the prototype development in relationship to the collaboration between the client and us as designers was created. The timeline together with the presented information about constrains and its impact on design acted as the basis for a discussion about how our prototype developed over time and whether the final design was improved or limited by the constraints set by the client and us.

We then discussed the spatial barrier (Fischer, 2004) and how it affected our design. Finally, we took a critical look at our design process and discuss what we could have done differently.

4. Case

4.1 Background

One of our goals with the examination work was to create a production in 3D. 3D production is a very time-consuming commitment and our approach was initially quality before quantity, which in this case primarily meant a short sequence. We contacted a number of television channels and asked if they were interested in
cooperation and Channel 5 accepted. We were offered to produce a station identification for their daughter company Channel 9.

4.2 Channel Identification
In addition to advertising for products and services, television channels also broadcast advertisement about themselves. This may be advertisement for series and films to be shown on the channel but also so-called station identifications. Station identifications are the sequences that appear at the beginning and end of commercial breaks. The true purpose of identification is that channels are required by law to identify themselves on the air; this applies to both radio and television (http://en.wikipedia.org). Stations use this legislation to promote the channel and provide an overall feeling or characteristic that should be associated with the channel.

A station identification is about 10 seconds long and we felt that it was something we would have time to complete with good result within our time frame so we accepted the offer. Channel 9 began broadcasting on February the 25th, 2007, and their target audience is men and women between 30 and 59 years of age (http://kanalnio.se). Their slogan is "Avkopplande TV" a concept lost in translation without explanation. In Swedish the word “avkopplande” means both relaxing and disconnected. This is reflected in a playful way in their previous identifications. Image 1 shows an example of one of their identifications. In the sequence windmills spin, but the pole, which they are supposed to be attached, is invincible, so instead they spin freely in the air. Their identifications are 8 seconds long, which for us meant 192 frames to fill with content.

Image 1. Example of existing station identification.

4.3 Software
We have used Autodesk Maya 2009 to create our 3D scene. The program is industry standard in 3D-production and has advanced features to create photo-realistic results thanks to the included renderer Mental Ray. Post-production has been done in Adobe After Effects, Adobe Photoshop and Adobe Flash.

We will not further detail discuss all the different stages of the 3D production as this requires a very thorough analysis in order to be fair. Rendering processes, however, was very important for our design process and will return later in the paper. For those who are interested in 3D production, we recommend Livny (2007) and O'Rourke (2003).
4.4 Key processes

Below we present four processes, which for various reasons have been of significant importance during the station identification production. These differ considerably in character but they can be roughly divided into two groups. “Image Composition” and “Capturing the right feeling” are aesthetically related while “Photo-realism in production” and “Rendering time and its restrictions”, both deal with different types of constraints we had to endure. We identified these four processes while looking back at our design in search for elements that had large affect on the constraints we had to endure. The criteria’s for the processes we where looking for was that they had been where very time consuming, that they led to disagreement between the costumer and us or between us as designers. We also looked for processes that could be directly linked to the problems that occur due to the spatial barrier. The processes that we chose were repeated every time we started working on a new prototype and most of them fulfill more that one of the criteria’s initially set up. “Picture Composition”, for example, was both extremely time consuming, it led to disagreements between all parties and most of these problems could be linked to the spatial barrier.

4.4.1 Picture Composition

Creating a basic scene and picture composition proved to be the single biggest challenge of this process. We tested a wide arrange of picture compositions, angles and perspectives to give the film enough movement not to be perceived as boring without making it stressful. Images and movie clips of famous bridges was very helpful during this process but the greatest help came from Peter Söderlind with his aesthetic experience.

Finally, we decided a picture composition (Image 2) that lived up to the criteria we put forward for ourselves. By having the cars drive from the far left to the close right of the picture and also a sun on the right side we wanted to draw the viewer's attention to the right where the channel's logo is displayed mid-movie. The composition also follows the well-known Rule of thirds used in visual arts worldwide (Bergström, 2001). The Rule of Thirds briefly states that photos should be divided into thirds and based on these divisions filled with content in order to create contrast between large and small parts (Image 3).

*Image 2. Final composition.*
4.4.2 Capturing the right feeling
Waern et. al argue how the three rhetorical figures Logos, Ethos and Pathos can be used when using pictures as rhetorical resources (2004). Logos appeals to the recipient's sense while Ethos shows the recipient who the speaker is and why he or she should trust him or her. Pathos is the last figure and in this case the most important. Pathos is the appeal involving the recipient emotions and it is widely used in advertising (Waern et. Al, 2004) (Image 4).

These three rhetorical figures is not always separated and can often be mixed to give the effect sought (Waern et. Al, 2004). In a promotion of wind energy, for example, emphasize the low price to speak to the recipient's Logos and show pictures on dirty coal to appeal to the recipient's Pathos.

Channel identification has as previously mentioned a number of purposes. Besides that they have to appear because of current legislation, they function as an excellent tool to convey an overall sense to the viewer. In terms of appeal, it is clear that Pathos was of great importance to production. In addition to that the sequence would contain disconnected elements, in our case an invisible bridge, the viewer should also get the feeling that he or she is watching a relaxing television channel. The struggle to achieve this feeling pervaded the whole project and its importance can’t be stressed enough. Relaxing television is very context-dependent; in the same way that music is relaxing, depending on who is listening and who plays. We sought after properties and characteristics that people between 30 and 59 years generally consider being relaxing. We therefore chose to work with warm colors, slow cloud that travels in the
sky with the birds flying in the horizon. Peter Söderlind gave us the suggestion to reduce the speed of the cars, which had a stress reducing effect on the product.

### 4.4.3 Photo-realism in production

According to Livny (2007), photo-realism does not need to be an image of a realistic object. What is important is that shadows and light behave in a natural and realistic manner; a dragon can be photo-realistic, while an ordinary man does not need to be.

Since the station identification in large part reflects the channel's production and quality, we put great emphasis on preserving photo-realistic results in our production. One of the major challenges was to create a sea in 3D, which behaved and looked natural and much time was devoted to this before we were satisfied with the results. We avoided the use of objects that we did not feel were of sufficiently high quality and focused instead on the cars, which we borrowed from two students who have great experience in car modeling. Mental Ray ships with a powerful tool to create a heaven and sun and after we made some modification to it we were very please with the result. We used the equivalent of a 35 mm Wide-screen camera to give a realistic depth to the picture.

### 4.4.4 Rendering times and its limitations

In 3D-production rendering is the process of transforming the 3D-softwares vector-based information and its movement to a rasterized image file (Livny, 2008). This process involves interpreting information including lighting, shadows, materials (such as metal, wood and rubber), reflection, refraction, and image depth. In this report we will not discuss individual render-settings, but rather how the rendering time affected the design process.

It can be an extremely time-consuming project to render out an image sequence. We wanted to initially create a scene that took place during a sunset. The lightning setup consisted of 50 light sources, each reflecting on the sea. The result was powerful, but unfortunately, due to time constraints was impossible to implement. We spent many hours trying to optimize the rendering time but when we realized that one single frame with only the sea and the light sources would take approximately 24 hours to render, we accepted defeat. In the final scene, we needed significantly fewer light sources, and we could render a frame with the sea and the sky in about 40 minutes. The cars we had been authorized to use proved to be problematic from a rendering point of view. 3D-models consist of polygons and to create the image file the computer must calculate the lightning, material and reflection for each polygon. These cars consisted of hundreds of thousands of polygons and the computers ran out of memory when these polygons were to be interpreted. We solved this problem by removing as much polygons as possible from the cars in the places where they are not visible in frame (Image 5). We rendered the sequence in six layers. (Image 6) The final rendering time of our production was approximately 255 hours or about 1.5 weeks.
4.5 Design Process

4.5.1 The Process Blog

After we had decided to produce a 3D sequence we also decided to produce a process blog (Image 7). The idea with the blog was that it would serve as a tool for us, an opportunity to always be able to share our visions with each other. The blog also resulted in a more organized process thus it helped reduce the stress factor.
The blog was designed so that the left hand column did not follow any timeline but acted as a storage unit for all the ideas we thought up during brainstorming sessions. The right hand column corresponded as a timeline of how our work actually progressed and what was and what should be done.

4.5.1 Brainstorming and first contact with the client
On the 25\textsuperscript{th} of March we executed the first telephone meeting with Peter Söderlind, promotion manager / creative director at Channel 5 and Channel 9 in Stockholm. This call gave us the green light for creating a production for Channel 9. At this point we had no clear guidelines on what the station identification should include, the information we had to work with was the theme "Avkopplad TV" (described in 4.2). In order to execute the project wholeheartedly, we knew that it was necessary to meet Peter Söderlind personally, so on the 28\textsuperscript{th} of March we booked a meeting with him to take place in Stockholm.

On the same day we carried out an extensive brainstorming session. In order not to get caught in initial ideas we set up a goal to add at least 25 proposals to our process blog. This meant that we could produce a wide range of ideas without getting to caught up with specific suggestions. We also thought that this would be an adequate way of storing our visions for later analyze. After we entered the 25 proposals in the blog, we chose to remove 11 of them. We based the removal process on two main questions:

\textit{Can we implement this idea in terms of production quality within the given time?}

\textit{Is the proposal within the aesthetic and emotional line of the channel's previous identifications?}

On the 31\textsuperscript{st} of March we chose to proceed with the idea "relaxing skateboards" and devoted one day to refine that vision into an operative image to show Peter Söderlind, with the purpose to demonstrate how it could be visualized (image 8). The meeting was held on the 2\textsuperscript{nd} of April. During the meeting clearer guidelines and specifications was presented to us. This led to the termination of our skateboard idea since Channel 9s target audience doesn’t necessarily relate extreme sports as a relaxing activity.

\textit{Image 8. First prototype.}
We then proceeded with the selection process, where we presented the remaining proposals that were in the blog, and together with Peter Söderlind discussed how strong the various ideas was and how the could be visualized. The idea that we concluded to have the greatest potential was one with cars driving over an invisible bridge.

### 4.5.1 Further prototyping

On the 6th of April, we constructed a rough prototype of how the scene could be visualized (image 9). This scene was inspired by the Golden Gate Bridge in San Francisco with bronze lighting contours of a bridge and an angle where the cars came driving below the viewer. After we analyzed the prototype we found some problems. There were too many light sources in the picture, which resulted in an unreasonably long render time. Also, the cars appeared to be too small and it was difficult to communicate what was really happening in the sequence.

![Image 9. Second prototype.](image9.png)

With the data we had collected from the previous prototype, we decided to redo the setup quite extensively including changing both the camera angle, but also the construction of the environment and surroundings. On the 9th of April we had two prototypes (Image 10 and 11), the camera angle was the same on both the prototypes but the surroundings of the scene differed from each other. We also chose to mirror one of the prototypes to see how the feeling of the sequence was affected by which side the cars came into the picture. These prototypes felt much better than the first one, but we still found difficulties conveying “the right feeling”.

![Image 10. Third prototype.](image10.png)
4.5.2 Back to the drawing board
On the 14th of April, we chose to brainstorm once again in an attempt to find new ideas that we could work with. We felt this was needed in order for us to get a fresh perspective on the problem at hand. Looking at the dynamic design process Stolterman and Löwgren (2004) presents it could be said that we were still in-between the vision and operative image at this point. The end result of the brainstorm-session did not affect the objects and the movement in the scene appreciably. Instead we found that the composition was the problem and that moving the 3D camera gave us a look that was much more satisfying (image 12).

Image 12. Fifth prototype.

This prototype was sent four days later to Peter Söderlind for feedback. This was the response we received (freely translated):

"It feels stressed, should feel more like a nice roadtrip / sailing, than racing. Probably as simple as adjusting the pace of things that move ... Maybe it is a lot in the sky and the lighting of the picture? The picture seems to empty."

This constructive criticism led us to start discussing among ourselves how to get more into the sequence without making it stressful. Peter Söderlind provided us with some video clips that worked as a mood-board for the feeling he was looking for. This short film footage of sunsets, horizons and bridges were of great help to us when we started to reconstruct our prototype.

4.5.3 Putting it all together
On the 24th of April we contacted Peter Söderlind via E-mail for comments on the ideas we had about how we had intended to develop the previous prototype. At this
time of the process we started to feel certain time pressure to start the construction process of the final sequence. We got feedback and once again we got back to work. On 28th April we had completed our sixth prototype (Image 13), which was the first to even resemble the final production. In terms of Stolterman and Löwgren (2004), this prototype was our specification.

*Image 13. Sixth prototype.*

At this point we knew that the picture seemed to empty on the right side, and that the realism of the cars were not of sufficiently high standard. However, we still felt that we needed to contact Peter Söderlind to hear his opinions on the matter. As figured, he was also critical of the lack of realism and movement. At this point we decided to start the construction process for the station identification. This meant that we still could add elements to the sequence but that the car movement and the camera angle could not be changed.

On the 15th of May, we completed the final production where we had chosen to add a sun, five birds flying into the picture and replace most of our cars to four new of significantly higher quality (Image 14). These cars were borrowed with permission by Emil Naili and Daniel Lindström, students at Digital Media Production, Umeå University. We felt that the sun added a sense of calm and harmony to the sequence and also made the scene looks less empty on the right side.

*Image 14. Final production*
5. Discussion

5.1 Design Development Timeline

On the following pages, we present and discuss a model that we have chosen to call the Design Development Timeline (Table 2). It is an attempt to visualize how the station identification was affected, shaped and constricted by collaboration with the client. The top timeline includes important dates when communication between Peter Söderlind and us took place. The second timeline describes dates where important events took place for us as designers’, including amongst other brainstorming-sessions, analyzes and creation of new prototypes. At the bottom, screenshots are presented of the different prototype that was developed during the different stages of the design process.
5.1.1 Collaboration between designer and client

While studying the Design Development Timeline we noticed an interesting pattern in the development of our prototypes. The periods during the process where interaction was mainly held between us as designers, the timeline clearly shows how the work was very focused on existing ideas and compositions and the refinement of these (2\textsuperscript{nd}-16\textsuperscript{th} of April). The greatest progress in the project's development took place when we had continuous contact with the client and got suggestions for new ideas and point of views, and also constructive criticism about our own ideas and thoughts (20\textsuperscript{th}-22\textsuperscript{nd} of April). Clearly, this type of cooperation was extremely important for our development. This could prove to be problematic in future design situations when this kind of communication won’t always be possible. There are, however, some special circumstances, which have to be accounted for in this project. Our contact person, Peter Söderlind has a long and broad expertise in the design field and he have committed a surprisingly amount of time providing us with constructive feedback and in a clear way conveyed the result he was looking for. In most design processes, such amount of feedback is probably rare. It’s probably even more unusual that the client is well educated in the design field and therefore has the ability to provide relevant feedback to the designers about the work process. Secondly, the quality and accuracy of the expected end-result way exceeded what we have gotten used to while working in school projects. In retrospect, we could have saved a lot of time if we had tried even harder to understand exactly what the client was looking for.

5.1.2 the Constraining process

The design process presented in this paper was both relatively free and very constrained at the same time depending how one look at it. Since we offered to create the station identification without economical compensation if Channel 9 chose not to broadcast the production, the only thing Peter Söderlind stood to loose was his own time. Because of this, we where essentially free to design whatever we wanted. However, our ambition was to create a production of broadcasting quality and therefore we had to follow the guidelines and constraints that our client gave us. The first major constraint was the value base that Channel 9 wants to present for its audience. This mainly includes the concept of relaxing television, but also a high standard of quality for everything that is broadcasted. Another huge and important constraint came from the Swedish play with the words Relaxing and Disconnected (explained in 4.2). These two constraints acted as the frame for the whole project, whatever we chose to design, these two constraints had to be taken into account if the result was ever to be broadcasted. Aside from those two, Peter Söderlind provided us with many other smaller constraints during the design process, often regarding the pace of motion in the sequence, the amount of objects to be displayed and so fourth. We had also set the initial constraint to create a production in 3D before we even contacted Channel 9.

Did all the constraints improve or hinder our final design? We definitely feel that they improved the end result. By limiting the options available it becomes an exciting challenge to find the best possible solution for the problem at hand. As Stolterman
and Löwgren (2004) notes, the constraints can help the designer force creative thinking. It is also important to note, that even though the constraints mentioned here might sound strict and many in number, we still felt from time to time that we had much to many options to choose from and that even more constraints would have been preferable.

5.1.3 Collaboration over long distance
As Fischer (2004) notes, it is a problem not being able to meet face-to-face with other designers and/or clients. Except for our initial phone call and meeting in Stockholm, all the communication between Peter Söderlind and us was held via e-mail. Even though the feedback the client provided was invaluable it would have been great to be able to have at least one more meeting with him in person. We found e-mail communication to be quite blunt, and as Olsson and Olsson (2001) notes, it leaves little room for thoughts and ideas that are considered abstract, which many of the thoughts and problems we had was. When meeting face-to-face on the other hand, we had the opportunity to engage in a more open and rich dialogue with the client. Unfortunately, face-to-face meetings are not always an option for various reasons. The key processes described as “image composition” and “capturing the right feeling”, both aesthetic in their nature and therefore somewhat abstract, was identified as two of the most difficult parts of the design process. Both processes are clearly related to the spatial barrier and the problems of communicating over long distance. This means that it is important for both the designer and the client to strive for as clear communication as possible in the available channels, whether it’s e-mail, phone, chat rooms or videoconferences. To help achieve this, it is important to optimize the communication channel that is being used. For example, images and sketches can be attached to emails and when necessary, body expression can to great extent be seen over videoconferences. In the end, we believe the ability to convey abstract thoughts over long distances are foremost developed by actively participating in a lot of design processes.

5.2 What could have been done differently

5.2.1 Visualization issues
One of the biggest mistakes we made is related to the spatial barrier. We both lack drawing skills, so instead of sketching on paper we used Autodesk Maya as our primary sketching tool. The problem was that our client found it difficult to see the vision we tried to express through the hastily created 3D-footage. This process would have been much easier if we had the opportunity to meet face-to-face and discuss it more detailed but this was impossible due to economical constrains. It would also have been much easier and time saving for both the customer and us if we had tried to outline our ideas on paper instead, even though from an aesthetic point of view, they would have been of low quality. Creating a paper prototype instead of a film sequence in 3D also makes it easier for the client to understand that it is only a sketch, and that nothing is decided. It will make it easier for the client to criticize and provide input.
5.2.2 Shoot your dogs

Tow (2003) describes the importance of being able to "shoot your dogs." It is important that designers do not develop strong feelings for an idea in an early stage, because many early ideas for various reasons will be discarded. The more time that is given to an idea the more difficult it is to let go of it, no matter how bad it is. A similar problem arose with the image composition during our process. We had decided early that we wanted to see the cars from a long distance. It proved to be extremely difficult to create a rich composition when the cars were such a small part of the image area. But instead of shooting our dog, we spent many hours fine-tuning the sea and camera angle before we finally dropped the idea. To test more scattered angles from the beginning would have saved us many hours of work and unnecessary wear.

A design process consists of numerous choices, decisions and actions and as a designer you are bound to make mistakes during the process. The dynamic process gives the designer a wide margin of error, which is extremely important for the designer's own development. Mistakes are not something we as designers should be ashamed of. Instead, we should draw lessons from them for the future.

6. Acknowledgment

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