Adaptation by Design: San Rafael Canal District
‘Keeping water out, and people in’
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‘Keeping water out, and people in’
The Delta Interventions research studio had set its focus on the San Francisco Bay Area because the state of California has made the initiative to proactively act against flood threat, by bringing the research by design competition to the Bay Area. Around the bay, flood risk threatens a variety of area’s ranging from the heart of San Francisco to ghost towns in the south bay. However, a similarity is also to be found, of the 200,000 people actually living in the flood risk area, the majority lives in poverty or in a poor economic situation. And this is a trend you also find on the global scale; there is a relationship between flood risk areas and social-economic discrepancies. Redesigned area’s after big flood events, like New Orleans, have the ability to improve themselves during this process. With the proactive approach of dealing with a flood threat, my research attempts to proactively improve the social-economic situation of these areas by using water management interventions as a tool for spatial improving.

At the start of the graduation process, my aim for the kind of research was clear, I needed to find the answers to the origin of the current problems on my research location and I wanted to find water management solutions that have been proven to work. You could simplify this approach by stating that I was looking for a base and materials that, together with my personal input and finding, would shape my strategy/design in the final product (see fig. 7.1). With the base being the more analytical research questions and the materials being the design research questions aimed at interventions. In urbanism, the relationship between research and design isn’t always a clear line, especially when you are using your design as a form of research, there is a lot of back and forth. In this project, that was not the aim. The goal was to have a clear set of research outcomes starting with the design process. Therefore, my methodology chart (see fig. 7.2) was a linear line with time on the one axes and process on the other, moving from an interest- to a research- to a design-driven approach (see fig. 7.3). During the research phase, there was expected to be a slight overlap with the design-driven approach because designing has become a second nature in our line of profession. During the research phase, you easily come across information you instantly want to transform into design elements, which also happened during the process of this project.

For the basis to build upon and the materials to be used, different research methods were used. One of the main research methods that were used, was the mandatory method of the research studio, the triple three-layer approach (3x3x3). A research method in which three different systems, infrastructure, nature and build up area, are compared with each other on three different scales, in three different time periods. This method was used to highlight the relation between these different systems and the scales they are working in. It provided a better understanding how the systems influence each other, and which role the design would play on these different scales. A big part of this method...
was tracing maps, tracing is not just a tool for analyzing, it is an essential part of research in learning to understand an area. By tracing the same lines over and over again, on different scales at different times, the area was explored. This method highlighted some of the major issues that are present in the Bay area today, and how these problems all came to be in the last 50 years of development. Initially, the method was used purely as an analyzing tool, with the last time period set on the current day. After a suggestion by a mentor, an alternative approach was used, the last timescale would be set in the future, turning the method into a forecasting design tool, alongside its analysis potential. A similar kind of tracing was done on the lowest scale possible, a street view analysis. This was again a great way to understand the area better, which wasn’t otherwise possible with the location being half a world away. This analysis highlighted some of the more local problems and at the same time inspired solutions as a result.

Other base research questions, especially the water management and social-economic problems had to be answered through desk research. Gathering as much data as possible and analyzing this data, uncovered some of the major problems in the project area. The problems revealed here were the problems that the design/strategy is trying fix and prevent.

For the more design driven research questions, a combination of desk and literature research was used. The aim was to find similar situations and locations were flood problems were solved with a social-economic benefit for the local population in return. The research provided a lot of acknowledgment for this problem but not a lot of input for solutions. Individually there are a lot of projects where a spatial strategy was used to improve the local social-economic situation and there are multiple examples of flood protection with economic benefit, but these problems together are rarely combined. This was also one of the reasons why I started on this topic in the first place. The desk research did provide with standalone elements that could be used to either benefit the water management situation or the social-economic situation. By combining these in the project, I tried the one to strengthen each other. But hard lessons from the previous projects were missing.

By the time the research phase was supposed to end, not all the research questions felt answered, which meant that there was not enough input for the design/strategy to build upon. Because of this, attempts were made to go back into the research phase to get the desired answers. This unwanted back and forth (see fig. 7.4) between the research and design phase caused a lot of stagnation and struggle for the project in the end. In hindsight, there should have been a reevaluation of the research before entering the design phase (see fig. 7.5). The research that was done did not supply the desired outcome, so at this stage, the research should have been redone through a different method, or the research questions itself should have been recalled. Without finding clear answers in literature, a completely different approach should have been used. For example an in-depth case study comparison between a function and non-functional area with the desired composition outcome of this project location.

With the intended research questions not clearly ended, the base of the strategy/design wasn’t solid. The project is build up with different materials that could reach the desired effect but the outcome is not strong. Individually for both the water management problem and the social-economic situation, a solution is provided. These kind of
measures are presumed to work, however, if they work together is not something you can test theoretically. Because the research did not provide the desired information, a large part of the conclusion is based on the assumptions. A strategy/design based on research should be built on facts. Because the research failed, the outcome of the project can also be considered a failure. It does provide a lesson, individual parts of these project could work, and personally, I have learned that it is better to completely reevaluate your research method and research questions than to try and keep continuing with it.

Even though the solidity of the project outcome is doubtful, in the end, a strategy was formed. In this reflection, the outcome of this project has been described as strategy/design multiple times, because it might be either one of them or both. This project started with an aim to find a strategy for redevelopment of the area that would benefit the current population. A part of this strategy is creating a strong framework of high-quality water management measures throughout the area. Creating a network like this is more of a design intervention, but you could also see this intervention as the strategy itself. A design sounds like a fixed project, and in many projects, this has been true (especially in the very privatized United States), but our current way of developing requires a more dynamic approach because we barely get to work with a tabula rasa anymore. Urban designs have become more guiding projects then fixed urban expansions, perhaps all urban designs are strategies now.

The suggested strategy in this project might work as a whole, but that would need testing. A solution for this project would have been to interview all the different actors, to understand if they would participate and what demands they had. With the project being in San Rafael this was simply impossible, if it would have been a similar location in The Netherlands, this could have been achieved, making the project much stronger.

Regardless, if a strategy like this would be implemented in the area, it would result in the desired outcome, it could be implemented in other flood risk areas with similar social-economic situations. For those locations, a local analysis would have to be done to understand the flood problem and you’ll need to create suitable water management solutions. But the strategy to use these water management solutions to attract a mixture of people with a higher social-economic status would result in the same outcome. In that way, utilizing water management implementations as a spatial quality tool combined with governance policies to maintain the local population, the project could be used as a stepping stone for a larger global problem. Again, this is mainly based on a lot of assumptions.

Doubts about the realization

Even if the strategy would work on its own, there are still a lot of developments that could completely counter all the interventions done. Climate change is not the only unpredictable factor in the equation of the project. An assumption is made that there will be a shift in mobility; this is supported from different angles, strong believers in automated driving and fast public transport systems. However, there is a chance that this won’t happen or the infrastructure might even become more dominant. Without these kinds of changes, the presented strategy won’t work.

Another vulnerable point of the strategy is the developer participation. The lack of social housing is a result of low feasibility. Developers are currently working around the rules, avoiding that they have to create social housing units. Asking them to participate in this project in return for development rights is doubtful. They are fully aware, that without participating, the project would never work and in time the land would be made available for another kind of development.

But there is even a bigger problem when it comes to this area; it has been completely ignored for this project because it is almost impossible to design for it, earthquakes. The San Francisco Bay area hasn’t had a major earthquake for many of years, and statistically, they are due for one shortly. It is one of the reasons that flood protection is not their primary concern; one earthquake could completely destroy a water management system. If it is impossible to create water management that can resist floods during an earthquake, area’s like the San Rafael Canal district should be abandoned. And in that case, restoring former marshlands would be the best possible solution for these locations.

Bionic Team Research

By now the Resilience by Design competition has started and the team working on San Rafael has a lot of overlap with larger suggestions made in this report. Their focus is not on the social-economic aspect but purely based on flood protection and recovery. They have accepted that flood can occur and try to redevelop the area in a way that it is more robust then adaptive. However, the larger interventions they are suggesting should have the same effect in creating a catalyst for larger redevelopment. With a improvement and change in mobility and a redeveloped waterfront.

The suggestions made by the Bionic team could spark the same interested in the area, attracting developers and actors to participate in redevelopment. With guidance from the municipality, similar policies can be added to secure a future for the current residents.