

Gazelle success in the United States of America

Design thinking from a distance

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Developing bikes for a market entry in the US by Gazelle

A design thinking approach without direct access to the user

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Preface

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I am writing this note as a final touch to my bachelors thesis. Being involved in the process and life at QuA has been a great experience. Spending a few months in this environment that is so radically different from that of the university has had a great impact on the way I think and work, it was inspiring. I would like to thank Arno Twigt and Jim Smith for the excellent advice and opportunities.

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Value sensitive design

Gazelle presentation

Feedback Santa Cruz

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Netnography, analyzed threads

Original assignment description

1 Introduction

1.1 Assignment

PON wants gazelle to enter the US market. They believe gazelle does not have the capabilities to do this unassisted. Therefore, Qua has been given the task to help Gazelle with a successful market entry, this starts with defining a strategy and goes all the way to designing the shops themselves. The assignment this paper covers is the start of that process, and is focused on the products Gazelle offers. The goal is to set guidelines for gazelle's initial product offering in the US and to design a product that defines the Gazelle US brand identity.

1.2 Goals of parties involved

<u>QuA</u> has the challenge to help Gazelle enter the US market. They will design the Gazelle brand environment in the US. They need to create a starting point for their work and a basis for the positioning and product portfolio of gazelle US. They believe that an iconic product is required to build the brand.

<u>Pon</u> wants to be the world's supplier of mobility, as a part of this they aim to be the biggest in the bicycle industry. To achieve this, they have acquired an extensive portfolio of brands. Their want to grow these brands by introducing them into new market and integrating these brands to make all of them stronger. For that reason, they want Gazelle to enter the US market.

<u>Gazelle</u> needs to grow, they are already the market leader in the Netherlands and are looking for new markets. They believe that the US is a market that holds much potential and want to bring their bikes to the American consumer.

1.3 Research questions

Answering the following question will lead to achieving the goal set by the assignment. To structure the process of answering this research question a number of underlying questions need to be answered. The main question is motivated by the assumption of QuA that an iconic bike is needed if Gazelle wants to enter the US market. The sub questions provide the context and theoretical basis and then move on to working towards the solution of the main question. These questions are the following.

Main question:

What should the iconic brand defining bike be?

Sub questions: Why is an iconic product needed?

What is the product portfolio that it fits to?

For what consumers should the iconic bike be designed?

What are the needs and values of these consumers?

How can these insights be translated into an iconic bike design?

Section 1: Theoretical frameworks

This section combines a set of theoretical frameworks that can support the process of answering the research questions. Design thinking is the base that connects these frameworks, it is a very good approach for when both the problem and the solution are unknown (R Buchanan, 1992). Design thinking is an approach to the development of solutions, it states that many of the principals used by designers and engineers are applicable to a far wider range of problems. Design thinking is not a step by step recipe for success. There are many ways design thinking has been described in literature something they all have in common is that there is no "one best way" to move through the process (Tim Brown, 2009). In his book, change by design, Tim Brown states that the continuum of innovation is best described as three overlapping spaces, inspiration, ideation and implementation.

approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success." Tim Brown, president and CEO at IDEO

2 Inspiration

This is the problem or opportunity that motivates the search for solutions. As design thinking is a nonlinear process, the inspiration will take many forms. Inspiration starts with understanding the problem a project is trying to solve and it reappears in different form every time progress is made. Without properly understanding the inspiration, defining the problem, successfully moving through the other spaces becomes difficult. In this project the problem that needs solving takes two shapes, the problem of Gazelle and since Gazelle produces bikes the problem of the users.

To understand the problem of Gazelle we need to know the motivation and mechanisms that are involved in their objective and how these are related to their products. This understanding will be obtained in the understanding the case chapter.

In change by design Tim Brown states that human beings need to be at the center of the innovation story, he suggests doing this in three phases. Insight, observation and empathy. Insight is one of the key sources of design thinking. Change by design states that a good starting point for insight is going out into the world and observe actual experiences. The objective is to get clues about the unmet needs of users and to understand their motivations. The next step, observation, is watching what people do and say. These observations rely on quality and not quantity, the key is finding users that are experts in what they do. Empathy is about understanding people at a deeper level. A designer who simply generalizes from his own standards and expectations will limit the field of opportunity (Tim Brown, 2009). Seeing the world through the eyes of others is needed. Since in this project there is no direct access to the user a different approach to obtaining insight, observation and empathy is required. This is accomplished in the understanding the user chapter.

If you already know what you are after, there is usually

not much point in looking. - (Tim Brown, 2009)

3 Understanding the case

The first step in the process is understanding the problem from a business perspective, this will be critical in the evaluation of viability is the ideation. The aim of Gazelle is to grow their business, to do this they want to enter a new market, the United States of America. This choice is related to a strategy for growth, understanding this strategy will lead to a better understanding of what decisions follow this choice.

3.1 Anshoff matrix

The anshoff matrix shows four strategies businesses can use to grow (H. Igor Anshoff, 1957). It relates types of intended growth to four product-market strategies. A product market strategy can be defined as the combination of a product line and the corresponding set of missions the products are designed to fulfill (H. Igor Anshoff, 1957). These four growth strategies are:

Market penetration

Aiming to increase sales while maintaining to original product-market strategy. This is done by either increasing the sales volume to present customers or by finding new customers within the current market.

Market development

Adapting the product line to fit new missions. Attempting to access new markets using partial product diversification.

Product development

Developing products with new or improved characteristics that increase performance. Having a better fit to customer-needs to grow the business.

Diversification

The most radical strategy, a simultaneous departure from the present product line and the present market structure.

Another way of looking at the ways to grow matrix is from an innovation perspective. This is done in with the tool developed by Diego Rodriguez and Ryan Jacoby at IDEO. It gives a better idea of what a growth strategy means for the innovation process. Instead of looking at products and markets this matrix focuses on offerings and users.

	Products		
		Existing	New
arkets	Existing	Market Penetration	Product Development
Z	New	Market Development	Diversification

	Offerings		
		Existing	New
Jsers	Existing	Manage (incremental)	Extend (evolutionary)
	New	Adapt (evolutionary)	Create (revolutionary)

3.2 Market segmentation

The market development strategy is about offering an adapted version of the existing products to a new market. Implementing this strategy successfully requires knowledge of the new market, most prominently a precise definition of the market the firm intends to enter. This is where market segmentation comes in. Market segmentation is a state of demand heterogeneity, customers within a market demanding different characteristics. The total market can then be divided into segments of customers that demand the same combination of characteristics. The accuracy of a business's perception of segmentation is often a critical determinant of competitive advantage (Dickson, Peter R.; Ginter, James L. , 1987).

3.3 Product differentiation

All of the growth strategies concern the product portfolio, some keep it as it is and some radically change it. When dealing with decisions regarding the product portfolio understanding and applying product differentiation is required. Product differentiation concerns the difference in characteristics between products. It is to be viewed from a customer perspective, this means that it concerns perceived differences on any physical or non-physical product characteristic (Dickson, Peter R.; Ginter, James L., 1987). Perceptual differentiation can be created by usage experience, word of mouth and promotion. Actual differentiation can be created by product characteristics.

3.4 Effective differentiation

A too complex product portfolio can lead to customer confusion. To avoid this, the difference between products needs to be understandable for the customer. A cause for a product portfolio that causes customer confusion is a business's limited understanding of customer needs (MA Jacobs; M Swink, 2011). This type of customer confusion can also be seen as unsuccessful product differentiation. A deep understanding of the customer needs and values can result in reduced portfolio complexity while increasing product differentiation.

3.5 Blue ocean strategy

When a better understanding of the business case the move to the US represents has been obtained, a possible course for Gazelle needs to be set. The blue ocean theory can help in choices that follow. Blue ocean theory states that the market universe can be seen as composed of two different types of oceans (W. Chan Kim; Renée Mauborgne, 2005). Red oceans, these are the known markets where firms compete for a bigger market share and in doing so reduce prospects for growth and profit. Blue oceans are the unknown markets defined by untapped market space, demand creation, and the opportunity for highly profitable growth. Creating a blue ocean market for Gazelle in the US is therefore highly favorable. A blue ocean market can be created by expanding the boundaries of the existing, red oceans, looking for new people to use bikes or new ways to use them may be essential to create a blue ocean market.





4 Understanding the user

Developing a deep understanding of the user of the to be designed product is essential to design a smart product that fits the needs. To get to that understanding, insight, observation and empathy are the key. Acquiring these without direct access to the intended user is a challenge. Going out into the world and spending time with the intended user is the general approach here. Since that is not possible within this project, another approach is needed. The solution can be found in moving from the physical world into the virtual world, this is the domain of netnography. This framework solves the problem of getting the insight and observation. Empathy however is more difficult, it involves a deeper understanding, a general approach to getting empathy is 'standing in the users shoes'. Gaining empathy by experiencing what they experience. How does the intended user experience the problem or situation and what human values are involved in this experience, this is the domain of value sensitive design. Through a deep understanding of the user, latent needs can be identified. The needs the users may not even know they have (Tim Brown, 2009).

4.1 Netnography

Netnography evolved from ethnographic research, the core idea is to gain unbiased and unobtrusive customer insights through observing the conversation and social interaction of community members in an empathic way without intrusion and exertion of influence (Kozinets, 2002; Bartl et al., 2009). Users gather in online communities to exchange personal experiences and opinions about products and their usage and talk about solving their product related problems. Some users develop their own product modifications and innovations, which they share in these communities. This turns online communities into distinctive consumer tribes where they exchange existing needs, ideas, attitudes and perceptions towards products and brands (Kozinets, 1998, 2002, 2006; Bartl et al., 2010). The observation of these communities can lead to a deep understanding of the user. The user perspective is critical in the process of designing products that fit. The perceptions of users towards product are key to understanding product differentiation and identifying market segmentation. This makes netnography a powerful tool for the complete analysis process. This report will apply netnography insights in two ways, to identify market segments form a user perspective and to get a deep understanding of user needs and ideas. The netnography analysis can be found in the appendix.

4.2 Value sensitive design

What are values? Whose values should be supported in the design process? How are values supported or diminished by particular technological designs? How should we engage in

trade-offs among competing values in the design? These are the questions that that value sensitive design methodology tries to answer (Friedman, B., Kahn, P., & Borning, A.,2002). Understanding these values and finding ways to mitigate possible conflicts will help design product that are a better fit to the needs of the user (Le Dantec, Christopher A., Erika Shehan Poole, and Susan P. Wyche, 2009). The VSD analysis can be found in the appendix.

5 Translating findings to product

The frameworks that have been described so far have provided findings and insights that, if used right, will help understand and design the iconic bike. In terms of the overlapping spaces of innovation, inspiration, ideation and implementation, this means moving from a focus on inspiration to a focus on ideation. While not forgetting about inspiration and implementation. Ideation cannot happen without constraints, otherwise no progress can be made. These constraints however should not be seen as obstacles on the path to innovation but as ways to identify opportunity. Design thinking puts the willing and enthusiastic acceptance of competing constraints at its foundation.

Constraints in this context can be categorized as three criteria:

- Feasibility What is functionally possible within the project.
- Viability
 What is likely to become part of a sustainable business model.
- Desirability What makes conce to and f

What makes sense to and for people.

Using these criteria in the ideation process can both give it direction and evaluate idea's. The goal is to develop a bike that allows for a perfect coexistence of these constraints. The process that uses these constraints to get to this goal looks like a rhythmic exchange between divergent and convergent phases (Tim Brown, 2009). The three criteria to innovation are the drivers in each phase and form the base for each phase transition. Going through these phases is not a linear process, it is constantly cycling back through the tree considerations, the emphasis being on human needs.

5.1 Implementation

The path that leads from the project room to the market. While this is outside the scope of this report it does have implications that are present in the choices made in the other innovation spaces. The criteria used in the ideation space for example are largely dependent on the implications of the implementation space.



Design legend Charles Eames once famously

said: "design depends largely on constraints".

Section 2: A deep understanding

This section mostly concerns the inspiration space. How the project moved through this space and to what insights this leads will be presented. This section can also be seen as the analysis part of the report. The goal is to obtain a deep understanding of the problem and the user.



Understanding the problem

Understanding the problem is the first step in the process of creating a solution. This is where the question, why is an iconic product needed, comes into play. The answer to this question can be found by evaluating the goal gazelle and PON want to achieve. They want to introduce their products to a new market. When looking at the anshoff matrix this corresponds to the growth strategy of market development. Choosing this growth strategy has direct implications for the product portfolio, it needs to be adapted. To move to a new market this market needs to be identified, more specific the intended market segment needs to be identified. Since a market segment is defined as a group of potential customers that want the same product characteristics, mapping the American bike market into segments should be done from a user perspective.

6.1 Market segmentation research from user perspective

Mapping the market segments from a user perspective is key to identifying these segments successfully. Some of these segments are already clearly defined, since the current US bike market is mostly focused on sports, these segments can be categorized as sub segments of sports bikes. Examples are, mountain, road, downhill, cross-country, bmx. Both users and producers recognize this segment and it has been the dominant segment in the US ever since the rise of the car. Over the last decade the bike has started to undergo a renaissance, instead of just a hobby people are recognizing its potential as a means of mobility. This movement is still very small and exists only in a few progressive hubs in the US. Since this is a recent development the segmentation of this market may not be well understood by the suppliers. A user perspective on what combinations of characteristics are needed gives an accurate view on the segmentation of this new market. The same type of online communities that have been observed in the netnography can give an insight on this user perspective. These communities have structured the topics they discuss to make it easier to navigate through the vast amount of information. These structures represent the way the members of these communities see the segmentation of the market. Through observation of some of the largest forums and blogs regarding cycling in the US, market segments from the user perspective can be identified. The forums and blogs used in this observation are, www.bikeradar.com, www.bikeforums.net and www.bikeshophub.com. The questions that have been answered through this observation are:

- For what purposes do the people in this emerging segment use their bikes?
- What categories/vocabulary do they use when talking about their bike use?
- Can the group of people that use bikes for mobility be divided into more specific segments?

Market development:

Adapting the product line to fit new missions.

Attempting to access new markets using partial product diversification.

6.2 The segments

Based on this observation the American cycling market can be divided into three segments.

Sports

As mentioned before, the largest and most recognized segment is sports. This contains a large set of sub segments as sports bike are usually built to serve a single and very specific purpose. This project focuses on the developing market of using bikes for mobility, therefore the sports segment is not relevant.

Commuting

The most recognized segment in the movement of bikes as a mode of transportation is commuter bikes. The advantages of using a bike instead of a car for the commute are more and more recognized. This is caused by rising levels of traffic congestion that bring down the average speed of driving significantly, that increase the stress of driving and give a near claustrophobic sensation. This makes the ease, tranquility and freedom of cycling an appealing alternative. When looking at this segment from a function perspective different types of bikes can be categorized. The folding bikes, their main advantage being the compatibility with other modes of transportation. The hybrid, the combination of sporty aspects with characteristics more suitable for urban mobility gives them appeal to a large group of customers. The type of upright siting position dutch city bike does not have a significant presence. A lot of bike suppliers have inserted themselves into this segment which means there is a lot of competition. The rise of the e-bike gives the segment a whole new dynamic, reducing effort while increasing speed makes the commuting bike an even more appealing alternative to using the car. All of these developments have bike commuters out of the general perception of being environmentalist hippies and has made it a serious and widely accepted way of getting around.

Family/utility

A segment that surfaced in the observation of the online communities but that is not as widely recognized by the industry is the people that want to use their bike for family and utility purposes. Conversations on this subject that are held in the online community are often people either having a clear idea of what they want to do with their bikes but unable to find a bike that suits their needs or people that have created their own solutions to adapt a bike to their need. The spectrum of bikes that are used in this segment is very broad and opinions on what type of bike fits what specific purpose are very different. There is no clearly defined best solution for each specific purpose as there is in the other two segments. The ability to transport more things than would be possible on a regular type of bike is one of the main concerns. E-bikes are increasing the potential of this type of bike, mostly the ability to transport heavier loads is appealing.



6.3 Fit to Gazelle

The next question is which of these identified segments is a match to Gazelle and the strategy of market development. Ideally this segment should be one were the need is closely related to the products and identity Gazelle already has and one that has not been recognized by all competitors, this way a blue ocean market can be created. This means that the sports segment is a definite no match. The choice then is between the commuting and the family/utility segment, where the utility/family segment is more favorable from a blue ocean perspective. Both these segments require product characteristics that are close to those already represented in the Gazelle product portfolio. However, the current Gazelle identity in the Netherlands is more one of family/utility. The family/utility segment has other advantages as well, there is no existing product that matches the need on the market and the competition is relatively low compared to the commuting market. Also the environment a bike is used in is more cycling friendly than commuting, shorter distances, less traffic, more space, lower need for speed. Positioning Gazelle as the go to brand for family bikes is the best choice, this does not mean the cycling purpose of commuting has to be excluded. It should however be approached from a family perspective.



7 Understanding the potential user

The choice for the family/utility segment is amongst other things based on the fact that there is good fit between the user needs and the available products. While this creates an opportunity is also means that a better understanding of the potential user is critical to success. User needs and values need to be identified to create a product offering that fits.

7.1 Netnography

The first step to a deep understanding of the potential user is through insight and observation. To do this the online cycling forum www.bikeforums.net has been used. This is the largest online community of cyclists in the US. Here people are looking for advice when buying a new bike, and thus letting others know the what they want to use the bike for. Others are presenting the limitations they experience when using their bikes looking for others that have solved these problems. The forum is divided into topics, each of these topics consists of threads that are started by users that seek opinions on a matter. Three topics are chosen, family, utility and e-bikes. Within each of these topics four discussion threads are selected for analysis. The selection of discussion threads is based on amount of replies, discussion subject and the date it was started. When a thread has been selected the initial question and the motivation for the question are deducted from the message that starts the thread. These are important as they form the basis for the discussion that follows and, since there have been relatively many replies, they resonate with other users. This is done before reading the rest of the discussion. Then the most frequently stated opinions in the discussion are summarized and if the discussion moves to a consensus this is documented. As a last step idea's that are not directly related to the initial question but are relevant to the research are documented.

When looking at the segment of family/utility cycling a number of insights and observations can be made. Regular bikes are not seen as adequate solutions due to the limited ability of transporting stuff. People that want to use a bike as their primary choice for short distances do not want to be limited in their possibilities. They want to be able to go groceries shopping and they want to be able to transport one or more children in a safe way. Most bikes available in the US have a bent over riding position, this creates a number of problems when using the bike for family/utility purposes. The most recognized is comfort, however there is also a need for more situation awareness which is impaired by this position. An upright position would benefit both these issues, most Gazelle bikes have that. New users are nervous about falling with their bike, they mostly experience this when starting or stopping.

Another big topic in the discussions is safety, due to Americans not being used to cyclists in traffic and a lack of cycling infrastructure, being safe in traffic is a problem that the cyclists have to address. Strategies for safety are being visible, being predictable, being aware of surroundings and being robust. For cycling with children these strategies apply plus two more. Children not being directly exposed to traffic, so always an adult in between a child

Regular bikes are not seen as adequate solutions due to their limited abilities for transporting stuff.

and traffic or the child being protected by the geometry of the bike. Always being able to see your child. Both these strategies are not represented in the much used solution of having a tag along bike. If the transportation limitations can be removed and the safety strategies involved in the bike, the needs of the users will be better represented in the design. Another theme that is important when looking at the use of bikes is e-bikes, electric powered bikes are moving into almost every segment of cycling. For the family/ utility segment they offer many advantages and the users are recognizing this. There are a few topics that users in the online community are particularly interested in, how much power is needed, what battery capacity is needed and how should the power be delivered. The insecurity regarding the power and capacity needed result in users demanding more than they actually need, when purchasing a new e-bike power and battery capacity are used to compare and chose. When trying different types of bike users comment on the power they feel, and they prefer a bike that feels more powerful. On how should the power be delivered there are two choices that are discussed, pedal assist and throttle, when choosing between these options the pedal assist is by far the most popular. However, most people would prefer to have both, throttle to help starting and steep hills and pedal assist to reduce general effort while keeping the cycling feel.

7.2 Value sensitive design

Getting a deeper understanding of the user will result in a product that is not just a match to the needs the users know they have, but also to a deeper set of needs and values that are not recognized and therefore not represented in bikes. To achieve this the focus has to shift from what people want in a bike and what they want to be able to do with their bikes, to why they want these things. This requires looking at what values drive people to make their choice for mobility and how these are represented in bikes.

Autonomy

That there are large differences in the way Americans think and the way Europeans do is evident in many different sectors of culture and society. When looking at a few of these differences a pattern emerges. Taxes in the US are generally lower than in Europe, health insurance as an individual responsibility versus mandatory and gun control. All these things have something in common, they emphasize personal responsibility and the individual's freedom to choose, being in control. When looking at these thing from a value perspective it is clear that this describes a different view on the importance of autonomy. Autonomy is an individual's capacity for self-determination or self-governance (J. Dryden, 2010). Another example of the different view on autonomy between Europe and the US, one that has a more direct relationship with the subject of this report, can be seen in the way we deal with traffic safety. While small cars have always been very popular in Europe the same can be said for very large cars in the US. Small cars increase traffic safety because they reduce the forces involved in collisions and they are easier to control. This tactic is effective when there is a collective approach to traffic safety. When looking at this from a more autonomous perspective it does not make as much sense, relying on other people's sense of responsibility to be safe is not very safe from that perspective. It therefore makes

IN CONGRESS, JULY 4, 1776.

The unanimous Declaration of the thuteen united States of America.

the causes which impel them to the Separation able Rights, that among there are Life, Lively, and the parsail of Happings __ That to pure these triphts, Gerenmonts are instituted among Man, driving their ent of the geresned, _ Inst whenever any Hom of Gereermant becomes deductive of these ands, it is the Right of the Right of the extended among Man, driving their ing its powers in such form, as to them shall seem most likely to effect their Sakty and Happinels . Pres I caufes ; and accordingly all response hath fluon , that manking spotion , it is their right, it is their duty , to the ow off such Govern The history these States . To prove this, let Stats be fue oberation till his about should be obtain of large districts of people, unless those people would relinguish the right of Representation in the He has called together legislative bodies at places unusual uncomfortable, and distance from the depository of their Rublic Rea with his meaples . ______ He has diferent Reprintative House repeatedly, for opposing with m. after such dispolations, to cause others to be elected; whereby the Legislative flowers, incapable of Ann I these States; for that purpose obstruc time exposed to all the dangers ofin hom without , and convulsions within used to prevent the population alization of Foreignes ; up ig lokap chure to meanage thin migrations hillin , and raising the conditions of new Appropriations taxs for establishing Judiciary flowers ______ Re has made "Judges dependent on his Hett alone, , for the tenure of their offices , and the amount He has wested a multitude of New Offices, and sont hiller fwarms of Offices to harafs our people, and cat cut their futestar He has affected to under it on the Inhabitants of these States : __ them, by a mock Juil, from funishment for any Murders The fee System of English Laws in a neighbor The has blundered our seas s to compleat the works of death desolation and the He has constrained our fellow Citizens taken Captive on the high Sea low by their Hands . __ He has weited dos undistinguished destruction of all ages, fears and conditions . se character is thus marked by en y. aRina thumble terr ve warned them from time to time of attempts by their legislature to east rigration and fettlement here . We have appealed to their native They too have been deaf to the voice in thend, Enemies in War, in Peace & kindred to disavow these upus pations, which, would inevitably intersupt our which denounces our Separation , and hold them as we hold the rest of m

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sense that Americans prefer a car that protects its driver in case of collision, it means being in control of your own safety, the popularity of SUV's and pickup-trucks in the US matches this line of reasoning.

Cycling and autonomy are closely linked, some aspects of cycling strongly support autonomy while others reduce it. Cycling supports autonomy by allowing for more possible routes when going somewhere, it is less strictly regulated and allows the user more choices, everyone is allowed to go cycling. This unrestricted nature of cycling seams to make it an ambassador for autonomy. There are however many factors that oppose this, addressing these factors in the design of bikes can make them connect to the potential users on a deeper level. What may be the largest intrusion on the user's autonomy is that the environment dictates the amount of effort needed, the user is not in control, wind and hills are in control. The effort needed in turn results in how long it takes you to go somewhere, how sweaty you get and how far you can go. This in combination with comfort has been a big driver in the rise of the automobile. The electric powered bike changes this, control is given back to the user. While e-bikes have been around for a long time, the limited capacity of batteries resulted in the advantages being nullified by very limited reach. This has changed and, with batteries getting more and more efficient, will only get better. An e-bike is therefore a better match to American values. Another limiting factor on the choices possible is the limited ability to transport things, both a lack of space and power impose this limitation. The second, power, is also removed through the electric motorized bike. This means bikes that allow the user to transport their groceries, children and all kinds of thing they want to bring with them, will help increase the user autonomy. In a study to ascertain the reasons for driving to work, five core motives were identified (Gardner; Abraham, 2007):

- Journey time concerns
- Journey based affect
- Effort minimization
- Personal space concerns
- Monetary costs

However, they also found that the underlying desire for control underpinned many of these motives. This supports the idea that autonomy is a key value towards getting people to use bikes for mobility. Journey based affect and monetary costs are both supporting the choice for a bike, for the e-bike this includes time concerns and effort minimization. The personal space concerns are not, in the daily lives of people personal space is very limited. Single person households have it, people working in a private office have it and people driving in their cars have it. In the rest of our lives personal space is very limited, for many people the personal space they experience in their cars is the only moment they experience it in their day. Using a bike instead of a car means losing that moment of personal space. Changing that could be a big step toward the general acceptance of bikes as the choice for mobility.

The environment dictates the amount of effort needed.

8 Conclusions

8.1 Product differentiation

Part of the growth strategy of market development is an adapted product offering. This means that a selection of products from the existing product portfolio needs be made that fit the new market, these products then have to be adapted to be a real match. This adaptation will address some of the findings from the user research. When looking at the Gazelle product portfolio from the perspective generated in that research, two products stand out.

The Citizen for its urban, sporty, lifestyle appeal.

The *Heavy Duty* for its fit to family/utility needs and its iconic looks.

Both these bikes are close to fitting the needs of the market segment and have great lifestyle appeal. There is another type of bike that is present in the Gazelle product line in many forms, the low step through bike. While it does not have the appeal of the previously mentioned bikes it does supply to a need that a lot of people have, to not have to climb over the high top bar of a bike. A low step through bike should therefore be added to the bikes mentioned above, resulting in three types of bike that are a near fit to the American family/utility cycling segment. Adapting these bikes without a complete redesign can be done by applying two of the findings from the netnography. The e-versions should have a more responsive power supply, a sportier motor, they should have very high capacity batteries, ideally they should have both pedal assist and throttle, otherwise just pedal assist. Especially the more responsive power supply is important, users want to have confidence that the power is more than adequate for their needs when trying out bikes in the buying process the gazelle bike should feel more powerful then others. Apart from these adaptations an effort should be made to make them more maintenance free, for example by replacing the chain with a belt and reducing non vital features.

8.2 Product focused market development strategy

The insights from the understanding the problem part of this report have resulted in an understanding of what needs to be accomplished, the insights from the user perspective have given as idea of how this can be done. Combining these leads to a user focused approach of the product domain in the market development strategy. A market segment with potential for Gazelle has been identified. From user insights, products that fit this market have been selected out of the existing product line. How these products should be differentiated to fit the needs of the new users has been determined. Together these things can form the basis for success. Something that is not yet clear is how to further develop this new market segment. Since the awareness of this segment is still low amongst the potential users, the idea of what family/utility bikes means is not clearly defined. This creates an opportunity for Gazelle to make its offering more powerful. If Gazelle offers a product that clearly defines what it means to have a family/utility bike it can boost recognition of the segment while linking it to the Gazelle brand. A product that defines the segment beyond doubt and clearly establishes the Gazelle brand identity, an iconic product, will make Gazelle the number one brand in this emerging segment.

If Gazelle offers a product that clearly defines what it means to have a family/utility bike, it can boost recognition of the segment while linking it to the Gazelle brand.

Section 3: Developing an American Icon

The process of developing a concept for an iconic bike will consist of a series of alternating divergent and convergent ideation phases. Central to generating and evaluating the ideas will be the three criteria for innovation, feasibility, viability and desirability.



Section 3: Developing an American Icon

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Three perspectives

The innovation criteria are not rigid and will be different for every idea and every choice. The three criteria for innovation can be seen as three different perspectives on developing new products. Bringing these perspectives into harmonious balance is then developing innovation. The sections 1 and 2 have provided an understanding of how the innovation criteria relate to this case, what follows in this section is using that knowledge to find an iconic bike that is the balance between the criteria. This will be done through iteration rounds, generating ideas based on the innovation criteria. Each round will be one step closer to that harmonious balance of innovation.



9 Iconic product

9.1 Product ideas

At this point in the process the feasibility is the most unknown factor. The only aspect of it that is known is that Gazelle aims to enter the market in two years. This means that the ideation on an iconic bike should not be a very futuristic concept that needs much development time. It does not mean that solutions that are not directly within the current capacities of Gazelle are to be ignored since through their network within the PON bike environment they may still be possible. The bike that is to be developed serves a very specific purpose, to clearly define what a family/utility bike is and to tie this to the Gazelle brand. Therefor the bike should supply to the user's needs in a very recognizable way and have a strong connection to the other bikes offered by Gazelle. Preferably the business case of the iconic bike itself should be profitable, however since its main purpose is to establish a segment and its connection to Gazelle this is not critical. The most important thing is that it fits the needs and values of the user. This means increasing the options for transporting goods, being capable of safely bringing along a child, support e-capabilities, creating some kind of personal space and appealing on an emotional level. Generating ideas with these things in mind has resulted in four possible solutions:

Restyle the Heavy-Duty cargo bike

The heavy duty bike is already a very recognizable bike that fits to many of the identified needs. Restyling it to make create an even bolder product and creating a range of add-ons that increase its possibilities even more.

Sidecar platform

This idea is about combining the heavy duty bike with a sidecar and possibly other modules. Using the sidecar as a platform on which:

- a child can be transported
- groceries can be stored
- extra batteries for the bikes electric motor can be installed
- a cooler box can be mounted
- and other implementations of the extra options a sidecar provides

These options allow each user to configure the setup to their specific needs. It also is a very recognizable idea, a bike with sidecar, that has the potential of being a strong icon.

Restyle



Sidecar platform



The safest bike

Safety is a very important topic among American cyclists, this is mostly caused by the fact that drivers are not used to cyclists. A bike that puts the safety concern central may therefore be a product that has a strong message and the possibility to be an icon. Since the safety issue is mostly caused by a lack of awareness of cyclists in traffic visibility and predictability are the key.

The 'Bakfiets'

A recent development in the bicycle market has been the rebirth of the 'bakfiets' This can be observed on the streets of Amsterdam and is also starting to gain popularity in some hot spots in the US, Portland for example. The 'bakfiets' as it is, solves many of the issues that Americans have with bikes and is the most recognizable type of bike. The bakfiets has been popular in the past and this original version still is an icon in the Netherlands. A redesign of this original cargo bike to transform this icon from the past into a modern classic can be the perfect fit to the needs of the family/utility segment.





9.2 Evaluating the Idea's

Based on evaluation on the three criteria there are two ideas that stand out, the sidecar and the 'bakfiets'. Both these ideas have potential of being an icon and both represent the family/utility segment. The advantage of the 'bakfiets' over the sidecar is that it is the most recognizable product, it is big, bold and different form regular bikes. The sidecar however has a stronger business case since it can be sold separately and it has a better connection to the other bikes, therefore the sidecar idea is the most promising.

Bastula the Heavy Duty cargo hike		The cafest hike	
Bro's	y-Duty taigo bike	Dro'c	
Con's	No significant development needed Strong link to other Gazelle products Weak as an icon Not strongly defining the segment	Con's	Development needed Link to other Gazelle products Match to user needs Weak as an icon Risk in American lawsuit culture
Sidecar platform		The 'Bakfiets'	
Pro's		Pro's	
Con's	Strong link to other Gazelle products Clearly defining meaning of family/ utility Match to user needs and values Powerful icon Can be sold separately from specific bike Development needed Technically complicated	Con's	Powerful icon Link to Gazelle brand Match to user needs and values Clearly defining meaning of family/ utility Connection to other Gazelle products Development needed



10 Developing the sidecar idea

10.1 The sidecar platform

The sidecar has been chosen because it is a close fit to the needs and values of the potential user while also having strong business potential. The fact that it can be sold separately and puts existing gazelle bikes into the spotlight was key. The sidecar concept can take shape in two ways. The sidecar itself as a platform with different modules or a single product. Creating the sidecar as a platform that can support different modules has the most possibilities and allows people to tailor the bike to fit them. The functions a sidecar could have are numerous, child seating, groceries transportation, BBQ, cooler box, camping gear, surfboard, music speakers, extra battery capacity. The option of using a motorized sidecar to add power to any Gazelle bike has been explored as well, however after analyzing the dynamic forces involved it was concluded that this would lead to a situation of dynamic instability. The functional possibilities can be combined into different sidecar modules that speak to a specific group of users, to a certain lifestyle. Three examples of this have been made.



Camping Trip





he American Icon and of opportunity

Football









Section 3: Developing an American Icon

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10.2 Evaluation with Gazelle

The concept of the sidecar platform has now taken sufficient shape to subject it to another evaluation round. As stated before the feasibility criterion is not clearly defined at this point in the process, to properly assess the potential of the sidecar concept a better understanding of what the time to market of two year means for Gazelle is required. To achieve this the concept has been presented to the director of Gazelle, Huub Lamers. As intended this lead to a better understanding of the feasibility aspect and as a consequence to the dismissal of the sidecar concept. Within the given time it will not be possible to develop a completely new product.

Developing a sidecar platform is not possible within the

available time.

11 Selecting new path

The dismissal of the sidecar concept means the process of developing an iconic bike has to circle back to the possible solutions that were previously defined. These need to be reevaluated with the improved understanding of the feasibility criterion. This new perspective influences the other criteria as well. The new insights from the meeting with Gazelle result in a better specified view on what the iconic product should accomplish. Its purpose is to clearly define the family/utility segment and tie this to the Gazelle brand identity, the business case of the individual product is less important.

When looking at the ideas that were previously defined, restyle the Heavy-Duty bike, the safest bike and the 'Bakfiets', it is clear that which has to be chosen. The new perspective on the three criteria results in a clear win for the 'Bakfiets', this idea has the most potential to be a powerful icon and it is the best fit to the user needs and values.



12 'Bakfiets' for Brand Identity

The new purpose of the iconic bike, to demonstrate what family/utility means to bikes, means that it does not need to be a product that is intended to be mass produced and sold to the consumer. Its role is being a remembered and establishing the Gazelle brand identity. As the bike can now be a custom build product the feasibility is not as constricting as it was. Generating iterations on the 'bakfiets' idea with the three criteria in mind has resulted in two different approaches to the concept.

12.1 Module to regular bike

This concept combines the 'bakfiets' with a regular bike. The result is a hybrid that has the best of both worlds. If needed all the possibilities a 'bakfiets' offers are at the disposal of the user and when circumstances are not ideal the regular bike is still an option. This concept also improves the connecting between the icon and the rest of the Gazelle bikes.

12.2 Redesign classic

The classic version that was used in Europe by many different professions until the 1950s holds much potential for becoming a modern icon. Its size and simplicity make it a very attractive option since these things are what the potential users need. All this bike needs to be the icon that is needed is a redesign to bring the principles it was built on to the 21th century. One of the major drawback it used to have was its weight, because of this is could only be used a very low speeds and would still require much effort. If the bikes design could be improved to have better driving characteristics and the effort problem is tackled by an electric motor, this concept holds much potential.

12.3 Evaluation

The modular bike seems to be the better option since it appears to be more innovative and it allows the user to have the most options. The feasibility criterion is where it fails, a regular bike is not designed to bare the added forces that the 'bakfiets' module would cause. Also the result of combining the regular bike with a 'bakfiets' might be the worst of two worlds instead of the best. This consideration leads to choosing the redesign of a classic as the best way of creating a modern icon.



13 Redesign classic

13.1 User insights

'Bakfiets' type bikes are popular in Amsterdam, it is therefore useful to see what functional problems the current users experience. To obtain these insights users in the process of buying a 'bakfiets' were approached. The most important issue they had with the bikes was that they tend to have stability problems at higher speeds. Other issues are related to the nature of these bikes, that they are large and heavy.

13.2 Solving the problems

The lack of dynamic stability is a problem that needs to be addressed if these bikes are fitted with strong electric motors and are used in the American environment. Increasing the stability can be done by a complete redesign of the steering setup of the bike. In the current setup the entire front end of the bike turns when steering, when at low speeds and on a flat surface this is no problem. At higher speeds or going down a hill it can cause problems which way result in the bike tipping over.

The current setup places the 'bak' central over and fixed to the wheel axis, which is the turning point of the bike. If the load is distributed equally this puts the center of gravity directly over the turning point, for stability it would be best if the center of gravity where located behind the turning point. A center of gravity behind the turning point would result in a self-correcting effect which increases dynamic stability. The obvious solution is to move the wheel axis forward, doing this will however only make the dynamic stability worse. The displacement of the center of gravity when cornering will increase significantly. The solution is to fix the 'bak' to the frame of the bike instead of the wheel axis, this results in a more stable setup. The increased wheelbase causes the bike to have a larger turning radius which is the biggest drawback of this setup. There are however a lot of extra advantages when turning the wheels independent from the 'bak'. Solutions to increase performance and stability that are common in the automotive industry can be integrated is this system. What these solutions are and how they relate to performance and stability can be found in the appendix.





14 Final concept

All this leads us to the concept that is needed to establish Gazelle as the number one brand for family/utility bikes, a bike that can do it all. Whether it is going to the beach with friends, having a picnic in the park with your family, bringing your child to school or going on a groceries run.



15 Validation

The design thinking from a distance approach that has been used to create the iconic bike concept has now reached a point where it needs to be validated. The question this validation should answer is whether the process has resulted in a correct understanding of the American user. To answer this question an American perspective is needed, this will be obtained by presenting the concept to Santa Cruz Bicycles. Santa Cruz is another brand that falls under the PON bike umbrella and the producer of high-end mountain bikes in the US.

The feedback provided by Geoff Casey, design manager at Santa Cruz Bicycles, confirms some of the findings from the user research. There is a big divide between the cycling needs of the urban user versus the suburban user. The weight and size of Dutch bikes make storing them in your apartment difficult. He also states that the sidecar idea may not be practical in the US since infrastructure is not suitable. A bakfiets type or a longtail are in his opinion the best solutions for the transportation needs. Here modularity would be a big benefit since the needs of the user are rather diverse. When creating a bike for the brand image purpose He believes that creating an American icon might not be the way to go, a better approach would be a European icon tailored to the US market. The European cycling culture is well known is the US which leads to an affinity for European bike brands.

The user understanding that has been obtained seams to be close to Geoff's opinion on the subject. The infrastructure situation has been underestimated slightly. This validation is at this point based on the view of only one person, while it would benefit form more sources the insights provided by Geoff are reliable since he is an expert on American cycling culture.

16 Conclusion

Gazelle has the potential to be very successful in the US in they succeed in establishing themselves as the brand for family/utility cycling and can communicate what that means to the American consumer. Adapting a selection of their current bikes to fit the specific needs that come with this relatively unknown segment is not enough. They need a strong message that clearly defines what is means to be the utility/family brand. That is where the lconic bike comes into play. This bike is not aimed at being the most practical solution to the needs but rather at making a statement to what gazelle is and what a bike can be. Creating a bakfiets that is the embodiment of the American dream will do just that.

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Netnography

Developing a deep understanding of potential cyclists in the US

Introduction

Developing a deep understanding of the user of the to be designed product is essential to designing a smart product that fits the needs. An approach to gaining this understanding that is often used relies on going out into the world to observe the actual experiences of the intended users (Tim Brown, 2009). Gaining this understanding without direct access to the intended user is a challenge. To do this the netnography method can be very useful.

Netnography

Developing a deep understanding of the user of the to be designed product is essential to designing a smart product that fits the needs. Gaining this understanding without direct access to the intended user is a challenge. To do this the netnography method can be very useful. Observing online communities to get insights into their needs and wants. Netnography evolved from ethnographic research, the core idea is to gain unbiased and unobtrusive customer insights through observing the conversation and social interaction of community members in an empathic way without intrusion and exertion of influence (Kozinets, 2002; Bartl et al., 2009). Users gather in online communities to exchange personal experiences and opinions about products and their usage and talk about solving their product related problems. Some users develop their own product modifications and innovations, which they share in these communities. This turns online communities into distinctive consumer tribes where they exchange existing needs, ideas, attitudes and perceptions towards products and brands (Kozinets, 1998, 2002, 2006; Bartl et al., 2010). The observation of these communities can lead to a deep understanding of the user. The user perspective is critical in the process of designing products that fit.

Method

There are four types of use that can be distinguished by looking at the cycling categories used by forums and blogs. Sporty use (road bike, mountain, cyclocross), family use (cruising, cycling with the family), utility (errands, shopping, visiting places in the area), commuting (to work and back).

This research is focused on two of these. Family and utility cycling. The reason for this is that it is a market that is a very large part of cycling in other countries, in the US however it is relatively small. Focus of the netnography research is on the reason for this, why is the recreational and utility cycling segment not popular in the US and what is needed to change this.

This question will be answer by observing the bikeforums.net forum. This is the biggest cycling related forum that has mostly American members. The forum is divided into topics, each topic houses discussion threads that are started by users that seek opinions on a matter. Three topics are chosen and within these topics four discussion threads are selected for analysis. The selection of discussion threads is based on amount of replies, discussion subject and the date it was started. When a thread has been selected the initial question

and the motivation for the question are deducted from the message that starts the thread. This is done before reading the rest of the discussion. Then the most frequently stated opinions in the discussion are summarized and if the discussion moves to a consensus this is documented. As a last step idea's that are not directly related to the initial question but are relevant to the research are documented.

Results

The analysis of the forum threads has led to insights that can help design a bike that will better suit the needs of the American utility and family cyclists. The three topics for the analysis are: Utility Cycling, Recreational and Family, Electric Bikes. The findings in each of the categories are summarized below.

Utility Cycling

There is much insecurity about what is needed to use a bike to do all groceries shopping. For this question there are a lot of different opinions. The most dominant are the need for panniers and a trailer. While that is the most frequent solution that is offered there is another that when offered quickly gets consensus. The cargo bike, there are many different types but the idea of a bike that is specially designed to transport more stuff is liked by most and seen as the way to go. The need to transport children is expressed in most discussions. The need for safety is recognized by all and there are many discussions on how to do this. The sidecar option is discussed and get very enthusiastic replies. The concern users have is for maneuverability and weight. Related to this is safety in general, it is the most made argument that the American environment is not adapted to cycling. Therefore, it is up to the cyclist to make their own situation safer, visibility is a big part. Users indicate having a comprehensive set of lights on their bike and having blinking lights on in daylight.

Recreational and Family

Discussions in this topic are mostly about riding with one or more children. There are questions on how to do it, where to do it and what is safe. The most proposed solutions are tag along bikes, trailers and cargo bikes. The option to attach seats to a regular bike is discussed but most users do not think it is a preferred option. Again visibility and no direct exposure of children to traffic is important. In the case of tag alongs, users write that they ride with an adult on an extra bike behind the child. Being able to stay in contact with the child is preferred which makes sidecars and cargobikes a better option than tag alongs and trailers. The upright riding position and a rear view mirror are proposed to help situation awareness. In this topic the crank forward position is discussed as well. People that are new to cycling show great interest as well as elderly and overweight. The feel it is easier and safer since it allows to put your feet on the ground while seated. The social benefit of being able to stop and talk while seated is also mentioned.

Electric Cycling

In this topic there are two technical matters that are present in nearly every discussion. The question if it is better to convert a regular bike or buy an e-bike is asked frequently.

The outcome of debate on this can go both ways. If the conversion option wins there are two reasons for it, power and price. If the buy new option wins the arguments are quality, range and comfort related. The buy new option wins most debates. That the motor power is seen as an argument for conversion can be caused by a lack of understanding of the relation between power and performance. The other debate that is frequently held is the throttle versus pedal assist (PAS). PAS wins this debate most of the time, however most users indicate that they prefer to use PAS as a primary and throttle as a backup for special circumstances and getting started from a stop. The opinion that e-bikes are too slow and heavy is frequently brought up. The range is a very important parameter. Doubts about hill climbing abilities of e-bikes are strong. Users give their opinion on why they think people wouldn't buy an e-bike. The most used argument is that they are too expensive. People feel like it is socially not accepted. People that already are into cycling are less likely to want one than people not used to cycling. But these people, those not already in to cycling, are not aware of the existence and advantages of e-bikes. There are some other arguments that are frequently used against e-bikes, they are too slow, they look goofy, they are too heavy. Some of the arguments are not just applicable to e-bikes but are about cycling in general, it exposes you to the elements and the limited cargo capacity.

Conclusions

One of the most significant findings is that there are many people that build or adapt their bicycles significant. This shows that the available bicycles do not suit the needs properly. Transport possibilities in all sorts of forms is the most frequent subject in the discussions. There are two solutions for the transporting of stuff that are not mentioned most frequent but when they are, consensus in the discussion stays on these solutions most of the time. These solutions are cargo bikes and cargo trailers. This demonstrates a need that is different from other cycling countries where panniers or a front rack are seen as adequate cargo solutions. Although not frequently mentioned in cargo or child transport discussions, when mentioned the sidecar is generally liked. Most examples of them are homemade solutions. Within the do it yourself topic of the forum the sidecar type is very popular. The lights of the bikes another subject on which the needs are not sufficiently met in stock bikes, people attach additional lights themselves.

All these things prove that there is a demand for a bike that solves the issues described above. People creating their own solutions is a strong indicator for this

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Value sensitive design Adapting bikes for the US

Introduction

The use of bicycles has the potential to contribute to solving a lot of problems of modern societies. They can reduce pollution, dissolve congestions in city centers and help people to live healthy. These are just some of the benevolent things bikes might bring. Bikes however have been around for some time now. And the use of them by adults in the US is very limited. Why is this and what can we do to change it? In the US bicycle industry there is a phenomenon called the blue ocean, this refers to the 90% of people that do not regularly use bicycles. For the advantages of bikes for society to become reality that big blue ocean needs to be dissolved. This paper will try to find what is needed to do this. This will be done by first analyzing the situation and then evaluating what that means to bikes. For the analysis and the evaluation, the value sensitive design (VSD) framework will be used (Friedman, B., Kahn, P., & Borning, A.,2002). This framework is chosen because it can help developers to give conflicting values a place in a smart design (3TU.Ethics. Value sensitive design). It is also a good tool to identify these conflicts since they may very well be the main issue for the research question. The research questions is:

How can designers mitigate the conflicts between bike technology and human values in the United States of America?

Method

What are values? Whose values should be supported in the design process? How are values supported or diminished by particular technological designs? How should we engage in trade-offs among competing values in the design? These are the questions that value sensitive design methodology tries to answer (Friedman, B., Kahn, P., & Borning, A.,2002). Understanding these values and finding ways to mitigate possible conflicts will help design product that are a better fit to the needs of the user. The first step will be analyzing to identify a critical human value involved in the interactions of people with the world through their bikes. The next step will be evaluating to find conflicts between values of potential users and those incorporated in the current technology and look for solutions to resolve these conflicts. These solutions will not be functional solutions but more guidelines that should be taken into account when designing an e-bike. Looking at technology from a human values perspective has the potential to create superior products that have a more significant role in the way we interact with the world around us (Van den Hoven, Jeroen, Gert-Jan Lokhorst, and Ibo Van de Poel, 2012).

Analysis

That there are large differences in the way Americans think and the way Europeans do is evident in many different sectors of culture and society. When looking at a few of these

differences a pattern emerges. Taxes in the US are generally lower than in Europe, health insurance as an individual responsibility versus mandatory and gun control. All these things have something in common, they emphasize personal responsibility and the individual's freedom to choose, being in control. When looking at these thing from a value perspective it is clear that this describes a different view on the importance of autonomy. Autonomy is an individual's capacity for self-determination or self-governance (J. Dryden, 2010). Another example of the different view on autonomy between Europe and the US, one that has a more direct relationship with the subject of this report, can be seen in the way we deal with traffic safety. While small cars have always been very popular in Europe the same can be said for very large cars in the US. Small cars increase traffic safety because they reduce the forces involved in collisions and they are easier to control. This tactic is effective when there is a collective approach to traffic safety. When looking at this from a more autonomous perspective it does not make as much sense, relying on other people's sense of responsibility to be safe is not very safe from that perspective. It therefore makes sense that Americans prefer a car that protects its driver in case of collision, it means being in control of your own safety, the popularity of SUV's and pickup-trucks in the US matches this line of reasoning.

Cycling and autonomy are closely linked, some aspects of cycling strongly support autonomy while others reduce it. Cycling supports autonomy by allowing for more possible routes when going somewhere, it is less strictly regulated and allows the user more choices, everyone is allowed to go cycling. This unrestricted nature of cycling seams to make it an ambassador for autonomy. There are however many factors that oppose this, addressing these factors in the design of bikes can make them connect to the potential users on a deeper level. In a study to ascertain the reasons for driving to work, five core motives were identified (Gardner; Abraham, 2007):

- Journey time concerns
- Journey based affect
- Effort minimization
- Personal space concerns
- Monetary costs

However, they also found that the underlying desire for control underpinned many of these motives. This supports the idea that autonomy is a key value towards getting people to use bikes for mobility. Journey based affect and monetary costs are both supporting the choice for a bike, for the e-bike this includes time concerns and effort minimization. The personal space concerns are not, in the daily lives of people personal space is very limited. Single person households have it, people working in a private office have it and people driving in their cars have it. In the rest of our lives personal space is very limited, for many people the personal space they experience in their cars is the only moment they experience it in their day.

Evaluation

What may be the largest intrusion on the user's autonomy is that the environment dictates the amount of effort needed, the user is not in control, wind and hills are in control. The

effort needed in turn results in how long it takes you to go somewhere, how sweaty you get and how far you can go. This, in combination with comfort has been a big driver in the rise of the automobile. The electric powered bike changes this, control is given back to the user. While e-bikes have been around for a long time, the limited capacity of batteries resulted in the advantages being nullified by very limited reach. This has changed and, with batteries getting more and more efficient, will only get better. An e-bike is therefore a better match to American values. Another limiting factor on the choices possible is the limited ability to transport things, both a lack of space and power impose this limitation. The second factor, power, is also removed through the electric motorized bike. This means bikes that allow the user to transport their groceries, children and all kinds of thing they want to bring with them, will help increase the user autonomy. Using a bike instead of a car means losing that moment of personal space. Changing that could be a big step toward the general acceptance of bikes as the choice for mobility. How this change could be accomplished may be very different for various types of bikes and the environment they are used in.

Conclusion

The rise of the automobile in the first decades of the 20th century completely smothered the bicycle market in the United States, in Europe this was much less the case. The result of this can be observed today, since the development of the bicycle for the past century has largely been done in Europe the American values are misrepresented in the technology. The exception on this is the moutainbike, an American invention. This essay has established that there is a difference in the importance of autonomy, a value that is deeply embedded in cycling, between Europe and the US. Designs that acknowledge is and give it a place in bike design will likely be more desirable to the American consumer.

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Netnography, analyzed threads Recreational & Family

Recreational & Failing	
Thread name: Thread properties:	A few questions about bike trailers, bikes and gear 600 views, 16 replies, since 02-01-2016
Question:	What type of bike and or bike equipment do I need to go cycling with my 1 year old son?
Motivation:	Likes recreational cycling and wants to share the experience with the child.
Proposed solutions: Some users offer opinions on traile	rs and seat mounts, lead users suggest cargobike which is the leading opinion.
Consensus: The person that started the thread enthusiastic	decides to buy a cargo bike. Most users agree that is the best option, very
Other frequent experiences Bad experiences with a front seat l Dislike for trailers for lack of contac Side-chariot option is proposed. Safety bars in trailer/cargo bike.	ocated between rider and handlebar. ct with child.
Thread name: Thread properties:	Questions about riding with a child 2000 views, 17 replies, since 31-08-2015
Question:	Can I ride a bike with a 16kg child on hills and what bike do you need?
Motivation:	Stopped cycling because of child and wants to start again.
Proposed solutions: Using a front or rear seat however bike. Other advice is high volume ti ready is proposed as well.	high center of gravity and stability problems. A trailer is proposed and the cargo ires, long wheelbase and good gearing. Switching to a tandem as soon as child is

Consensus:

Consensus looks to be going to the seat option until the cargo bike is proposed. Then the cargobike wins the debate. The person that started the thread has now bought a cargo bike.

Other frequent experiences:

Getting on the bike becomes difficult with the seats because of instability and not being able to swing a leg over the rear.

Thread name: Thread properties:

Tag along safety in the city 800 views, 10 replies, since 08-06-2015

Question: do others use? How dangerous is it to ride with a child and what solutions

Motivation:

Couple that likes to go cycling with their 2+ year old child

wants to know what the safest option is.

Proposed solutions:

A tag along is often proposed but this may be caused by the thread subject, the concern for having the child behind you is mentioned every time. Tandem option is mentioned and tandem +1 to. Using a cargo bike is proposed with the benefit of a less fragile setup. Other solutions are situation awareness related and to stay away from much faster traffic. The rear view mirror is seen as a good addition to any bike.

Consensus:

Good judgment seems to be the most shared opinion, a mirror could help. Situation awareness is very important. People want an adult to be in between their child and other traffic.

Other frequent experiences:

The child behind is an often used solution, in a trailer or a tag along. However many people decide to let one of the adults ride behind. This is not comfortable since it makes conversation between adult difficult.

Thread name: Thread properties:	Elektra's new townie 90000 views, 384 replies
Question:	What do you think of the crank forward position?
Motivation:	Doubts whether it's a functional improvement or a marketing scheme.

Opinions:

People that are new to cycling, older or overweight find it a perfect solution for them. Being able to put their feet on the ground is the most heard of reason. They like being able to stop and talk to people without needing to get of the saddle. There are concerns for the climbing, user experiences are that it is fine. The feet on the ground option is good for slippery conditions. It needs a rear rack, it looks cool and is great for kids.

Consensus: Great for non sports cycling. Feels safe and comfortable. New cyclists are very enthusiastic.

Other frequent experiences: Frequent cyclists seem to think it is not real cycling.

Utility Cycling

Thread name: Thread properties:	Bringin' home the groceries 4000 views, 51 replies, since 23-08-2015
Question:	What do I need to bring home the groceries?
Motivation:	Wanting to do grocery shopping that can not be carried in a backpack. (transport stuff)

Proposed solutions:

The advice given can be categorized in three categories. Overall consensus is that a combination is best. Rear rack is mentioned in nearly every post. Panniers suggested 15 times Roller panniers suggested 6 times Baskets suggested 4 times Trailer suggested 16 times Cargo bike suggested 1 time

Consensus: The two dominant options are the panniers which are liked for their convenience and the possibility to leave them

on always, preferred over baskets because of capacity and removability. And the trailer, the main argument is capacity while objections are effort and handling related. The ability to carry big loads is seen as very appealing by most users.

Other frequent experiences:

Thread name:	Homemade sidecar - looking for suggestions
Thread properties:	3000 views, 29 replies, since 07-02-2015
Question:	How do I create a lighter and improved version of my homemade sidecar?
Motivation:	The homemade sidecar that was created to carry two girls needs to be improved to save weight.
Proposed solutions: Remove material, for this multiple solutions are Replace wood with fabric or aluminum. Replace construction elements, do the math.	e proposed. Thinner panels, cut open sections into the panels. e steel with aluminum. Use composite panels. And thinner
Consensus: Cool bike but to heavy construction, better mat	terials and a better design could save much weight.
Other frequent experiences: Looks like a very social option for cycling with a A simpler attachment mechanism would be an	child. The sidecar should be on the other side to protect the child. improvement.

Thread name: Night riding			
Thread properties:	4700 views, 37 replies, since 27-10-2014		
Question:	What lights do you use on your bikes?		
Motivation:	Looking for visibility solution while cycling after dark		

Proposed solutions:

Use a combination of blinking lights and solid. Have multiple lights front rear and on the sides. Use blinking lights during the day. At night steady in front blinking rear. Use very bright lights.

Consensus: Lights are not to see things they are to be seen. Be extremely visible!

Other frequent experiences: Dynamo lights vs battery lights is a big discussion point.

Thread name: Thread properties: Shopping strategies for groceries 2800 views, 38 replies, since 11-04-2015

Question: Shopping? How many panniers do I need to be able to use my bike for

Insecure about what to buy to start using the bike for

Motivation: Shopping.

Proposed solutions:

Buy two panniers, if you want to do some bulk shopping the advice is to buy a trailer. Bungee cords are proposed as well as bolting boxes to the rack.

Consensus: A combination of solutions is what most are using.

Other frequent experiences: Watch out for heel kick on the panniers.

Electric Bikes

Thread name: Thread properties:	Really new, need help in buying an E-bike! 600 views, 26 replies, since 10-04-2016
Question:	Do I need to convert my bike to or buy a new e-bike?
Motivation:	Older couple that wants to keep cycling in the hills, they are overweight.

Proposed solutions:

The e-mountainbike is the most suggested option. If more power is needed the advice is to convert the bike yourself. The need for a display that keeps you informed about the performance is discussed and seen as important. Most doubts are power, battery and range related.

Consensus:

Though consensus is moving to buying a new e-bike the user decides to convert his bike. The motivation for this is the perceived need for more power than stock e-bike deliver. The source for this need is insecurity whether bikes with less power are unable to climb steep hills. The user decides to install a 1000 watt motor. The discussion on motor strength is causing a lot of insecurity, no real arguments are made.

Other frequent experiences: Some other things users find important are mentioned. Good gearing, big battery, step-through frame.

Thread name:	Justify an e-bike for my commute, please!
Thread properties:	900 views, 31 replies, since 25-03-2016
Question:	Is an e-bike a good option when i just need to tackle a few Hills?
Motivation:	Older man wants to commute by bike and is thinking about
Buying an e-bike, is has doubts if the added we	eight will be to much trouble.
Proposed solutions:	-
The discussing goes to the economics of e-bike	s vs cars. Reasons for having an e-bike that are mentioned involve
the joy of cycling, health, arriving at work with	no sweat.
Consensus:	
Consensus goes toward buying an e-bike. The	user is swayed by the economics argument and decides not to buy an
e-bike. The other users try to convince him that	t he should.
Other frequent experiences	
The argument that the commute becomes more	e enjovable is made frequent
The argument that the commute becomes not	e enjoyable is made nequent.

Thread name: Thread properties:	Throttle or no throttle your preference? 2200 views, 43 replies, since 14-10-2015
Question:	What are your opinions regarding throttle?
Motivation:	Personally likes throttle, more toy-like and feeling in control

Proposed opinions:

Most that have throttle almost never use it, there are some misconceptions. People think throttle is better for when not using the assist. PAS is found to be better but is has to have enough preferences. Throttle has its uses for special situations such as walking with the bike. PAS gives the feeling that you are cycling and throttle does not. Many want both, PAS as a primary mode and throttle to use when needed. If the throttle option is there it should not jerk when initiating it.

Consensus:

PAS is the preferred option, however most want the throttle option to be available.

Other frequent experiences:

Thread name:	Why do you think e-bikes haven't caught on for commuters in northern America?
Thread properties:	11000 views, 221 replies, since 29-05-2015
Question:	Why do you think e-bikes haven't caught on for commuters in northern America?
Motivation: Everyone if more people did it.	Really likes commuting by e-bike and thinks it would benefit

Proposed solutions:

The most used argument is that they are too expensive. People feel like it is socially not accepted. People that already are into cycling are less likely to want one than people not used to cycling. But those are not aware of e-bikes. They are too slow. They look goofy. They are to heavy. They do not offer the private space a car does. It exposes you to the elements. Limited cargo capacity.

Consensus:

The consensus is that there is a lot to be improved on e-bikes. Speed is a big concern. Also the infrastructure is seen as a big problem.

Other frequent experiences: Infrastructure that does not allow for a safe ride.

Original assignment description (in dutch)

Opdracht omschrijving bachelor eindopdracht Bastiaan Evers, s1012819

Bedrijf: QuA Associates BV

QuA is een design consultancy bureau dat zich specialiseert in het ontwikkelen van brand environments.Brand Environment Design (BED) is het proces dat QuA heeft ontwikkeld om branded items te ontwerpen en geintegreerde communicatie strategieën te managen. Aan de hand van de hun disciplines: interieur, architectuur, grafisch ontwerp en multimedia, ontwikkelen zij alle zaken die hun klanten ondersteunen in het bouwen en onderhouden van een effectief en consistent merk. BED zorgt ervoor dat een merk zichtbaar is op alle niveaus. Goed contact met de klant staat hierbij centraal, zorg dragen dat alle zaken op welke schaal dan ook voldoen aan de verwachtingen van de klant.

Opdracht:

Context

Gedurende de afgelopen jaren heeft PON een uitgebreide portfolio aan fietsmerken verzameld, Gazelle is daar één van. Gazelle is in nederland de marktleider en produceert per jaar 275.000 fietsen. In de Verenigde Staten is heeft gazelle nog geen sterke aanwezigheid. Daar moet verandering in komen. De toekomst perspectieven voor stadsfietsen zijn zeer goed, veel overheden zien fietsen als een mogelijke oplossing voor verkeersproblemen. Ook de consument ziet de voordelen van een fiets steeds vaker. De recente opkomst van de e-bike draagt daar aan bij. Ook in gebieden waar de afstanden groter zijn en het terrein niet zo vlak als in Nederland wordt, door de komst van de e-bike, de fiets nu een goed alternatief voor bijvoorbeeld de auto. Hier ontstaat dus een markt met hoge potentieel, de juiste fiets kan helpen dit potentieel te realiseren.

Fiets

Er moet dus een gazelle fiets ontworpen worden voor de amerikaanse markt. Deze fiets moet beschikken over een type transport system en moet waarschijnlijk elektrisch zijn. De opdracht is om dit te ontwerpen. De focus in het proces zal liggen op het ontwerpen van de juiste deel oplossingen zoals het transport systeem. Het ideaal doel is om de opdracht af te sluiten met een ontwerp voor een gazelle fiets waarin deze oplossingen zijn geintegreerd.

Overeenkomst:

Periode:	
Aan- en afwezigheid:	
Werklocatie:	

3-4 maanden te starten op 4 april Volledige werkweek QuA, Tweede Helmerstraat 90-96, Amsterdam

Gazelle presentation





Gazelle US Family Bikes Existing product line

Existing product line Status Development time of < 2 Years Limited experience in US market

Solution Chose and adapt/modify existing GAZELLE bikes







Steering setup

What type of steering setup the bakfiets needs largely depends on whether the bak should be fixed to the frame or turn with the wheels. The classic gazelle bakfiets, just like all cargobikes in that period, has the second system. The main advantage is that it is a very robust system and that it is relatively easy to make. Drawbacks are dynamic instability, bad cornering, downhill instability and the simple fact that the bak does not stay in a fixed position relative to the driver. The first option, bak fixed to frame, allows for a whole new world of steering and suspension setups. The simplest one is almost the same as when the bak is fixed to the steering setup from that starting point it can get as complex as needed all the way to fully independent suspended tilting while keeping the bak horizontal. Somewhere in that spectrum of complexity the perfect solution can be found.

Since in this project the final product will be produced on a very small scale and its purpose is to create a brand identity that shows a deep understanding of the values of the intended users, a very complex product would not be the best choice. Independent suspension and a tilting bike are therefore not suitable technologies for this bakfiets. There are however still many steering related concepts that can be integrated in the design without creating a to complex product. Technological concepts that are common in the automotive industry and among trike manufactures can be translated to a large cargobike with two front wheels, in trike jargon a tadpole setup.

Caster Angle

The caster angle provides a degree of self-centering. This makes the bike easier to drive, it improves the stability. Not enough caster can make the steering very nervous while too much caster can result in a lack of responsiveness in the front of the bike. A caster angle of around 10 degrees is common on recumbent tricycles while an angle of around 5 degrees is normal for cars.

Camber

A negative camber improves cornering grip. The outer wheel generates more lateral force when entering a corner. The disadvantage is greater friction when going in a straight line, this will increase rolling resistance and tire wear.

Toe-In

Toe-in refers to the front ends of the wheels pointing inward, towards each other. It provides greater line stability at the cost of efficiency and cornering. A very little toe-in, less than a degree, can provide benefits without noticeable drawbacks.

Kingpin Inclination

The kingpin inclination allows the wheels to turn directly in line with the steering axis. This helps decrease tire scrub (wear) and it allows the bike to lean into corners slightly. It provides advantages for both cornering and straight line stability.

Kingpin to Wheel Axle Orientation

If the wheel axle is placed in front of the kingpin, the caster angle is not functional and the system becomes unstable. The wheel axle and kingpin should intersect or the wheel axle should trail the kingpin slightly.

Ackerman

When making a turn the wheels of the bike will have different turning circles, the inner wheel's circle will be smaller than the outer wheel's circle. This means that when turning, the inner wheel should have a more aggressive angle than the outer wheel. The ackerman setup makes that possible. The alignment of the ackerman setup is shown in the illustration.



Ackerman

rear axie

The state of urban cycling in the US is interesting. To assess the consumer base one needs to ask a series of questions. To start with "Is the user a first time cyclist". As mentioned in the beginning of the thesis Americans have a number of barriers to cycling as a main mode of transportation; The primary ones are riding in traffic, going up hills or long distances, and getting sweaty. To capture the 'first time buyer' a bike needs to address these issues. Most urban cyclists that would be in the market for a Gazelle are not first time users so getting to the next level of detail that a more seasoned cyclist will appreciate can capture users who have already bought a bike that doesn't suit their needs and now knows what the want and how they want to use it.

The second question is "do you live in a city". The American cycling community has a pretty big divide between urban and suburban cyclists. This is where you will see the difference between beach cruiser bikes and other 'urban' bikes. People in the suburbs and smaller cities seems to latch onto the classic cruiser bike which really is the American version of the Dutch bike. These Beach Cruiser bikes are typically only used for short distances, around the neighborhood or in flat towns. Anything over 600 for this user is a big ask and many want to spend under \$300. Many in the urban bike realm see the beach cruiser as 'uncool', but it's a large market in the US.

Urban dwellers on the other hand appreciate the practicality of Dutch bike. We had a big dutch bike craze about 7 years ago on the West Coast but the biggest issues were weight and cost. Most people weren't ready to spend \$800 on a heavy bike that's hard to get into your apartment or go up hill with. The bakfiets were well liked but you have to live in a house with a garage for one of these to be practical.

Locking a bike outside is only something that you do when you go inside for a few hours at a time. Bike are not stored outside here.

A sidecar would not be viable in the US. Bike lanes are scarce and even when they are there it's only in a limited capacity so you often find yourself going in and out of bike lanes, even in cities like Portland and Seattle which have some of the better bike infrastructure in the US. One would lose any of the benefit of having a bike such as the ability to move through traffic. With a bakfiets your load is in front and about the same width as the handlebars which allows the rider to visually judge the spatial relationships as he or she rides.

I think that creating a "New American Icon" is maybe the wrong path. The Americana aspects of the beach cruisers, coca cola, and hot rods will always occupy the hearts of Beach Cruiser subset and won't be re-defined by a European brand. A better approach would be to "Introduce a European Icon tailored for the US market". The Urban Commuter Cyclist typically has an affinity for Europe, European brands, and the fact that cycling is a big part of European culture. I can't count how many times people come back from Europe amazed at the bike culture. Due to the varied terrain and scale of American Cities modularity is probably the best way to reach these users. This is why we see the most traction with long tail cargo bikes. You can modify to suit ones needs, whether it's grocery getting, hauling kids or just having friend ride on the back to the bar. With the advancements of pedal assist these are now a viable option regardless of terrain.

The popularity of cycling is rising in the United States, this development creates opportunities for cycling companies to grow their business. Gazelle is such a company, producing over 275.000 bikes a year they are the leading brand in the Netherlands. In 2015 they have become part of the PON bike house of brands and are now more than ever in a position to expand. To capitalize on this Gazelle is looking at the possibilities for a market entry in the US. In this report an approach to developing successful Gazelle bikes for the US market is described. This is achieved using the Design Thinking method developed by Tim Brown and adapting it to be applied from a distance.