DESIGNING PUBLIC TRANSPORTATION FOR PRIVATE CAR USERS

ABSTRACT

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Publication year
2012
Department
Design
Study program
Industrial and Strategic Design
Thesis name
Designing Public Transportation for Private Car Users
Thesis type
Master Thesis (Master of Arts)
Language
English
Number of pages
115

Active and functional public transportation is a necessity in urban areas. It provides a means of mobility for service users such as teenagers, elderly and people who cannot or do not want to use a private car, walk or cycle. Public transportation is also more economical and ecological mode of transportation if compared with a private car. However, the problem is that a large number of urban travellers do not consider today’s public transport services as a real alternative for a private car. This causes for instance traffic congestion and air quality degradation in urban areas. This thesis compares the travelling experience between private car and public car. The work questions what is it that private car users have to ‘give up’ if they make a change in their travel behavior and start using public transportation instead of a private car? Why do private car users prefer using their own cars and what is it that makes them such an appealing and attaching object to own and use? And how come are our current public transport services incapable of satisfying the travel related needs and desires of private car users? The thesis answers symbolic, affective and instrumental motives behind private car users’ transport mode choice with an emphasis in the symbolic and affective motives to use a private car.

The findings are used to create an alternative design approach for developing public transportation services in the future. At the end of the thesis, a new demand responsive transport concept is used to illustrate future scenarios for a new public transport service, which could hold potential to change the habits of private car users. The findings are a part of a five-year long Metropol research project, initiated by the Aalto University School of Science and Technology. The project has examined and evaluated transportation services in Helsinki and other metropolitan areas and evaluated how they can improve the service and how they should facilitate and incentivize the use of other modes of transportation such as public transport.
ABSTRACT
Active and functional public transportation is a necessity in urban areas. It provides a means of mobility for non-car users such as teenagers, elderly and people who cannot or do not want to use a private car, walk or cycle. Public transportation is also more economical and ecological mode of transportation if compared with a private car. However, the problem is that a large number of urban travellers do not consider today’s public transport services as a real alternative for a private car. This causes for instance traffic congestion and air quality degradation in urban areas.

This thesis compares the travelling experience between private vs. public and personal vs. shared. The work questions what is it that private car users have to ‘give up’ if they make a change in their travel behaviour and start using public transportation instead of a private car? Therefore, the thesis examines the motives for private car use. Why private car users prefer using their own cars and what is it that makes a private car such an appealing and attaching object to own and use? And how come are our current public transport services incapable of satisfying the travel related needs and desires of private car users? The thesis views symbolic, affective and instrumental motives behind private car users’ transport mode choices with an emphasis to the symbolic and affective motives to use a private car.

At first, the thesis examines transport related theories explaining what affects to the individuals’ travel behaviour and travel related needs. After this, the thesis looks into European transportation research papers related to private car users’ motives to use a private car. The product attachment theories are studied to find
explanations to the questions: Why do private car users tend to be so attached with their cars and what is it that makes giving up car use such a difficult task to do? To allow comparisons between the experience of using a private car and using public transportation, a four-month participant observation period considering service experiences in today’s public transport was conducted in Helsinki. In addition, the thesis includes documentation analysis considering the public transport service quality factors that are used to measure the quality of today’s public transportation services.

The findings are used to create an alternative design approach for developing public transportation services in the future. At the end of the thesis, a new demand responsive transport concept is used to illustrate future scenarios for a new public transport service, which could hold potential to start attracting private car users.

This thesis is a part of five-year long Metropol research project, initiated by the Aalto University School of Science and Technology. The project has examined whether a new type of demand responsive transportation concept is economically and technically feasible to design and implement in urban areas such as Helsinki. The ultimate aim of the project has been to design and produce a new type of public transportation service concept, which could finally challenge the predominance of a private car as the most popular mode of transportation in urban areas.
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PART 1
INTRODUCTION
1.1 Struggling against the urban transport problem

The figures from Helsinki regional area implicate what is happening in growing middle sized and large cities. The number of inhabitants in Helsinki regional area was 943,752 during the year 1980 (1). During the year 2010 the same number had grown to 1,335,366 (1). This has caused direct consequences to the traffic in the area. The mean number of journeys conducted inside Helsinki regional area per day was somewhat less than 1,500,000 during the year 1966. During the year 2005 the number of trips was already doubled. The estimations show that when coming to the year 2030 the number of journeys might grow close to 4,000,000 per day (2).

The picture 2 (2) indicates that public transport share of the total journeys made by motor vehicles inside the Helsinki regional area has not grown as rapidly as the share of journeys made with private cars.

The inefficient private car

The private car is a highly inefficient mode of transportation, because generally the occupancy of it is very low. One private car carried only 1.3 passengers on average when used for commuting in Helsinki regional area during the year 2007 (2). In comparison, the same number for a bus during the year 2005 was 25.59 (3). This means that on average, a metal box the size of 4.5 meters per 2 meters and equipped with a motor, most often carries only one person. This creates problems. The extensive use of motorised vehicles causes traffic congestion, noise pollution and exhaustion fumes boost air quality degradation. If compared with public transportation, extensive private car use is energy consuming and space intensive (including roads and parking). So when there are too many cars present, the environment becomes unpleasant. According to James Urry “the one-quarter of the land in London and nearly one-half of that in LA is said to be devoted to car-only environments” (4) (Page22). This is alarming. The cities should be designed for people and not for cars.

Public transportation

Public transport services are typically modes such as buses, trams, metros and commuter railroads offering service for hire to the general public. Taxis are not included as a mode of public transportation since they are generally available for the use of only one travel party at a time. Public transport services offer transportation, which is always shared with the general public. (5)

Public transport is always a service, where the person who uses it has the role of a customer, whereas the service provider delivers the service. In cities, the public transportation services such as metros, busses and trams are often provided by the local municipalities, meaning that the services are managed and organised by the local city government or other public organizations. In Helsinki regional area, the Helsinki Regional Transport organisation (HRT) administers the operation of public transportation services with its several different sub-contractors (6).
Pic.2. The share of journeys made by motor vehicle at the Helsinki regional area during the year 2007. (2)
The common way public transport services operate is based on the idea to move masses of people effectively with large vehicles. The vehicles usually operate along fixed route lines and according to fixed timetables. These types of services are usually affordable for the customer and ecological and economical for the city environment.

**How could public transport help solving traffic related problems?**

According to Litman (7), public transportation helps to reduce traffic congestion, parking congestion, traffic accidents, road and parking infrastructure costs, automobile costs to consumers, excessive energy consumption and pollution emissions. In addition, the public transport offers the means of mobility for non-drivers, such as teenagers, disabled and elderly people. However, increasing the amount of public transport services alone does not solve the problems related to urban transportation. The real challenge is how to get the private car users to use public transportation.

According to Litman “…there is little benefit to society from simply operating transit vehicles… …most benefits depend on how much transit is used, how well the service responds to users’ needs and preferences, the amount of automobile travel displaced, and the various savings and benefits that result (including reduced vehicle ownership and operating cost, avoided roadway and parking facility expansion, increased safety, etc.).” (7)(Page 2)

In other words, displacing automobile travel with public transport services is beneficial. However, this can be challenging, because the private car seems to hold the most potential to satisfy the private car users complex travel needs compared with conventional public transport services (8). Therefore, in the future, public transportation services should respond better to the private car users’ versatile needs, expectations and desires related to travelling. Before public transport providers make this happen, it is unlikely that private car users will start altering their travel behaviour and travel mode choices.

1.2 **Paratransit modes and the potential of mass Demand Responsive Transportation?**

Paratransit modes are alternative modes of public transportation. They are usually considered more flexible when compared with other public transportation modes, since they are not based on fixed timetables and routes. The fleet of paratransit transportation services usually consists of minibuses or other semi-sized vehicles. The paratransit vehicles run along more or less defined routes, which they can deviate from to pick up or leave customers for the convenience of its passengers. Typically the paratransit services have been used to serve low-density areas, dispersed travelling patterns, and travel of seniors, and people with disabilities. (5)

**Mass Demand Responsive Transportation**

The most advanced form of paratransit is demand responsive transportation
Pic.3. The example picture illustrates how space intensive it is to use a car in urban environment if compared with a bus. The example compares the space required to transport 60 people.
(DRT). It is a public transportation service mode which operates the pickups and deliveries according to the criteria defined by the customers. It does not follow fixed routes or fixed timetables, because the service operates the customer pick-ups and the drop-offs in accordance with the customer needs. In practice, a door-to-door service quality is provided for the DRT customers. All rides with DRT are shared, which makes the DRT an intermediate form of transport, somewhere between bus and taxi services. (9) The concept is that computers assist in dispatching and scheduling trips and customers into shared rides. In theory this is faster and more efficient than dial-a-ride types of trips that are operated by humans.

DRT model is not a new concept in the history of urban transportation. The computer assisted dispatching system to schedule vehicles, which can serve different passengers simultaneously, was demonstrated already during 1970’s. However the computer algorithms of that time were not efficient enough to run this type of services in practice (5). Later, DRT concept has been in use in some rural areas where a frequent bus or coach line services would be too expensive to operate since the low number of customers. The DRT has also been used in the transport of seniors and people who have disabilities, but not as a mode of public mass transport service in urban city environment.

**Future potential**

According to computer simulations made by Finnish National Public Health Institute, implementing the DRT concept into use in an urban area with one million inhabitants could reduce health, environmental and other detrimental impacts of car traffic typically from 50-70% (10). Other positive research results from Aalto University’s Metropol research project incline that by utilising modern information technology it is possible to create DRT based public transportation service which has potential to rival against the popularity of a private car, while DRT is 1) cost effective 2) fundamentally more resilient than a taxi or a private car 3) reliable (11). However, there are still no existing examples where the DRT would have been tested in practice as a large-scale mass transport service in urban environment.

The DRT concept holds great potential to challenge the predominance of a private car, since in theory, it provides service quality close to a taxi with a price of a bus ride. In the DRT concept, the customer can determine the travel criteria instead of the service provider. The customers can define the time of departure and arrival according to their own desires. The DRT concept would also allow location-to-location services without interchanges. These improvements in the public transportation service quality could start to attract the car drivers to become users of public transport services. (12)
PART 2
PROJECT BACKGROUND
2.1 Metropol Project

Since 2007, Metropol research project has investigated whether a DRT based travel service would be feasible to design, produce and implement in the metropolitan areas, so that 1) trips can be ordered in real time, just before the desired time of travel, 2) passengers can receive a service quality which competes with the convenience of a car 3) service system is technically and economically feasible.

The Project is run by Soberit (Software Business and Engineering institute), part of Department of Computer Science and Engineering at Aalto University School of Science and Technology. Tekes (Finnish Funding Agency for Technology and Innovation), Ministry of Transport and Communications, HRT (Helsinki Regional Transport) and City of Helsinki are funding the research project.

Metropol concept

Metropol service concept has been in development in the research project. The idea has been to design and produce a transportation service concept, which is so appealing that it could start to challenge the popularity of a private car.

The technological concept is founded on the idea to utilise the state of art technologies for creating a DRT based transportation concept in metropolitan areas accessible for general public. For example, the latest GPS technologies can be used for locating the customers and vehicles. The trip ordering can be made via Internet from a home computer or with a smart phone application. An efficient software program and computers can be used for calculating the schedules, prizes and routing of the trips. The software program also dispatches the customers and vehicles into shared rides so that every customer will receive the desired trip and service quality.
Pic 4. Technological concept sketch.
The Metropol vehicles are located via GPS satellite connection. The vehicles communicate their location and status to the automated trip organiser via GMS data network. The automated trip organiser conveys the customer trip requests to Metropol vehicles and dispatches customers and vehicles.
Pic 5. Technological concept sketch
The automated trip organiser dispatches customers into shared rides. Every time a Metropol vehicle receives trip orders the route of the vehicle is updated.
CUSTOMER AUTOMATED TRIP ORGANISER VEHICLE

MAKE A TRIP INQUIRY

TRIP OFFER CALCULATION PROCESS

CALCULATES TRIP OFFERS
Prises and travel times of the calculated trip offers vary within the framework set by the customer.

ONE OF THE TRIP OFFERS ACCEPTED WITHIN TIME LIMIT

TENDERING PROCESS BETWEEN VEHICLES ABLE TO SERVE THE CUSTOMER’S REQUEST

THE CHOSEN VEHICLE IS RESERVED TO THE CUSTOMER FOR A MOMENT

MAKE A TRIP REQUEST

CONFIRMING THE TRIP OFFER BY PAYING WITHIN THE RESERVATION TIME

THE CHOSEN VEHICLE RECEIVES INSTRUCTIONS TO PICK UP A NEW CUSTOMER

YES

RECEIVES TRIP INFORMATION AS A CONFIRMATION OF THE PAYMENT

DISPATCHES THE CUSTOMER AND THE VEHICLE

NO

CANCEL

CANCEL

YES

CANCEL

Pic 6. Technological concept sketch
System map of the technological concept (Trip ordering: User perspective)
PART 3
FRAMEWORK
3.1 Framework

One of the three key objectives of Metropol research project is to study whether the DRT based transportation service concept has potential to offer its passengers a service quality which can compete with the convenience of a car?

While setting the design requirements for creating a quality public transportation service, it is extremely important to consider the reliability and the accessibility of the service as well as cost, speed, total travel time, waiting time, the amount of interchanges, the ability of carrying luggage and the other ‘measurable qualities’, which have effect on customers travel behaviour and transport mode choices. The previously mentioned ‘measurable qualities’ of public transportation were studied and compared with the assets of a private car by the Metropol research group (12) and therefore, for the most part, they are framed out from the context of the thesis.

This thesis examines the service quality factors differentiating a private car and public transportation from another perspective. The work concentrates on the symbolic and affective motives, which might also have an effect on private car users transport mode choices. The hypothesis is that having a more holistic understanding of the motives to use a private car can enrich the public transportation design processes when the aim is to create more appealing and attaching transit services for private car users.

3.2 Transportation research

The literature review from the area of transport research seeks answers to questions 1) what aspects affect our transport behaviour and travel mode choices and 2) what are the motives for using a private car in urban areas?

To answer the previous question, the thesis leans on three theories that explain our transport behaviour. The first is activity-based travel theory, which is based on the notion that people do not move to travel; they move to participate in activities (13). The second salient theory is that traveller’s personal attributes affect on their transport behaviour and transport mode choices (14). In addition, the third theory describes a model of temporal ordering to make travel related choices (8).

To find answers to the latter question, the thesis studies a variety of transport research papers discussing the relevance of symbolic and affective factors related to private car users’ travel mode choices. The thesis also utilises some of the recent research findings from Metropol project in order to understand the instrumentally reasoned motives that lead to the urban car dependency.

Helsinki has been used as the reference city in Metropol research project. Therefore, the used literature concerning the transport behaviour is chosen mainly from European countries. By doing this, the research tries to avoid the possible biases that major cultural differences and dissimilarities in the urban environment might cause.
3.3 Consumer behaviour science

According to consumer behaviour scientists (15) (16) (17) the symbolic and affective aspects of a product have significant roles in supporting the process of attachment between the user and the object. The popularity of private car use suggests that owning and using a car can be extremely attaching and appealing. Therefore, the consumer behaviour science and especially product attachment theories might have potential to allow a better view into the motives of private car use. This is relevant in the context of the thesis, since recently some design communities have found potential ways to utilise the product attachment theories as a part of design processes especially in cases when the aim is to create more attaching and engaging products (18), (19).

3.4 Service Design

Service design is a relatively new field of design. It focuses on planning and organising people, communications and material components (e.g. user interfaces or built infrastructure) of a service, either to create new services or to improve the quality of existing services. Often the goal of service design is to enhance the interaction between the service provider and customers to increase the quality of the customer experience. For the service design activity, it is common to suggest new behavioural patterns or use scenarios to the actors that interact with the service. The foundations of service design are in understanding the users, their needs, expectations and behavioural patterns. The service design approach is often also holistic. The holistic approach considers e.g. users, service providers and all stakeholders who are somehow involved in the service. In addition the holistic service design approach considers the context where the service functions. Observing and analysing the real contexts where the new services should function or where the existing services are already functioning is one of the cornerstones of service design activity. For the service designers it is also common to use visual tools and methods in order to illustrate the design problems and solutions. Some of the common tools and methods are stakeholder maps, service blue prints, user personas, customer journeys, use scenarios, storyboards and service evidences. Also storytelling is a common way for service designers to perceive, visualise and communicate problems, ideas and design solutions. (20) (21)

In the context of this thesis, the service design expertise and its methods are utilized for structuring, analysis and creation of visual representations of the ideas and outcomes that the preceding research phases will produce. Service design methods, especially observations in the context where the services function, are also used to analyse today’s public transport service experiences.

3.5 Who is a private car user?

The focus of this thesis is set to private car users since the objective of the Metropol project is to create a new public transport service concept, which could
decrease private car use in urban areas. In the context of this thesis, a person whose daily travelling is done either occasionally or continuously by a private car is considered as a private car user. Obviously, the people who are frequent public transit users do not make their travel choices according to the same motives as the private car users. Therefore, the transit users are framed out from the research.

3.6 Research questions

The following research questions 1) can Metropol service concept offer its passengers a “service quality” which competes with the symbolic, affective and social assets of a car and 2) what makes driving a car more appealing and attaching than using public transportation, will support achieving the aims and objectives listed below.

3.7 Aims and objectives

The thesis aims are 1) to understand what affects to our travel behaviour and transport mode choices, 2) to understand the travel related symbolic, affective and social user needs that make the private car use more attaching and appealing than using public transportation, 3) to recognise design opportunities for creating more appealing transit services for private car users and 4) find ways to incorporate the design opportunities in the Metropol concept.
Pic. 7. Framework
The thesis framework constructs from the overlapping elements of transport research and consumer behaviour sciences (especially product attachment theories). These fields of research are expected to offer good understandings of what affects our transport behaviour and mode choices. After gaining knowledge of the private car users’ motives to use a car instead of other transportation modes the current public transport services are studied by utilising tools and methods familiar to service design activity. The current public transportation services (concentrating mainly in Helsinki area) are studied in order to find out design opportunities to improve today’s public transport services in a way that they would start to attract more private car users. In the context of this thesis, the Metropol concept functions as a platform to present the possible new design opportunities.
PART 4
THEORIES
PART 4, SECTION 1: TRANSPORT BEHAVIOUR AND TRAVEL MODE CHOICES

The section discusses some of the basic behavioural patterns, which are used to explain individual's travel behaviour and transport mode choices.
4.1.1 Need for transportation

Fulfilling our biological needs, social obligations, and personal desires, requires that we move from one place to another to perform goal-directed behaviour such as work, life maintenance activities and recreational activities. The basic rule of this activity-based approach to travel behaviour is that need to travel derives from this requirement. (Gärling) (8)

4.1.2 Journey type

Our travel behaviour and transport mode choices are also affected by different travel agendas, such as travelling to work or recreational activities. The daily travelling to work for example is often experienced as routine-like. In this type of habituated travelling, even a minor change or annoyance may be considered as harm (12). In comparison, we need to plan and organise our travelling very carefully, if we travel to places where we have not been before. Going to a job interview, which is held at unknown location, is a good example of this. As a comparison, shopping trips are often less planned or planned with a short time horizon (8).

The most common trip types according to the data from the Finnish national passenger transport survey (22) are trips to work, trips to school, work related trips, shopping trips, visiting trips and other societal and recreational trips.

Work Trip:
• Self paid trip between home and work

School trip:
• Trip to school or child’s independent trip to day care or kindergarten
• Draftee’s trips to military base

Work related trip:
• Work related trip during the working hours (paid by the employer)
• Work related trip during the leisure time (paid by the employer)

Shopping trips:
• Buying groceries
• Other type of shopping trip
• Running errands
• Giving someone a lift

Visiting trips and other recreational trips:
• Trips to summerhouse
• Visiting relatives, friends or other socializing
• Other leisure time trips; for example going to the movies, hobbies, sports etc.

The work trips comprise the largest single journey type. (22)

All these trip types have different characteristics and so forth they influence our transport behaviour and mode choices. An example of how the journey type may influence our travel behaviour and transport mode choice can be described in
a very short scenario. Let’s imagine that someone has a very important work interview. If the meeting is located 8 kilometres away, it is very unlikely to choose travelling by bike. We do not necessarily want to give a sweaty and dirty first impression, so we travel with other means.

4.1.3
Temporal ordering to make travel choices

Gärling (8) proposes a four-stage model, which describes the temporal ordering of making travel choices. These four stages create a continuum where a person makes decisions that influence on travelling. The four-stages determine our travelling by starting from the choice of activity that we want to perform.

What shall I do? Is the first thing that we need to ask from ourselves before we travel. This question characterises what I would like to do and determines the journey type (Shopping, work, etc.). Where shall I do it? Is the second question and it determines the destination and preferred route. Third question following is: How shall I get there? Here we choose the mode of transportation according to its efficiency, comfort, attractiveness, accessibility, speed, reliability, cost, safety, suitability, etc. The last and fourth question is: When shall I go? Interferences, inconveniences or changes in the chain will often be perceived as a challenge, annoyance or both.

The Gärling’s model, applies only to single trips made by individuals. The model does not apply for example, when people are planning their daily travelling

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Pic 8. Four determinants for travel. Adapted from Gärling (8)
patterns (Home-Kindergarten-Work-Shop-Kindergarten-Home) or when other people have to be concerned as a part of the travel.

4.1.4 Activity travel patterns

Bowman et al. (23) describes activity patterns related to travelling as “...person’s choice of activities and associated travel as an activity pattern overarching a set of tours. A tour is defined as the travel from home to one or more activity locations and back home again. The activity pattern consists of important decisions that provide overall structure for the day’s activities and travel.” (Page 1)

According to Bowman et al. (23) there are two important elements in the activity based travel theory. First, the need to travel comes from the need to perform certain activities during the day. Travelling causes disutility. This is why, it is undertaken only when the benefit from performing the activities exceeds the disutility caused by the travelling. Second, people face temporal spatial constraints, functioning in separate places at separate times by experiencing the time and cost of movement between the locations. Usually, people are also forced to return home to rest. Therefore, individuals form complex activity travel patterns in the cities. In this context the word ‘activity’ refers to those daily activities that people perform during their daily living such as working, buying groceries, meeting friends, studying or having an appointment with their doctor. The activities take place in different locations and often include other people. Also travelling between the activity-locations often includes other people. In theory our travel mode choice is repeatedly dependent from the activity travel patterns. For example, the first trip of the day has to be made with a car instead of a bus, since later that day the traveller has to pick up children at the kindergarten. Normally going to work by bus would be fine, but this time it is necessary to use the car throughout the day. People, who have children in day care, suffer usually from this type of logistic problems (12).

4.1.5 Personal attributes have an effect on our transport mode choices

Stradling (14) identifies three main axioms that influence on our transport behaviour and travel mode choices. The first one describes travelling as an expressive activity. It means that individual travel choices and behaviour reflect our complex biological and social identities. The second axiom is that individuals vary in their travel choices and in the perceptions, conceptions and values that inform their choices. This variation concerns the individuals who belong to different demographic groups of people or different attitude-based segments. The third axiom is that we are at the same time adaptable and resistant to change our travel behaviour. We are able to cope with new cars, congestion, increasing fuel prices, new public transportation systems etc.

The 19-year old high school student has quite different needs and expectations towards transportation than the 42-year old engineer who has two children at home and is married. The other affords to pay more for the transportation, has
different social circles, different time tables, daily responsibilities and obligations, clothes, values, future plans, interests, status etc. As these people are different they also have different motives, expectations, desires, needs and interests towards transportation. The travel mode they choose to use is the one that responds to their personal motives, needs, desires, interests, plans, values, self-image, a social role etc. However, under certain conditions they are both ready to alter their travel behaviour and transport mode choices.

4.1.6 Summary

According to transportation researchers, the fundamental motives for moving seem to be more or less the same for most of us. The answer to the question why do we move is relatively simple. We need to move to maintain our lifestyle and take care of our daily obligations and responsibilities. However, our individual transport behaviour and travel mode choices vary significantly. Therefore, it is more complicated to answer the question how do we decide the way we move. All travellers have their own expectations and needs considering the way they travel. The needs are related to whom we are, what are our responsibilities, schedules, what kind of journeys we conduct, who we travel with and how we want our transport choices to reflect and represent us.
PART 4, SECTION 2: WHY PEOPLE CHOOSE TO TRAVEL BY PRIVATE CAR?

This section looks into the reasons behind car use in urban areas and investigates what makes a car such an appealing instrument for travel. The aim is to have a holistic understanding of private car users’ motives for driving instead of using public transportation. The research part two contains discussions considering the instrumental, symbolic and affective aspects of car use.
4.2.1 The cities are built for cars

Many changes in the construct of urban environment have occurred because the automobile has become a popular consumer product, which many people have an opportunity and desire to possess. Nowadays, an extensive road network connects homes, work places, shopping malls and other meaningful places that support person’s daily living. This has for example enabled living tens of kilometres away from workplaces. James Urry (4) argues that the private car has become so important for many people that they could not sustain daily social activities without having their car available for twenty-four hours a day. For many, the private car seems to be the best single instrument to move inside the urban areas.

4.2.2 Instrumental motives to reason car use

When referring to the instrumentally related factors affecting individual’s transport mode choices, I refer to the travel related factors such as total travel time, waiting time, the price, accessibility, the number of interchanges between the connection lines, cover against the weather or other aspects that relate to a general utility of a transport mode and can be measured by a certain value. An example of comparing instrumentally reasoned pros and cons of certain transport modes could go as follows; a private car satisfies the instrumental travel need considering travelling time better than a bicycle, since the car is faster.

The Previous Focus Group Studies

A focus group study concerning private car user’s motives for driving a car instead of using public transport in urban areas was conducted in Metropol research project by Sihvola et al. (12) during the year 2010. The study concentrated on examining the needs of urban car travellers and to analysing how DRT concept is able to respond to the exposed user needs. A total of 44 participants took part to the interviews. The sample included various urban travellers with different travel agendas. The discussion during the interviews was guided to travel related situations where the users 1) considered the car as the only possible travel mode, 2) car is seen as the top travel mode, and 3) there is a downside in the use of a car.

The assets of using a car

According to the study by Sihvola et al. (12) the private car users often experienced a private car as the only feasible or the top travel mode choice when used for commuting, shopping trips, other societal and recreational trips or visiting trips.

The common motives for driving a car instead of using public transportation were 1) lack in public transport service provision (e.g. poor connections that include interchanges), 2) car offers more flexibility for travelling than public transportation (e.g. car was experienced as a necessity for people who work and have children, because their daily travelling forms complex activity-travel patterns), 3) car was experienced faster, 4) car offers better shelter against bad weather, 5) car offers
privacy and 6) car allows carrying heavy luggage.

**Downsides of car use**

The Sihvola et al. (12) respondents also recognised downsides of car use when compared with public transportation. 1) Some private car users seemed to experience the actual effort of driving as a downside of a car (e.g. driving inside hectic traffic) 2) the difficulties related to parking (e.g. costs and finding parking space were experienced as the downsides of a car). 3) Driving during the wintertime was also mentioned as a negative aspect of car use. The effort of scraping the ice and snow off the car before driving is unpleasant and time taking. Also driving on icy roads was experienced negative.

**DRT vs. Private car**

The research (12) results incline that the DRT based Metropol concept has potential to compete with the instrumentally reasoned motives to drive a car. In theory the DRT based travel service is able to provide enough flexibility for travelling, since the concept is free of fixed timetables, fixed routes and does not require interchanges.

**4.2.3 Symbolic and affective motives to use a car**

*What are the symbolic and affective functions of an object or a possession?*

Dittmar (16) suggests that humans use their possessions (e.g. cars and clothes) for two purposes. The possessions have two different functions to us, which are instrumental functions and symbolic functions. The instrumental functions refer to the general utility of the objects, whereas the symbolic functions relate to a human need for identity construction. The need for identity construction is often fulfilled through the consumption of possessions such as products (16) (24) (17). This means that possessions are used to fulfil the need for self-expression (e.g. status or a social position) and a need to affiliate with certain groups of people (e.g. showing that you are a part of a certain community). Therefore, the symbolic needs guide our consumer behaviour and they may even guide our transport mode choices.

According to McGuire (25), in the context of consumer behaviour, the affective motives are related to the individual’s need to gain pleasurable feelings and to reach emotional goals. The Affective motives to use a specific object, product or a service relate to pleasurable emotions that the use of products or services may evoke in us.

**The importance of the symbolic and affective functions of a car**

Steg (26) (27) examined the motives for car use with two studies. The first study (27) revealed that when the private car users compared the attractiveness of different car use episodes (the episodes were written descriptions related to car use, which emphasized either instrumental, symbolic or affective aspects of
car use) they seemed to highlight equally symbolic, affective and instrumental aspects.

Steg’s second study (26) concentrated on the underlying motives behind commuter car use. The second study revealed that even commuter car use is most strongly reasoned with symbolic and affective motives instead of instrumental motives. This is significant, because commuting trips are often considered as highly functional and routine-like trips where time, costs, and other instrumentally reasoned motives to use a car would be more relevant. Steg’s respondents seemed to choose a private car for commuting, because using a private car suits them better. More specifically, Steg found out that people “…commuted more often by car when others also drive to work, when their family expects them to do so, when they compare their commuter mode choices with others and think driving a car suits them better than travelling by public transport or bike, and when they think car use is less arousing (i.e., stressful)” (Steg (26) (Page 157). In addition, Steg argues: “…that people can express themselves and their social position by means of (the use of) their car, they can compare their (use of the) car with others and to social norms”. (Steg 2004) (Pages 149-150)

She also emphasises that her respondents seemed to appreciate the feeling of sensations, superiority and arousal that driving creates.

Three private car user types, adapted from Jensen’s six mobility types

Jensen’s (28) study concerning the Danish road users’ attitudes towards motoring and transportation exposed underlying symbolic and affective motives for car use. As a result of her study, Jensen (28) divides the Danish road users into six mobility types. Three out of six mobility types are private car users. The private car user types are 1) the passionate car users 2) the everyday car users and 3) the leisure time car users.

Especially the passionate likewise the everyday car users seem to consider their cars as self-extensions. They think that their car conveys something about them, their status, values and to which social class they belong to. The passionate car users love their cars and driving. They are extremely attached with their cars on both symbolic and emotional levels. Also the everyday car users are very attached with their cars. However, in comparison to the passionate car users they can be more adaptable to start replacing some of the private car trips with public transport, if the public transport would offer more convenient and flexible services. The everyday car users just “like” their cars instead of “loving” them. Both, the passionate and the everyday car users consider their cars as symbols of freedom and independency. For them, the car may represent prosperity and ability to be self-sufficient and self-determinant. Typically, both of these car user types are confident drivers. They can appreciate the time spent inside the car and they find driving pleasurable. The third car user group is different. The leisure time car users differ from the passionate and the everyday car users, because they would be glad if they could replace the use of a car with the use of public transport. Today’s public transport is just not flexible and convenient enough for them. They simply experience the car to be more convenient. The leisure time car users do not appreciate driving and they think that a car is just a necessary expense among
other daily things. However, they think that for some people the car is more than a means of transport.

According to Jensen (28) the passionate drivers form a minority of 6.3% from all Danish road users. The everyday drivers compose a 33% share and the leisure time drivers compose 36.4% share from all Danish road users.

*The car, a symbol and a cultural phenomenon*

Jensen (28) discovered also that almost 80% of all Danish car users believe that the car symbolizes freedom and independence. She claims that the car elicits positive feelings of being free and self-determinant in many private car users. These people enjoy the freedom to drive fast, the freedom to express themselves, freedom to make their own choices, and the freedom to choose whom to travel with. The freedom is tied to both, owning the car and driving it. Jensen suggests (28) that if the car drivers were forced to use public transport, they might think that their freedom and independence are restricted.

4.2.4 *Passenger perceptions towards urban bus journey experience in Edinburgh*

Stradling (29) examined the passenger perceptions towards bus journey experiences in Edinburgh. The research objective was to find out what factors either courage or discourage people to use busses in Edinburgh and what would be the ideal urban bus journey experience. The study indicates clear overlapping between the previously discussed motives to use a car instead of using busses by Sihvola et al. (12) Steg (27) Steg (26) and Jensen (28).

Eight underlying factors restricting bus use were reported in Stradling’s study.

1. Feeling unsafe (e.g. ‘Drunk people put me off travelling by bus at night’)
2. Preference for walking or cycling (e.g. ‘I prefer to walk’)
3. Problems with service provision (e.g. ‘No direct route’)
4. Unwanted arousal (e.g. ‘The busses are too crowded’)
5. Preference for car use (e.g. ‘I feel more control while I am driving’)
6. Cost (e.g. ‘The fares are too expensive’)
7. Disability and discomfort (e.g. ‘There are not enough handrails in the buses’)
8. Self-image (e.g. ‘Travelling by bus does not create the right image’)

4.2.5 *Summary of the motives for using a private car (Instrumental, affective and symbolic)*

Different motivational categories that create attachment towards car use have been distinguished. The categories are 1) Instrumental, 2) affective and 3) symbolic motives to use a car.
**Instrumental**

Firstly, there are instrumentally reasoned motives to use a private car instead of public transportation. The instrumental motives refer to the general utility of a car. In another words, people are able to perform certain actions with cars, which are not possible to perform with public transport services. With a car for instance, it is easier to transport heavy luggage, choose with whom to travel with, have more privacy and travel whenever desired.

**Affective**

Secondly, there are affective motives influencing some private car user’s decisions of using a car instead of public transportation. These motives refer to the positive emotional experiences that the use of a car evokes. The fact, that some private car users seem to experience driving pleasurable or even love driving, seem to support their attachment towards car use (27) (26) (28). These private car users experience for instance excitement, freedom and power when they are driving. For many private car users, the driving itself evokes feelings of being free etc. Many private car users also appreciate the sense of being in control while they travel by car.

**Symbolic**

Thirdly, for many private car users the private car seems to offer an important means for status and identity construction. The car is used partly because it enables the ‘right’ kind of means for self-expression and affiliation with certain groups of people if compared with public transit. This seems to have a strong effect on private car users transport mode choices. It seems to be important that the chosen transport mode reflects the user’s identity, values, status and social position. For some private car users giving up the car might even cause the lessening of self-esteem.

**Control as a common nominator**

Control seems to be a common nominator for the categories above explaining the motives to choose using a private car instead of using public transport. Having control is related to the desire to choose the travelling company, ability to choose the type of a car that suits the user and the possibility to control the time and the travelling process as a whole. Many car drivers appear to enjoy the actual driving and the feeling of being in control while steering the vehicle. They appreciate the sensation of power, freedom and independency that controlling the car creates.
PART 4, SECTION 3: 
PRODUCT ATTACHMENT THEORY 
(How people gain attachment with possessions like private cars)

Product attachment theory describes how people become fond of their possessions, such as cars or certain services, through a process of meaning making (18). There seems to be similarities between the previously revealed motives to use a car and the way product attachment theories explain person’s attachment to a possession. The section studies the product attachment theories because these theories can help to explain why the behavioural change from being a private car user to becoming a public transport user is so difficult. The section concludes by discussing a recently evolved theory of how product attachment theories could be utilised in design processes, when the aim is to design more engaging products and services.
4.3.1
What are possessions?

“We are what we have and this may be the most basic and powerful fact of consumer behaviour.” Russell Belk (17)(Page139)

According to Belk (17), the things we are able to access, use, store, own or consider to be entitled with may be called our possessions. We may either be the legitimated owners of our possessions or just think that we are entitled to have them. The possessions may be material possessions (e.g. car, home, clothes) or other people (e.g. people with the same nationality, friends), abstract ideas (e.g. the law, the morals of society), personal identifying characteristics and attributes (e.g. age, a profession, our abilities and work), objects within the close physical environment (e.g. furniture in this room) or objects within distant physical environment (e.g. the moon).

Extended self

Belk (17) states that a key to understanding what possessions mean is to realize that either consciously or unconsciously we regard our possessions as parts of ourselves. According to Dittmar (16), the possessions are meaningful to us, because they reflect our image of self. When the personal relationship develops deeper between the person and the possession, becomes the possession more meaningful to its holder. This is also the very reason why we tend to get attached with our possessions. The following example describes a ‘theoretical’ relationship between a person and a possession. If someone says, “the spectacles you are wearing are ugly” or “your car is a piece of junk and it does not suit you at all” the insults can be taken personally. When someone criticizes our possessions, we might feel personally insulted even though only the objects were criticized. However, if someone says that the shirt that still hangs in the sales window of a fashion store is ugly, the other person is very unlikely to get insulted, since that shirt is not his or ‘part of him’.

Can services be considered as possessions?

Even if services are immaterial they can be considered as person’s possession. Shostack (30) compares airlines with automobiles. She describes that in one sense, these two are mirror opposites of each other. A car is a material possession while airlines are intangible transportation services and therefore cannot be physically possessed, they can only be experienced. Shostack continues by saying that the “inherent” promise of a car is also a service. The car offers transportation as a service like the airline does. Both, a car and transportation services have tangible décors, which the user experiences while using the car or the service. When the customer pays for the transportation service, he has a right to access, interact, use and experience the service through the tangible decor of the service. These tangible décors of a service are called touch points in the service design literature (21). So, in the context of Belk’s (17) earlier definition of what is a possession, also services can be considered as a person’s possessions, since the person is able to have an access to use and control the physical and immaterial elements of the service.
4.3.2
How do we get attached with our possessions?

Autonomy seeking and affiliation seeking

Kleine (24) divides our possessions to two types that we create attachment within: 1) possessions that enhance autonomy seeking (self-image) and 2) possessions that enhance affiliation seeking (social-role).

Possessions reflect autonomy seeking when they evidence:

- Individual accomplishments (e.g. Today, I managed to drive to work in 11 minutes)
- Distinctiveness (e.g. I have a station wagon since I am proud father of four)
- Uniqueness (e.g. I chose to buy a yellow car, since it is so recognisable)
- Independence (e.g. in my car I am independent of others timetables)
- Self-control (e.g. if I am running late, I can take faster route and make in time)

Affiliation seeking when possessions reflect connections with others:

- Heritage (e.g. this estate broker company's employers have always used private cars to travel to client meetings)
- Tradition (e.g. last three of my cars were Volkswagens)
- Being touch with others (e.g. we often talk about our cars at the work place)
- Staying contact with others (e.g. we organise annual Lada hobbyist meetings)
- Occasions spent with others (e.g. I like to take my daughter to school by car every now and then)

According to Kleine (24), the types of possessions described above, tend to capture the facet of a person's identity. These possessions form a person's “life-story” by representing and reminding him or her of the things that were and are meaningful to them. According to Dittmar (16) we use our possessions as the symbols of identity and therefore our possessions shape our self-image. They help us to define who we are with others as well as for ourselves. We use our possessions as the symbols of identity to communicate to others who we are and in which social groups we belong to.

Control

According to Belk (17), 1951 McClelland suggested that external objects may be regarded as parts of self, if a person has the power to exercise control over them. Like one can control his legs and arms, he can also control his car. According to Belk himself (17), the greater the control over the possession, more closely we consider the possession as part of self. Dittmar (16) states that the control extends to a person’s right to control the possession itself, the ability to control the physical environment with the help of the possession, and the power to control the social environment. Possessions, which enable strong right, ability and power to have control over the ‘things’, tend to create a stronger attachment with the user.
Investing Self

According to Csikszentmihalyi and Rochberg-Halton (15), we invest our ‘psychic energy’ in objects, which we focus our attention, effort and creativity on. Mugge (31) used the Csikszentmihalyi’s and Rochberg-Halton’s theory as her framework when she studied product personalization, and found out that people who personalize their possessions get more attached with them. Mittal’s and Lassar’s (32) findings also support the idea. They found out that personalisation during the interactive service encounters with customers is the most important determinant, which increases the perceived service quality and customer satisfaction. This also supports the idea that when people are able to invest time, effort and creativity to personalise the possessions, they are more likely to get attached with the possessions. If cars are considered, we can note that a private car requires a lot of attention. The cars need to be washed, repaired and tires have to be changed etc. The private car users can also choose the colour of their car, the type of a car they have and influence many customisable qualities while either renting or buying a car.

4.3.3 A car, an object that is easy to get attached with

Dittmar (16) divides the functions of our material possessions (like cars) into two main categories. The categories are instrumental and symbolic functions. The instrumental functions are three folded and the symbolic functions are two folded.

The instrumental functions of a car supporting attachment

Firstly, the instrumental functions refer to a general utility of objects and relate to the human need to effect and have control over the physical and the social environment. These functions allow people to use their possessions for performing certain activities as well as restrict others to perform the same activities with the same possessions.

Many of the Sihvola et al. (12) respondents reasoned their car use by stating that while using a car they have better control over the process of travelling when compared with public transportation. They stated that car enables them to move more freely and with the desired travelling company. Also Stradling (29) found out that in Edinburgh, non-transit users (including private car users) disliked using busses because of the “intimidating” passengers. In addition, Stradling (29) notes that people who did not prefer to use transit seemed to dislike the feeling of not controlling the travelling process as a whole, if they travel by bus. The lack of control is connected to both, the control over the physical parts of the service and the control over the social environment in busses.

Secondly, the instrumental use of possessions raises emotional experiences (16). Steg (26) was able to prove this connection among private car users when she found out that for some private car users driving evokes emotions, such as power, pleasure and excitement.

Thirdly, the instrumental functions can symbolise the performed activity. For
instance, an artist’s brush makes possible to paint a picture, but at the same time painting the picture with the artist’s brush represents skill and being an artist. The previously discussed study by Jensen (28) inclined that for the majority of people, driving as an activity symbolises being a free and independent individual.

It appears that for private car users, the car embodies all three levels of instrumental functions. The car enables, for the private car users, to do things that are impossible with other means of transportation. This relates to the instrumental motives to use a car. In addition, the use of a car evokes pleasurable feelings in some private car users. This relates to the affective motives to use a car. The use of a car also symbolises of being someone. This relates to the symbolic motives to use a car.

The symbolic functions of a car supporting attachment

According to Dittmar (16) the symbolic functions are two folded. Firstly, they refer to the ability of a possession to express person’s identity and secondly, in which demographic groups or attitude-based segments of people, the person belongs to. These symbolic functions correspond with Kleine’s (24) definition of possessions that individuals are likely to get attached with (autonomy seeking and affiliation seeking).

Steg’s studies (27) (26) indicate that car use is favoured because of the symbolic functions that cars are able to offer. Steg claims that many people commute to work because their colleagues commute with cars, when their relatives and friends expect them to do so and because they think that commuting by car suit them better than commuting by public transport. Also Jensen’s study (28) revealed that the Danish private car users are nearly single minded, about the matter that the make of a car sends a signal of the user’s personality. Stradling (29) again has found out that some non-transit users (including private car users) do not use public transportation because it does not create the ‘right image’.

The car users seem to reason their car use with motives that relate both symbolic functions that our possessions may have (autonomy seeking and affiliation seeking).

4.3.4 Loss of possession

If possessions are viewed as part of self, it results that an unintentional loss of possession may be experienced as a loss or lessening of self (17). A study by Gärling et al. (33) addressed a question of how well private car users accept road pricing in Stockholm. The findings inclined that compulsory restriction of private car use is often experienced as a personal infringement on freedom, fairness and self-interest. The research results proposed that involuntary and compulsory means to reduce car use may work, but are often experienced as sanctions. If we reflect the findings by Gärling et al. (33), with the previous statement from Belk (17), we may assume that restricting car use by compulsory means is partly experienced negatively since the restriction causes the lessening of self. Belk (17) states as well, that person might experience a traumatic lessening of self, if uniqueness
is substituted with standardised ‘identity kits’ by organization or other authority. Let us think about an example: a private car user is ‘forced’ to give up using a car and start using public transportation. If we consider public transportation system where the use is shared with others, ‘dictated’ by the service provider and operated by a public organisation as a substitution for a private car, we may understand some of the reasons why people are resistant to give up car use. According to Belk (17), in these types of situations the individual typically becomes a user of these new products, services or systems rather than owner of them. Furthermore, Belk continues to describe that when individuals control is limited and organisation remains the owner, identity is bestowed by the organisation.

The involuntary loss of self may cause trauma, but in cases where a person voluntarily gives up their possessions the trauma is not present (17). This is the very reason why the behavioural change concerning transport mode choices should be voluntary, whenever it is possible. The public transportation service design should therefore try to support the modal shift from a car to public transport, by offering types of services that would provide considerable substitutes for a car. This means that in the design of public transport services, the focus should be aimed to seek new service types and service features, which could offer substitutes considering all the motives that are used to reason private car use. In this way, people might not feel such a strong resistance against giving up car use.

4.3.5 Product attachment theory and design practise

When the private car gets compared with public transportation, it appears that the private car is an object that is extremely easy is to get attached with. This elicits an important question. How could public transportation services be designed in a way that they would offer similar means to create attachment and become as meaningful to the private car users as their cars are for them at the moment?

The product attachment theory is well recognised in the design community (18) (19). There are also some attempts to connect the product attachment and the design practise. The following couple of pages will discuss what kind of opportunities the public transport developers might attain by connecting the product attachment theory and the design practise.

Three levels of creating an engagement

Patrick Jordan (18) a design marketing and brand strategist argues that before a product or a service can really be compelling it has to engage with its user at three different levels. Firstly, it has to be able to perform the tasks it has been designed for (instrumental motives for use). An oven must heat your food, a barber should be able to cut your hair and bus trip should take you from A to B. The use experience is more engaging if the oven cooks the food nice and easy, barber cuts a beautiful haircut at an affordable price and if the bus arrives on time. Therefore, the functionality of the product or service should always work well, be easy to use and the price should match the expectations of the offered quality. The second level has to do with the emotions associated with the service or product (affective motives for use). Jordan gives a good example of this; "For example
if you are using an electronic banking system, then feelings of trust and security might be appropriate, whereas using a stereo should be fun and exciting.” Jordan continues with an example, which fits well with the topic of how to design engaging public transportation services for private car users. “Driving a sports car should be exiting too, but there should be a feeling of safety and security.” (18) (Page 9) According to Jordan (18), the third level reflects the aspirational qualities associated with the product (symbolic motives for use). This is how the product or service describes its owner. If a person owns the latest and coolest sports car, it says something about the owner.

**How to implement the product attachment theory in design practise?**

According to John Zimmermann (19), interactive products (which services may be considered as well) offer a great opportunity for designers to design the product’s behaviour in a way that the product (or a service) becomes an explicit collaborator in a user’s identity construction activities. He also (19) suggests that designers could use six framing constructs (listed below) that can give guidelines for designers to connect the product attachment theory to the interaction design of a product. According to him, the six framing constructs provide lenses for designers for framing the problems and the solutions to their design challenges.

**Three ways to use the six framing constructs:**

Zimmerman (19) lists three ways for designers to utilise the framing constructs. These are during 1) user research, 2) ideation, and 3) iteration.

1. The framing constructs may be used during the user research as guidelines to give focus when, for example observing users. Designers can look for specific examples where the framing constructs function in the lives of the users.

2. During the ideation phase, while designers are creating ideas to build concepts on, they can use each framing construct as a starting point for new ideas. The framing constructs can also be used, as a base to build on scenarios that capture the intersection of user needs and the framing construct itself.

3. When the concept development has proceeded into the iteration phase, the design team may systematically analyse the six framing constructs by reflecting the constructs with the developed concept. This way the team may identify which constructs are active in their design, and then systematically identify which of them should be emphasized in the development of the emerging design.

1) **Role engagement**

Throughout our daily living, people practise different types of activities. These activities can be seen as types of performances, where people play slightly different roles. For example, people may act different personas at work and at home. The role engagement helps people to focus on a single role at time.
A simple scenario helps to illustrate this. The user needs could go as follows: “I like to drive my daughter to hobbies because I want to be a good and caring father. I like to do this even though I found it difficult to find time for driving around the city.” Two user needs are present in the previous example. 1) The desire to act like the role of a caring father requires 2) easing the burden of driving around the city on a hectic schedule.

2) Control

Control over appliances, control over environment, and control over the behaviour of others are all forms of control that have been proofed to increase product attachment. Zimmermann (19) highlights control as constant issue in interaction design.

3) Affiliation

These are product functions that either construct or evoke memories and provide abilities or other methods of reconfirming a connection with certain groups.

4) Ability vs. bad habit

These functions may provide extra abilities for people during certain activities with an aim to reduce their mistakes, or they can point out person’s less desirable habits. An electronic calendar can for example send reminders. This prevents the user from running late and forgetting important meetings.

5) Long-term goals

These are product functions that make long-term goals more visible or tangible for the user. If a person’s long term goal is to lose weight, the ability to get the belt one buckle hole tighter, supports achieving the goal and increases the significance of the belt itself.

6) Ritual

People may have spiritual, religious or other motives to perform rituals during their daily living. The framing construct suggests that some product or service features should support performing the daily rituals.

4.3.6 Summary

There seems to be a clear overlapping between the ways that product attachment theories explains the process of attachment with possessions and how private car users reason their car use. The private car users seem to be capable of creating meaningful relationships with their cars on several levels, which are described in the previous product attachment theories. This addresses important questions in the context of public transportation service development, especially when the aim is to lure more private car users to become public transport users.
1. Why are private car users incapable of creating meaningful personal relationships with public transportation services?

2. Do conventional public transport services allow the customers to actively participate to the service delivery process so that the involvement is meaningful to the user?

3. Could product attachment theory assist in the creation of more meaningful and personal public transportation services for the private car users?

If the public transport services started to offer, at least partially, similar means for creating attachment as the private car has today it could lead towards improved and more personal service experiences in public transportation. This might be attained by considering the above three questions and the answers to them in public transportation service development.
PART 5
PRACTICE

The thesis part five investigates today’s public transport services in Helsinki regional area. The main objective is to identify design opportunities and gather ideas, which can support the Metropol service concept’s development of becoming more appealing transportation service to the private car users than conventional public transport services are today. The focus is set on the symbolic and affective aspects that support attachment to private cars and car use.

At first, the research analyses how the service quality is defined among the public transport organisations. Secondly, the customer experience of today’s public transport services is analysed. The findings are then reflected with the previous findings considering the motives for private car use in order to find and generate new design opportunities for developing the Metropol transportation service concept.
PART 5, SECTION 1: METHODOLOGY
5.1.1 Report analysis

Six recently published reports (34), (35), (36), (37), (38), (39) concerning today’s public transport service quality factors and service quality evaluation methods were analysed. The analysis was conducted for two reasons: 1) to understand, on a general level, how public transport service quality is currently defined in Finland and 2) whether the revealed service quality factors correspond with the previously discussed private car users’ motives for choosing a car. The assumption is that the service quality factors are used as guidelines when developing public transport services. If the symbolic and affective motives for choosing to use a car are neglected, there might be an opportunity for improvement in cases where the aim is to lure more private car users among public transportation.

The research is rather narrow, since the low number of the analysed documents. However, these documents seem to offer a general picture of the factors used for defining the quality of the current public transport services. The reports were published in Finland in between the year 2006 and the year 2011. Two of the reports are published by the Ministry of Transport and Communications, two reports by Helsinki Regional Transport organisation, one by Tampere Regional Transport Organisation, one report by Helsinki Metropolitan Area Council and one by the Finnish Transportation Agency.

5.1.2 Participant Observation

During the past five years, I have used a bicycle as my main transportation mode. For the last two years, my mean distance from home to work has been eleven kilometres. I have used public transportation only occasionally. This is less than once a week.

I changed my personal travel behaviour radically to get in-depth use experiences from today’s public transportation services. I started using HRT’s public transport services as my main transportation mode. This was done for two main purposes. The first goal was to get personal use experiences of contemporary public transport services. I concentrated on analysing the overall service experience. The second aim was to observe what type of opportunities an individual customer has to interact with the service, control the service or actively participate in the service delivery process through meaningful involvement.

The observations took place between March and June 2011 in Helsinki and Espoo. Work trip was the most common journey type. My mean travel distance to work was approximately 14 kilometres and the travel time altered from 30 min to 45 min depending on the traffic flow, possible technical faults, missed interchange connections etc. The total walking distance was altogether one kilometre per journey. The work trips often repeated the same pattern, walking to a metro stop – travelling by metro – interchange to a bus – travelling by bus – walking to the final destination. During most of the trips, I travelled alone. Usually, I did not have to link my work trips to form complex activity-travel patterns (e.g. I did not have to take children to school or recreation).
5.1.3
Data gathering and analysis

A participant observation method (40), where the observations are made at the same time while participating in the user’s activities, was used for conducting the observation. Zimmermann’s six framing constructs together with the previously discussed symbolic and affective motives for using a private car provided a focus for making notes. This way I was able to observe what type of opportunities for meaningful involvement the current public transport services offer to the individual customer. Writing notes and photographing was used for gathering and documenting the data.

I used Gärling’s (8) theory of temporal ordering to make travel related decisions (1) What shall I do 2) Where shall I do it 3) How shall I get there 4) When shall I go) as one framework for organising the gathered data. This way I was able to analyse at which stages the public transport services start supporting the customer participation in the service delivery process. In addition, I divided the service experience into separate service phases, in order to generate a general picture of the service and its functions. After this, I reflected the gathered findings with the previously discussed symbolic and affective motives to drive a car, in order to see whether public transport has similar elements for creating attachment as the car does.

The observation composes the main part of the thesis research phase.
The following section presents the main findings from 1) the report analysis 2) from the participant observations.
5.2.1 Report analysis

Public Transport Service Quality Factors

The Finnish Ministry of Transport and Communications Jotu –research project was set to find out the prerequisites for valuating different types of public transport service quality factors and to generate a strategy for creating tangible guidelines for evaluation and development of the services (35). Among other results, the report presents a model of the factors contributing to the public transportation overall service quality.

The model is described here in more detail since it seems to have a significant role in setting the parameters for public transport service quality evaluation in Finland. The model divides the service quality factors in four main categories 1) travel time, 2) supply, 3) quality, and 4) others. The main categories break down into several sub-categories presented in the illustrations 9.1, 9.2, 9.3 and 9.4.

The model concentrates on evaluating the importance of different service quality factors from the customer’s viewpoint (35). It composes mainly out of the instrumental service components such as travel time, speed, ease of use, seat availability, punctuality, cover against the weather, accessibility etc. The total travel time and its components are valuated as the most important service quality factors (35). This is reasoned with the fact that when valuating different public transport service quality factors, the supply of the service and the total travel time has most effect on the service quality perceived by the customer. The supply of the services and the total travel time are also comparable and achievable to measure with numeric values.

According to Jotu -report (35), the public transportation service quality valuation is useful for investigating the relevance of journey experience quality factors affecting individual’s transport mode choices. When the individual travel preferences, related to the mentioned service quality factors are valuated, a generic representation of a ‘user’ and user’s travel preferences can be formulated. This information can then be used to set guidelines for the development of the services.

The report does not mention or take in consideration the previously revealed symbolic and affective motives related to many private car users transport behaviour and travel mode choices. Neither, does it suggest that different types of services could be designed and marketed to fit the travel needs and expectations of specific user types nor customer groups or communities. Evidently, the approach the report takes will guide the design of the services towards designing for the average Joe, who does not represent anyone and at the same time represents everybody. This could be one of the reasons why the private car users, who appreciate the symbolic and affective functions of a car, are not likely to find public transport services suitable for them.
Pic. 9.1. Illustration of the Pesonen model of service quality factors contributing to public transportation overall service quality from the customers viewpoint (35).

Pic. 9.2. Illustration of the Pesonen model of service quality factors contributing to public transportation overall service quality from the customer viewpoint (35).

Pic. 9.3. Illustration of the Pesonen model of service quality factors contributing to public transportation overall service quality from the customer viewpoint (35).

Pic. 9.4. Illustration of the Pesonen model of service quality factors contributing to public transportation overall service quality from the customer viewpoint (35).
Areal Division of the Public Transportation Service Quality levels

Another distinguishable finding from the report analysis inclines that a common way to set the guidelines for the public transportation service development is to divide the urban areas to districts, where some areas are better served by public transportation than others. Five out of six analysed reports used this type of strategy. These development strategies are based mainly on land use, the size of the local population, the expected need for transportation and the estimated future need for transportation.

It seems to be typical, that the development strategies are based more on handling the logistic efficiency of the public transportation systems. For instance, the year 2010 HRT design guideline (39) divides the Helsinki regional area in six different service quality categories.

The area categories are:

**Area 1. Public transport as a primary transport mode**
**Area 2. Equal service quality with a private car**
**Area 3. Public transport enables living without a car**
**Area 4. Moderate service quality**
**Area 5. Possibility to use public transport**
**Area 6. Offers necessary connections to school- and work trips**

The service quality category two offers a tangible reference for examining the public transport development and the service quality factors used for defining the service quality, which should be compatible with a private car. (See example picture Pic 9. concerning the ‘service quality equal to a car’).

At the start of the year 2011 the Finnish Transport Agency published a report containing recommendations for Finnish public transport authorities (34). The report contains a set of parameters for defining the public transport service quality. Also this new procedure suggests a model, where the public transport service quality is evaluated mainly with instrumental service quality factors. In addition, the report proposes the strategy of dividing urban districts into areas where the level of public transport service quality would vary according to district.

**Conclusions**

None of the six analysed reports considered neither symbolic nor affective travel related factors that influence on travellers transport behaviour and travel mode choices. It is unlikely that public transportation services that really match the ‘service quality’ of a private car will be developed if the symbolic and affective factors are neglected. Especially, when the private car offers, enables and symbolises so many other things for the private car users than only short walking distances and travel times.

As a conclusion, the report analysis inclines that considering the symbolic and affective in public transportation design may hold an opportunity for creating more appealing transit services for private car users.
Four star service quality reference values. (Service quality equal with a car)

<table>
<thead>
<tr>
<th>Traffic starts (Arrival to the city center)</th>
<th>Traffic ends (Departure from the city center)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mo–Fr</td>
<td>Sa</td>
</tr>
<tr>
<td>5:45am</td>
<td>6:30am</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum headway (min)</th>
<th>Generally</th>
<th>Metro</th>
<th>Local train</th>
<th>Tram</th>
<th>Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak hours (6:30-9:30 and 15:00-18:00)</td>
<td>10</td>
<td>8</td>
<td>15</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Daytime and early evening (9:30-15:00 and 18:00-22:00)</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Early morning and evening (5:30-6:30 and 22:00-24:00)</td>
<td>30</td>
<td>10</td>
<td>30</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Night time</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday (11:00-18:00)</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Saturday (Other)</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Sunday</td>
<td>30</td>
<td>10</td>
<td>30</td>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Walking distances (Measured as the crow flies)</th>
<th>Maximum value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Maximum value</td>
</tr>
<tr>
<td>Trunk lines and railways</td>
<td>Other bus stops</td>
</tr>
<tr>
<td>less than 500 meters</td>
<td>less than 400 meters</td>
</tr>
</tbody>
</table>

*Pic. 10. An example of service quality requirements in areas where the public transport service quality is defined to be “equal service quality with a private car”. Adapted from Räty (39).*
5.2.2 Participant observation

A customer journey is a service design tool that helps designers to perceive the service process as separated service moments (21). The service moment is a definite phase in the service process, where the customer interacts with the service operator and performs activities that enable the customer to proceed to the next phase in the service process. Paying the trip for instance, allows the customer to enter the bus and start travelling. During the service moments, the interaction between the customer and the service operator happens through touch points (21). The touch points may be different types of user interfaces, information boards, physical environment, people etc.

The participant observation results are presented in a form of one example customer journey. The example customer journey composes the key findings, experiences and observations from the four months period of participant observations. Only substantial findings are included in the thesis. The example is divided into five sections. The first four sections follow Gärling’s (8) four phases of temporal ordering to make travel choices which are: 1) what shall I do 2) where shall I do it 3) how shall I get there 4) when shall I go. (See page 28) The fifth phase is the actual travelling. (See pic. 12. on page 57). General observations are made and the activity of transit service and the possibility for passenger involvement are analysed in the sections.

1) What shall I do?

This is obviously a phase in the temporal ordering to make travel choices that the transit services cannot strongly support. Individuals have to make their own personal decisions concerning their daily agendas.

2) Where shall I do it?

Journey Planner (http://www.reittiopas.fi/en/) is a web-based tool that assists the customers in finding stops, routes and timetables. However, the journey planner does not offer the means to find completely new locations. The customer has to know the exact location (the address) of the place he wants to go to, before he can start using HRT’s services or the journey planner. The journey planner does not offer support in finding places according to activities (e.g. I would like to go swimming. Where can I find a swimming pool and how can I get there?).

3) How shall I get there?

This is a phase in Gärling’s temporal ordering to make travel choices, where the HRT’s transit services become active. The journey planner offers information concerning the routes, departure times and the desired time of arrival to a certain location. However, this happens strictly according to criteria, which is predefined and fixed by the service provider. The customer cannot tailor the desired route, vehicle type, preferred seating or any other service feature.
Pic 11. An example customer journey in Helsinki public transportation
Gärling’s Four Stages, Temporal Ordering to Make Travel Choices

<table>
<thead>
<tr>
<th>Stage</th>
<th>What Shall I Do?</th>
<th>Where Shall I Do It?</th>
<th>How Shall I Get There</th>
<th>When Shall I Go?</th>
<th>Travelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Activity</td>
<td>Service Inactive</td>
<td>Service Inactive</td>
<td>Service Becomes Active</td>
<td>Service Is Active</td>
<td>Service Is Active</td>
</tr>
<tr>
<td>Service Moment</td>
<td>Planning the Daily Agenda</td>
<td>Planning the Route</td>
<td>Planning the Route</td>
<td>Planning the Timetable</td>
<td>Includes Several Service Moments</td>
</tr>
<tr>
<td>Key Touch Point</td>
<td>---</td>
<td>---</td>
<td>HRT’s Journey Planner</td>
<td>HRT’s Journey Planner</td>
<td>Includes Several Key Touch Points</td>
</tr>
</tbody>
</table>

Pic. 12. A customer journey in Helsinki public transportation, divided into separate service moments according to Gärling’s temporal ordering to make travel decisions.
4) When shall I go?

The customer has to choose the time of travel on the grounds of offered fixed timetables. There are two options for the customer. The first option is searching for trip options according to designated arrival time. The second option is searching for trip options according to desired departure time. This feature of the journey planner allows a minor possibility for the customer to effect over the offered service. In addition, the customer can ask the journey planner to prioritise the connections without interchanges, whenever possible.

Pic 13. HRT’s Journey planner is a web-based tool for finding available timetables, routes and walking directions to stops.
5) Travelling

The actual travelling seems to be the most complicated, time taking and stressful part of the whole customer journey. Therefore, it may have the biggest influence on the complete service experience. This phase of the customer journey can be divided into several service moments and touch points between the customer and the service provider.

1. Going to the stop

The journey planner assists in finding the right stop if the customer has not used the specific stop before. For commuters, finding the stop is not a problem. After some days of commuting with public transportation, I learned to memorise the timetables, interchanges and routes.

2. Arriving at the bigger stations and entering the transportation system

The customer receives information concerning the timetables, stop addresses and the possible bus, tram, metro and the train lines that operate from that stop. Most commonly the information is delivered through electronic displays.

3. Managing the personal travel account (loading money on personal travel card)

This is a service moment, where the customer has a minor possibility to control a part of the service. The customer can decide how much money is charged on the personal travel card. The customer can also decide if he wants to buy travel time (e.g. seasonal ticket) or travel credits (e.g. 10 euros).

4. Finding the right stop or platform (from larger stations)

5. Payment

During this service moment, the service provider offers the customer an option to choose the method of payment. The main options are 1) seasonal ticket and 2) loading value on the travel card for single journeys. The metropolitan area of Helsinki is divided into three regional public transportation zones. If the customer crosses a regional zone, he has to pay extra. The customer needs to be aware of whether he is going to travel inside one or more regional areas. The customer has to pay with value on the travel card, if his seasonal ticket does not cover the length of the desired trip. Internal ticket inside one regional area is valid for 60 minutes. Regional ticket covering two regional areas is valid for 80 minutes. A three – zone regional ticket is valid for 100 minutes. If the customer travels only with trams and without interchanging to other transit vehicles, the price is considerably lower. Generally, the payment process seems to be rather complicated, because it has several different phases and options that the user has to be aware of. A mistake can cost an 80-euro penalty fee for the customer, if the customer is caught travelling without an appropriate ticket.

During this service moment of the customer journey, the customer has a minor possibility to control the service. The customer can choose the method of payment.
Pic. 14. Example pictures from my personal service experiences.
6. Boarding

People tend to rush to get inside the vehicles. They might be afraid of missing ‘the last available seat’ or just missing the ride.

7. Travelling (Metro car interior)

Metros and some other vehicles are equipped with electronic information displays. Some displays indicate the next stop. Other displays provide either entertainment or information, such as news and weather broadcasts or disruption in traffic. While travelling, the customer receives different types of information, but does not have opportunity to influence it.

The customer can choose a seat if there is an available one. During the peak hours, the vehicles are full and there are not enough seats for everybody. Generally, people sit quietly, maybe reading a book, almost like being in a church or in the library.

8. Interchanging

Larger stations are well equipped with information boards and displays that guide the customer to the next stop or platform, where the interchange to the next vehicle happens. The smaller bus, and tram stops are not so well equipped.

The bigger stations offer some free newspapers to customers to read. Thus, this extra comfort is offered by third party instead of HRT’ service.

9. Boarding part two (a bus in this particular scenario)

The customer has to verify that he has paid the trip and is justified to board the vehicle. Showing the travel card for the second time to the electronic payment machine does this. Some drivers say hello and others do not.

10. Travelling (Bus interior)

During the peak hours there are not enough seats in busses and people are cramped in. This is quite uncomfortable and it seems that most people are suffering from this.

Some people seem to avoid social contacts with others. Many of these people ‘escape’ the situation by reading newspapers and listening to music with earphones (or this is how it appears to be). The same phenomenon is happening in other transit vehicles as well. Of course, people also read and listen to music just for entertainment. Generally, many people seem to spend their time while travelling by reading papers or books, sending emails, making phone calls or browsing the Internet with smart phones.

Sometimes people (familiar with each other) seem to occur in the same vehicles unintentionally. In most of the cases, this seems to be perceived as a positive experience (or at least social rules obligate us to behave like we were positively
surprised). There are also people who clearly know each other from work or work related context.

Special user groups are noticed in the busses and other vehicles such as trams and metro. There are for instance seats reserved for disabled, blind, pregnant and elderly people. This seems to be the only concrete example where some of the customer groups have been specially notified (and for a reason). The rest of the service appears to be designed, more or less, with “one size fits all” principle.

11. (Bus interior) depart from the bus

The customer can stop the bus simply by pushing a stop button. Here the customer has a small change to have control over the service. This is the only possibility for the customer to actually ‘steer’ the service, so that the service will function according to criteria set by the customer and not vice versa.

Pic 15. My Routes and My Locations features offer minor room for service personalisation.

other findings

planning the journey

the observations revealed that the travel phase when people plan their journeys is not well supported by the public transport services. for instance, the public transport services do not help in seeking locations based on the activities that the customer would like to perform. for example, the public transport services do not provide the ability of finding first-rate new restaurants, the nearest hospital, a swimming pool that is open right now, a gym that offers a pilates class etc. where the customer has not visited before, or which locations he is not aware of.

after a few days of travelling with public transport services the journey planner became useless during my work trips. i learned to memorise the routes and the timetables and therefore i stopped using the hrt’s journey planner. after recognising this, i was able to distinguish three different journey characteristics 1) routine journeys to locations where routes, timetables etc. were already memorised, 2) infrequent journeys where the locations were known, but the possible routes, stops, timetables etc. are not memorised, 3) ‘first time journeys’ where the locations and the address are unfamiliar. the journey types two and three usually required the use of the journey planner while planning the trips.

the journey planner offers only minor room for personalisation

the journey planner includes some features that enable minor service personalisation for the customer.

my routes feature

the ‘my routes’ feature allows saving a pre-set trip inquiry quick buttons according to departure and arrival locations. the ‘my routes’ buttons are saved on the journey planner user interface. the ‘my routes’ buttons appear only on the computers where the pre-set inquiry quick buttons have been configured. for example, it is not possible to set up a personal user account and log in from a different computer to access the previously saved ‘my routes’ buttons.

my locations feature

‘my locations’ feature allows the customer to save addresses to the journey planner user interface. ‘my locations’ feature is time saving as by clicking the addresses the customers does not have to type the addresses in the text fields ‘from’ and ‘to’. the ‘my location’ buttons are also saved only on the customers personal computer.
**My departures feature**

The third feature is ‘my departures’. The feature allows the customer to save a certain stop location in a template. The feature then shows automatically the next departures to all directions from the chosen stop. This feature gives access to the timetables faster than basic journey planner function.

**The overall service experience**

The public transport services seem to support only minor possibilities for the customer to participate actively in the service delivery process. In another words, the customer is not able to have much control over the service or influence the received service quality. The public transport services are aimed for masses and do not support personal travel preferences and needs. During the whole service experience, nearly everything is controlled by the service provider and not by the customer. It seems that the customer is more in a role of an inquirer than a customer. The customer has to constantly inquire the service provider about information concerning the timetables, routes, prises, value that he has on his travel card, where to go next etc. In addition, the customer does not have the opportunity to control the social environment in the busses, ask for privacy, travel on preferred routes, configure the time tables, or organise shared rides with people who are familiar to the customer.

From my personal experience, the customer participation during the service delivery process was very minor. The customers seem to have a role of a ‘faceless user’ instead of being treated as an individual customer, who spends money on the service and expects to receive personal service experiences. It feels that the customer is treated more as a particle inside a huge logistic system, which is designed to move particles from A to B rather than a person with his own travel related preferences.

One remarkable finding is that everything, except the personal travel card, is shared. Personally, this was the biggest single difference between riding a bicycle and using public transit. Undoubtedly, there are some overlapping elements in the travel mode change from a bike to public transport as there would be from a private car to public transport. In both of these examples, the traveller’s privacy, flexibility to travel, freedom to move and make personal travel related decisions, individuality, control, and self-determination are oppressed under the rules of public transportation services.

It seems that many people know me as a passionate cyclist. It was surprising that numerous people inquired me if I had become lazy as I did not commute with a bike anymore. I had good argument for reasoning my behavioural change (I am doing research), but I still found the explaining distressing. It really seems that the expectations of others influence travel mode choices. In about two months, after a somewhat of a sticky start, I became more accustomed to using public transport. After the observation period, I started to travel again by bicycle (which I love). This was extremely easy to do.
PART 6
CONCLUSIONS

Part six summarises the previous research findings by comparing different car use motives with the experiences from today’s transport services. After the summary, the section concludes by presenting how Zimmermann’s six framing constructs (19) could offer a design approach that enables considering the symbolic and affective private car use motives in the context of public transportation services.
6.1 Why do people choose to use a private car?

Three different types of reasoning seem to exist for choosing to use a private car instead of public transportation.

Firstly, the car offers more flexibility for fulfilling the complex travel related needs and challenges that many private car users have to face during their daily living. The private car is experienced as a more convenient travel mode for performing different journey types compared with public transportation. (For the private car users, the idea of waiting at the stops, interchanging, worrying about missing a ride and running late seems to be too big obstacles to start using public transit.) Especially the work and family dependent private car users experience the flexibility that a private car offers as a necessity.

Secondly, there are arguments that demonstrate that some private car users transport mode choices are influenced by the emotional enjoyment that they get from using a car. Some private car users seem to experience driving pleasurable or they may even “love” driving. By controlling the vehicle and the travelling process as a whole, these private car users experience for instance excitement, freedom and power.

Thirdly, the car is used not only as an instrument to travel, but also as a means for self-expression, identity construction and to create a sense of social affiliation with certain social groups. Many car users prefer using their own cars since they think that driving a car suits them better than using public transportation. The car functions as a medium for communicating this to others as well as to the user itself. In comparison, who would use unfitting clothes? And after all, the private car is way bigger investment for most individuals than a complete outfit.

The ability to control the travelling process as whole seems to be a common nominator between different motivational categories for choosing to use a car instead of using public transport. Making the decision to use a private car seems to be related to the need to control the physical and social environment during travelling, the ability to choose the type of a car that suits the user’s self-image and the possibility to control the time and the travelling process as a whole. Many car drivers appear to enjoy the actual driving and the feeling of being in control while steering the vehicle.

6.2 Private car users are very much attached with their cars

Meaning making through identity construction and social affiliation are two fundamentals of product attachment. People consider their possessions, such as cars, as the extensions of themselves. Possessions attain attachment when they have a meaningful role in person’s life and if they reveal something about person’s identity, individuality or when the possession strengthens the person’s connection with certain social groups. When the use of possession evokes pleasurable feelings in its user, the user is more likely to be attached with the possession. Possessions
also become meaningful to the user, if they help to perform activities that would be otherwise either challenging or even impossible to accomplish. The car seems successful on many of these aspects. Evidently, this also affects the private car users transport mode choices.

6.3 How are today’s public transportation services?

The report analysis inclined that today’s public transportation services are designed to serve the needs of the average Joe and Josephine. The services seem to be designed with the ‘one size fits all’ strategy. This is justified strategy when designing transit services for masses. However, this could be one of the reasons for private car users snubbing the public transit services. Altogether the current transit services seem to be incapable of providing private car users the kind of service experiences that they would desire.

For the private car user, the benefits of a private car seem to be the following: The private car offers highly independent and flexible travelling, sense of being free, means for self-expression and social belonging as well as more individual and pleasurable travel experiences. Participatory observations inclined that public transportation services are quite the opposite of this: Public transit does not offer many possibilities for a single customer to have control during the whole process of travelling (the customers cannot select a preferred vehicle type or a specific route, control the timetables individually, choose the level of privacy or have opportunity to control with whom to travel). The participant observations inclined that the customer has merely a role of a faceless particle inside a huge logistic system, rather than being a co-owner or a customer of the service. The customer cannot “steer” the service or actively participate in the service delivery process. Also the positive emotional use experiences through active and meaningful participation (that the car is able to provide) seem to be missing from the use experience of public transport services. All of this can mean that some private car users might think that their freedom to make unique, personal and independent choices during their everyday life would partly diminish, if they started using transit services.

It seems evident that the contemporary public transportation service quality has not yet reached the standards, which would be sufficient for private car users. It seems that in the future, the public transport providers should start to offer more personal, meaningful and flexible transport services in order to get the private car users interested. The problem is that the present public transportation services and systems seem to be too rigid for that to change. Therefore, new approaches to designing public transport service systems and modes are needed if the aim is to create more personal and engaging transit services for car users. Also new types of services are needed.

6.4 An approach to create more meaningful, engaging and personal public transport services for private car users

One suggestion for developing more meaningful and engaging transit services for
private car users might be formulated by focusing on the symbolic and affective functions of a car. The approach could provide guidelines for developing transit services that offer more possibilities for meaningful involvement during the process of travelling, give the passenger more control over the process of travelling and tailor more personal and unique service experiences for the individual customer. This way, it might be possible to start incorporating similar symbolic and affective functions that private cars have today into the transit services.

Utilising Zimmermann’s six framing constructs (See page 43) enabling designing for the ‘Self’ (19) might have potential to help accomplishing the above. By identifying the framing constructs that from the private car users perspective are active while using a car and are inactive while using public transportation should open opportunities for creating new designs. These designs could start bridging the gap between service quality of a car and public transport.

**The active and inactive framing constructs**

When reflecting the symbolic and affective motives for using a car with Zimmermann’s six framing constructs, four out of six framing constructs can be recognised being active in the process of choosing to use a car instead of public transportation. The intersection of these four framing constructs opens up a possibility for kick starting an ideation process for the creation of service features which could increase the attractiveness of public transportation services in the eyes of the private car users.

**1. CONTROL**

*Public transportation services should allow the individual customer to have more control over the service.*

- Many private car users seem to dislike the feeling of not being in control, if they use public transportation.
- Some of the private car users appreciate having inclusive control over the physical and social environment while travelling which public transport services fail to offer. (e.g. have privacy to make important phone calls, control the speed, control the route choices, control the time, control the specific social mix of people to travel with)
- Private car users often consider driving and controlling the vehicle pleasurable.
- Car allows having a feeling of being in control during the entire process of travelling.

From the private car user’s perspective, one of the current problems with public transportation services is that they operate mainly according to fixed criteria (timetables, routes, vehicles, prices) that are set by the service supplier and not by the individual consumer. Increasing the customer’s ability to control the service delivery process has potential to support improvements in the perceived service quality. This could also increase the level of attachment between the customer and the service.
One strongly highlighted matter considering different motives for car use is that most private car users appreciate the sensations of freedom and independency which car offers to them. Jensen (28) summarises that freedom of owning and driving a car is tightly related to the freedom of being an individual. In the future, the public transport services should try to respond to private car users desires to sustain the sense self-determinacy. The service features that support individuality and control over the service might have potential to respond to the desires of being free and independent.

2. ABILITY

The public transport services should offer abilities to handle complex travel needs.

- The car offers parents the ability to take care of the ‘family logistics’.
- The car offers the ability to handle complex travel-activity patterns by connecting the different journey types and the trips of other people.
- The car offers the ability to change travel plans extremely impulsively, when compared with public transportation.
- The car offers the ability of having a private space, where the user may act without troubling or being troubled by others. This relates also to safety.
- The car offers better ability to access places where the public transport network is inadequate.
- Some private car users experience that car offers the ability to move faster, being free of timetables.
- The car offers the ability to carry luggage.

Many drivers reason their car use with their need to link different journey types together on a daily basis. Combining work trips, shopping trips and taking children to recreations creates hectic activity-travel patterns. Especially people who work and have small children need to face this type of complicated logistic problems. At the moment, the conventional public transport services are too inflexible for these users for tackling all of their daily obligations. Therefore, the public transportation service design should consider this need while creating new transit services and service features. If the public transportation services are not able to provide the required flexibility for combining the trips to complex activity-travel patterns, they could try to satisfy the need by other means. In the future, public transport services could try to take a role of an organiser, which could assist in arranging trip types for different family members. The service could for instance take care of the time management and help the parents to monitor that their kids are provided with journeys to hobbies and back to home. The service could arrange and provide the trips automatically for each family member.

3. ROLE ENGAGEMENT

Public transport services should allow personalisation and offer more unique and tailored service experiences to support the customer’s individuality and social role.

- For many private car users to have and to use a car symbolises being free
and independent individual

- Most of the private car users think that the make of a car and the use of a car say something about them (e.g. being adult, reinforces status and social position, shapes self-image)
- Some private car users choose using a car since it “suits” them better than other transport modes
- Some people are more likely to use a car because they feel that they are expected to do so
- Looks as if the private car users travel mode choices are affected by their desire to enjoy the feeling of being themselves in the privacy of their cars without the pressure to fit into a social norms.

It is likely that at the moment some private car users do not have possibilities to reflect or express themselves through the use of conventional public transportation services. It might be challenging for private car users to create a meaningful relationship or sense of ownership with conventional public transportation services. They seem to feel that public transport services are not meant for them. Also Belk (17) states that in cases where the former uniqueness (like my car) is replaced with standardised “identity kits” (like public transportation for all), people often feel a traumatic lessening of individual’s sense of self. Therefore, the transit services should start to feel more personal rather than shared with general public. This could be achieved for example, by personalisation and customisation of the services.

4. AFFILIATION

Public transport services should offer means to affiliate with certain social groups

- Some people seem to use a car more likely because they feel pressure from peer groups (e.g. family, colleagues, friends)
- Some private car users seem to like travelling with the “right kind” of company
- Some private car users like to compare their cars and use of their cars with others
- People commute more often to work by a private car when colleagues drive to work

For some private car users, a car offers means to affiliate with the social groups that the user belongs to or desires to belong to. In another words people use cars partly because they are expected to do so and because others use cars as well. Therefore, public transport service features that could support social belonging with friends, family or work colleagues could support attachment and desirability towards public transportation. Obviously, these kinds of service features become relevant only when others start to use public transit services as well. However, if a certain group of people becomes public transit users, the service features that support group membership would deepen the attachment and desirability of the service.
The following part of the thesis presents the Metropol concept, which has been developed as a collaborative and multidisciplinary undertaking in the Aalto University’s Metropol project during the years 2007 and 2011. My own part in the process has been to create the first tangible representation of the concept from the user’s perspective. The aim of the following pages is to explicate the service concept for the reader in a tangible form.

After presentation of the core service concept, the thesis continues by illustrating initial level design ideas of how the four previously discussed framing constructs could be used to jump start design processes which might have potential to incorporate the symbolic and affective factors for Metropol service concept.
Pic 17. Service evidence:
The customer is waiting for Metropol vehicle at Aleksanterinkatu. During every trip, one vehicle is assigned to deliver the service for the specific customer. The customer specifies the travel criteria and the trips are ordered via Internet either by using a personal computer or a smart phone.
PART 7, SECTION 1: METROPOL CONCEPT
7.1.1  
Service description

Metropol service is a new type of public transportation service concept. The concept is designed to compete with the ‘travel quality of a private car’. Metropol transport service concept is a form of demand responsive transportation, which operates the trips according to customer preferences, instead of fixed route lines, and timetables. The service concept utilises the state of art IT-technologies that can make trip ordering, trip organising, payment and travelling more flexible compared with traditional public transportation services. The concept’s objective is to produce public transportation service quality, which responds to private car user’s travelling needs and expectations. The aim of the concept is to produce a public transport service, which is genuinely close to ‘the service quality of a car’.

7.1.2  
Strategic design guidelines

•  The service is convenient for the customer
•  The service quality is more taxi-like than bus-like
•  The service accessibility is equal regardless of the areal location
•  No interchanges
•  The prise of one trip is between traditional bus and taxi
•  The customer can decide the desired time of travel and pick up and drop off locations
•  The customer always receives an individual service promise for the price, pick up and drop off times
•  The service is extremely reliable
•  The service is informative and can be controlled by the customer
•  The customer always has a seat
•  The trips are carried out by minibuses capacity between eight to sixteen passengers
•  The customers and vehicles are dispatched together by a fully automated system operated by computers
•  The vehicles have drivers who follow driving instructions given by driving computer
7.1.3 Stakeholder map

According to the original definition by Freeman and Reed (41) a stakeholder can be considered as an actor whose support is fundamental to the existence of a business.

In the context of this thesis, a stakeholder map is used as a tool to help the design team to map out the people, groups and organisations that are needed 1) to create and 2) to maintain a successful service. The stakeholder map presents only the ‘key’ stakeholders that are crucial for the service. If any of the four ‘key’ stakeholders is missing the service concept will not work.

Pic 18. The stakeholder map illustrates the vitally important actors for the concept.
7.1.4
Customer Journey

The results from the previous Metropol concept development and the data from the previous user research were used as a base for creating an initial customer journey. This was done to divide the service process to separate service moments and to identify the necessary touch points that will enable a fluent service process flow for the customer. The initial customer journey was created to assist the research and design team to understand the service process better from the user’s perspective. In addition a relatively detailed user scenario was constructed from the base of the initial customer journey.

Pic. 19. The customer journey
7.1.5
Use Scenario

A relatively detailed use scenario was constructed from the base of the initial customer journey. The created use scenario illustrates the service from two perspectives 1) the customer perspective and 2) the technological perspective. The aim of the use scenario was to gain deeper understanding how the customer uses the service, by illustrating the service in a ‘real’ use context and not only in abstract form. The technical concept is also illustrated in the scenario. This was done to illustrate the key technological functionalities of the concept. The customer perspective takes place on the front stage of the service (visible to the customer) and the technological functionalities happen on the backstage of the service (not visible to the customer).

The detailed use scenario appeared to be a good tool for gaining more knowledge about the service moments and required touch points, where the communication is necessary between the customer and the service operator. Second important reason for creating the use scenario was to produce ‘easy to understand’ material describing the concept. The use scenario had two functions 1) to help the design team to gain deeper understanding of the concept and 2) to provide a tool for supporting the communications between the design team members. The scenarios were also used for promoting the concept and project for possible partners.

Use scenario in a mobile world: Anna goes to dinner after work

Anna is a 39-years old accountant who used to commute to work with a private car. She works at Espoo Keilaniemi and lives at Helsinki Laajasalo. Anna’s husband works at Myllypuro hospital. The couple have a 10-year old boy Sami, who loves playing ice hockey. During weekdays, Sami goes to elementary school within a walking distance from their home. Sami goes to ice hockey practise three times a week. Anna or her husband used to take Sami to trainings with one of the family’s two private cars.

The increased traffic congestion, fuel prises and the difficulty to find parking space have been constant nuisance for Anna. In addition, Anna has never enjoyed driving a car that much. However, she appreciates the convenience and ‘the luxury’ that her car offers. Before Metropol service was available, Anna disliked using public transportation, since the journeys took so long and required interchanges. In addition, she thought that the cramped buses, trams and metros were not suitable for her kind of a person.

Anna was curious to test an alternative option for transportation, when the Metropol travel service became available. She registered to the service via Internet and became a user.

Soon Anna found out that her daily travelling had become more convenient. Anna was especially impressed with the service quality. The vehicles were comfortable and there were always seats available for relaxing during the journeys. Immediately, she thought that this more for me than the regular public transport.
Anna appreciated the fact that she is able to set the parameters for her journeys, like timetables, price and routes. Almost like a taxi, except much more affordable, since the rides were shared.

Anna and her husband have even considered selling their second car. The second car has become quite useless and more of ‘an economic burden’, since now Anna makes most of her daily travelling with Metropol service. Nowadays also Sami travels to ice hockey practice with the service.

Today Anna is meeting her friend after work..
it is late afternoon...
Pic 20. Use scenario:
...and Anna is still working at the office. The time is 17:56 and she is still busy with her work.

Pic 21. Use scenario:
Anna’s mobile draws her attention. It is an appointment that she set up a week ago. She has to leave right away, if she is going to be there on time.
Pic 22. Use scenario:
The journey is approximately 6.5 kilometres long. The private car would be quite impossible, since driving during the peak hours and finding a parking space from the congested city centre would take too long.

Pic 23. Use scenario:
Anna launches Metropol service application from her mobile.
Pic 24. Use scenario:
She defines her trip request simply by typing the locations and setting the time when she is ready to leave. Then she asks trip proposals from the service.
Pic 25. Use scenario:
The trip request is sent to the automated trip organiser. The system observes the current traffic and status of all Metropol vehicles. It calculates and sends the three best trip proposals matching with Anna’s trip request.

Pic 26. Use scenario:
Anna receives the three trip offers. She chooses the one that is the most suitable for her and confirms the trip by paying the trip. The price is added to her phone bill.
Pic 27. Use scenario:
Anna receives an electronic ticket from the automatic trip organiser. The ticket contains a service promise for the customer and trip information. Time is 17:58.
Pic. 28. Use scenario:
Meanwhile Anna receives the electronic ticket; the automatic trip organiser reserves a car for her according to Anna’s customer preferences.

Pic. 29. Use scenario:
The route of the chosen vehicle gets updated.
Pic. 30. Use scenario:
The driver receives information concerning the updated route and instructions to pick up a new customer at Keilalahdentie 2.

Pic. 31. Use scenario:
Anna identifies her ride from the vehicle number that was given to her while receiving the electronic ticket.
Pic. 32. Use scenario:
Anna may identify herself in the car either by showing her travel card to the card reader or by entering her customer code 17 into the machine.

Pic. 33. Use scenario:
The vehicles are minibuses with the capacity of 8 to 16 passengers. All rides are shared, so the vehicle may do other customer pick-ups and drop offs during Anna’s trip.
Pic. 34. Use scenario:
Anna can follow how her trip progresses in real time. This helps her to get off at the right stop especially if she is travelling to unfamiliar location.

Pic. 35. Use scenario:
Anna may also follow the information display that is located at the front section of the car. Anna’s customer number is 17, so her stop is within 3 min.
Pic. 36. Use scenario:
The service promised to Anna that she would be at the final location 18:28 latest. Time is now 18:26. She is two minutes early at the restaurant front door but that is fine, since her friend seems to be a few minutes early as well.
### 7.1.6 Service blueprint

<table>
<thead>
<tr>
<th>Line of interaction</th>
<th>Onstage contact (service operator)</th>
<th>Backstage contact (Automatic trip organiser)</th>
<th>Support processes (payment)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical evidence</strong></td>
<td>Registration</td>
<td>Registrates the customer to the service</td>
<td>Connects the customer into the Metropol service’s payment system</td>
</tr>
<tr>
<td><strong>Line of interaction</strong></td>
<td>Trip planning</td>
<td>Offers alternative trip options to the customer</td>
<td></td>
</tr>
<tr>
<td><strong>Line of visibility</strong></td>
<td>Trip ordering</td>
<td>Confirms the trip order to the customer</td>
<td>Charges the customer’s travel account</td>
</tr>
<tr>
<td><strong>Line of internal interaction</strong></td>
<td>Walking to the stop</td>
<td>Guides the customer to the stop</td>
<td>- Credit - Debit</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Automatic trip organiser is a computer software which operates simultaneously several trips for multiple customers. The system arranges constantly new trips for new customers and dispatches them efficiently in shared vehicles.

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* Pic. 37. The service blueprint illustrates the service process from the system and from the customer perspectives.*
<table>
<thead>
<tr>
<th>Internet - smartphone app. stop</th>
<th>Internet - smartphone app. vehicle exterior driver</th>
<th>Internet - smartphone app. vehicle exterior info display</th>
<th>Internet - smartphone app. vehicle exterior info display driver</th>
<th>Internet - smartphone app. stop infra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting</td>
<td>Boarding - identifying the right vehicle</td>
<td>Travelling</td>
<td>Exit vehicle</td>
<td>Walking to the final destination</td>
</tr>
<tr>
<td>Delivers real time information to the customer considering the waiting time</td>
<td>Assists the customer at identification of the appropriate vehicle</td>
<td>Offers real time travel information to the customer - e.g. arrival time</td>
<td>Informs the customer about the forthcoming stop</td>
<td>Guides the customer from the stop to the final destination - map and directions</td>
</tr>
<tr>
<td>Calculates real time data concerning the trip process</td>
<td>Calculates real time data concerning the trip process</td>
<td>Calculates real time data concerning the trip process</td>
<td>Calculates real time data concerning the trip process</td>
<td>Calculates real time data concerning the trip process</td>
</tr>
</tbody>
</table>
PART 7, SECTION 2: FUTURE POTENTIAL

The previous section presented the Metropol service concept, as it has been developed in the Metropol project and parallel with the thesis work. The following section will present early stage ideas that are based on the previous four framing constructs (discussed on the pages 68-70). The presented ideas should be considered more as discussion openers and design opportunities than fine-tuned and mature concepts.
7.2.1
Design opportunity

The DRT based Metropol service concept takes an advantage of the state of the art IT-technologies such as Internet, 3G communication technology, GPS-location technology, smart phones and the latest software development. This opens up a great opportunity for transit designers to start re-designing the whole trip planning process, trip ordering, payment, navigating during the journey, travelling, information distribution to the customer, seating, and even communication not only between the customer and the service provider but also between the individual customers.

The service does not operate along fixed routes and timetables, but instead it can move according to travel criteria defined by the customer. Already this offers a great amount of control for the individual customer to manage the instrumental functions of the service.

Secondly, the technical advance of Metropol concept allows the designers to start implementing the symbolic, affective and social features and functions, which the private car has today into public transportation services. For instance, people with the same customer preferences or people familiar with each other could be dispatched to the same vehicles with each other. People who appreciate fast traveling could order trips that are delivered with cars that take less customers and are therefore also faster timewise. In the future, Metropol service concept could have potential to respond not only to instrumental, but as well to the symbolic, affective and social requirements that private car users set for their travelling.

7.2.2
Possible outcomes (Initial service feature ideas)

The following ideas are scenario-like sketches for new service features that could be implemented into Metropol service somewhere in the future. The illustrated ideas focus on service features that could provide similar symbolic and affective functions than the private car has today. I kindly ask the reader to approach the ideas with an open-minded attitude. At this point, the ideas should not be evaluated according to their efficiency, cost effectiveness or technical feasibility.
The idea is to offer different vehicle types and vehicles with different themes to different types of users. The users can choose from a set of options the one that suits them the best. This type of service feature could also allow the users to travel with people they would be more likely choose as travel company. For instance, people with the same interests could choose the same theme cars. Work related travelling could for example offer a wlan-network, room for laptop, privacy and silence.

This service feature idea can increase the user’s control over the service. The idea should also support the user’s identity construction activities.
Travelling is an essential part of daily schedules especially for people whose work requires a lot of travelling during the day. The time management service idea is aimed for people who want to concentrate on their daily responsibilities and not to spend time in planning the trips. The service can do the planning for the user.

By integrating the user’s electronic calendar with Metropol service, the service can automatically start arranging trips according to user’s travel needs. By utilising GPS location technology, the service can recognise where the user is and set the starting points of the trips. The desired arrival times and the destinations of the trips can be set from the user’s calendar notes.

This service feature offers the user a unique ability to ‘outsource’ the trip planning phase from the travelling process. The idea also offers more control and flexibility to the travelling process. A service feature that becomes an integrated supporter to the user in his daily activities could also create a sense of more personal service experiences.
2. CHOOSE THE TIME OF TRAVEL

ABILITY
ROLE
ENGAGEMENT
CONTROL

NEXT PLACE
MEETING 2.

GROCERIES
HOME

KINDERGARTEN
The next three ideas are ‘travel community’ related. The ideas are aimed for communities with similar travelling interests. These communities could be for example families or communities formed at work. The idea is that certain groups of people could share rides, organise trips for themselves, others or just be connected with their peer groups while travelling.

The travel community idea version one is aimed for families who are suffering from complex logistic travel related problems. Often people who work and have children suffer from hectic daily schedules. They need to take care of scheduling their own daily trips as well as trips of their children. The idea is that the service allows the parents to organise the necessary trips to their children without driving hectically around the city. At the same time, the service should offer the parents a sense of being able to take care of and look after their children.

Sami’s training is at 20:00
1. Pre-order a round trip for Sami. Anna has pre-set travel features relating to Sami’s trips to ice rink (e.g. the vehicles have room for the sport gears)
2. Arrival at the ice rink at 19:30
3. Departure from the Ice rink at 21:30

Anna is leaving work.
Today she needs to do the grocery shopping and therefore taking Sami to the ice rink with a car is impossible.

Anna arranges a trip for Sami.
Anna receives confirmation from the service.

Sami has approved the trips and entered safely to the Metropol vehicle.

Sami receives a message from his mother. The message contains trip proposals. Sami’s mother has paid the trips beforehand.

4. Sami chooses the appropriate trips.
The travel community idea version two is aimed at work communities. The idea is that employees from the same company or organization can form their own travel communities. One vehicle could automatically pick up the people who are part of a travel community into a shared ride and take them to the work place in time. The trips could be offered by more enlightened employers who want to support sustainable development and take care of the safety of their workers.

This type of services could support the sense of belonging to a certain social group. The travel mode change from the private car user to Metropol service could also happen without the lessening of ‘self’ if the user gets peer support from the colleagues.

3. When Anna makes work related trips, e.g. travels to meet a client the service charges her employer.
1. The previous evening, Anna has informed the service that tomorrow morning she will need a ride to her workplace.

Anna has set a standardized trip request concerning her work trips. She does not want to leave home before 8:15 am and she wants to arrive at work 8:55 am latest.

2. In the morning, Anna receives trip information 15-20 minutes before the pickup. She gets only one trip offer.
The travel community idea version three is aimed for anyone, who likes to keep in contact with his or her friends and affect with whom they travel with. The service feature idea is familiar from the social media, except staying in contact with people can be more tangible in the context of travelling than it is in services such as Facebook, Twitter or MySpace. This service feature idea allows the user to add friends to their personal travel community and ask the service, when possible, to favour rides and vehicles where their friends are on board. The private car allows its user to choose the desired travelling company. In some sense, this service feature ‘imitates’ this ability of a private car.

The previous three service feature ideas described earlier could support the travellers need to affiliate with certain groups of people and support the user’s self-image. In addition, this type of service features increases the individual travellers control over the process of travelling.
IDEA 6
The user can start ‘collecting’ a list of places that are personally meaningful to the user (e.g. places that the user often visits). This list can be used as a list of alias addresses in the trip ordering process. The places are added and presented in a tangible form. The alias addresses are saved into user’s personal travel account. This type of service personalisation requires ‘psychic energy’ to be invested by the user. Within time, the service becomes more convenient and more personal for the user.

This service function enables continuous development of the service through the personal and meaningful user involvement. Eventually, when the number of personal locations increases, the service will hold more value for the user.
It is Saturday at noon. Anna is enjoying a relaxing day out with her friend. They have just left an exhibition at Ruoholahti. Later that day they are planning to do some shopping, but before that...

Hmmm! I am getting hungry. How about some food before we go shopping?

YES PLEASE! Do you know whether there are any Korean places in the city where we could lunch?

Great idea. If there is one, I would like to try Korean food. Let see what Metropol service suggests.
The possibility to change travel plans impulsively while travelling seems to be an advantage to the private car when compared with public transportation. This ability strengthens the motives to use a private car and supports the attachment towards car use.

This service feature idea offers the ability of travelling more impulsively.

The idea is that people can order and make trips according to the activity that they would like to perform without seeking the locations where the activities may be performed beforehand.

Anna opens Metropol service on her mobile. She searches locations according to activities.

...AND THE LADIES GET ON THEIR WAY.
PART 8
DISCUSSION
At the beginning of this thesis, I asked the question whether Metropol service concept could offer its passengers a ‘service quality’ which could compete with the symbolic, affective and social assets of a car. I also posed the question what makes driving a car more appealing and attaching than using public transportation.

To private car users, the private car appears to be the best single travelling mode for three main reasons. Firstly, the private car offers the most flexibility to individuals travel needs. Secondly, the use of a private car offers more enjoyable and emotional travelling experiences to its users compared with using public transportation. Thirdly, some of the private car users think that using a private car represents their values, beliefs and social position better than public transportation would. All of the reasons above for private car use are consistent with the way that product attachment theories explain person’s attachment to their possessions. Therefore, giving up a private car use can be a challenging task.

It is obvious that converting the private car users to public transport users is a long and challenging process. However, the results of this thesis incline that in theory, the Metropol concept has some potential for making this behavioural change to happen. The technical qualities, which the Metropol concept is built on, allow producing more personal travelling experiences for public transportation than ever before. In the future, the Metropol service concept could hold similar symbolic meanings for its user as the private car has today and the use of the service could produce emotional satisfaction comparable to the private car.

Metropol transportation service is ‘under construction’ while I write these last sentences. Presently the service is being produced as a collaboration between Helsinki Regional Transportation organisation, Aalto University and Ajelo Oy. The first pilot version of the service will start operating during the year 2012. At first, the fleet of the Metropol vehicles will be small. Ten minibuses will start to offer demand responsive transportation in Helsinki area. In another words, the whole Metropol work group is living exiting times. The near future will show, whether the service can fulfil our huge expectations. The first pilot phase will continue for three years. Within that time, we hope that we can prove that the Metropol concept truly has potential for serving the private car users needs to such an extent that a considerable number of journeys conducted by a private car will be replaced with public transportation. Until then the research will continue.
ACKNOWLEDGEMENTS

Most of my gratitude goes to my beloved partner Annukka Takala. Thank you for bearing me in both my darkest and lightest hours. I love you. I am also grateful for the help of my tutor Eero Miettinen. Thank you for guiding me through the worst pitfalls. I would also like to give credit for the good people of Metropol research group who made this thesis project possible in the first place: Teemu Sihvola, Reijo “Shosta” Sulonen, Jani-Pekka Jokinen, Joona Oja-Palo and Antti Ruotoistenmäki. Thank you for having me in the project and thank you for all the inspiring discussion during the past two years. I also owe a lot to Marjo Kauppila. Thank you for your supporting me to continue with my thesis topic, you helped me to get back on track with the work. I also applaud Jari-Pekka Kola. Your educated comments helped me a lot in bringing together the pieces of this thesis. I would also like to profess my gratitude to my family and to my friends. Without you guys, I would not be the person that I am.

REFERENCES


IMAGE REFERENCES

Pages 58 and 62: Journey Planner, Screen shot from a webpage, Source (http://www.reittiopas.fi/en/)
Pages 72 – 73: Image from Aleksanterinkatu, Source: (http://www.panoramio. com/photo/27224274)
Pages 100 – 109: The maps that appear on the background are screen captions from Google Maps, Source: