Barriers to the Creation of a Bike-City

A study of Munich's transport policy

By Patrick Cachia Marsh and Tobias Ritzau-Kjaerulff

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Table of Contents

Summary

The City of Munich is a major growth area in both Germany and wider Europe. This growth is leading to a growing population and therefore stresses on transport capacity. The transport policy of Munich therefore seeks to decrease modal share of cars and increase that of other modes of transport, especially bicycles.

Munich's bicycle policy is a two-pronged approach combining both 'hard' and 'soft' measures. The soft policies denote measures such as marketing or the creation of bike-friendly legislation. On the hand, hard refer to the creation of physical infrastructure such the creation of cycling lanes and paths, or the prioritization of cyclists in certain roads.

This approach has been largely successful so far, with modal share for bicycles increasing from 8.1% in 2000 to 17.4% in 2012. To build upon these successes, the aim of Munich's transport policy is to further increase modal share and turn Munich into a "Radlstadt (Bike City)" similar to the experience in Copenhagen and Amsterdam.

The purpose of this report is to investigate how a city shifts from car-orientated infrastructure to a more bicycle-friendly one, and which challenges and barriers follow in this action. This is being done by using the City of Munich as a case-study. The research questions for this report are:

1. What are the barriers to car-orientated to bike-orientated transport policy?
2. To what extent is Munich's vision for a bicycle-city currently feasible?

The empirical methodology is based on a combination of desk-based research, field observations and a series of interviews. Much of the latter two forms of research were conducted over an 11-day research trip to the city itself.

This study illuminates three major forms of barriers to the successful implementation of bicycle transport policy:

Perception and Awareness:Barriers related to this issue are those that deal with attitudes and values of people towards bicycle-use. This study finds that many are still not aware of the efficiency and comfort of the bike. Safety and perceived status of bicycles are also issues. While Munich's bicycle marketing campaign, RadlhaupstadtMünchen, attempts to generate public and thereby political support, it is a slow progress. There might still perhaps be certain segments of the population who are resistant to change.

Space: The aspect of space is one of the strongest barriers to transport policy in Munich. By looking at different cases during field observations, it was possible to see concrete examples of the lack of space. Munich's urban planning policy is to create a compact and efficient city. While Munich seeks to increase modal share of bicycles, it also wishes to ensure that the other modes of transport are still attractive options. This strive for efficiency leads to a conflict of space on the streets of Munich. Narrow bicycle lanes and insufficient parking

space for bicycles are some clear examples of this lack of space. However, this report identifies some new initiatives to counter this such as contra flow for cyclists on one-way streets.

Politics: The planning of bicycle policy and infrastructure is a big political issue in Munich.The political support and will for creating a bike-friendly city is slightly ambiguous. While it would seem that the governing political coalition supports the bike, there are many other factors to consider.Various interests and the long tradition for planning a car-oriented city are some of the major barriers for bicycle-friendly policy.
The Planning Department must therefore find compromises and solutionsbetweengiving more space to the bicycle and having transport policy which is not overtly against car transport. These factors slow down Munich's vision for a "bicycle city."

The presence of these barriers makes prediction for the realization of Munich's vision difficult. Or at least, it is not easy to predict whether Munich will achieve the same levels of modal share as in cities such as Amsterdam and Copenhagen.

This study concludes that there has certainly been an improvement in awareness, usage and infrastructure for bicycles and both qualitative and quantitative data reflects this. The various barriers and challenges to bicycle policy implementation either slow down the process of turning Munich into a "bike city" or make it unclear if this vision will be realized. If Munich wishes to further increase modal share for bicycles then this progress must be maintained for the future. In this scenario, the prospects for achieving this vision are bright. Current growth of political and public support is certainly beneficial to Munich's bicycle policy aims. In addition, it is believed that Munich has the knowledge and innovation capacity to create practical solutions for certain barriers, especially those related to space.

Background and Aim of the Study

Munich is a major city in the state of Bavaria that is of importance to both the German and wider European economy (Faludi, 2004: 395). The metropolitan region of Munich is flourishing, and is in fact the region with the fifth highest GDP per capita in Europe (Eurostat, 2011). The city's continuing economic growth has led to positive population and employment trends, which in turn has caused stresses to transport infrastructure in the region. Munich has therefore adopted transport policy which seeks to reduce, shift and manage these traffic volumes (LandeshauptstadtMünchen (LM), 2006: 2).

In essence, Munich's transport and urban planning strategy is based around three principles: *urban*, *compact* and *green* (LM, 2005: 5). These principles are closely related to the concepts of sustainability and smart growth, where creating a dense yet efficient urban fabric are encouraged. To maintain these principles, a mode of transport is needed that is clean, healthy, quick and efficient. The bicycle is thus an ideal candidate as it has all these characteristics. Munich's bicycle transport policy is integral to its aim of creating a socially and environmentally sustainable transport system.

> *"…the bicycle represents a quick, flexible, economical, healthy and environmental means of transport"* (LM, 2010, p.4)

Prior to 1990, Munich's bicycle policy was centered on dedicated bicycle transport infrastructure. The city has always had a strong tradition of car-use and it could be said that infrastructure at the time sought simply to keep bicycles separated from automobiles (Klein 2012: 37.20). However, since 1990 policy has revolved around creating a network of interconnected cycle routes (Bördlein, n.d.: 1).

The purpose of this report is therefore to investigate how a city shifts from car-orientated infrastructure to a more bicycle-friendly one, and which challenges and barriers follow in this action. This is being done by using the City of Munich as a case-study, which aims to increase the amount of bicycle use and transform itself into a so-called "bicycle-city". The research questions for this report are therefore:

1. What are the barriers to car-orientated to bike-orientated transport policy?
2. To what extent is Munich's vision for a bicycle-city currently feasible?

Methodology

To get a comprehensive picture of this case study one needs a broad spectrum of perspectives. To ensure this, a variety of methods have been combined to collect the empirical framework. The notion that knowledge often is embedded with an interest has been used (Flyvbjerg, 2001: 3-5) and it was therefore seen as important to get in contact with different kinds of knowledge and opinions in the political field of planning. In extension of this, there has been a methodical focus on how the planning is being verbalised to the public and how one can see it physically.

Field observations in Munich have made is possible to get a more practical approach and a better contextual understanding of the case study. The easier accessibility to sources through field-based experience of Munich has been an important factor for the perception of the city and the creation of this report.

Besides the obligatory desk-based research, two additional methods were used to gather data:

Interviews

Three recorded interviews have been done during the fieldtrip;

- *Elizabeth Zorn*, Traffic planner in the Department of Planning and Regulation in the Municipality of Munich. (Conducted on 08/05/12)
- *Bertram Klein*, Active member in the national bike Association and NGO, *ADFC*. (Conducted on 09/05/12)
- Members of the local bike Association *BikeKitchen*. (Conducted on 09/05/12)

All of the interviews have been semi-structured, since it has been seen as the most useful approach where it was possible to structure the interview in relation to the focus of the paper and in the same time be open-minded for uninspected perspectives.

In addition, a further two interviews were carried out by e-mail correspondence. While structured and considerably shorter than the recorded interviews, they gave additional supplementary viewpoints. The following people were interviewed in this manner:

- *Martina Pelz:* Lecturer at Ludwig-Maximillian University who has carried out research in the field of bicycle transport policy.(Received on 23/05/12)
- *Marco te Brömmelstroet*: Lecturer at the University of Amsterdam who specialises in transport research. He is a bicycle enthusiast and writes a blog dedicated to cycling in Munich. (Received on 24/05/12)

There was also contact with

other locals, among them the bikestore StilRad, which have contributed to the general knowledge about the city and bike use.

Observation and participatory observation

During the fieldtrip experience and impressions of the city have been documented. Trough notes and photographs concrete knowledge has been collected about the bicycle facilities, bike behaviour and other related perspectives.

Furthermore, the authors of this report have biked in Munich to get a more personal and embodied experience. The two authors have different bicycle background and the experience of biking in Munich has therefore not been the same. The feeling of safety in the traffic, the utility and the understanding of good bicycle solutions have varied and these differences have been an interesting and important way to perceive and assess the bicycle facilities in the city.

Limitations and Critique of the Study

As with any scientific study, there are a number of limitations which must be outlined. The first of which is the temporal aspect. This study was written and prepared over a period of approximately two months. While there was sufficient time to write the report, data collection was mostly restricted to a field research trip to Munich which took place over the space of 11 days. Therefore, an extended research period would have been beneficial to the project. The writers of this report were also not natives of the city. Whilst an outsider's perspective is beneficial, there is always the risk that certain values and aspects of the city might not be comprehended properly.

In addition, a large amount of the data generated for this report originated from the interviews that were conducted. Many of the interviewers are believed to be decisively pro-biking and thus there might be a slight degree of bias to the findings. Those that are most enthusiastic for cycling could be arguably called the most biased. The report would therefore have benefitted greatly from additional interviewees who would more inclined to using and promoting automobile infrastructure.

The concept and rationality behind the trend of biking policies

While people consider the bicycle as both a form of transport and a source of enjoyment it is important to realize there are many other benefits to using it. The bicycle can be understood as a political planning tool to create and realize the visions for many cities. When cities facilitate and promote their citizens to bike it's actually the side effects of the physical planning and the practice of biking that is the main goal. This should be understood in the context of the many diverse benefits of a bike-friendly city:

Infrastructural Benefits

The need of accessibility and mobility is still increasing. In earlier planning paradigms the answer was to create more and better infrastructure, understood as more roads and more space to cars, which created what you can call C*ar Cities*. As a consequence you see today that congestion is an everyday reality in major cities all over the world. It is therefore clear that there is need of a new strategy to solve this traffic issue. The bike takes up about one quarter the space of the car and generally provides a much bigger degree of freedom than both the car and public transport (within shorter distances). The bike should therefore be seen as a key solution. Newer research has shown that the bike is actually faster than car over short distances(5km) in urban areas. In addition to this, about half of the trips made by cars in Europe cover distances less than 5km. By replacing the car with the bike you thus not only cut down the traffic jams but it also makes travel faster (EU, 1999: 10). From this perspective a bike-friendly city can make the everyday transport more efficient.

Environmental Benefits

One of the main reasons that biking has become such a hot planning topic is because of climate challenges and the concept of the sustainable city. In a zero carbon city you need alternatives to the gas driven cars. Here, the human-driven bike has its obvious benefits with no carbon footprint. As it can be seen in table 1 the replacement to bike will furthermore reduce the negative impacts from the cars. A bigger share of bike use will decrease the noise, risk of accidents and improve air quality (EU, 1999: 16).

Table 1 - Transport Modes and impact

Comparison of various transport modes from the ecological viewpoint with a private car for an identical journey with the same number of people/km. (Base = 100, private car)				
	Car	**Bus**	**Train**	**Bicycle**
Space consumption	100	10	6	8
Primary energy consumption	100	30	34	0
CO2	100	29	30	0
Nitrogen oxides	100	9	4	0
Risk of accidents	100	9	3	2
Source: adopted from EU (1999)				

Health and Social benefits

With the emerging obesity-epidemic among citizens in western countries, there increased focus on improving public health. The bicycle can be seen as a good way for the facilitation of everyday exercise. It is here notable that this type of exercise is integrated in everyday life, where the bike is also a practical form of transport. It has also been seen that the social life in the city changes when facilitating a bike-friendly environment. The Architect Jan Gehl has registered an improvement of safety and use of public space and social activities when providing better conditions for pedestrians and cyclists all around in the world (Gehl, 2010: 6ff).

The whole idea of facilitating bike use is therefore closely related to many of the values and visions of the ideal city in terms of economic, social and environmental perspectives.

Strategy and Policy of Biking in Munich

Munich's bicycle policy is carried out through a combination of 'hard' and 'soft' measures. The soft policies refer to measures such as marketing, or the creation of bike-friendly legislation. Hard refers to the creation of physical infrastructure including cycling lanes and paths, or the prioritization of cyclists in certain roads. According to Hep Monatzeder, the Transport Mayor for Munich, the ratio in spending between hard and soft measures is 4:1 (Monatzeder, 2011: 0.38).

Soft Measures

Munich's current bicycle marketing campaign has been in existence since 2010 and is a major component of the city's bicycle policy. Its main focus is that of turning Munich into a "Radlhaupstadt (Bicycle City)". Munich can trace the origins of its marketing campaign to the Velo-City conference which was held in 2007. The Velo-City series of conferences revolves around creating sustainable, bicycle-friendly cities and did much to promote this concept both publicly and politically (Zorn, 2012: 1.55).

It is a major component of Munich's bicycle transport policy and intends to increase awareness about the benefits of cycling and thus increase the modal share. A separate benefit is also to foster good cycling practice such as improving road safety.

The marketing campaign is further supplemented by an online mobility management service entitled "Munchen – Gscheidmobil" which provides tailored information and guidance to individuals or companies to better improve their mobility. By viewing an interactive map, it is possible to view information about traffic volume and the location of one-way streets and thus one can plan the route they feel most comfortable and safe with. More specifically tailored data may also be provided for elderly people, and those with a migration background as they are considered the demographics that use cycling the least (LM 2010: 19, 22).

The City of Munich has also enacted legislation to support biking. An example includes adjusting the Building Code for minimum thresholds on biking shelters in new developments. Others would be adjustments to traffic regulations providing safety and security for cyclists (LM, 2010: 7, 16).

Hard Measures

While favorable bicycle policy and legislation is important to increasing the modal share of cyclists, sound infrastructure is also essential. The City of Munich has been developing the cycling network via a series of Transport Development Plans for Bicycles (VEP-R). The first one was published in 1986 and its main focus was on the creation of bicycle lanes and other dedicated bicycle transport. However, more recent development plans have stressed the

importance of cycling forming part of an integrated and shared transport network. Therefore, whilst the bicycle network covers 1,200 km, 450 of these follow shared-use roads with cyclists riding side-by-side safely amongst other forms of transport (LM 2010: 7-8).

Despite this, it is still necessary to have some dedicated bicycle infrastructure such as the creation of three large ring roads in or around the city. Together with the existence of 14 sign-posted routes spreading out from the city centre, the City of Munich has ensured ease of connectivity and mobility to the suburbs (LM 2010: 8).

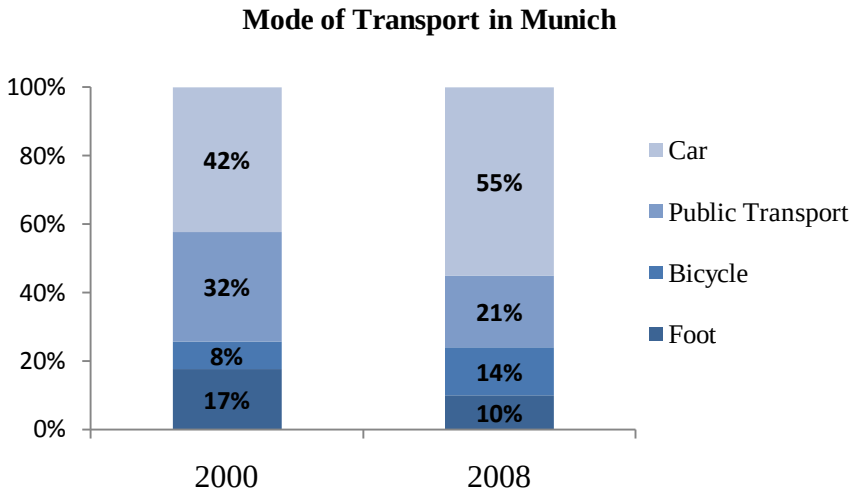
Mobility for cyclists has also been aided by the establishment of one-way streets for car traffic, which are in turn opened to contraflow for bicycle traffic. In addition there are 17 bicycle roads in Munich which are reserved entirely for cyclists. In recent times there has also been the enhancement of infrastructure such as traffic lights at urban intersections, which are commonly considered to be accident hot spots (LM 2010: 16-17). Signage in general has, in fact, improved considerably. It is now more visible to the cyclist and is also more informative about the connectivity between different routes.

While the bike is one of the most efficient modes of transport for this, other forms of transport are still used over a wide range of distances. Thus, facilities that enhance ease of modal share are essential. Connectivity between different transport modes is understandably one of the main priorities of transport policy. Therefore, most metropolitan train stations provide bike and ride facilities, where you can park your bike and switch mode of transport. In fact, there are approximately 25,000 bike and ride parking racks located in the inner city, with more planned on being built in the future (LM: 2010: 12).

Statistical Information

The City of Munich has invested a considerable amount of money into its bicycle program. At the moment, the yearly allowance for bicycle transport is €4.5 million. Therefore, the question one needs to ask is if this combination of hard and soft transport policy is effective. Judging by official statistics the answer would be a strong yes.

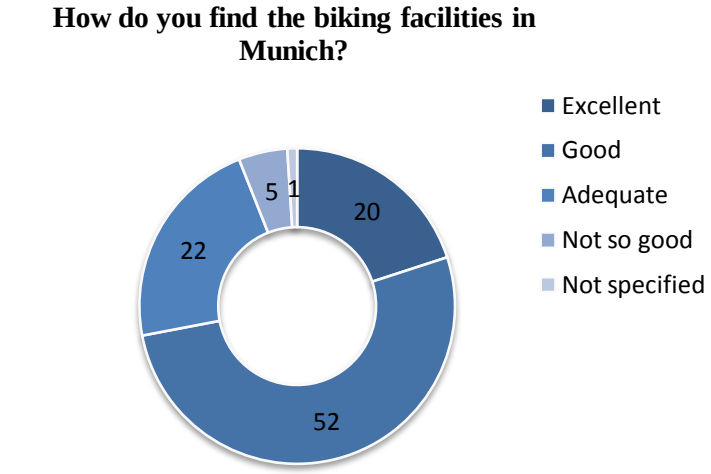
Analysis of transport modes in 2000 and 2008 has seen the amount of trips carried out by the bike increase from 8.1% to 14% (LM 2006: 4; LM 2010: 23). Munich's transport plan aims to have the share of cycling traffic increase to 17% by 2015. However, According to an analysis carried out by the newspaper Sueddeutsche, this has already been passed and the figure currently stands at 17.4% (Völklein, 2012). Compared to modal share in cities such as Amsterdam and Copenhagen, figures stand at 43% (Pelzer, 2010: 3) and 36% (Copenhagen Department of Traffic, 2011: 5) in the inner-city respectively.



Source: Adapted from LM (2010); (2006)

Figure 1: Comparison of trip proportion by different transport modes in 2000 and 2008

Public perception towards cycling in Munich is also rather positive. According to a 2008 study carried out by the Department of Urban Planning, 72% of survey respondents indicated that they consider cycling in Munich to be either 'good' or 'excellent'. However, some perceive the cycling in Munich as inadequate. Nonetheless, the figures show that Munich's development of bicycle infrastructure has been generally well-received.



Source: Adapted from LM (2010)

Figure 2: Public perception towards cycling in 2008

The City of Munich wishes to further build upon these positive indicators and in 2009 passed a resolution called "Bicycle traffic in Munich" which pledges a number of goals to be completed by 2015. Aside from the modal-share target of 17% mentioned earlier, other targets include: a further 4,000 bike stands to be constructed; a reduction in traffic accidents;

a total of 300 one-way streets to be opened for contraflow; and additional bicycle garages at railway stations.

While these statistics paint a bright picture for the bicycle situation in Munich, there is always the risk that quantitative data only tells part of the story. Therefore, the purpose of this report is to investigate bicycle policy using a variety of methods and in doing so explore the difference between what is planned, and what has actually been reified.

Barriers and Challenges

All policy, transport-orientated or otherwise, has certain barriers that must be overcome to achieve successful implementation. The following chapter lists what is thought to be the major barriers to bicycle policy in Munich. It is thought that there may be other minor barriers, but due to research constraints they will not be investigated.

The major barriers are identified as:

- Perception and Awareness
- Space (or, lack of it)
- Politics

This chapter has attempted to investigate and exemplify the above barriers and also provides examples where planning policy has attempted to or succeeded in overcoming them.

Perception and Awareness towards Biking

One of the greatest barriers towards achieving this higher modal share of biking in Munich is that of perception and awareness. To counter this, Munich's bicycle policy includes a comprehensive marketing campaign that wishes to increase awareness about the benefits of cycling. Solely building infrastructure is therefore seen as insufficient and marketing constitutes an elementary aspect of bicycle policy (Zorn 2012; Mentz&Lonhard 2009: 3). While infrastructure is important, citizens that call for better infrastructure are often those that use the bike on a regular basis (Klein, 2012: 23.50). This marketing campaign was therefore created to address a number of different barriers related to public perception.

Attitude towards the status of biking

Munich is a city with a large automotive tradition with companies such as BMW, Audi and MAN based in or around the city. Because of this, perceptions towards the status of biking are of particular hindrance to increasing modal share. According to Bertram Klein (2012: 14.18) of the ADFC, the demographic least likely to use the bicycle are:

> *"…men between 30 and 50 [who are] probably the quintessential car drivers [and perhaps] have no time or do not wish to get sweaty in their business suit*."

Elizabeth Zorn (2012: 4.00) of the Munich Department of Urban and Regional Planning states that Munich has done a lot of work over the last few years to enhance the perception of

cycling. Whilst 20 years ago the bicycle was only used as a form of transport by certain demographics, the typical cyclist nowadays is much more diverse.

> *"…now everyone is cycling. Businessmen [and also] families with children …cycling is mainstream. It is trendy."*

Klein also states that a lot of work is being done towards increasing the perception of cycling (2012: 22.55), and perceptions as negative as they used to be:

> *"We think [the marketing campaign] is a very, very good idea… in particular in Germany, it's really that to some extent [that cycling] used to be a poor man's thing. I mean basically students did it while they couldn't afford a car. And then basically when they got a car they stopped cycling… I think [the marketing campaign] is very important."*

Zorn does however identify the elderly and those with a migration background as least likely to use the bicycle but states that they are actively working to increase bicycle use for these demographics.

Promoting Trendy Biking

Stilrad is chain of bicycle shops with an outlet in Munich who deal in luxury bicycles. They wish to show that bikes are not only an environmentally-friendly and functional mode of transport, but one that can be trendy and perhaps even luxurious. Although the bicycles may not be as affordable as more mundane ones, the prestige in riding one might cater to more affluent demographics.

Source: Stilrad, 2012 (http://www.stilrad.com/)

Ease of biking

Another form of barrier is that related to perceptions about the ease and convenience of biking. A considerable number of trips are still done by the car and as Zorn (2012: 10.44) states, this is for a number of reasons:

> *"… some use [the car] because they don't like to use public transport; or [because] they are safe in their car because of social interaction; or [if] they have to transport anything; or because they have health problems; or [if] they are habituated in using the car."*

Zorn (2012: 11.21) goes on to state that the marketing campaign is attempting to promote the use of bike to "break" any unnecessary habituation for the car. A particular focus on the campaign is on children, so that the benefits of using the bike are learned at any early age. However, this preference for the car is something that can only be changed over a long-term period. The fact that more than 60% of trips encompass a distance of less than five kilometres is being used in transport policy to promote the benefits of the bicycle (LM, 2010: 6). Given this statistic, it is possible that since the bicycle is a more efficient mode of travel, the use of the car for short distances is mostly related to habituation, culture and other influences.

Admittedly, it is still not possible that everyone is able to use the bike. Therefore there must be other modes of transport to cater, for example, for elderly people or people with disabilities (Zorn, 2012: 34.04).

Safety

Perceptions about the safety of biking are of prime importance to the campaign. This is not only so for those who wish to start using the bike, but also regular cyclists who would presumably stop biking if conditions become too unsafe.

According to Bertram Klein (2012: 37.20), Munich is making great strides in improving safety and security for biking. The opening of a number of bicycle prioritised streets for cyclists on many streets is seen as particularly positive. However, a lot of archaic and unsafe dedicated bicycle infrastructure from the 1980s period remains.

> *"In the 80s you have to say that bicycle infrastructure was to get bicycles out of the way of cars… it doesn't improve the traffic flow for bicycles, it doesn't improve safety. On the contrary what they built at these times really worsened safety for bicycles."*(Klein 2012: 37.20)

Klein also states that perhaps the best approach to increasing bicycle safety would be to remove dedicated transport infrastructure. The reason for this is that it creates a number of accidents at intersections where bicycles and automobiles come together from a multitude of different directions (2012: 26.37).

There is also a problem with capacity on certain bike lanes throughout the city. Some are not big enough, or too close to parked cars. Capacity is particularly a problem on days with good weather (Klein, 2012: 40.00; Bikekitchen 15:00).

What Klein sees as a solution is the creation of infrastructure that promotes vehicular cycling, however he does admit that it is somewhat "aggressive" approach to cycling that is only appropriate for confident cyclists (Klein 2012: 24.55).

That is not to say that bicycle lanes are unsafe. On the contrary, evidence shows that the majority of cyclists feel safer when using dedicated transport infrastructure (Rasmussen 2007: 5). If this infrastructure is incorrectly planned it can lead to safety problems with both pedestrians and automobiles. This matter is particularly pressing due to the fact that the number of cyclists is constantly increasing.

In addition, since the number of cyclists has increased quite dramatically in recent years, not all car drivers are used to this. As Pelz (2012: 1) states

> *"You still do have these aggressive car drivers, that do not yet know, bikes are actually "allowed" by law on the street now."*

Munich's bicycle marketing does, however, address the safety issues. Conflicts between different traffic users are unavoidable, but the campaign provides bicycle safety checks and also aims to improve sensitivity and understanding towards cyclists (LM 2010: 21).

Space

The aspect of space is one of the strongest barriers to transport policy in Munich. The city's urban planning policy is to create a compact and efficient city. This compaction naturally leads to conflicts when it comes to finding the space for different types of transport infrastructure. This report acknowledges four main users of the streets of Munich:

- Private cars and automobiles (including that used for commercial purposes)
- Public transport (including buses and trams)
- Bicycles
- Pedestrians

Munich's transport policy intends to increase the modal share of cycling and walking. However, it still wishes to maintain an efficient transport service and keep the car as a viable option. The problem is therefore creating infrastructure that caters to the needs of the different users, whilst additionally considering the interactions on the street between themselves. There is thus a conflict on the streets in finding space for all the different modes.

A further concern is the growing population of Munich. Coupled with efforts to create a compact city, this growth greatly increases population densities. This causes capacity problems for different transport modes, including biking. A challenge is therefore to create infrastructure that is sufficient for not only the present, but the future.

This chapter thus wishes to illuminate the conflict of space in Munich. This shall be done by explaining a few different scenarios in which these conflicts happen and illustrating them with examples derived from field observations.

Narrow Lanes

Narrow lanes are a direct reflection of the conflict of space. According to Klein (2012: 15.00) these lanes are often the remnants of 80s bicycle infrastructure. Klein goes on to state that, whereas infrastructure has improved since then, it is still built to minimum space specifications. Whereas the City of Munich wishes to create a network that is accessible to everyone, the problem of narrow lanes becomes a particular problem due to the different levels of skill of cyclists (Bikekitchen 2012: 15.00).The lack of space can also lead to many stops along a cycle path due to capacity problems.

In addition, the boundaries between bicycle lanes are not always visible, or it is unclear which lane is for pedestrians and which is for cyclists. This can lead to trespassing into different lanes and therefore accidents. On a positive note, however, bicycle policy is currently leaning more towards the creation of mixed-use transport infrastructure.

Left: Here it is possible to see the narrow size of the cycle lane. In addition, markings are not visible

Right: Here you can see congestion along the cycle path, causing blockages in the cycle path

Contraflow

One of the newest initiatives when it comes to improvement of bicycle facilities is the new regulations which allow contraflow on smaller one-way street for cyclists. This initiative does not only create legal shortcuts for the cyclists, and thereby a more efficient transport, but also a better exploitation of the space. In short it could be said that the municipality now utilizes space that was previously unused. However, there needs to be more awareness on the side of car drivers, especially when it comes to opening car doors. The initiative has been praised by ADFC and the members of BikeKitchen and is today slowly being implemented. Currently, about 50% of the planned for contraflow have been opened. (Klein, 2012: 35.14; BikeKitchen, 2012, 51.05; Zorn, 2012:12.20).

Above: A typical sign denoting contraflow

Parking

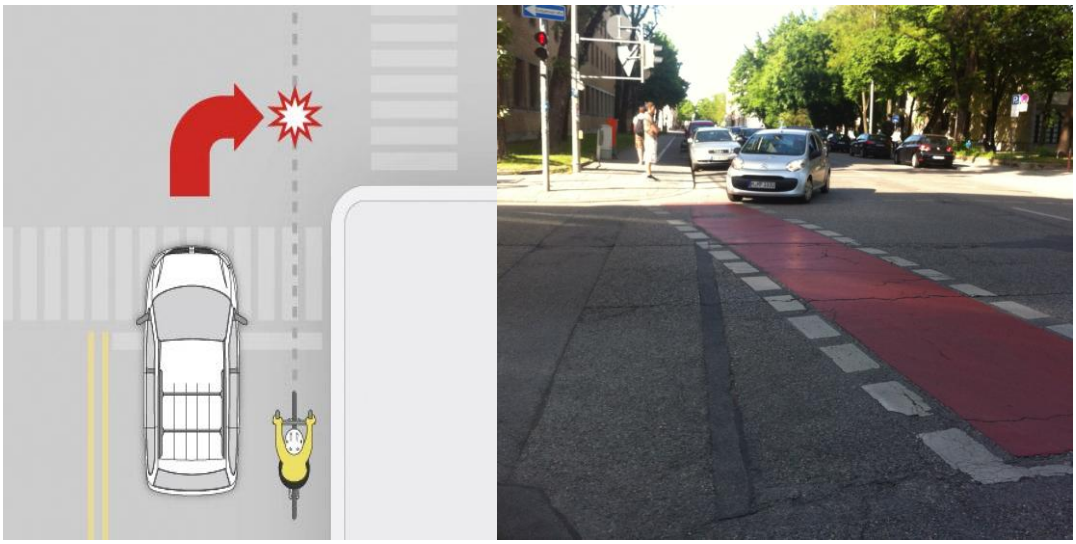
Parking is a big issue both when it comes to cars and bicycles. While it is possible to see how parking slots have been created by taking space from pedestrians, the will of creating space for cyclists is much more controversial. For example, when opening contraflow on one-way streets (see earlier case); one important aspect was that of visibility at intersections being inadequate. One way to improve this was to take away the last parking spot in the end of the road to get a better view angle for both the cyclists and the car drivers. This created a bigger political commotion in the city council (Klein, 2012: 35.30). But times are changing and the city council decided last year to take away 24 parking slots for cars to create 1.000 new slots for bikes (Völklein, 2012).

Left: Car parking encroaching upon a sidewalk

Right: Bikes huddled together due to lack of parking space

Right Turns

Right turn accidents are one of the most common accidents for cyclists around the world. To prevent this, the municipality has painted a red line at intersections to visualize the presence of cyclists. This initiative created a public debate because the coloring of the roads was seen as unaesthetic. Nevertheless, they are still being implemented (BikeKitchen, 2012: 34.10).



Left: Illustration showing risk of accidents due to a right turn

Right: Red lane to increase awareness towards cycle lanes

As the cases show, improvements have been and are continuing to be made to the transport infrastructure. Despite this, it is still very possible to see the conflict of space and the difficulty of creating new space for bicycles. Our observations also show that, especially when it comes to very sensitive areas, the will for taking space from the cars is lacking. Such proposals are often seen as controversial both publicly and politically.

Political Barriers

The planning of bicycle policy and infrastructure is a very political issue in Munich (Zorn, 2012, 15,15). In relation to the earlier described challenge when it comes to scarcity of space, the process and planning of a denser city has increased the interest of the use of space, especially when it comes to traffic management.

The political support and will for creating a bike-friendly city is slightly ambiguous. From official policy papers, as illuminated earlier, the bicycle is presented as an important transport mode in the city. On the surface, activities by the municipality of Munich a political will to develop Munich to the "Bicycle Capital". Munich is today governed by the coalition of the social democratic party *SozialdemokratischeParteiDeutschlands (SPD)*, the green party, *Die Grünen*, and the pink party, *Rosa Liste* and it is under this red-green political coalition that the pro bicycle policy has developed in the last decades (Klein, 2012; 05.00; BikeKitchen, 2012: 07.34). According to Bertram Klein all parties in Munich are officially pro bicycle but in practice the support is much less clear;

> *"In principle everybody is for promoting bicycling but when it really comes down to it then it is only the members of the green party."* (Klein, 2012: 05.12)

Through his knowledge and experience from his work in the ADFC it is mostly the green party that actually is willing to cut into what he calls the "prerogative of car traffic". Elizabeth Zorn concurs with this understanding and adds SPD's support into the equation, albeit to a lesser extent.

This notion is strongly related to what members of BikeKitchen see as the long tradition for planning for Munich: that of a car-oriented city. (BikeKitchen, 2012: 33.27). Through time, this type of planning has developed more and more car-oriented needs among the citizens such as parking slots in the inner city and expansion of the roads for cars. When talking about public meetings, Klein (Klein, 2012: 11.27) states that:

> *"…If you look at the minutes of the meetings you can really see that traffic is the main concern. Mainly it is to keeping out car traffic and securing parking spots for them self…"*

From this perspective you can see a dialectic relation between the physical planning and citizens' behavior which has created a sort of regional discourse of a "car city". The emergence of bicycle policy stands somehow in competition to this dominant discourse. In relation to Bertram Klein's experiences, this can be seen in the planning system:

> *"Not everyone is on board [on the bicycle-friendly policy] of course. You have some people who are very much involved in this, who are very bicycle-friendly, but then you have the people who are really obstructing things because they don't believe in it."*(Klein, 2012: 50.28)

According to Klein this car-oriented paradigm can also be found in the Traffic Department of Munich, where he claims that the engineers' approach to traffic has not evolved with the newest development (Klein, 2012: 52.41). There is therefore not a complete ownership of the idea of a bicycle-friendly infrastructure among the planners. Klein thus sees a lot of friction in the actual planning;

> "*The problem is, then it [the political will to promote bicycle-friendly facilities] has to filter through the department into the actual planning process. And here it gets diluted"*(Klein, 2012, 09.07)

At the same time you find some of the of biggest car companies in the world in Munich which are influential stakeholders in Munich. BMW, Audi and MAN have their headquarters in Munich and are not only important firms when it comes to employment and economic growth in the city but also a part of the Bavarian brand and identity. The importance of BMW is here evident with the close relation the company has to the municipality of Munich (Zorn, 2012: 44.41). In addition, the commercial areas in the inner city of Munich have the interest of good infrastructure for car traffic for practical reasons (Zorn, 2012: 16.41).

Another transport mode which is really popular in Munich is public transport. Munich has an efficient public transport system and it currently has the highest modal share out of all transport modes. For Elizabeth Zorn, there is a relationship between the use of public transport and bicycle:

> *"We have seen in Germany that in cities you have a high share of public transport don't have so high share in cycling. An as a contrast you can see in Holland that the cities have very high share when it comes to cycling but very low share in the public transport"(Zorn, 2012: 33.30)*

This leads once again back to the political issue about space. It is therefore difficult to create infrastructure that aims for a high modal share for both forms of transport (*Zorn, 2012: 33.30)*.

As part of the bike association, ADFC, Klein is of course himself represented as a stakeholder. By making bicycle-activities and policy recommendations, ADFC lobbies for more and better bicycle facilities in Munich. It therefore has a good relationship with the municipality. Together with other bicyclist enthusiasts, such as Bikekitchen, this group can be understood as one of the main stakeholder when it comes to promoting bike-friendly transport. However, as cyclists are somewhat of a minority, their visions and demands will be perceived by many as more extreme. But as the forecast shows, increasing numbers of people are starting to use the bicycle and therefore public interest and awareness about bike-friendly infrastructure will rise.

Although Munich has a relatively small dedicated bicycle budget, funding is derived from a shared transport budget. From this perspective, it is difficult to fully estimate the true size of the budget and therefore the political will for bicycle policy. But as the space for the bicycle in many years has been created by taking space from the pedestrians, the €4.5 million bicycle budget will now be shared with the walking campaign (Zorn, 2012: 22.40). It is therefore possible to take this as a sign of wavering political will for the bicycle.

Further Progress and the Art of Compromises

The promotion of better bicycle facilities is therefore slightly controversial. Physical planning in practice is can be quite a slow process but the political environment, hereby meant the political agenda and support for policies, also impacts the speed of the planning. There are diverse – and to some degree contrary –interests from politicians and stakeholders. The administration in the Planning Department must therefore find compromises in the thin line between given more space to the bicycle;

improving the public transport; promoting walking; and not having a policy that is not directly against car use (Zorn, 2012: 10.10). As Zorn explains;

> *"Transport policy in Munich shouldn't be against the car. And it is very difficult to find compromises between the car traffic and the other transport modes"* (Zorn, 2012: 15.27)

An example of this dilemma is the department's attempt to separate and divert the flow of car traffic to the main streets and keep this away from the smaller streets and residential areas. The reasons for this are because of the noise, air pollution and safety. It is, according to Zorn (2012: 29.37), therefore not possible to take too much space from the cars since this will change the traffic flow. Another more administrative issue is the fact that many of the already decided implementations are being handled by only a few employees which slow down the progress (Klein, 2012: 06.15).

This is maybe one of the main reasons why the process of developing bicycle-friendly facilities to the many pro bicyclists as ADFC and Bikekitchen has been experienced as too slow (BikeKitchen, 2012: 34.45)(Klein, 2012:06.15). The long-term bicycle plan of Munich is pretty much in line with ADFC's interests but the issue about giving more space to the bicycle has not yet been fulfilled. And the only way to do that is by taken more space from the cars(Klein, 2012: 31.32).

This fact is exemplified by the parking situation in Munich. When it comes to parking, Klein states that cars take too much space. He states that the space from parking slots could improve the infrastructure for all kinds of transport modes but, as he comments, there is not yet the political pressure to do so (Klein, 2012: 32.29). Both Martina Pelz and Marco te Brommelsstroet support this opinion and see it as necessary to take more space from the cars if Munich wants to keep up to the image of "the bicycle capital".

To handle this dissatisfaction, Zorn advocates for a good communication about what is being done and what is in the pipeline. Although the progress is slow, it is important for the municipality to show results and the promotion campaign combined with information via brochures, homepages and meetings are essential to do this. Furthermore, it's important to give the citizens a better understanding of the limitations of action (Zorn, 2012:38.58). As she explains, transport policy is very complex and there are many conflicts. It is very easy for the public to complain about the administrative work, especially without the background for the decisions. So it is therefore important for the planner to participate in the discussion and show the public the reason for choosing certain decisions over others (Zorn, 2012: 39.12). The municipality has even tried more participatory methods to get more local ownership and embedded knowledge into the planning, but these initiatives are often too intensive for both time and money compared to budget that has been given (Zorn, 2012: 39.12).

Planning is in many ways a political question and the discussion about infrastructure and bicycle-friendly facilities is no exception. It is possible to see that the political environment in Munich has become more positive for the bicycle in the last few years. This trend is seemingly continuing, but the car-oriented tradition of the city and the variety of interests are some of the reasons that slow progress. As one of the members from BikeKitchen describes the situation;

> *"A lot of cities were built for cars and this process was more than 40-50 years long. To change this structure will take a lot of time – and to change the mindset too"* (BikeKitchen, 2012: 33.27)

Conclusion

The story of the transformation to a bicycle-friendly policy is the story of the process of change in a city, and thereby resistance to it. When new ideas emerge it will often stand in opposition to the dominant and traditional paradigm which, in most circumstances, creates conflict and friction for the new coming idea. The wish of transforming the old and more car-oriented Munich into the "bicycle Capital" is no exception.

The findings of this study show that it is the general perception of biking and the political environment that are some of the major barriers for bike-friendly policy. Due to the lack of space, the physical bicycle facilities can here be perceived as a representation of the support for the concept of a "bike-city".

Many are not aware of the efficiency and comfort of the bike. In addition perceptions about safety and the status of biking are also issues when it comes to attracting more people to use this mode of transport. While Munich's bicycle campaign attempts to generate public and, thereby, political support, it is a slow process. There might still perhaps be certain segments of the population who would prefer Munich to be a 'car-city.' While this can be due to personal values or convenience, others find the car the only option due to issues such as health and/or old age.

It is evident, both from quantitative and qualitative data, that Munich is making great strides to increasing the share of cyclists in the city. Despite this, it is not easy to estimate whether Munich will become a true "bike-city". Or at least, it is not easy to predict whether the city will achieve the same levels of modal share as in Amsterdam and Copenhagen.

However, it would appear that if Munich keeps up the current efforts then it is likely that its vision will be realized. This progress is slowed by a number of factors such as insufficient political and public support. While support levels are currently considerable, it is not believed that they have achieved levels that one would expect in a true bike-city. This insufficient political support is also influenced by the various stakeholders who might have differing and conflicting aims.

In addition, it is hard to predict future political developments such as elections and possibly a reduction in budget. Of particular note is that the dedicated bicycle-transport budget of €4.5million is now to be shared with that of the walking campaign. Therefore, it is possible that this factor will further slowdown transformation.

There are further factors which might hamper progress. One of the most considerable is the growing population of Munich. It would seem that Munich is trying to juggle between creating efficient infrastructure for a number of modes of transport. However, this might not

always be possible due to space constraints. When population and transport capacities are put under stress, it is thereby unclear which mode will suffer most.

By no means is it inferred that Munich's bicycle policy is lacking. On the contrary, there have certainly been improvements in awareness, usage and infrastructure. If Munich wishes to become a "bike-city", then this progress must be maintained for the future. In addition, it is believed that innovative solutions for space can be found where Munich's bicycle policy is lacking. Measures such as contraflow are an example of this and they can be supplemented by further policies. Munich is a centre for knowledge and innovation, and therefore such solutions are not out of its reach.

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