A Comparative Analysis of Bicycle Cultures in the United States and the Netherlands

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A COMPARATIVE ANALYSIS OF BICYCLE CULTURES IN THE UNITED STATES AND THE NETHERLANDS

Written by
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In partial fulfillment of a Bachelor of Arts Degree in Environmental Analysis: Sustainability in the Built Environment Claremont McKenna College, Claremont, California Fall 2014

Readers:
Lance Neckar
Char Miller
ACKNOWLEDGEMENTS

I would like to thank everyone who helped me write this thesis.

First, to my readers, Professor Lance Neckar and Professor Char Miller, for their support, advice, and encouragement in this process.

To Peggy Mandeville, City of San Luis Obispo’s Transportation Planner, and Maria Tipping, City of Claremont’s Bike Coordinator/Associate Engineer, for taking time out of their busy schedules to talk to me about their cities’ bicycle plans.

And finally, to my parents for always believing in me, encouraging me to care about the environment, and teaching me how to ride a bike. Thank you for all of your love and support.
# TABLE OF CONTENTS

Introduction....................................................................................................................... 4

City of San Luis Obispo Background.............................................................................. 7
City of Groeningen Background...................................................................................... 9
City of Claremont Background...................................................................................... 12

Chapter 1: Policy and Implementation Process of a City Bicycle Plan....................... 14

City of Groeningen........................................................................................................ 16
City of San Luis Obispo.............................................................................................. 23
City of Claremont........................................................................................................ 29

Chapter 2: The Bicycle Network and Advocacy......................................................... 36

City of San Luis Obispo.............................................................................................. 51
City of Claremont........................................................................................................ 68
City of Groeningen....................................................................................................... 78

Conclusion...................................................................................................................... 91

Bibliography.................................................................................................................. 98

Figures List.................................................................................................................... 105
INTRODUCTION

I can vividly remember the first day my parents taught me how to ride my bicycle without training wheels. They first had me practice braking and balancing on a grass hill so I wouldn’t hurt myself if I fell. My hands gripped the handlebars as tight as they could as I felt my dad’s hands let go of the seat of my bike and I started to pedal down the small grass hill in front of me. After I had mastered the art of riding a bicycle we began taking weekend bike rides around the town with my little brother in a seat on the back of my dad’s bike. I grew up riding my bike to school, to friends’ houses, and fun weekend bike rides around town. From elementary school to middle school to high school, I rode my bike almost every day to class. I never grew out of the childhood activity of riding a bike that is so common in America; I still ride my bike to classes here in Claremont and when I need to run errands in the village. My parents raised my brother and me to care about the environment, which included riding our bikes as much as possible instead of driving everywhere. Luckily, they raised us in a community that was rapidly becoming bicycle-friendly. In the 18 years I lived in San Luis Obispo there has been significant change in the bicycling culture, from bicycle infrastructure improvement to public advocacy. When I was first learning to ride a bike, the town had few streets with lined bike lanes, but by the time I was in high school the number of bicycle lanes on streets more than doubled.

The culture of biking to work and school as an alternative way of transportation is slowly spreading across the nation. People now not only bike to race, exercise, or for recreation, but also bike for sustainability purposes (riding to work, school, or errands). “Bikes are no longer just for kids: we’re using them for commuting, hauling and delivery
goods, and more.” As our country becomes more consciously aware of the harmful impact our cars have on the environment, more and more people have slowly started to rely on their cars less and more on their bikes. The list of benefits of a successful bicycle culture in a community goes on and on, including environmental sustainability, health, equity, and access. The article “The New Cycling Revolution,” from *Natural Life* magazine provided a long list of the advantages of bicycling:

> Among them are better physical and emotional health for people of all ages, improved personal finances and more equitable living for low income earners, improved municipal finances as less public money is required for transportation systems, increase in local property values, greater mobility, increased sense of community, less congested roads, safer and quieter neighborhoods, better air quality, cleaner surface and ground water, and greater sustainability including slowed pace of global warming.  

However, the cities and towns that have the most people riding their bikes to work and school are the ones with the most accessible and safe bike lanes. If American cities want to promote bicycling as an alternative way of transportation or even a daily life activity, they need to focus their bicycle infrastructure and policies on the accessibility and safety of bicycle facilities.

In this thesis I will investigate and analyze three case studies of cities and how their bicycle infrastructure and policies influence their bike cultures. The first city I chose is my hometown of San Luis Obispo, California, a growing bicycle-friendly town that shaped my fascination with exploring urban space on my bike. The second city is Groeningen, Netherlands, where I studied during the summer of 2014 and fell in love

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2 Ibid.
with its intense bicycle culture, which was nothing like I had ever experienced before here in the US. The third, Claremont, California, the city where I attend Claremont McKenna College and have enjoyed riding my bike to and from classes. All three cities can be considered college towns with their populations comprising of large numbers of young adults. This important similarity has a positive influence on their individual bicycle cultures and the bike infrastructure of their cities. Each is also thought to be a progressive town because of the youth culture; a population made up of mostly young adults creates a community that is progressive, cares about the environment, and feels responsible for creating living spaces that are healthy and sustainable. Therefore, a successful bicycle culture has a strong chance of flourishing in a city with a young population because of their healthy and youthful bodies as well as their environmentally concerned outlooks.

For bicycling to become more popular and to serve as a realistic alternative form of transportation in the United States it needs to be safe, accessible, politically legitimized and publically promoted. I will compare the differences and connect the similarities in the bicycling principles, plans, and facilities of the three cities. After introducing each city with some historical background, I will discuss each city’s policies and processes for creating and implementing their bicycle master plans. Then, I will explain the three city’s physical bicycle infrastructure, accessibility, education, and promotion.
City of San Luis Obispo Background

San Luis Obispo is located in the Central Coast region of California, approximately halfway between Los Angeles and San Francisco. The Spanish missionaries founded the community in 1772 when they built the Mission San Luis Obispo de Tolosa. Then about 100 years later, in 1876 it officially became a Charter City, meaning that it has more local authority over itself than a General Law City that has to follow rules made by the State of California. A Council-Mayor-City Manager form of government runs the city, and the city holds the county seat of San Luis Obispo County.³ San Luis Obispo (SLO) has a population of about 46,000 residents, including students at California Polytechnic State University, and covers almost 13 square miles.⁴ In the last few decades San Luis Obispo has become a popular place for tourism. Before the 1890s when the railroad arrived in San Luis Obispo, the city was fairly inaccessible and grew very slowly. However, with the introduction of the railroad in the late 1800s and early 1900s the city began to quickly make its way on the California map. The railroad in San Luis Obispo assisted in connecting the Central Coast to the two main hubs, San Francisco and Los Angeles. The construction of the train tracks brought rail workers to move to the downtown area of San Luis Obispo to live closer to work. The railway also produced economic benefits to the city by providing transportation of local oil and agriculture to the rest of the state. By the 1920s, this once-sleepy town caught the eye of Hollywood

when movies like *The Sheik* and *The Ten Commandments* were filmed here. The
infamous newspaper publisher William Randolph Hearst’s (of Hearst Castle) would
invite Hollywood and political elite to stay at his luxurious castle. His guests would
spend the night in San Luis Obispo after a long train ride before heading up the rest of the
way to the castle. Tourism grew even more quickly with attractions like the Pismo Beach
clams and Hearst Castle State Park in 1958. Then, in 1972 Cal Poly began to grow with
its incorporation into the State University system and became California Polytechnic
State University San Luis Obispo. In the 1980s, Cal Poly “developed a national
reputation for excellence and began to dominate the city’s economic and cultural life,
which it still does today.” At the same time, floods of tourists began to fill up hotels
while touring San Luis Obispo County’s emerging wine industry. Tourism has always
been a big part of the economy for the county but in the past few decades the numbers of
tourists increase steadily each year. Today, “Of the $12.5 billion gross county product,
tourism contributes about $1.1 billion (8.8 percent),” while the other sectors deliver less
than 5 percent each. The mild climate, close proximity to beaches and numerous hikes in
the wilderness areas draw tourists to this city. Tourism was an important factor that
shaped the first wave of bicycle culture in San Luis Obispo. The first improvements of
bicycle lanes in SLO focused on areas for recreational cycling for the tourists. The City
of San Luis Obispo implemented its first Bicycle Transportation Plan in April of 1985,

5 “A Little More History,” Government, *City of San Luis Obispo*, accessed September 16,
6 “Our Vision of San Luis Obispo’s Economic Future” (San Luis Obispo Chamber of
7 Ibid.
and updated it in 1993, 2002, 2007, and 2013.\(^8\) “By 2026, all San Luis Obispo residents will have access to a well designed and maintained network of interconnected bikeways linking City destinations…Bicycling becomes an important element of the City’s economy.”\(^9\) The original bicycle culture was formed around tourism and recreation, and in the past decade the city has slowly promoted recreational and utilitarian use of the bicycle.

**City of Groeningen Background**

Groeningen is located in the northern part of the Netherlands and holds the capital seat of country’s northeastern province, Groeningen.\(^10\) Similar to most Dutch cities, Groeningen was a former medieval town that once had a city wall, making it a very compact and high-density city. Currently the city population of 195,000 residents covers an area of about 32 square miles.\(^11\) Similar to the cities of Claremont and San Luis Obispo, Groeningen is considered a university city with students amounting to 25 percent of its population. The origins of the city of Groeningen dates back to the Middle Ages; it was “was founded at the top of the Hondsrug, a broad sandy ridge that extends from

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\(^9\) Ibid.

\(^10\) The English spelling of Groeningen is Groningen.

southern Drenthe river to just north of the city.” In the 12th century Groeningen was an important trade center and the residents built a city wall to establish its authority. Around 1100 the Martini Church was built making it the largest building in the city; it still stands today with improvements from 1482. During the same time the city wall and moat were built, as well as, the two market squares: the Vishmarkt (Fish Market) and the Grote Markt (Grand Place). These features of the city helped shape the street plan that exists today and the two city squares are still considered the core hubs of city. In 1594 the city of Groeningen was finally incorporated into the Republic of the Seven United Netherlands. From 1608 to 1624 the city witnessed its largest urban expansion and the fortress walls were dismantled and a new city wall was built, and in 1614 the University of Groeningen was founded. During the 17th and 18th centuries the city and surrounding areas remained a center for trade, especially for agriculture. By 1850, Groeningen had become the third trading city in the Netherlands, specializing in wood and grain, and increasing in sugar, bicycle factory, and clothing industry. As with San Luis Obispo and Claremont, its population increased after the arrival of the railroad, creating a connection with the country’s rail network. With the increase of the population the fortifications needed to be demolished again in 1874; and development began to take place beyond the old fortress. By 1927 the population had reached 100,000. The city suffered little damage from World War II until liberation day in April 1945 when the German soldiers resisted the Allied troops and the Grote Markt was largely destroyed. However, this

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13 Ibid.
destruction brought innovation and new plans for reconstruction of the damaged parts of the city. The new construction included opening up the Grote Markt with two larger entrances instead of small tight streets lined with houses. The 1950s and 1960s were dominated by “innovation and accessibility” for the growing traffic and population. However, these new ideas of accessibility and development led to the destruction of historical buildings and creating wider canals and streets. The 1970s brought more change to the city, but this time it was more beneficial for the entire community, including the environment. In 1977, the new progressive left-wing government implemented the radical Traffic Circulation Plan to the center of the city. The aim of the plan was to make the inner city more safe and accessible for pedestrians, cyclists, and public transportation. The policy banned all car-traffic from the inner city and designed an intricate network of bicycle infrastructure. It was revised in 1980s when a new Traffic Neighborhood Plan was created. The 20th century brought strong anti-sprawl concepts to spatial planning in the Netherlands. With these new plans, bicycle culture began to flourish throughout the city and soon bicycling became more popular than driving. In Groeningen, and throughout the Netherlands, bicycling is not just used for recreation, exercise or alternative transportation; instead it is a way of life. “The bike is an integral part of everyday life rather than a specialist’s accessory or a symbol of a minority

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14 Ibid.
Bicycle infrastructure became more safe as well as innovative, and soon Groeningen became one of the world’s best cycling cities.

City of Claremont Background

Claremont is located on the eastern border of the Los Angeles County and sits just beneath the foothills of the San Gabriel Mountains. Its population now totals 36,000 residents, covering about 13 square miles of land. The Serrano Indians first inhabited the land and then in 1771 the San Gabriel Mission was founded and the area of Claremont became part of the mission’s tract. The community of Claremont was founded in January 1887 with much help from the construction of the Santa Fe Railroad. The predicted population boom in this area was only temporary and many surrounding communities soon became ghost towns. However, the founding and relocating of Pomona College in 1888 saved the city of Claremont from becoming a deserted railroad town. The founders of Pomona College brought their New England heritage with them, which eventually helped shape the local government of Claremont. Even today Claremont’s citizen participation and volunteerism reflect the New England style of community. In 1907, the City of Claremont was officially integrated into the Los Angeles County. Unlike San Luis Obispo, Claremont was incorporated into California as a General Law

17 “State and County QuickFacts: Claremont (city), California,” Government, United States Census Bureau, (July 8, 2014), http://quickfacts.census.gov/qfd/states/06/0613756.html.
19 Ibid.
City that follows the laws made by the state. 20 During this period the Claremont Colleges continued to grow and the citrus industry began to spread throughout the foothills and into Claremont. After WWII the citrus industry declined and farm owners were forced to sell their lands for residential development. The City of Claremont grew even more after construction of the San Bernardino Freeway (I-10) was completed in 1954, bringing people from surrounding areas like Los Angeles to live in Claremont. 21 However, the creation of the elaborate freeway system of Southern California not only brought more people and sprawl to Los Angeles County, but also more cars. It was hard then and still difficult now to create a bicycle culture when cities have to compete against the popular vehicle freeway infrastructure of Los Angeles. Similar to San Luis Obispo, Claremont is considered a college town, but with a smaller population of students compared to San Luis Obispo. The young students, families, and college professors make up a community that has become increasingly aware of the importance of creating a safe and accessible bicycle culture. Former Pomona student, Eliot Chang stated in his 2009 Environmental Analysis thesis: “it is essential that citizens express their concern over a car-dominated streetscape… need for strong demand and political pressure can be achieved through bicycle advocacy and increasing ridership.” 22

21 “History of Claremont.”
22 Eliot Chang, “The Viability of Bicycling as a Primary Form of Transportation in Los Angeles” (Pomona College, 2009).
CHAPTER 1:
POLICY AND IMPLEMENTATION PROCESSES OF A CITY BICYCLE PLAN

Bicycle policies not only affect the construction of bicycle networks, but also contribute to the benefits of a strong bicycle culture, like sustainability, health, equity, and access. Environmental sustainability is promoted through governmental policies that call for strategies to improve the environmental quality of the community. For example, the California Global Warming Solutions Act of 2006 (AB 32) requires the reduction of greenhouse gas emissions to 1990 levels by 2020—“a reduction of approximately 15 percent below emissions expected.”23 Cleaner transportation is one of the categories that this California law aims to improve.24 Riding a bike creates a healthier environment because zero greenhouse gas emissions are released. Therefore, encouraging bicycle culture in California falls under the goal of cleaner transportation in AB 32. Policies related to bicycling can also improve the physical and emotional health of a community by promoting a healthier lifestyle of using a bike as an alternative mode of transportation.

According to Abigail Wise, from the Huffington Post:

[Bicycling] is an excellent way to get your heart rate up that can actually help slow the decline of cardiovascular health in older people, according to a 2013 study. In addition to helping your heart, biking uses a range of muscles, including your quadriceps, hamstrings, calves and even your core.25

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24 Ibid.
Bicycle policies can provide promotional programs for the community to demonstrate the health benefits of bicycling. As mentioned before in the quote from the “The New Cycling Revolution” article, financial equity is another benefit of a successful bicycle culture. Implementing policies and plans that promote bicycling in communities can provide equality to every economic class. The Integration of Bicycling and Walking Facilities into the Infrastructure of Urban Communities report states: “the average family spends 18 percent of its annual income on transportation;” therefore, some families may have a hard time buying a car.26 Bicycles are cheaper than cars and can offer an affordable alternative transportation for lower income families. Policies that deliver safe and convenient bicycle facilities allow access for all income levels. City bicycle plans can save money for the city because bike infrastructure is cheaper than paving new roads or constructing new railways. Accessibility is one of the most important features of a successful bicycle environment. Bike policies and plans must include strategies to integrate the bicycle network into every aspect of the community by providing accessibility and connectivity. A bicycle network is useless to the community if it does not provide access to schools, shopping, public parks and facilities, etc. The construction of a well-developed, safe, and connected bicycle network is impossible without successful city bicycle plans and policies. In the Netherlands, “the relationship between

26 Cornelius Nuworsoo et al., Integration of Bicycling and Walking Facilities into the Infrastructure of Urban Communities, Mineta Transportation Institute Report (San Jose State University, February 2012), http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1093&context=crp_fac.
bicycle use and improving traffic safety is inherently related to policy.”²⁷ I will examine this quote in the following sections with analysis of the three cities’ bicycle policies and plans.

City of Groeningen

There is an old saying about the Netherlands that states, “God created the world, except the Netherlands – the Dutch built it themselves.” Spatial planning has always played an important role in the development of land in the Netherlands. Almost 40% of the land is below sea level, and about 90% of the Dutch population lives on 10% of the land surface.²⁸ This country’s entire existence has been consumed with keeping the water out of their towns. “The leading characteristic of the Netherlands is the scarcity of usable land that has raised high and early awareness on spatial development issues and its connections with natural and environmental protection.”²⁹ The country’s battles against water and limited amount of land have been a driving force for the careful planning of compact cities, including Groeningen. The first national Spatial Planning Document of 1960 focused on improving the overcrowded West and undeveloped rest of the country. This document encouraged the migration out of Randstad (includes Western cities like

Amsterdam, Rotterdam, and The Hague). The Dutch government published the Second National Spatial Planning Document in September 1966. This document included demographic forecasts that the population would grow from 12.4 million to at least 20 million by 2000. This second version focused on three main goals: better distribution of population and economic activities throughout the country, more encouragement of migration out of the Randstad, and protection of the central open space of the country called the “Green Heart.” However, this document was not very successful because it provided no implementation plans. Therefore, in 1973, the Third Spatial Planning Document focused more on implementation and specific plans. It was the first plan that included discussion about taking care of the environment. Its mission stated:

To encourage the creation of such spatial and ecological conditions that the efforts of individuals and groups within society can realize their full potential, thus guaranteeing the diversity, cohesion and sustainability of the physical environment as effectively as possible.

The country incorporated goals like: strengthen residential function of inner cities, promotion of public transportation, produce less air, water, soil, and noise pollution, maintain central open spaces between urban areas, and clustering of new urban areas within urban regions. As shown in the mission statement of third document, these spatial planning documents also focused on the importance of community interaction and participation. To many Dutch, bicycles seemed to be the solutions to improve the health of the environment and strengthen communities. These new national plans were the

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30 van Steen, “Spatial Planning in the Netherlands, Past and Present.”
31 Tsubohara, “Democracy through Political Parties and Public Participation: The Case of the Planning History of Groeningen.”
32 van Steen, “Spatial Planning in the Netherlands, Past and Present.”
33 Ibid.
beginnings of the renowned Dutch bicycle culture. The Second and Third Spatial Planning Documents led to the rethinking of the structures and functions of inner cities, including how pedestrians and bicyclists interact with cars.

Before WWII there were large amounts of bicyclists but the roads were unsafe. There were few bike paths and the ones that did exist were of poor surface, narrow, and unconnected. At this time, “cyclists out numbered auto traffic by far,” but after WWII things began to change. As the country began to rebuild in the war’s aftermath, it began to restore the parts of their country that had been destroyed. This reconstruction caused an industrial boom to occur as well as the extraction of natural gas and quickly brought wealth to the country. “From 1948 to 1960 the average income got up by 44%, and by 1970 it was a staggering 222% more.” The population was now able to purchase expensive goods, like the recently popular car. The car sales skyrocketed which led to the rise in amount of cars on the road and the increase in deaths due to car accidents. “In 1971 more than 3,000 people were killed by motor vehicles, 450 of them children.” The high number of children deaths by cars caught the attention of many Dutch citizens. In early 1970s the Stop de Kindermoord (Stop the Child Murder) social movement began to gain popularity. Stop de Kindermoord campaign started after the child of respected Dutch journalist, Vic Langenhoff was killed in a car accident while riding a bike. He wrote multiple articles calling for the stop of children's’ deaths from motorists. This launched the successful campaign for pedestrian and bicycle safety. Citizens from all economic

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34 How the Dutch Got Their Cycle Paths, Education (YouTube, 2011), http://www.youtube.com/watch?v=XuBdf9jYj7o#t=76.
35 Ibid.
36 Holligan, “Why Is Cycling so Popular in the Netherlands?”
backgrounds became involved in this progressive movement, including influential affluent families. Maartje van Putten, joined the Stop de Kindermoord after reading Langenhoff’s articles. This 23 year old mother from a wealthy Amsterdam family soon became the President of this organization, stating: “When I saw Langenhoff’s article I thought: my God, what kind of society are we creating?” With the combination of the Kindermoord protests and the oil crisis of 1973, the Dutch government was persuaded to fund better bicycling infrastructure and safer bicycle policies.

The Dutch government is considered a parliamentary representative democracy, a decentralized unitary entity, and a constitutional monarchy. The constitutional monarchy part of the government simply states that the Netherlands is a kingdom with a constitution and the monarch (King or Queen) has no political power. The decentralized democratic unitary part includes the central, provincial and municipal governments that “cooperate to organize society.” Over time, the municipalities (cities) gained more power in creating and implementing policy because they have a more direct connection to their populations. Dutch politics are known to pursue unanimity over important issues within the political community and society as a whole. The municipal authorities include the municipal council and the municipal executive. The municipal council “has

38 Ibid.
40 Ibid.
representative, controlling and policy-making functions,” and oversees the municipal executive.41 Municipal councils meet at least once a month (depending on size of municipality) and these meetings are open to the public. Councilors do not have a salary but do receive a general stipend; therefore, their council work is usually in conjunction with their normal jobs.42 Municipal executives are made up of a mayor (appointed by the Crown) and aldermen (appointed by the council). The municipal executive tends to day-to-day administration, including executing national legislation, responsible for financial affairs, and implements decision made by the council. Groeningen’s municipal council is made up of 39 members and its municipal executive consists of the Mayor and six aldermen.43

The two Spatial Planning Documents of the 1960s and 1970s and the powerful social movements against cars brought changes to many old Dutch cities like Groeningen. The discussion of traffic in Groeningen also started to solve the growing problems of air and noise pollution, pedestrian and bicycle safety, and car circulation. In Groeningen during the early 1970s the newly elected left-wing government made a shift to emphasize environmental quality and quality of life in the inner city. The first step was a proposal from the left-wing government called the Document Objectives Inner City

42 Ibid.
Groeningen (also called the Objectives Document). The municipal executive proposed this plan to the municipal council, highlighting the new plans for the city center. The goals included:

In this centre, and perhaps also elsewhere in the inner city, the pedestrian must in principle have priority over car traffic. In these areas, measures must be taken with which no through traffic is possible.

The traffic in the inner city must be settled within the street spaces currently available for it. In order to use the space available for traffic as efficiently as possible, priorities must be granted to public transport and cyclists.

Residents were highly critical about this plan and in May 1975 the executive municipal published a new plan called the Traffic Circulation Plan (Verkeerscirculatieplan, VCP). However, this new plan was linked to the Objectives Document and contained similar goals calling for the inner city to be car-limited and offer a more safe space for pedestrians, public transport, and cyclists. The VCP continued to get critiques from the residents and businesses suggesting that they would lose business if car use were limited inside the city center. However, the community finally agreed to this idea and the municipal council approved the VCP in September of 1975. It was implemented in September of 1977 with the division of the inner city into four equally sized sectors. It

44 Tsubohara, “Democracy through Political Parties and Public Participation: The Case of the Planning History of Groeningen.”
46 Ibid.
47 Clemens Hellemeir and Mahdokht Soltaniehha, “Implementation and Results of the Traffic Circulation Plan in the City of Groeningen” (Term Paper, Stockholm Univeristy, 2010), http://www.academia.edu/510183/Implementation_and_Results_of_the_Traffic_Circulation_Plan_in_the_City_of_Groeningen_The_Netherlands_.
was no longer possible for a car to travel from one quarter to another; drivers had to go
by way of the ring road around the city. But cyclists, pedestrians, and buses can go right
through the city center. This measure is still intact with only a few exceptions made for
vehicles delivering goods to stores inside the inner city. The Traffic Circulation Plan
(VCP) is one of the oldest and most significant documents about traffic implemented by
the municipal council in Groeningen. Many of the plan’s initial elements are still found
functioning successfully throughout the city. In 1986, Netherlands published the
Structural Plan, which embraced the concept of the compact city, like the old fortress city
of Groeningen. In response, in 1987 Groeningen updated its master plan that called for
the development of work places in the vicinity of public transport services. And in 1992
the “Hand on Heart” plan was developed and approved in 1993 to encourage the concept
of a compact city and continue to limit car use in the inner city with its park-and-ride
facilities. Then in 1996 Groeningen municipal council approved the new master plan
called Groeningen in 2005 – City for a New Century that contained measures on public
transport, new bicycle parking facilities, and improvement to the ring roads. This plan
also focused on connecting bikeways from the inner city to the surrounding growing
neighborhoods. The Accessible and Livable City policy and plan was an addition to the
1996 master plan and it is the latest plan for transport policy and planning in
Groeningen.48 From 1977 to present day Groeningen continues to improve and expand its
bicycle facilities throughout the city center as well as the surrounding new neighborhoods
and housing developments. The development and expansion of the bicycle facilities in

48 Ibid.
Groeningen through policies and planning brought the bicycle culture that this city is now famously known for. Groeningen’s bicycle culture thrives on the accessibility and connectivity of its bikeways, from the city center to every surrounding neighborhood. It allows for a safe, healthy, and connected community that interacts with one another while riding their bikes instead of sitting in cars.

**City of San Luis Obispo**

The City of San Luis Obispo’s decision to implement a plan for bicycle facilities in 1985 was very progressive. American bicycle planning grew between the 1970s and 80s when the federal government and state governments began to create street planning guidelines that included bicycle facilities recommendations. One of the most significant documents of the history of American bicycle planning was the *Guide to the Development of New Bicycle Facilities*, created in 1981 by the American Association of State Highway and Transportation Officials (ASSHTO), and updated in 1991. For a while local governments relied on this document because there were no federal or state guidelines and design standards for bicycle planning. However, California led the way for bicycle planning even before the ASSHTO guidelines. In 1972, UCLA created the *Bikeway Planning Criteria and Guidelines* for California Department of Transportation (Caltrans). The introduction of this document states:

> It is clear that community representation is important in considering bikeways and their locations, as it is in the location of highways. This report can help engineers and

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community representative to reach more reasoned conclusion regarding provision of bikeways than heretofore has been possible.\(^{50}\)

The three classes of bikeways that are used today in local bicycle plans are even defined in this guide. It is interesting that in 1972 the current goals of successful bikeways and facilities had already been established. But compared to the Netherlands, bicycle culture has grown much slower in the United States.

San Luis Obispo created its first bicycle transportation plan in April of 1985, called the Bicycle Facilities Plan. Three years earlier, the city had added the Circulation Element to the General City Plan with the goal to “Reduce people’s use of their cars by supporting and promoting alternatives such as walking, riding buses and bicycles, and using car pools.”\(^{51}\) This prompted the creation of a committee to determine how to implement this important goal, the result of which was the addition of the 1985 Bicycle Facilities Plan to the Circulation Element of the General Plan. It acknowledged the existing small network of on-street bike facilities, referring to the disconnected bike lanes on low traffic streets. The old network of bikeways was made up of arterial streets, which “provide a high capacity of mobility and generally serve longer vehicle trips to, from, and within urban areas,” and collector roads, which “connect traffic from small local roads to arterial streets”.\(^{52}\) In 1991, while the San Luis Obispo City Council was improving the Circulation Element they decided they wanted to update the Bicycle Facilities Plan as

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\(^{52}\) “City of San Luis Obispo Bicycle Transportation Plan 2013.”
well. The Council created the Bicycle Advisory Committee (BAC) and hired a Bicycle Coordinator.\textsuperscript{53} The BAC is a “seven member committee appointed by the City Council to provide oversight and policy direction on matters related to bicycle transportation.”\textsuperscript{54} This committee has played a large part in helping with the update of the BTP in 1993, 2002, 2007, and 2013. In June of 1993, the BAC notified the public and the City Council of their updated version of the plan, renaming it the Bicycle Transportation Plan. And on October 27, 1993, the City Council reviewed the Committee’s updates and adopted the new plan.\textsuperscript{55} The 2002 version of the BTP included mostly information that the California Streets and Highways Code required. The next update occurred in 2007 and focused on new bicycle facilities standards and expanding policies. In this same year, the League of American Bicyclists named San Luis Obispo as a Bicycle Friendly Community. In 2013, San Luis Obispo published its most recent generation plan of the Bicycle Transportation Plan.\textsuperscript{56} San Luis Obispo’s Bicycle Transportation Plan (BTP) and all five of its updates were developed and written by city staff, members of the Bicycle Advisory Committee, and citizen volunteers. This allowed for the entire community to become involved in the creation of the city’s bike plan and residents were able to voice their concerns, ideas, and opinions about the plan.

To develop and even update a bicycle plan is not an easy task; a city must take into consideration many documents, plans, and competing interests to make sure they comply with all the rules that are required by the state and federal government. San Luis

\textsuperscript{53} “Bicycle Transportation Plan 2002.”
\textsuperscript{54} “City of San Luis Obispo Bicycle Transportation Plan 2013.”
\textsuperscript{55} “Bicycle Transportation Plan 2002.”
\textsuperscript{56} “City of San Luis Obispo Bicycle Transportation Plan 2013.”
Obispo’s 2013 version of the BTP stated: “This Plan has been submitted to the California Department of Transportation’s Bicycle Unit and has been certified as being in compliance with applicable codes.”

The newest 2013 update of the BTP, San Luis Obispo had to follow regulations found in Section 891.2 of the California Streets and Highway Code, the Highway Design Manual Chapter 1000: Bicycle Transportation Design, AB 1358: The Complete Streets Act of 2008, AB32: Global Warming Solutions Act, and SB 375: Sustainable Communities Strategy in order to for their plan to become certified by the state government.

Chapter 8 of the California Streets and Highways Code was the main document that the city had to consider and follow. Section 891.2 of the California Streets and Highways Code requires the city to include specific information and required sections in their plan in order to become approved, “A city or county may prepare a bicycle transportation plan, which shall include, but not limited to, the following elements.”

Some of these required components included “a map and description of existing and proposed bikeways,” information on public bike education and safety programs, “estimated number of existing bicycle commuters,” letters of support and other evidence of community involvement, etc. These requirements covered the important bike policy feature of access and connectivity, it called for cities to prove that their goal was to provide a bicycle network that was safe and connected.

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57 Ibid.
58 Ibid.
59 “California Streets and Highways Code: Section 891.2” (California State Government, 2002), http://www.dot.ca.gov/hq/LocalPrograms/bta/PDFs/Sec891_2.pdf.
60 Ibid.
The second important document that SLO incorporated into their BTP was the Highway Design Manual (HDM) that was constructed for the California Department of Transportation (Caltrans) by their Division of Design. Caltrans does not enforce this manual as a standard of conduct; instead it acts as a guideline for policies and procedures for the California State highway system.\(^61\) In order to be certified by the Caltrans Bicycle Facility Unit the developers of SLO’s BTP used bikeway design criteria from Chapter 1000: Bicycle Transportation Design of the HDM. The beginning of the “Bicycle Transportation Design” chapter of the HDM provides a list of references from different sections of Chapter 8: Nonmotorized Transportation of the California Streets and Highways Code that relate to topics covered in this chapter. This chapter of the HDM also includes design guidelines for the different types of bikeway facilities, including Class I bikeways (bike paths), Class II bikeways (bike lanes), and Class III bikeways (bike routes).\(^62\) SLO’s plan also had to comply with Caltrans’ Complete Streets Act; a policy that helps creates more accessible and safer choices of getting around California. Caltrans defines a complete street (also known as livable streets) as:

A transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, motorists, appropriate to the function and context of the facility. Complete street concepts apply to rural, suburban, and urban areas.\(^63\)

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\(^62\) Ibid.

Many complete street plans include improving bicycle facilities, providing options and access for non-drivers. SLO’s 2013 BTP has only been in effect for a year now and the City and residents have already noticed amazing improvements to bicycle infrastructure throughout the city, contributing to the growing bicycle-friendliness of the town.64 San Luis Obispo continues to improve their bike policies and plans on December 2nd, 2014 the City Council adopted the National Association of City Transportation Officials (NACTO) Membership and Urban Bikeway Design Guide Endorsement.65 NACTO is a non-profit association that is a coalition of city transportation departments.66 The NACTO Urban Bikeway Design Guide “provides cities with state-of the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists.”67 By adopting this endorsement, the city of San Luis Obispo is required to “take appropriate action to implement this action” by following the Urban Bikeway Design Guide when constructing new bikeways around the city.68 San Luis Obispo’s bicycle planning focuses on improving the connectivity of the bicycle network and publicizing the health and environmental benefits of bicycling through promotional and educational programs.

64 Peggy Peggy Mandeville, Thesis Research Interview, Personal Interview, August 1, 2014.
68 “Council Agenda: Special Meeting.”
City of Claremont

Unlike San Luis Obispo, bicycle planning is fairly recent in Claremont. The first separate bicycle plan, detached from the city’s General Plan, was adopted in November of 2007. For the city to have enough money to improve its bicycle facilities, it had to apply for funding from the Caltrans Bicycle Transportation Account (BTA). “To become eligible for such funding, a jurisdiction must adopt a stand-alone bicycle plan that meets certain BTA requirements.”69 In 2007, city officials put together the Claremont Bicycle Plan that included required elements from the BTA and bicycle related components of the new adopted General Plan of 2006. This plan includes the existing bicycle facilities as well as the proposed bicycle infrastructure—which included the construction of more bike lanes to improve the connectivity of Claremont’s bicycle network. The 2007 plan was supposed to be updated in 2012; however, with not enough funds and the anticipated new guidelines from Caltrans, the city could not revise the outdated 2007 version.70 Today, most of the 2007 proposed bicycle facilities have already been built, for example, the Claremont Bikestation at the Historic Depot Station and the Citrus Bikeway extension on 1st street. Other bike facilities are still in the process of being implemented, or are awaiting the new updates in the expected 2015 Claremont Bicycle Plan.

Before the 2007 Claremont Bicycle Plan, bicycle infrastructure could still be found throughout the city streets and scattered about the city’s General Plan. In 1956, Claremont became one of the first General Law Cities to create an official master plan.

70 Maria Tipping, interview by Sydney Stephenson, Claremont, CA, September 2, 2014.
Before 1956, the State of California Government authorized master plans for General Law Cities, which were to follow the laws of the state more strictly than a Charter City like SLO. This simple General Plan was amended in 1969, dealing with the expanded area of land. The 1969 version added a Circulation Element to the Claremont General Plan. However, this new section of the plan made no reference to bicyclists and pedestrian for circulation plans; it only focused on transit routes and street classification.\(^71\) In the 1980s, things began to change as Americans finally were taking action in making their cities have fewer environmental impacts. One area of environmental impact that was highly focused on in California was improving air quality. In 1981, Claremont updated its General Plan including making improvements to its Transportation and Circulation Element. The California Government Code Section 65302(b) called for “all cities and counties [to] include a Circulation or Transportation Element as part of the required General Plan”.\(^72\) Claremont made numerous changes to its 1969 outdated Circulation Element. For example, it added seven major sections including a portion on Non-Motorized Transportation, even though there was just a small paragraph devoted to bicyclists. It also listed measures that would be taken by the city for each section of Non-Motorized Transportation, for bicyclists it included:

\[
\begin{align*}
H. & \text{ Require that new public development be designed with easy access for pedestrians and bicyclists and include bicycle parking or storage facilities…} \\
L. & \text{ Preserve rights of ways as they become available for the development of bikeways.}
\end{align*}
\]

M. Provide adequate signs for bicycle routes.\(^{73}\)

The implementation measures that were listed for bicycle infrastructure seemed substantial; however, the city’s ability to follow through depended on funds that were limited to bicycle infrastructure at that time. In 1993, the city updated its General Plan again, but made no revisions to the bicycle section of Non-Motorized Transportation chapter because of the limited amount of funds. In 2004, the City of Claremont started on its extensive upgrade of the General Plan.\(^{74}\) This version expanded all areas of city planning and adding a new principle to the overall plan: sustainability. The plan defined sustainability in Claremont as:

> The ability for the City and residents of Claremont to meet the needs of the present economy, society, and environment while preserving the ability of the future generations to meet their needs.\(^{75}\)

The new Claremont General Plan was adopted on November 14, 2006 by the City Council. This new comprehensive plan now included a larger section dedicated to bicycle planning in its Community Mobility Element. It recognized that bicycling was becoming more popular for recreational purposes as well as for transportation. One new key feature that was added was the Bike Priority zone that “emphasizes safe bicycle routes and parking facilities.”\(^{76}\) The 2006 General Plan also incorporated a brief summary of the different bikeway classes as well as the new Citrus Regional Bikeway (part of the regional bike trail system that allows bicyclists to commute from San Dimas, to the west

\(^{73}\) Ibid.


\(^{75}\) Ibid.

\(^{76}\) Ibid.
Once again, the city seemed to have taken too big of a bite with the new proposed bicycle features and the small funds allotted to non-motorized transportation infrastructure. Consequently, the improvement of bicycle facilities became low on the city’s priority list and seven years later still not all the proposed facilities have been implemented.

Therefore, soon after the adoption of the 2006 General Plan, the city decided to apply for the Caltrans Bicycle Transportation Account. The BTA “is an annual program providing state funds for city and county projects that improve safety and convenience for bicycle commuters.” In order to receive these funds from Caltrans, the city needed to adopt a Bicycle Transportation Plan that follows the rules of the Streets and Highway Code Section 891.2. For that reason, the City of Claremont approved the City Bicycle Plan in November of 2007. In an email conversation with Claremont’s Associate Engineer, Maria Tipping explained, “This plan was developed to be consistent with the Bicycle Transportation Account Program guidelines to create a funding mechanism to fund the top priority bicycle related projects as described in the bike plan.” This bicycle plan was successful and the city received the BTA funds to begin to implement the measures and plans proposed in the 2007 Bicycle Plan. Similar to San Luis Obispo, Claremont had to follow all the same regulations and guidelines of the Streets and Highway Code Section 891.2. However, the 2007 Claremont Bicycle Plan was set up to

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77 Ibid.
only include the specific information called for by Code 891.2 (see Figure 1). San Luis Obispo’s plan was set up more like a city’s General Master Plan with goals, objectives, background information, polices, implementation, etc. Claremont’s plan was not formatted in this way each section was broken up into the specific sections from the Streets and Highway Code’s BTP Checklist. Maria Tipping also mentioned in the email that in 2010 Claremont applied again to the BTA to fund more of their bicycle infrastructure proposals without officially updating their 2007 Bicycle Plan, and again received funding from Caltrans. However, the BTA required that Bicycle Plans be updated every 5 years, meaning Claremont’s Bicycle Plan expired in 2012. Claremont had few funds, little time, and not enough urgency in the Planning Department to update the 2007 plan. Soon after the expiration of the plan the BTA became nonexistent, with the creation of the Active Transportation Program (ATP). The ATP was “created by the Senate Bill 99 and Assembly Bill 101 to encourage increased use of active modes of transportation, such as biking and walking.” It required the merging of state transportation programs like the federal Transportation Alternatives Program, state Bicycle Transportation Account (BTA), and federal and state Safe Routes to School Programs into a single program; and the guidelines for the ATP were adopted on March 20th, 2014. Therefore, Claremont decided to wait to update their 2007 expired plan until Caltrans had finalized the guidelines for the new ATP. Since August of 2014, Claremont’s Traffic and Transportation Commission, Planning Department, and the

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80 Ibid.
city’s Bike Coordinator/Associate Engineer Maria Tipping, have been working on finally updating the overdue new Claremont Bicycle Plan.\textsuperscript{82} As with the 2007 plan, the city staff in 2014 also received input from the Claremont Bicycle and Pedestrian Advisory Committee and Claremont Senior Bike Group. The Claremont Bicycle and Pedestrian Advisory Committee (CBPAC) was created in 2002 by a passionate and involved group of bicycle advocates. The committee helped with preparing the new General Plan’s Mobility Element and “the group’s comments and suggestions were incorporated as part of the City’s bicycle oriented policies and implementation measures”.\textsuperscript{83}

\textsuperscript{82} Maria Tipping.
\textsuperscript{83} “Claremont Bicycle Plan.”
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Pages</th>
<th>Comments</th>
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<tr>
<td>(a) The estimated number of existing bicycle commuters in the plan area and the estimated</td>
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<td>increase in the number of bicycle commuters resulting from implementation of the plan.</td>
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<td>(b) A map and description of existing and proposed land use and settlement patterns which</td>
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<td>shall include, but not be limited to, locations of residential neighborhoods, schools,</td>
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<td>shopping centers, public buildings, and major employment centers.</td>
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<td>(c) A map and description of existing and proposed bikeways.</td>
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<td>(d) A map and description of existing and proposed end-of-trip bicycle parking facilities.</td>
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<td>These shall include, but not be limited to, parking at schools, shopping centers, public</td>
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<td>buildings, and major employment centers.</td>
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<td>(e) A map and description of existing and proposed bicycle transport and parking facilities</td>
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<td>for connections with and use of other transportation modes. These shall include, but not be</td>
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<td>limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and</td>
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<td>landings, park and ride lots, and provisions for transporting bicyclists and bicycles on</td>
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<td>transit or rail vehicles or ferry vessels.</td>
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<td>(f) A map and description of existing and proposed facilities for changing and storing</td>
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<td>clothes and equipment. These shall include, but not be limited to, locker, restroom, and</td>
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<td>shower facilities near bicycle parking facilities.</td>
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<td>(g) A description of bicycle safety and education programs conducted in the area included in</td>
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<td>within the plan, efforts by the law enforcement agency having primary traffic law enforcement</td>
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<td>responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle</td>
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<td>operation, and the resulting effect on accidents involving bicyclists.</td>
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<td>(h) A description of the extent of citizen and community involvement in development of the</td>
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<td>plan, including, but not limited to, letters of support.</td>
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<td>(i) A description of how the bicycle transportation plan has been coordinated and is</td>
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<td>consistent with other local or regional transportation, air quality, or energy conservation</td>
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<td>plans, including, but not limited to, programs that provide incentives for bicycle</td>
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<td>commuting.</td>
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<td>(j) A description of the projects proposed in the plan and a listing of their priorities for</td>
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<td>implementation.</td>
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<td>(k) A description of past expenditures for bicycle facilities and future financial needs for</td>
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<td>projects that improve safety and convenience for bicycle commuters in the plan area.</td>
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CHAPTER 2: 
THE BICYCLE NETWORK AND ADVOCACY

The success of a city’s bicycle culture depends on well-designed bike facilities, accessibility, parking and safety, and education and promotion. In order to increase the number of bicyclists in a community, a city needs to provide bicyclists with a connected, accessible, and safe network of bikeways. A city’s history, culture, topography, and climate can have a huge effect on the success of bicycling. For example, many American cities are challenged by the road infrastructure built only for car use. Other cities throughout the world are faced with the problem of encouraging bicycling in an area with steep hills, and some cities struggle with their year round cold and wet weather. However, a community can overcome these obstacles by implementing strong policies and building safe bike facilities. After the process of adopting a bicycle plan the next step is to physically build or improve bikeways and parking, and use advocacy tools to promote and educate the community on bicycling. Bicycle culture can flourish in cities when the majority of bicyclists feel safe and knowledge about riding their bikes on the facilities provided.

Accessibility

Accessibility plays an essential role in an extensive bicycle network and contributes to the success of a bicycle culture. “Providing an interconnected network or bikeways will improve safety for all users and access for bicycles. The development of

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well-conceived bikeways can have a positive effect on bicyclist and motorist behavior."\textsuperscript{85} Accessibility is one of the primary elements city planners focus on when designing any new attribute to the area, whether it is a new road, intersection, or especially a bikeway. Along with safe and well-built infrastructure, accessibility is a key factor for a functional bikeway system. The Dutch have incorporated all types of bikeways into a network that connects important inner city destinations, neighborhoods, and even cities together. Therefore, accessibility goes hand in hand with the connectivity of a bicycle system; if bikeways are connected then the city is more accessible to the bicyclist. A more accessible city and bicycle network creates a safer environment for both expert and beginning level bicyclists.

A well-connected network of bikeways provides access to important destinations throughout the city. Bicycle networks should offer safe and convenient routes to practical and every day destinations like: the city’s center or downtown area, schools, parks and open spaces, neighborhoods, grocery stores and shopping centers, business and office buildings, public transportation, and parking. In both the U.S. and the Netherlands, separate and off-the-road bikeways are commonly found providing access to schools, parks, and connecting neighborhoods. Whereas, bike lanes and shared bike routes are frequently used to reach city centers, grocery stores, office buildings, and public transportation, where there is only street space for bikeways. Accessibility to common destinations offers more opportunities for a wide range of people to ride their bikes including students, office employees, and families. Route directness and trip distance are

\textsuperscript{85} “Highway Design Manual.”
other factors of accessibility that contribute to the success of a bicycle system. Bikeways are useless when they are sporadically placed throughout a city. This can be found in many American cities where bike lanes and bike routes start on one street, disappear on the next, and then start back up a few blocks later. In situations like these, bicyclists have to ride on busy, dangerous streets without bikeways or have to take a roundabout route in order to arrive at their destination. This can be both unsafe and more time consuming for bicyclists; therefore, accessibility needs to become an important factor in city bicycle plans. In the Netherlands, this is seen less often because their city planners focus on bicycle accessibility in their compact cities, allowing for bicyclists to ride on nearly every street. Cities in the Netherlands, like Groeningen, offer direct access to the city center for bicyclists. Cars are not allowed to travel through the city center and instead have to travel around. This feature of Groeningen’s street plan allows for shorter trip distance and more direct routes for bicyclists. Dutch cities are more compact than American cities thus trip distances can be shorter and more convenient for walking and cycling.

**Bikeways**

Bikeways are one element that is important in improving bicycle safety and accessibility. If a bikeway is narrow and has an uneven surface, people would prefer to drive rather than bike. And many bicyclists would feel unsafe and nervous about riding on this bikeway. A poorly designed bikeway would hinder a city’s bicycle community and discourage people from riding their bikes. Not all kinds of bike facilities work in every city; city planners must consider which types of facilities would work with their specific street system. Many U.S. bikeway designs are influenced by European designs,
but are adapted to work with U.S. car-dominated city streets. In the U.S. “it’s car, car, car; and in the Netherlands it’s car but also so much bicycle, walking, and public transportation.”

The difference between the two countries is that the bicycle infrastructure in the Netherlands has been around longer and has had more time to develop and grow. And Dutch city planners have had a longer time to experiment with different policies and designs for bikeways. The extensive developments of bicycle networks in Netherlands along with its progressive policies have created a Dutch lifestyle driven by bicycling. The difference between American and Dutch bicycle networks is that the Dutch bicycle networks have their own set of rules and systems, whereas, American bike networks are implemented as part of the motor vehicle system. In 2009, the Dutch Ministry of Transport, Public Works and Water Management listed the five main requirements for bicycle-friendly infrastructure in their “Cycling in the Netherlands”:

It is not only an improvement to traffic safety which is targeted in the strongly traffic-oriented and infrastructural approach to bicycle policy. Empathetically, safety is “only” one of the five main requirements in the development guidelines. The other four are:
• Direct: short and rapid routes from origin to destination.
• Comfortable: good surface, generous space and little hindrance from other traffic participants.
• Attractive: an attractive and socially safe environment, without smell or noise inconvenience.
• Cohesion: logical and cohesive routes.

These main requirements apply to the entire network of bicycle routes, but also to the facilities at road stretches and intersections.

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86 Professor Furth (Northeastern University Boston) Interview (YouTube, 2013), https://www.youtube.com/watch?v=F8eq_1yU8M4.
These are just a few guidelines that cities throughout the Netherlands have followed and have successfully created a strong bicycle culture. In the Netherlands there are cycle tracks, bike lanes, cycle streets (bike boulevards), and stand-alone paths. Cycle tracks are one of the most popular bike facilities used in the Netherlands. Cycle tracks are bike paths that are physically separated from traffic but still located within in the street’s right-of-way. They are separated either by parked cars, curb, median, or posts. Cycle tracks in the Netherlands are usually distinguished by red pavement along with painted bicycle symbols and signage.88 One-way cycle tracks are usually placed on the two sides of a road, while two-way cycle tracks are place on only one side of the street. The Dutch CROW “Design manual for bicycle traffic” recommends the widths of one-way cycle tracks range from 2.0 meters (6.5 ft.) and 4.0 meters (13.1 ft.), depending on the number of bikes per hour during rush hour.89 In 1998, the Dutch Ministry of Transport, Public Works and Water Management adopted the Bicycle Master Plan. Then in 2007, CROW, a non-profit organization that works with the government and professionals to produce research and regulations for traffic, transport, and infrastructure, published the Dutch “Design manual for bicycle traffic.”90 Two-way cycle tracks are more favorable to cyclists because they can reduce accidents involving cyclists crossing car traffic too often. Two-way cycle tracks usually have red colored pavement, plus a dashed white line

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89 Ibid.
separating the two directions of the path. This kind of cycle track also takes up less space than constructing one-way cycle tracks on both sides of the street. During the first few decades of cycle tracks, one-way tracks were more mainstream because they are easier to implement on older roads. However, more recently, two-way cycle tracks have become more popular in Netherlands in redevelopments and new road construction. Two-ways also benefit cyclists by allowing for passing and riding next to each other for a more relaxing bicycle ride. In the Netherlands, bike lanes are less popular than cycle tracks, cycle streets, and stand-alone paths.91

Bicycle lanes clearly divide the space for bicyclists from the space of motor vehicles on a mixed roadway. The CROW manual states that in the Netherlands “on cycle tracks next to road sections, 50% fewer injurious accidents occurred per bicycle kilometer ridden than on bike lanes.”92 They are distinguished similarly to American bike lanes with a white stripe separating the modes of traffic, but Dutch bicycle lanes usually are also marked like their cycle lanes with red asphalt, stone, or brick for visibility. As shown in the table below, Dutch bike lanes are required to be much wider than American bike lanes. The Dutch want bicycling to be safe, and also allow bicyclists to be social and be able to ride next to one and other (see figure below).

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bike Lane</th>
<th>With on street parking</th>
<th>High Bicycle Volume</th>
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<tbody>
<tr>
<td>AASHTO &amp; NACTO</td>
<td>Minimum 4 ft (1.2 m)</td>
<td>Recommended 5 ft (1.5 m)</td>
<td>Recommended 6 ft (1.8 m)</td>
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<tr>
<td>CROW</td>
<td>Minimum 1.5 m (5 ft)</td>
<td>Maximum 2.5 m (6.2 ft)</td>
<td>Minimum 2 m (6.6 ft)</td>
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Figure 2. U.S. bike lane width requirements (AASHTO and NACTO) versus Dutch requirements (CROW).

91 “Bicycling Facilities in Holland.”
92 Ibid.
Fietsstraaten (cycle streets) are roads where bicycles are regarded as the primary form of transport and motorized vehicles are seen as guests. Cycle streets are usually found in residential areas where there are low traffic levels and are used to improve safety on neighborhood streets. Red bricks are commonly used on these routes to designate it as a cycle street and to act as a traffic-calming device. Other traffic calming devices are also used like speed bumps throughout the street or at intersections. Stand-alone paths (or bike-only routes) are what Americans call “bike paths.” Similarly to bike paths in the U.S., Dutch bike-only routes usually do not run beside motor vehicle routes. This allows them to be more direct than local car roads. The distinct Dutch concept of complete separation of bikeways from motor vehicle systems is called the “unravelling of modes.” Examples in the Netherlands of unravelling modes can be found in the countryside connecting town to town, or in city centers where cyclists are allowed to travel straight through the center of the city and cars must travel on the outside of the city center to get to the opposite side.

American city planners are challenged with designing bike facilities that accommodate the bicyclist, as well as the prominent motor vehicle. U.S. bikeways are categorized into three classes: Class I (bike path), Class II (bike lane), and Class III (bike route). Different bikeway designs meet the needs of the user and each has a suitable application. A Class I bikeway “provides a completely separated right-of-way for the

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93 Ibid.
95 Ibid.
exclusive use of bicycles and pedestrians with cross flow by motorists minimized.”

These bike facilities are located off of streets and attract bicyclists who are hesitant about riding their bikes on streets with cars. Class I bike paths offer a safer alternative route for children, families and new cyclists. Most bike paths constructed in the U.S. are completely separate from the street system and can be one-way or two-way. They are usually found within parks or school campuses and beside coastal fronts, rivers, and abandoned railroad right of way. Unlike Dutch bike-only routes, that offer a more direct route to town destinations, American bike paths do not necessarily have an important destination. The majority of American Class I bikeways are often used for recreational purposes and rarely for utilitarian uses. Even though Class I bikeways are the safest they are not the most abundant in the U.S. because it is hard to find space to construct them when they are an entirely separate entity from the road system.

Class II bikeways (bike lanes) are the most popular and most commonly found throughout the U.S., unlike the Netherlands. A bike lane is considered “a striped lane for one-way bicycle travel on a street or highway,” and is located adjacent to motor vehicle lanes. This class of bikeways provides the most direct access to main city destinations and used by commuting bicyclists. Therefore, it is important to maintain, improve, and construct bike lanes whenever possible. Bike lanes can help guide bicyclists

96 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
97 “Highway Design Manual.”
99 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
100 Ibid.
through streets that are unsafe and do not have enough room for separated bikeways. Redesigning streets can be one solution for creating safer bike lanes like “reducing the number of lanes, reducing lane width, or prohibiting or reconfiguring parking on given streets.”

Bike lanes can be made of just two white lines outlining the area of the lane or they can be more protected with a barrier between cars and bicyclists. There are four kinds of bicycle lanes used in the U.S.: conventional bike lanes, buffered bike lanes, and two other not so common ones, contra-flow and left-side bike lanes. Conventional bike lanes are on the right side of the street, between the travel lane and curb or parking lane, and usually marked by solid white lines. The popular protected bikeways in the Netherlands are slowly popping up around the U.S. However, it is controversial whether they should be considered a Class I or Class II bikeway. In an email from SLO’s Transportation Planner Peggy Mandeville she describes the situation with protected bike paths:

    Since they are relatively new, I think they fall into a great area. We are calling them buffered bike lanes (Class II) when they are same grade as the street. When they are up on the sidewalk level, we are calling them bike paths (Class I).

These protected bikeways are considered part of the road system but are separated from car traffic by a raised median, barriers, or a parking lane; and are modeled similarly to the Dutch cycle tracks. Buffered bike lanes “are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel

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101 “Highway Design Manual.”
102 “NACTO Urban Bikeway Design Guide.”
104 “NACTO Urban Bikeway Design Guide.”
lane and/or parking lane." Both buffered bike lanes and protected bike paths allow more room for bicyclists to pass each other without entering the car lane; however, they can only be implemented on streets with wide lanes or wide sidewalks. Even though these protected bike paths are one of the most common types of bikeways in the Netherlands because of their safety, they have only started to become popular the last few years in the U.S. It is also interesting to note that the California Highway Design Manual does not recommend protected bikeways because they can cause conflicts at intersections and offer less mobility for the bicyclist compared to riding on the street. Contra-flow bicycle lanes are constructed on one-way traffic streets. Therefore, by placing a contra-flow bike lane on a one-way street it turns the street into a two-way street: one-way for cars and bikes and the other way for bikes only. The one-way traffic lane is separated from the contra-flow lane by a yellow double line. Left-side bike lanes are simply conventional bike lanes located on the left side of one-way streets. They work best for streets that have bus or delivery vehicles stopping on the right side of the street frequently.

In the Netherlands, bicycle lanes are usually designed wide enough to allow cyclists to ride next to each other to encourage social biking. However, in the U.S., city planners design bike lanes to fit only one bicyclist. Bike lanes are located along major streets while Class III bike routes are located on collector streets, where the traffic volume is small. The function of Class III bike routes are to fill in the gaps of the

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105 Ibid.
106 “Highway Design Manual.”
107 “NACTO Urban Bikeway Design Guide.”
108 “Bicycling Facilities in Holland.”
bikeway system, connecting smaller streets with less traffic to Class I or Class II facilities. Bike routes are implemented on streets where there is no room for Class I or Class II bikeways. On Class III bikeways, bicycles share the road with cars, indicated by bike route signs or painted symbols on the pavement.\textsuperscript{109} If the three bike classes are constructed correctly and implemented properly, a city can develop a successful connected network of bikeways that benefit the entire bicycle culture of the city.

\textit{Parking}

Bicycle parking is a small element of a bicycle network but plays an important role in providing convenience and safety for cyclists. “Providing well designed bicycle parking racks located at popular destination points, both commercial and recreational, promotes and encourages bicycling as a transportation choice.”\textsuperscript{110} It is important for bikeways to offer access to important destinations, but it is equally important that there is adequate parking for bicyclists once they have arrived. Responsibility falls on the city to provide safe parking along streets and at public transportation stations. Having biked in both the U.S. and the Netherlands, I notice a distinct difference in bicycle parking. In the Netherlands, they provide thousands of bicycle parking spots around the city; however, they still have a problem of not having enough parking spaces because so much of the population rides their bikes daily. On the other hand, in the United States, there is a problem of not having enough bicycle racks placed around a city that are accessible at popular spots, but not because there are too many riders. Availability of bike parking at important locations can present an incentive to bike. “Cyclists want parking to be

\textsuperscript{109}“Highway Design Manual.”
\textsuperscript{110}“City of San Luis Obispo Bicycle Transportation Plan 2013.”
available at destinations the same way automobile drivers do."¹¹¹ Bicycle parking can come in all different shapes, sizes, and for different lengths of time. There are parking facilities for short-term bicycle parking like bicycle racks that “accommodate visitors and customers, who are generally parking for less than four hours.”¹¹² Bicycle racks are the most common form of bike parking and are found along streets in downtown areas of cities or outside retail, entertainment and business locations frequented by visitors.¹¹³ In many cities like Claremont and San Luis Obispo, bike racks can also function as public art pieces and are designed creatively. In the Netherlands bicycle racks can be found in areas containing hundreds of racks for public use.

Another form of parking is long-term bicycle parking “to accommodate employees, residents, commuters, and other expected to park on a regular basis for more than four hours.”¹¹⁴ Types of long-term parking are usually secured facilities that include a locked room with standard racks or bicycle stations. Businesses that provide a locked room with standard racks usually also provide changing rooms and showers for their employees. The second type of long-term parking facilities are bicycle parking stations.¹¹⁵ They are similar to parking garages for cars and are parking structures that are specifically designed for bicycle parking, and can be free or require a small fee. Most bike parking stations in the United States are found at public transportation stations. The

¹¹¹ Nuworsoo et al., *Integration of Bicycling and Walking Facilities into the Infrastructure of Urban Communities.*
¹¹² “City of San Luis Obispo Bicycle Transportation Plan 2013.”
¹¹³ Ibid.
¹¹⁴ Ibid.
¹¹⁵ Ibid.
“Bicycle Parking: A Plan for the Los Angeles County Metropolitan Transportation Authority” states the importance of bike parking at public transportation facilities:

Providing quality bicycle parking at transit stations can enhance bicycle transportation in general, the transit system, and the transportation network as a whole. It creates destinations or transfer points for cyclists. Without bicycle parking, a network of bikeways will only be viable for circulation (i.e. recreation) and not for utilitarian uses that can replace auto trips.116

However, these parking facilities usually have a paying fee or membership requirement. Bike parking stations are more common in the Netherlands than in the U.S. because there is more demand from the numerous amounts of bicyclists in the country. In the Netherlands, bicycle parking stations at transit stations are usually free, covered, and guarded facilities offering parking spaces for hundreds of bikes. However, bike parking structures can also be found at shopping centers or sporting arenas throughout the Netherlands.117 All bicycle parking facilities come with the same benefits. The construction of bicycle parking is inexpensive, uses little spaces, and offers a visual reminder of bicycling as an alternative mode of transportation. For example, an average auto parking space can be transformed into about six bicycle parking spots; therefore bike parking saves space and money. Bicycle parking can act as a reminder that bicycling can

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be another option for transportation when constructed at well-lit and well-travelled areas.118

**Education and Promotion**

In addition to the construction of an interconnected bicycle network, it is important to provide education to the community. Safe and well-designed bicycle infrastructure can contribute to a functioning bicycle environment, but if community members do not know how to properly use the facilities then the bicycle network is useless. The San Luis Obispo Bicycle Transportation Plan states:

> Education plays a significant role in the safety and confidence of bicyclists...Education is relatively cheap when compared to most bikeway facilities projects, yet it is labor intensive and has to be repeated year after year to have a long term impact.119

If cities want to create a better bicycle culture, it is essential for them to establish educational programs in safe bicycling practices for both children and adults. In the Netherlands, extensive and valuable bicycling safety techniques are included in children’s regular school curriculum.120 The Dutch cycling education curriculum is started at a very young age in primary school and most children are finished with the course by age of 10. Every year in April, children take a “practical traffic examination” before they start secondary schooling. This examination includes a riding test around the city to make sure the children have mastered the rules, etiquette, and safety of riding a

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118 Benjamin, “Bicycle Parking: A Plan for the Los Angeles County Metropolitan Transportation Authority.”
119 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
120 Pucher and Buehler, “Making Cycling Irresistable: Lessons from the Netherlands, Denmark, and Germany.”
However, in the United States, bicycle advocacy groups in each city usually run bicycling educational programs. Educational programs in the U.S. include bike safety classes offered by the city or safety lessons put on by bicycling groups at elementary schools. However, they are less effective than the educational program in the Netherlands because “they reach some students and some people who are interested in bicycling, but do not reach a large portion of the population,” because bike education is not required.

Bicycle advocacy is another important part of encouraging the growth of a city’s bicycle culture. In the Netherlands, bicycling is already extremely popular, but they continue to work on promoting this mode of transportation. Many promotional events in the Netherlands focus on safer cycling rather than on more cycling. The Netherlands also has bicycle websites, bike trip planning tools, and bike maps for most cities and regions.

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122 Nuworsoo et al., Integration of Bicycling and Walking Facilities into the Infrastructure of Urban Communities.
123 Ibid.
124 Pucher and Buehler, “Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany.”
City of San Luis Obispo

Accessibility

The city of San Luis Obispo plans by 2026 “all San Luis Obispo residents will have access to a well designed and maintained network of interconnected bikeways linking City destinations. Where bicyclists will find convenient and secure places to park.” According to the American Community Survey Report from the US Census Bureau, 3.6 percent of San Luis Obispo’s population commuted to work by bicycle in 2000. This increased to 5.2 percent by 2010; however, the city expects that this percentage is even higher than reported because in this census the person was asked how they usually got to work last week. Therefore, it did not account for bicycle commutes other than work, or for children or student who use bikes for transportation. However, these stats still demonstrate the growing number of bicyclists in San Luis Obispo. In San Luis Obispo’s Bicycle Transportation Plan, the importance of a connected network is described as: “the City’s key to promoting increased use of bicycles as a transportation choice and encouraging bicycling for health, economic, and community, environmental, or other personal reasons.” As shown in the map below San Luis Obispo’s bicycle network is made up of all three classes of bikeways that contribute to the growing number of bicyclists. San Luis Obispo currently has 7.4 miles of Class I separate paved bike paths. There are 29.7 miles of Class II bike lanes along roadways. San Luis Obispo

125 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
126 Ibid.
127 Ibid.
has three different kinds of Class III bikeways: bike routes, bicycle boulevards, and sharrows, 20.6 miles, 0.5 miles, and 3.4 miles, respectively.\textsuperscript{128}

Bikeways

Class I: Railroad Safety Trail (RRST)

Currently the Railroad Safety Trail (RRST) is about 2.25 miles long, and the 2013 Bicycle Transportation Plan proposed a 4.5-mile long bike path expansion. It is a two-way path that bicyclists as well as pedestrians can use as an alternative to walking along a busy street. When this project is completely finished it will provide a Class I bike path that from the northern to the southern city limits.

Figure 4.

Figure 5.
One segment currently runs parallel to the Union Pacific Railroad and another segment runs through California Polytechnic State University.\textsuperscript{129} As shown on the map above, it will provide access to the San Luis Obispo train station, downtown neighborhoods and business, elementary schools, San Luis Obispo High School, and Cal Poly (see Figure 5). The green boxes on the map highlight current sections of the project that are Class I separate bike paths, and the red box represent the section of the RRST that are Class II bike lanes presently. This Class I bike path is an important part of SLO’s bicycle network because it provides access to major city destinations and safe route away from motor vehicles.

\footnote{129\textit{“City of San Luis Obispo Bicycle Transportation Plan 2013.”}}
Class II: Bike Lane

San Luis Obispo Class II bikeways are all conventional bike lanes. The city has not constructed any buffered bike lanes, contra-flow, or left-side bike lanes. The current BTP’s long-term plans are to construct Class II bike lanes on all arterial streets throughout the city. The photo on the right is of a Class II bike lane found on Pismo Street (see Figure 8). As shown in the picture, the city placed speed bumps on this street for traffic calming purposes and to provide safety for bicyclists. One distinct feature the 2013 Bicycle Transportation Plan proposed for Class II bike lanes was channelization. Channelization is “the use of pavement markings, raised islands, or other suitable means, to regulate and separate intersection turning movements from through movements, for the safe and orderly conduct of motor vehicles, bicycles, and pedestrians.” It is common for bike lanes to disappear prior to intersections, but channelization continues all the way up to the intersections to provide spaces for the bicyclists. They are usually found at intersections where there are dedicated turn lanes for cars. To make bicycle movements even more

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130 Ibid.
131 Ibid.
predictable, San Luis Obispo has colored pavement green in know high conflict zones.\textsuperscript{132}

The bottom left photo is an example of channelization at the Madonna Road/South Higuera Street intersection. The picture bottom right was taken in March of 2014 and is the same intersection as the left but with the new colored green paint to make cars more aware of bicyclists. This intersection is now an example of both channelization and colored pavement.

![Figure 9.](image1)

![Figure 10.](image2)

**Class III: Bicycle Route**

In San Luis Obispo, Class III bikeways are mostly made up of bicycle routes with a couple of bike boulevards. In review, Class III bike routes are designated routes for bicycles, but are not separated from motor traffic. They usually have signage to define it as a bicycle route; San Luis Obispo’s bicycle routes include sharrows as type of signage.\textsuperscript{133} Sharrows, or shared lane marking legends, are pavement markings used to improve the safety and awareness of Class III bike routes. They are described in the SLO

\textsuperscript{132} Ibid.
\textsuperscript{133} Ibid.
BTP as “pavement legends used to assist bicyclists with lateral positioning in narrow lanes or lanes with on-street parking, to remind motorists to expect to share the roadway with bicyclists.”\textsuperscript{134} The picture below is an example of bike sharrows located on Chorro Street (see Figure 11). The picture of the “May Use Full Lane” sign is also located on Chorro Street and can be found on other bike route streets throughout the town (see Figure 12). Bike Sharrows and “May Use Full Lane” signs help indicate to bicyclists and motorists to share the street with each other. They also are used to encourage cars to pass bicyclists safely and to encourage bicyclists to ride outside the parked car door zone. They can be found on normal Class III bike routes or even bike boulevards for even more recognition.

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\caption{Figure 11.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure12.png}
\caption{Figure 12.}
\end{figure}

\textsuperscript{134} Ibid.
Class III: Bicycle Boulevard

A bicycle boulevard is an enhanced Class III bikeways described in SLO’s Bicycle Transportation Plan as “a shared roadway (bicycles and motor vehicles share the space without marked bike lanes) where the through movement of bicyclists are given priority over motor vehicle travel on a local street.” Since they are Class III bikeways, bike boulevards are implemented on low speed and low traffic volume streets. The photo below is of the Bill Roalman Bicycle Boulevard, constructed in October of 2009 (see Figure 13). This picture is taken at the intersection of Morro Street and Buchon Streets and demonstrates how cars are restricted from turning left onto either street by the cement barriers located in the middle of the intersection.

Figure 13.

\[^{135}\text{Ibid.}\]
\[^{136}\text{Ibid.}\]
San Luis Obispo Bikeway Design Guidelines

The San Luis Obispo Bicycle Transportation Plan also includes a table of their bikeway width design standards that meet or exceed standards required by the California Highway Design Manual and the California Manual of Uniform Traffic Control Devices.\(^{137}\)

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**Figure 14.**

\(^{137}\) Ibid.
Parking

In the past decade there has been a huge expansion and improvement of the San Luis Obispo bicycle network, which has brought an increase of bicyclists. Therefore, the city has called for more parking facilities to support the residents and tourists riding through the downtown. “The City shall encourage existing development to upgrade their bicycle parking facilities to meet current City standards (e.g. type of rack, number of bicycles accommodate).” The 2013 BTP also instructs new developments to provide bicycle parking for their employees. According to the BTP, the downtown area has a capacity to park almost 400 bikes, with over 130 publicly owned bicycle racks. Inverted “U” racks are the most common in the downtown area because bicycles can be parked parallel to parked cars and do not take up much space on the sidewalk (see Figure 15). Peak Racks are another type of bicycle rack parking and are manufactured by a local company in San Luis Obispo, Peak Bicycle Racks. They can hold two to eight bikes and can be ordered larger numbers of bikes. Most Peak Racks can be found at public facilities like parks or the county library; they usually are too big to place on sidewalks (see Figure 16). These bike racks are also apart of the “Racks with Plaques” program. In 2005, San Luis Obispo started a donation program called “Racks with Plaques.” Through this program, the city places bike racks at public facilities and throughout downtown and places a plaque with the donor’s name on it. Private businesses and Cal Poly also

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138 Ibid.
139 Ibid.
141 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
purchase Peak Racks to place in front of their building for clients or students. Peak Racks can also be found being used as bicycle corrals, or in-street (or on-street) parking, in front of downtown stores and restaurants. Businesses can apply for an on-street bike rack on SLO County Bicycle Coalition’s website.\(^{142}\) In San Luis Obispo, in-street parking involves placing the bicycle rack on the curb of the sidewalk and having bikes park perpendicular to the street. One example in SLO is the bicycle corral across from Linnea’s Café (see Figure 17). The bike corral usually takes up a car’s parking space and benefits the downtown area by removing bicycles from the sidewalk and providing better business access and pedestrian movement.\(^{143}\) Bicycle corrals also contribute to a bicycle-friendly environment that San Luis Obispo continues to improve and enhance. San Luis Obispo also plans to improve bicycle parking at transportation hubs like the Amtrak train station and SLO’s Transit Downtown Transit Center. The Downtown Transit Center offers parking for eight bikes and the each bus has a bike rack that can hold three bicycles (see Figure 18).\(^{144}\) It is important that San Luis Obispo provides parking at transportation stations because it helps connect the transit and bicycle system together. It encourages bicyclists to choose to bike to the transit station and then take public transportation someplace farther, instead of driving their car.

In the 2013 BTP, San Luis Obispo encourages businesses to provide long-term parking for their employees. These parking facilities provide secured indoor parking for

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\(^{144}\) “City of San Luis Obispo Bicycle Transportation Plan 2013.”
bikes and can include changing rooms and showers for employees.\textsuperscript{145} For example, the City of San Luis Obispo Community Development building provides a locked caged unit as well as bike lockers for its employees who commute to work by bicycle (see Figure 19). The last type of bicycle parking that San Luis Obispo provides to its bicycle community is the Bike Valet. The Bike Valet is “a bicycle parking service, usually set up for special events, offering convenient and secure bicycle parking at locations where a large number of bicyclists are expected.”\textsuperscript{146} SLO’s Bike Valet can be found at the local Thursday night’s Farmers Market or the summer Concert in the Plaza events (see Figure 20). This type of parking is very beneficial for the growing SLO bicycle culture because it encourages biking to popular community events where there are usually limited car parking spaces.

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\caption{Figure 15.}
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\begin{figure}[h]
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\includegraphics[width=0.4\textwidth]{fig16}
\caption{Figure 16.}
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\textsuperscript{145} Ibid.
\textsuperscript{146} Ibid.
**Education and Promotion**

The most influential factors of the San Luis Obispo’s growing bicycle culture are the bicycle educational and advocacy programs. The programs have reached out to the entire community and encourage students, families, and work commuters to bike as an alternative mode of transportation. The City of San Luis Obispo’s Public Works Department works with multiple advocacy groups to help maintain and improve the bikeways throughout the city. One of the main groups is the San Luis Obispo County Bicycle Coalition (SLOCBC); it was formed in 2001 as a nonprofit organization dedicated “to improve the quality of life in San Luis Obispo County through advocacy, education, and inspiration”. According to the city’s Transportation Planner, Peggy Mandeville, the SLO County Bicycle Coalition, partners with the city letting the city know where they are issues on bike facilities, attends city budget meetings, and also gets paid by the city to run bike safety and education lessons and events. The SLO County Bicycle Coalition has also been involved with their own inputs and advice in the last few updates of the BTP. The SLOCBC also provides programs that are open to the public like the Bike Kitchen, Bike Valet, Kidical Mass, and bicycle education workshops. As mentioned previously, SLOCBC members run the Bike Valet as a free and guarded place to park your bike at local community events. The Bike Kitchen “has all the parts, tools and knowledge you need to fix your bicycle! We can help you build a bike from the

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148 Mandeville, Thesis Research Interview.

149 “City of San Luis Obispo Bicycle Transportation Plan 2013.”

ground up, fix that junker you just found at the garage sale, or simply tune up your bicycle;” and is solely run by volunteers.151 The Bike Kitchen is an important location for SLO’s bicycle community because they welcome everyone to come in and learn how to fix up their bike. Kidical Mass is another important bicycle community event that SLOCBC runs; it is an event where parents ride bikes with their children to teach them how to ride their bikes safely around town (see Figure 21).152 The Bicycle Coalition also directs bicycle education assemblies at local schools and education workshops at local businesses (see Figure 22). Members of the SLOCBC that are league of American Bicyclists Certified Cycling Instructors teach these bicycling education programs.153 All of SLOCBC’s programs encourage community interaction and cooperation, which is important for boosting the city’s bicycle culture.

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San Luis Obispo Regional Rideshare is another organization that helps motivate commuters to use alternative transportation modes like bicycling to work. Once a year SLO Rideshare gets help from the City and SLOCBC to run the annual Bike Month event. Bike Month is a countywide “effort encouraging residents to commute by bike and participate in a variety of bicycling related events scheduled during the month of May.” In the last few years Bike Month has been very successful with bringing the community together and getting businesses, organizations, and community leaders involved. In May 2014, SLO Bike Month had 90 events including bike breakfasts for commuting workers and students, the Commuter Bike Challenge, “Bike-In” movies, and even scavenger hunts by bike. During this month, there were over 100,000 event attendees, the most this event has ever had. Bike Month is geared for every age group and every year has been successful with getting the entire community involved. This event brings the residents together to show one another that a strong bicycle culture can benefit the community on multiple levels, including creating a city that is environmentally conscious and bicycle friendly.

The City of San Luis Obispo works with SLOCBC, SLO Rideshare, and other bicycle groups to provide bicycle education for children, students, and adults. One educational event that the City sponsors is the Bicycle Safety Rodeo that is held every fall since 1998. “The purpose of the rodeo is to teach safe riding practices and vehicle

154 “City of San Luis Obispo Bicycle Transportation Plan 2013.”
155 Ibid.
code compliance to elementary and secondary school aged children."\(^{157}\) Safe Assemblies at local elementary schools are another example of education that the City offers to the public. These are similar to the Bicycle Safety Rodeo because students are informed about safe bicycling techniques and are run by the SLOCBC. San Luis Obispo also sponsors adult bicycle education as well, including lunch seminars for businesses or half-day courses for anyone. These programs incorporate the rights and responsibilities of being a bicyclist and tips to riding safely and comfortably on any street.\(^{158}\) It is not only important to provide information on how to ride safely on streets but also how to drive safely around bicyclists. These programs create an understanding between motorists and bicyclists, which leads to a safe environment on the streets. The education programs offered by San Luis Obispo are not as extensive as the education provided by cities in the Netherlands. But the city has been successful with educating their bicyclists at a local level and has been improving education with more free programs offered to the entire community. More educated and confident bicyclists contribute to the growth of a bicycle culture. Therefore, if San Luis Obispo continues to provide educative bike programs it will create a strong bicycle culture and a community of bicyclists and motorists that respect each other on the streets.

\(^{157}\) “City of San Luis Obispo Bicycle Transportation Plan 2013.”

\(^{158}\) Ibid.
City of Claremont

Accessibility

In Claremont’s 2007 Bicycle Plan, I calculated a total of almost 24 miles of bikeways in the city. In 2007, there were 4.72 miles of Class I bike paths, 13.98 miles of Class II bike lanes, and 0.23 miles of Class III bike routes.\(^{159}\) Claremont prides itself on its Bike Priority Zone (BPZ), a designated area “within the Claremont Village, Claremont Colleges, and the adjacent residential neighborhoods south of Foothill Boulevard and east of Indian Hill Boulevard.”\(^{160}\) It promotes local bicycle transportation by providing safe bicycle routes and parking facilities. The BPZ connects the bicycle network to the regional mass transit with its location near Claremont’s transit station on First Street. Here, bicyclists are provided with a safe access to public transportation like the regional bus system and Metrolink.\(^{161}\) The city of Claremont’s 2007 Bicycle Plan estimates that the city had a total of 938 bicycle commuters before implementing this plan.\(^{162}\) They also estimated that with the new proposed bikeways, “implementation of this plan, and of educational, enforcement and engineering improvements” bicycle commuters will increase to 2,614.\(^{163}\) Unfortunately, since they have been delayed with the update of the new Claremont Bicycle Plan they do not have information at this time of the current number of bicycle commuters in Claremont. Unfortunately, the Bicycle Plan does not include a definition of a bicycle commuter, so it is unclear whether it includes children.

\(^{159}\) “Claremont Bicycle Plan.”
\(^{161}\) Ibid.
\(^{162}\) “Claremont Bicycle Plan.”
\(^{163}\) Ibid.
and students, and not just work commuters. The City of Claremont residential areas continue to grow north towards the base of the mountains. Therefore, it is important that the city continues to expand their bicycle network not only in the neighborhoods around the restaurant and shopping area (Claremont Village), but also connecting bikeways in the neighborhoods north of the 210 Freeway (see Figure 23). A bicycle culture can be successful in Claremont if the bicycle network can become even more connected than it is currently.
Bikeways

Class I: Thompson Creek Trail

Figure 24.

The Thompson Creek Trail in Claremont is similar to a lot of Class I bikeways in the United States because it is considered a park facility by the city (see Figure 24). It is located in the northern part of Claremont along the Thompson Creek flood control channel. The Thompson Creek Trail was constructed in 1977 and it is continuously maintained and repaired by the city. It is 2.8 miles long and is mostly used for recreational purposes instead of utilitarian use. Bicyclists as well as joggers, walkers, and leashed dogs can be found on this Class I bike path.164

Above is a photograph on Bonita Avenue in Claremont of a Class II bike lane (see Figure 25). This bike lane is a part of the Citrus Regional Bikeway, which is planned to extend 27 miles, from San Dimas (west of Claremont) to Rialto (east of Claremont).\textsuperscript{165} The Citrus Bikeway was “originally planned to be constructed in the railroad right of way…[but] has been moved to the streets to avoid conflicts with the planned extension of the Gold Line” of Metrolink.\textsuperscript{166} Claremont’s portion is an important part of the Citrus Bikeway because it connects the gap between Los Angeles County and San Bernardino County. The Claremont section of this bikeway is found along Bonita Avenue and First Street. Most of the portions on Bonita Avenue and First Street are made up of Class II bike lanes with a small section of a Class III bike route Bonita Avenue between Indian

\textsuperscript{165} “Claremont Bicycle Plan.”
\textsuperscript{166} Ibid.
Hill Boulevard and College Avenue.\textsuperscript{167} The Citrus Regional Bikeway is important to Claremont because it “shows [the] City’s efforts to work with neighbors to continue to provide and improve bicycling alternatives within the region.”\textsuperscript{168} It is also essential to Claremont’s bicycle culture because it not only connects the city’s own bicycle network but also provides a bikeway linking together communities in this region. A connected regional bikeway encourages commuters to use a bicycle for an alternative mode of transportation, which is important for the creation of a bicycle culture in this country.

\textbf{Class III: Sharrows on College Avenue}

\begin{figure}[h]
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  \includegraphics[width=\textwidth]{figure26.png}
  \caption{Figure 26.}
  \end{figure}

The section of College Avenue between W. Bonita Avenue and Sixth Street contains bike sharrows, making it a Class III bike route (see Figure 26). Claremont’s bicycle network is made up of very few Class III bikeways. Another Class III bike route with sharrows is part of the Citrus Bikeway on W. Bonita Avenue, between Indian Hill

\textsuperscript{167} Ibid.
\textsuperscript{168} Ibid.
Boulevard and College Avenue.\textsuperscript{169} It is important for the City to plan to implement more Class III bikeways to make the narrow streets of the downtown area of Claremont safer for bicyclists.

\textit{Parking}

Claremont’s 2007 bike plan also proposed to construct more bicycle parking including a long-term parking facility at the city’s train station, “as means to facilitate bicycle commuting, schools and colleges in Claremont provide bike racks for students and faculty.”\textsuperscript{170} Soon after the bike plan was implemented the city’s Associate Engineer and Bike Coordinator, Maria Tipping, worked with Francine Baker, the city’s Art Coordinator to find new designs for bike racks instead of purchasing premade one. They hired a local artist, Susan Cooper, to design the circular bike racks that are found around Claremont Village.\textsuperscript{171} These racks can hold two bikes, one on each side, and are aesthetically pleasing with each painted a different color (see Figure 27 and Figure 28). They can be found throughout Claremont’s Village area. The colorful circular bike racks act as public art as well as visible, convenient, and safe places to park a bike.

\footnotesize
\begin{enumerate}
\item \textsuperscript{169} Ibid.
\item \textsuperscript{170} Ibid.
\item \textsuperscript{171} Tipping, Thesis Research Interview.
\end{enumerate}
Claremont also provides long-term parking with bicycle lockers at the Metrolink parking lot, Village West Parking Garage, and the Bike Station at the Historic Claremont Depot. The Claremont Bike Station is a very progressive feature of Claremont’s bicycle network. “Claremont Transit Center Bike Room repurposed 600 square feet of the historic building’s luggage room with electronically secured indoor bicycle parking,” and includes a changing room, restroom, 30 bicycle racks, and tools for self-repair. This long-term parking facility offers a secured and safe place for people to park their bikes (see Figure 29 and Figure 30). It also attracts commuters to ride their bikes to the Metrolink station, park their bikes at the Bikestation, and then take the Metrolink to work instead of driving. However, the one downside to this facility is that you have to pay to be a member of Bikestation and park your bike in this station. Other Bikestations can be found in cities throughout California; the Bikestation organization established its first

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facility in Long Beach in 1996. The organization’s goal is to create “communities where bicycling is an integral part of the transportation system resulting in cleaner air, safer streets, and healthier living.”173 Similar to the Citrus Bikeway, this parking facility strengthens Claremont’s bicycle culture by connecting the bike network to the Los Angeles region with its connection to the region’s public transit system.

Education and Promotion

The City of Claremont provides four main programs for bicycle safety and education. One program is the annual Safety Expo that is helped run by the entire community. The Fire Department, Police Department, Fish and Game, Park Rangers, Red Cross and California Highway Patrol are all involved with this event, “offering safety tips for bicyclists, pedestrians and drivers.”174 The second program is the Bicycle/Pedestrian Safety Assembly that is put on by the Police Department. This event is offered at

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174 “Claremont Bicycle Plan.”
elementary schools and is a “very interactive presentation, which offers safety tips for walking and riding to and from school, followed by a question and answer session.”  

The third event, Saturday Safety School, is also offered by the Police Department and is designed for children at intermediate school or high school. However, it is only mandatory for children who obtain a ticket for disobeying a bicycle law under the California Vehicle Code. Lastly, Claremont provides a Pedestrian/Bicycle Safety Flyer that is handed out at the Claremont Colleges to offer tips for safe bicycling. As mentioned before, the Claremont Bicycle Advisory Committee and the Claremont Senior Bicycle Club are heavily involved in helping to create a successful bicycle culture in Claremont. They both attend city meetings to suggest improvement for bicycle infrastructure and they both assist in running the bicycle safety programs listed above. However, Claremont does not have a local Bicycle Coalition chapter like San Luis Obispo, nor do they have a Rideshare Chapter. A local Bike Coalition group in Claremont would benefit the community by providing stronger promotion and encouragement for bicycling as an alternative mode of transportation. An organization like this would also push the City of Claremont to make improving bicycle culture a higher priority than it is currently.

175 Ibid.  
176 Ibid.
City of Groeningen

Accessibility

The City of Groeningen has created a strong bicycle culture by making bicycling a more accessible mode of transportation than driving a car. “To many cities in the Netherlands and abroad, Groeningen sets an example [for] bicycle climate and bicycle use.” As mentioned before, the inner city of Groeningen limits the use of the car and in order to get from one side of the inner city to the other in a car you have to drive all the way around, while on a bike you can ride right through the center. The compactness of the city is another feature that has helped make bicycling successful in Groeningen. Since the city is so compact, bicycle trips are shorter making bicycling more appealing to the residents. More than “78% of the inhabitants live within a radius of 3 km from the city center, and 90% of all jobs are located here; almost all major building are within 5 km radius.” Another feature that contributes to the bicycle culture in Groeningen is the connectedness of the city’s bicycle network. A resident can get anywhere they want in Groeningen on a bike and feel safe and comfortable because the city has constructed a bikeway on almost every street or has created completely separate bikeways for only bikes. In a short Streetfilms documentary created by Clarence Jr. Eckerson, an interviewee, David Hembrow stated:

You’re not going to get a cycling revolution by having a few 30-kph streets, you’re not going to get it by building just a few cycle paths, and you’re not going

178 Nijmegen, “Cycling in the Netherlands.”
to get it by traffic calming a few streets either. You have to do everything and you have to do it everywhere.¹⁷⁹

That is the key difference between Groeningen and the two American cities, Claremont and San Luis Obispo. Groeningen has a bicycle network that has a bicycle facility on every single street. In Groeningen, biking is the fastest and most convenient way to travel and “over 50% of all trips are done by bike.”¹⁸⁰ For all these reasons, in 2002, Groeningen was named “City of the year” by the Dutch Cycling Union, Fietsersbond.¹⁸¹

Groeningen prides itself on its extensive network of bikeways throughout the city. The map of Groeningen below displays the car restricted and car parking areas (see Figure 31). The yellow streets on the map, shown in the legend as “Verkehrsberuhigt/autofrei” translates as “Car restricted/car free,” and represent the street in the inner street that cars are completely banned. The blue “P” symbols (“Parkhaus”) on the map and in the legend represent car-parking garages. The red lines on streets (“Parkleitsystem + Fahrtrichtung”) represent the parking route where cars are allowed to park along the street in designated spots. In the legend, “Zahl de Parkplätze” with the number 600 represents the number of parking spaces in each parking garage located on the map with the number next to it. And the 1 and 2 circled numbers (“Zufahrt en Boterdiep garage”) are the name of two main parking garages in Groeningen.¹⁸² This map is a good representation of how much of the inner city restricts the use of a car.

¹⁸⁰ Ibid.
¹⁸¹ Nijmegen, “Cycling in the Netherlands.”
Bikeways

Cycle Tracks

As mention before, cycle tracks are one of the more popular bikeways in Netherlands. In Groeningen, cycle tracks are found mostly surrounding the inner city area and located next to higher motor traffic streets. In review, cycle tracks are separated from the street by parked cars, curb, median, or post. The photograph above on the left I took while studying in Groeningen. This picture illustrates a one-way cycle track that is separated from the road by a cement median (see Figure 32). The second photograph on the right I also took in Groeningen while riding my bike to class at the University of Groeningen (see Figure 33). This photo demonstrates a two-way cycle track that is

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183 “Bicycling Facilities in Holland.”
separated by a curb. As shown in both photographs, cycle tracks are constructed with red pavement to distinguish them from the road.

**Bicycle Lanes**

Figure 34.

Similar to most cities in the Netherlands, not many bike lanes are found in Groeningen. The Dutch view bike lanes as less safe than cycle tracks, stand-alone paths, or even cycle streets. Bike lanes in Groeningen are very similar to bike lanes in the United States, except that they are paved with red concrete just like all other Dutch bikeways. Bicycle lanes are less safe than cycle tracks and stand-alone because they are not physically separated from motor vehicles (see Figure 34). They are also less safe than cycle streets because motor vehicles feel free to pass by bikes faster when bike lanes are present. When a street is considered a cycle street or a shared space, car drivers are more aware and conscious of bikes and pass them more slowly. However, bicycle lanes remain

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184 Ibid.
a fundamental type of bikeway in the Netherlands because not all streets have enough room for cycle tracks and other streets have too much car traffic to be made into a cycle street.

**Cycle Streets**

In Groeningen, most cycle streets are located in neighborhoods where the speed limit is under 30 kph and has a low level of car traffic. Cycle streets are also called share spaces and are represented in the photograph to the right, taken in the suburb neighborhood of Groeningen, Haren (see Figure 36). Shared-space streets or cycle streets allow motor vehicles and bicyclists to share the road. The left picture illustrates the signs found on these kinds of streets; the top sign says “fietsstraat auto te gast,” which means “cycle street, car is guest.” On cycle streets, bicycles share the streets with cars but cars still have to respect the bicyclists who have more dominance on the road. The bottom sign reads “fietsstraat toegestaan,” this means that motorcycles, bikes, and cars are all allowed on this street (see Figure 35). Shared-space streets are important to the Dutch...
because they promote a bicycle culture that involves pedestrians, bicyclists, and motor vehicles to share and respect a space where they can interact safely.

Stand-alone Paths

Figure 37.        Figure 38.

Stand-alone paths are fairly popular in Groeningen and are used by many students and commuters. The completely separate paths can be found along the countryside connecting Groeningen suburb neighborhoods to each other and to the city center. In At the Frontiers of Cycling: Policy Innovations in the Netherlands, Denmark, and Germany, Pucher and Buehler wrote about the connectivity of Groeningen, “by 2006, all outlying residential areas had been connected with separate cycling facilities directly to the city
The photo to the left demonstrates a bike path that connects the city center to a Groeningen neighborhood, Vinkhuizen (see Figure 37). This section of the stand-alone path runs along one of the many canals that run throughout Groeningen. The photograph to the right is the bike path that I used daily to ride my bike to class (see Figure 38). This path starts directly outside the inner city area and continues through a park and residential area and only crosses three main car traffic streets. This stand-alone bike path is heavily used by the University of Groeningen students and every morning and afternoon it becomes crowded with students coming and leaving school. Stand-alone bicycle path are very beneficial to a strong bike culture because it encourages community interaction. Completely separate bicycle paths like these have little interaction with motor vehicle traffic and therefore bicyclists can have leisurely bike rides to work or school and converse with one another without having to worry about cars.

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As stated before, Groeningen is very unique because the city center’s streets are restricted to cars and only pedestrians and bicyclists are allowed. The photograph above is taken of an inner city street in Groeningen where no cars can be seen, only pedestrians and bicyclists (see Figure 39). The circular sign with the red circle around the symbols of a car and a motorcycle designate the road as only for pedestrians and bicyclists, motor vehicles are restricted from this street. However, the sign underneath it with a symbol of a delivery truck instructs pedestrians and bicyclists what days of the week and times delivery trucks are allowed on the street for the shops and restaurants. Similar looking streets can be found throughout the city of center contributing to the strong bike culture and healthy vibrant city of Groeningen.
In the past decade, bicycle parking has become Groeningen’s new bicycle policy challenge. With over 50% of all trips made by bicycle, the difficulty is where these bicyclists are going to park their bikes. It is common in the inner city to find bicycles parked randomly along the sidewalk. Obviously, this causes obstructions in front of businesses and restaurants. The problematic areas in Groeningen are the inner city and the railway station. In 2005, the city placed 1,500 bicycle racks around the city center where there was still room for them (see Figure 40).\footnote{Eric van Huissteden, “Velo-City Conference 2009 - Bicycle Parking: The Latest Challenge in Groeningen’s Bicycle Policy” (Municipality of Groeningen), accessed November 20, 2014, http://www.velo-city2009.com/assets/files/paper-van-Huissteden-sub3.1.pdf.}

Guarded bicycle parking facilities have always been a unique feature in Groeningen, but they were originally paid for by bicyclists. In 2007, four bicycle parking facilities in the inner city were made free of charge, first as an experiment but then became a permanent policy.\footnote{Ligtermoet, “Bicycle Policies of the European Principals: Continuous and Integral.”}
parkings saw a 34% increase in customers.\textsuperscript{188} This project of improving the space for bicycle parking in the inner city was called Stadsfietsen and has been successful, “the number of bicycles parked outside stands has fallen by 10-14%, despite an increase in the number of bicycles in the town centre.”\textsuperscript{189} The city is currently constructing the Groninger Forum, a building that will bring cultural entertainment, like films, talk shows, debates, and other presentations.\textsuperscript{190} The Groninger Forum will open in 2017 and will contain about 1,700 bicycle spaces in the basement of this building.\textsuperscript{191} When this building is finished, it will contribute to a significant move of parked bikes off the streets and into this parking facility. The Groeningen railway station is the second spot that did not have enough space for bicycles (see Figure 41). The Stadsbalkon (City Balcony) opened in January of 2007, offering 4,650 bicycle parking spaces at the railway station for visitors and inhabitants. This facility is a free underground parking facility that is guarded 24/7, and is mainly used by bicycle commuters who ride their bike from home to the station, park their bike in the City Balcony, and jump on their commuter train to work in another city.\textsuperscript{192} As mentioned before, Groeningen has a strong bicycle culture and is a leader in bicycle infrastructure. Even though bicycle parking has become an obstacle for Groeningen, unsurprisingly, it continues to design innovative techniques and facilities for improving bike parking, like the Stadsbalkon and the basement of the Groninger Forum.

\textsuperscript{188} Ibid.
\textsuperscript{189} Ibid.
\textsuperscript{191} Huissteden, “Bicycle Parking: The Latest Challenge in Groeningen’s Bicycle Policy.”
\textsuperscript{192} Ibid.
Education and Promotion

Similar to other cities in the Netherlands, Groeningen’s elementary school children are exposed to bicycle safety and etiquette at a young age within their school curriculum. Almost a quarter of the city’s population is made up of University of Groeningen students, and many of these students are international. Therefore, the city and University provides international students with lessons on bicycling in the Netherlands.\textsuperscript{193} The majority of residents in Groeningen ride their bike at least 10 times a week. In Groeningen, bicycling is a way of life, not just an alternative mode of transportation.\textsuperscript{194} Therefore, the Municipality of Groeningen does not need to focus on promoting bicycling. Groeningen’s traffic policies from the 1970s until now have been the most effective at promoting a healthy bicycle environment. In the past 40 years, Groeningen has implemented traffic policies that have limited car use and promoted bicycling by authoritative laws and infrastructure. In \textit{At the Frontiers of Cycling}, Pucher and Buehler mention:

Together with the provision of extensive cycling infrastructure, the city’s compact land use and car-restrictive measures have encouraged the continued growth of cycling as a means of daily travel… The main way that Groeningen promotes cycling is not through any special marketing gimmicks but rather by providing superb cycling facilities and restrictions on car travel.\textsuperscript{195}

The national Kindermoord Campaign in the Netherlands provided a push to increase bicycle use in Groeningen. However, from the 1970s to the present, Groeningen needed no promotional campaigns to encourage bicycling because the majority of the residents

\textsuperscript{193} van Steen, “Spatial Planning in the Netherlands, Past and Present.”
\textsuperscript{194} Eckerson, \textit{Groeningen: The World’s Cycling City}.
\textsuperscript{195} Pucher and Buehler, “At the Frontiers of Cycling.”
were on board with the plans, policies, and infrastructure implemented, which forced the community to become a bicycle dominated community. Since bicycling is a very natural and normal activity in Groeningen there is no need to implement bicycle advocacy programs.
CONCLUSION

In *A Modern Utopia*, the futurist author H.G. Wells stated: “Cycle tracks will abound in utopia.”\(^{196}\) My experience in Groeningen, reminded me of this quote because it is a city that seems to be an extremely successful bicycle utopia. Groeningen embodies the ideal bicycle culture that every city should strive for. A strong bicycle culture provides four main benefits that I previously mentioned: environmental sustainability, healthy lifestyle, economically feasible, and most importantly it builds community interaction.

Just like cars, the manufacturing process of bikes does have a negative environmental impact. The production of bike frames and other parts burns energy, usually fossil fuels that produce greenhouse gas emissions and toxins.\(^ {197}\) However, overall bikes are very clean and a sustainable way of transportation. As I referenced before, bicycling emits zero greenhouse gases into the atmosphere.

The U.S. Census estimates that about half of all Americans live within five miles of their workplace. Those who decided to bike those five miles every day rather than driving an average car could reduce total household emissions by six percent.\(^ {198}\)

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\(^{198}\) Ibid.
Therefore, bicycling can contribute to a decrease in the harmful emissions released by motor vehicles. Bicyclists do not burn any non-renewable fossil fuels or produce any air pollution; instead they burn calories that improve their health.

Cycling is very beneficial to our health; it is good for the heart, muscles, coordination, mental health and lifespan. Riding a bike can improve cardiovascular fitness and decrease the risk of heart disease. It also is good for your leg muscles and is an activity that has less of an impact on your joints than running on cement. Bicycling improves your coordination skills because you have to practice balancing while steering and pedaling at the same time. This activity also is linked to improvement of mental health and increased one’s lifespan.\(^\text{199}\) In the Netherlands, I noticed that the amount of people who were overweight was much smaller than the number of overweight people in the U.S.

Bicycling is also a practical and economically feasible alternative mode of transportation. Car ownership consumes a large portion of many Americans’ income. According to the League of American Bicyclists, “The cost of operating a bicycle for a year is only $308.”\(^\text{200}\) The Pedestrian and Bicycle Information Center website also states, “an increasing number of studies show that bicycle and pedestrian facilities increase home values, drive spending at local businesses, and spur economic development in


communities." Lastly, the cost of implementing a bicycle facility is much cheaper than
the costs of maintaining roads or parking garages. Bike lanes and bike parking
facilities take up less space than a motor vehicle road, parking lot or garage.

In Groeningen, what stood out to me the most was the sense of community the
bicycle culture brought to the city. Even though the population of the city is much greater
than Claremont and San Luis Obispo, it seems like everyone knows each other in
Groeningen. The bicycle culture in Groeningen has created a very friendly community
and complete strangers greet each other and ask each other how their day is going while
riding next to each other or stopped at an intersection. The bicycle facilities in the
Netherlands are also wide enough for bicyclists to ride next to each other, which allows
for social interaction. A community that embraces social interaction produces a safer and
family-friendly environment. A successful bicycle culture can reduce crime levels
because there are eyes and ears on the streets. Streets feel safer when there are more
people providing natural surveillance and community interaction. A bike-friendly
environment also provides a space where everyone can end up in the same proximity.
Wealthy people can be found riding next to lower-income people. Therefore,
supporting social interaction between all kinds of people and strengthening the culture,
the economy and safety of the community.

201 Ibid.


203 Ibid.

Dutch cities like Groeningen are great models for a successful bicycle culture including planning and policies. However, American city planners cannot just pick up an entire Dutch city’s bicycle infrastructure and policies and place them directly into a U.S. city; it will not work. One reason that it won’t work is because the car has too much dominance in the U.S. compared to the Netherlands. Dutch cities are more compact allowing for shorter bike trips compared to the sprawling cities of the U.S. San Luis Obispo and Claremont have been more successful with implementing a bicycle plan than other U.S. cities. However, their bicycle cultures never grew as fast as the Groeningen’s because there were no policies that forced cars off the streets. The Dutch have pushed bikes to the top of the pyramid of transportation. In the Netherlands bicyclists and pedestrians are at the top, then public transit, and cars are at the bottom.

American bicycle policies have never given bicyclists complete priority on the streets. The United States has had a car-dominated transportation system for so long that it is hard to lower the car’s priority. As I mentioned before, in Groeningen bikes are an essential part of the daily life that creates a society that is heavily influenced by its bicycle culture. Eliot Chang describes in his “The Viability of Bicycling as a Primary Form of Transportation in Los Angeles” thesis that American’s “car culture is so pervasive that driving is taken as an inherent part of individual lives.” American city planners can’t expect to immediately change our culture from being car dominated to bike dominated; it will take a long time for that process to occur. Therefore, city planners need to focus on designing bicycle facilities that will work for our car-dominated streets.

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205 Chang, “The Viability of Bicycling as a Primary Form of Transportation in Los Angeles.”
We have to figure out what is the best for each of our cities and determine what features from Dutch bicycle planning we can incorporate into ours.

I believe that a few elements from Dutch bicycle policies and infrastructure can successfully be implemented into U.S. bicycle transportation planning. Restricting the use of the car in city centers, like Groeningen, could greatly benefit cities in the United States. This policy would not be very difficult to implement because it’s a small area of a city and you are not completely forcing the car out of the entire city. Limiting car use in the inner city promotes a safe environment for pedestrians and bicyclists as well as creating more social interaction.

Another Dutch bicycle feature that could help improve U.S. cities’ bike culture are separated bike facilities. In “Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany,” Pucher and Buehler mention:

Providing such separate facilities to connect practical, utilitarian origins and destinations also promotes cycling for work, school, and shopping trips, as opposed to the mainly recreational cycling in the USA, where most separate cycling facilities are along urban parks, rivers, and lakes or in rural areas.\(^{206}\)

The Dutch believe that separated bicycle paths are the most safe and convenient type of bikeway. For one, they are completely separate from motor vehicle facilities creating a safer environment for bicyclists. Secondly, in the Netherlands they provide quicker and more convenient routes for bicyclists compared to car drivers. In the United States, it is hard for city planners to design separate bikeways because our land use policies do not

\(^{206}\) Pucher and Buehler, “Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany.”
allocate enough land to construct these bike paths. Therefore, city planners need to urge for more land use policies that provide mixed-use development for separate bikeways.

Thirdly, Dutch cities like Groeningen provide their residents with a multimodal transportation system. Their entire bicycle network is interconnected with their public transportation system. This makes the car less convenient and bicycling and public transportation more convenient to the community. The United States’ cities need to focus on not only filling the gaps of their bicycle networks, but also connecting their bikeways to their public transit systems. American city planners must make sure that the bike networks provide easy and convenient access to transit stations. They also must provide long-term bike parking like Groeningen’s train station underground bike parking lot and Claremont’s Bikestation at the Historic Depot Station. Connecting public transportation to bicycle networks can benefit a community by incentivizing the use of alternative modes of transportation, instead of the car.

As I mentioned before, Groeningen needs to provide not much promotion for bicycling because already the majority of the residents bike daily to work, school, or to run errands. However, in the U.S. promotional programs are extremely important for the encouragement of bicycling. San Luis Obispo is a good example of a community with strong bike advocacy groups who actively encourage the community to bike instead of drive and works with city planners to help create a successful bicycle culture. Claremont would highly benefit from more bicycle advocacy organizations that could help support the bicycling community and motivate more residents to ride their bikes. It may take a while for bicycling to become part of our daily lives as in the Netherlands. If bicycling
can become a major mode of transportation it can help contribute to our country’s movement to become more environmentally sustainable and build more interactive and tighter-knit communities.
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LIST OF FIGURES

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7. Ibid.

Figure 8.
Photograph taken by Sydney Stephenson on November 29, 2014.

Figure 9.

Figure 10. Ibid.
Figure 11. Photograph taken by Sydney Stephenson on November 29, 2014.

Figure 12. Ibid.


Figure 15. Photograph taken by Sydney Stephenson on November 29, 2014.

Figure 16. Ibid.

Figure 17. Ibid.


Figure 19. Photograph taken by Sydney Stephenson on November 29, 2014.


Figure 24.

Figure 25.

Figure 26.

Figure 27.

Figure 28. Ibid.

Figure 29.

Figure 30. Ibid.

Figure 31.

Figure 32.
Photograph taken by Sydney Stephenson on June 10, 2014.

Figure 33. Ibid.

Figure 34.

Figure 35.
Figure 37.
Photograph taken by Sydney Stephenson on June 4, 2014.

Figure 38. Ibid.

Figure 39.

Figure 40.

Figure 41.