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# Cycling around the car : an analysis of America's car culture, cycling for transportation in the Netherlands, and an exploration of policy solutions.

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Cycling Around the Car:
An Analysis of America's Car Culture, Cycling for Transportation
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By

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**<u>Introduction</u>**

From the start of the early 1900s, the United States, and the way we navigate through it, changed in a dramatic way. In 1908 Henry Ford mass produced what has today become the primary form of transportation: the automobile. By 1927, Ford sold close to 15 million Model T cars (Flink 1975, 67). Although the car was invented before this time, the Model T crossed the threshold from cars being primarily a luxury item to one of every day use. Today, the total number of vehicles on the road in America exceeds the number of Americans with their driver's licenses (Fernandez and Lutz 2010, 3). Those once 15 million cars have now become over 253 million vehicles, a dangerously growing number. They generate countless issues ranging from traffic congestion, road pollution, and safety, to name a few. With all these side effects, it is a small wonder why the car has become the most utilized mode of transportation in the states as opposed to other more resourceful, economical, and healthy options.

One such option is the bike. Yet, in the United States, only one to two percent of urban trips are made by bicycle. With a population of 318.9 million people, this percentage is extremely low in comparison to northern European countries, especially the Netherlands. Having a population of only 16.8 million people, over 28% of urban trips are completed by bike in the Netherlands. While the two countries are not comparable in many regards, including size or density—the Netherlands has a density of 1,054.8/sq. mi as opposed to the United States population density of 90.6/sq. mi—the Dutch model showcases many techniques and cultural phenomena that encourage the use of bicycles as transportation and discourage the use of the car (Moudon 2005).

There are many factors that encourage car use as opposed to cycling. By addressing some of these key issues, I will discuss whether it is possible to create a culture where cycling is a more dominant form of transportation in an already car dependent society. First, I will explore the cultural and real factors associated with car dependency in the United States. Addressing the psychological and structural components of this societal phenomena, I primarily reference the detailed book, *Carjacked: The Culture of the Automobile and Its Effect on Our Lives*, by Catherine Lutz and Anne Lutz Fernandez who provide an in depth analysis to this issue. Based on their work, transferring from a primarily car dependent culture to that of cycling seems unattainable. However, there are many factors that could aid in this transition and in this paper I explore the cultural factors that encourage or discourage cycling for transportation and discuss the costs and benefits associated with cycling. Drawing on academic research and examples, I present planning models from the Netherlands and explore successful Dutch vehicle use and cycling practices to suggest ways in which they could be incorporated in the United States.  In order to reduce vehicle use and increase cycling, cities should incorporate better policy initiatives that focus on de-marketing the car and encouraging cycling. Such policies include: building better cycling infrastructure, increasing bike safety and redesigning urban areas to increase accessibility without a car. Such policies, in addition to a cultural shift, can create real and impactful opportunities for the way we travel.

**The Car as a Tool for Freedom**

Since the widespread utilization of cars from the 1990s, vehicle ownership has come to represent a fundamental aspect of American life: freedom. Much like the American dream,

the car embodies the ideals of mobility, status, and opportunity. It has even come to

represent a part of our *selves*. This car mythology, a coin termed by Lutz and Fernandez,

demonstrates the psychological pulls associated with vehicles (Lutz and Fernandez 2010).

No longer is is just a means to get from point A to point B; rather, it is a means to express

individuality, showcase status, and achieve the ultimate amount of freedom.

Indeed, as noted by Lutz and Fernandez, the car is one of the most "potent and

tangible" symbols of freedom (2010, 15). It propels our independence, giving us liberty

from other people's schedules or desires. Much unlike public transportation, the car

provides daily conveniences and comforts that would otherwise be sacrificed. It is readily

available; there are no stops you must first walk to; it is custom designed for the owner's

taste—leather seats and fancy speakers; and it gives the owner control and power, both in

speed and navigation routes. Naturally, such amenities are appealing, especially for our

nation's teenagers, many of whom are bestowed with new, rather than used, cars upon

turning sixteen. Such a tradition propels the sentiment that the car is the ultimate tool for

freedom and adulthood, enabling teenagers to create distance from their parents and

parents to no longer serve as their children's chauffeurs.

But, as noted by Lutz and Fernandez, the car is only perceived to be the ultimate

form of freedom. Rather, they assert:

> The ideal of freedom that taps into our American identity as pioneers, libertarians,
>
> and rebels is a powerful one, and we continue to assume that the car is allowing us
>
> to live out those roles. These days, however, the car is not so much freedom's tool as
>
> its obstacle…It is the reverse of freedom when we are trapped in ubiquitous traffic
>
> jams instead of pursuing the activities we love, wrapped in the chains of car loan

indebtedness, and stuck in the quagmire of a foreign policy tethered to the supply of

oil. The myth of car freedom causes us to ignore these costs and ask our government

to spend more of our tax dollars on more roads and lanes, despite research that

shows that those new lanes will become as congested as before within just a few

years (2010, 21).

In reality, the freedom associated with car ownership is paradoxical. There is very little

about a car that is free. In 2008 the average price for a new vehicle was $26,477 (Lutz and

Fernandez 2010, 80). This is only the initial cost. Over time, the price dramatically

increases to include insurance, gas, parking and tickets, in addition to the extra added

finance for a home with a two-car garage, as commonly befit of modern American

households. Such an amenity can add "$30,000 to the price of a house and account for 10

percent of the property tax bill" (Lutz and Fernandez 2010, 81). On top of the yearly value

depreciation of the vehicle, it also costs approximately 66 cents per miles for an American

to drive their car. This adds up to roughly $14,000 a year per family with two cars driving

an average of 22,000 miles per year (Lutz and Fernandez 2010). Add car loans to the mix

and the price exceeds that of what a family would normally pay for a year of their child's

higher education.


**The "Green" Car**

Along with providing a sense of freedom, the car also serves as a form of self-expression, or

individuality. According to a study by Linda Steg on the instrumental, symbolic and

affective motives for car use, it was apparent that the "utility of car travel is not only

dependent on its instrumental value, but also on symbolic and affective factors" (Steg 2005,

148). People find an identify of themselves in a car, using it as an outward expression of

their status and personality. And car companies know this. Actually, they capitalize on this.

Over the years marketing teams have found a way to integrate vehicles into core

aspects of entertainment and personal identity. They are featured in popular movies—

often with a high-speed, unrealistic car chases—various commercials, and large billboards.

Even vehicle names invite consumers to imagine themselves on daring adventures and

embarking in the wilderness. Names such as the Jeep Liberty and Compass; Ford's Escape,

Expedition, and Explorer; and the Chevrolet Trailblazer and Avalanche all provide images

of pioneering the unknown and conquering the wilderness. These names frame the mind

for something exciting and allows people to imagine a life outside their own. The list

continues with Nissan's Pathfinder, Quest, and Xterra; Mitsubishi Outlander and Endeavor;

Toyota Highlander; Subaru Outback: and the Ridgeline and Odyssey by Honda. They build

upon the human desire for adventure, presenting car ownership as an opportunity to have

thrilling, daring and pleasurable expeditions (Lutz & Fernandez 2010, 16).

As Steg points out, these advertisements appeal to the desires for power, control

and self-esteem. Yet, such names rarely provide any of these marketed experiences. Rather,

these cars are confined to traffic intense highways, urbanized roads, and parking lots.

Rarely are Jeeps utilized for their off-road exploring; rarely is a Honda Ridgeline seen

perched at the top of a mountain. What is frightening about these marketing techniques

though, is how successful they are. They feed into the American Dream and fantasy and

freedom and status. As Lutz and Fernandez conclude, "But in all of these model names and

when Americans discuss the car, there is an intense association with the idea of

emancipation and the fantasy that another life is possible down the road, just over the

horizon, or in some faraway exotic locale" (2010, 17). In other words, the exaggerated freedom and adventure the car provides can be all but an illusion.

The marketing for the car does not conclude there. Certainly, car companies have accommodated growing demands for cleaner and more efficient cars. In an effort to meet this demand, they have created "green" cars, or hybrid vehicles. Astonishingly though, the purchase of these cars is not primarily for environmental reasons. Rather, the main motive for owning these cars, such as Honda Civic or a Toyota Prius, is lower gas expenditures as opposed to a genuine concern to conserve resources. Furthermore, these cars are usually purchased *in addition* to a family's SUV, rather than as a replacement. Car companies recognize this. They showcase these cars as environmentally friendly and economically conservative by presenting their new and improved green cars as gas-saving vehicles when in reality, gas is one of the cheapest components of owning a car. Yet, given the visibility of gas prices, it is hard to ignore the constant fluctuations. This only creates fierce and dramatic perceptions that presents gas costs as an exorbitant amount and implies that the solution is not to use cars less, but to explore options to find cheaper gas. It is odd that more simplistic solutions, such as cycling for close destinations (which actually does create positive environmental impacts), are seemingly out of the question. Yet, as Lutz and Fernandez duly note, "The Prius owner is someone who was convinced by car advertising to broadcast that he is an environmentalist, not by driving less, or recycling more, but, ironically, by buying a car" (2010, 30).

**The Car Jungle**

What elevates the car above other aspects of society is its overwhelming pervasiveness. In a given week's time, Americans spend an average 18.5 hours in their cars. As stated by Lutz and Fernandez, "Whether we are driving them or watching them, the number of hours we spend immersed in car culture means that they are everywhere—not just on the road—and we seem to welcome their pervasiveness" (2010, 7). Perhaps it is this inherent acceptance that allows us to look pass the many harmful effects that accompany the car. In terms of large scale construction, cities are literally redesigned with cars in mind. Indeed, the urban environment has adapted to the car, eliciting construction of many new concrete parking garages and lots, wastefully paving often underutilized roads, and expanding into once predominantly pedestrian areas. The urban jungle has readapted itself, assimilating the the societal car culture.

Additionally, the entire growth of American has perpetuated this systemic dependency on car transportation. Americans are moving to the suburbs at increasing rates, relying on their car to go to work, to the grocery store, and to take their kids school. The convenience of the car makes it a feasible option. But, as seen in many European countries, it is not the only option, nor is it the most efficient. Contrarily, a well formulated public transport system, either by bus or train, proves the most effective in transporting the masses to urban areas. With such a system in place, people can opt to make a short cycling trip to the station and then take the public transit into the heart of the city. Yet, the American government repeatedly pours tax dollars into funding car investment, rather than new and innovative public transit methods or cycling infrastructure. The emphasis on mobility has led the federal government to spend an average of over $30 billion a year for the past ten years on transportation. Unsurprisingly, the majority of these funds was used

for road and bridge construction and repair, as well as the improvement of air quality

caused from vehicle exhaust (Lutz and Fernandez 2010, 10).

From a governmental stand point, this is understandable. The automobile industry

contributes to roughly 4 percent of our nation's GDP and employs millions of workers, in

areas such as manufacturing, retail and wholesale trade (United States Department of

Labor). Therefore, it would seem reasonable for the government to provide tax breaks and

incentives for large automobile corporations to increase production and investment. On the

other hand, these incentives only perpetuate the problem. In some more infrequent cases,

such as Tesla's all electric car, the tax incentives are actually promoting true energy

preservation and supporting alternative energy solutions. But, for the majority of

companies, instead of engineering alternative energy solutions and manufacturing more

efficient cars, oil and car companies continue to supply inefficient energy sources and oil-

dependent vehicles. Their political foothold allows them to do so. Considering that the

energy industry is heavily consolidated—in 2005 the top oil refiners owned 55 percent of

the gas supply in the United States (Lutz and Fernandez 2010, 122)—it is no small wonder

that the government continues to provides subsidies and incentives to these companies

rather then actively promoting and supporting cycling.


**<u>Cycling for Transportation</u>**

The average distance for someone to commute by bicycle is seven miles (Antonakos 1994).

As presented in the research, people who already cycle for recreation are more likely to use

their bikes to commute to work, as opposed to people who do not use their bikes for non-

work trip purposes (Stinson and Bhat 2004). Additionally, cycling is more common in

urban areas, such as universities, downtown locations and urban centers. With the benefits

of cycling including increased balance and coordination, joint pain alleviation, and even

lower death risks for cyclists, both for transportation and recreation, it is a preferable

means of transportation (Frank, Engelke, and Schmid 2013). Other than personal health

benefits, cycling creates positive impacts on the environment. Direct results include the

decrease of air pollution, decrease of car congestion on roads causing delays, and

preservation of natural resources.

While there are inherent benefits to using bikes for transportation, in the United

States there are many factors that inhibit people from cycling. With aversions such as

heavy traffic, inadequate bike lanes, fear of theft, lack of bike parking, and inaccessibility of

shower facilities at work, it is difficult for urban planners and policy makers to present

cycling as the most viable option of transportation. Considering that much of the American

population view cycling as a dangerous activity, it is challenging to erase this notion and

focus on the increasing benefits. But, do the benefits truly outweigh the costs? This

question is one many people ask before making the decision to cycle. Because of the

cultural image (especially in the United States) that cycling is a sport that requires certain

gear, such as helmets, specific clothing, and mirrors, it is concluded that without such

equipment, there can be negative outcomes. This belief is not without merit. In fact,

through the research conducted by John Pucher and Lewis Dijkstra (2000), walking or

cycling, as opposed to the use of motorized vehicles for transportation, is three times more

dangerous, depending on location. Additionally, when analyzing the data based on per

kilometers traveled, cycling is 11 times more likely to result in death than riding in a car

(Pucher and Dijkstra 2000). Yet, this is not the same overseas. American pedestrians are six

times more likely to be killed by cars than those in the Netherlands. Although this

particular study is based off numbers and statistics from a decade ago, such dangers still

exists for cyclists, particularly in the form of fast traffic areas, limited shoulder room, and

the lack of visibility for cyclists.

Although these statistics are frightening, when compared to causalities and injuries

caused by car wrecks, they are insubstantial.  In 2007, a total of 41,059 people were killed

in car crashes, an average of 112 a day (Lutz and Fernandez 2010, 181). As stated by Lutz

and Fernandez, that is the "equivalent of a fully loaded passenger plane going down in

flames every single day of the year."  When put this way, the severity of car wrecks is seen

as infinitely more dramatic. Considering their frequency, however, fatal car accidents rarely

make the news, even at the local level, unless accompanied by some odd occurrence, unlike

plane crashes. It is bizarre that the American culture is so strongly tied to the most harmful

activity we do in our daily lives; car crashes have been the leading cause of deaths for

Americans ages 1 to 34 and have been for years (National Highway Traffic Safety

Administration 2013).

**Gender Roles and Status in Transportation**

This real and perceived danger is something that deters many from cycling, especially

women. With men's cycling trips comparing to women's by 2:1, women are often

considered "indicator species" for bike-friendly cities (Baker 2009). Previous research in

the United States shows that women are less inclined to take risks than men, leading

females to be primary subjects in determining whether cycling is deemed safe and if proper

precautions are taken as prerequisites to cycling. In comparison, the Netherlands flourishes

with having over 55 percent of their cyclists being women, an aspect of the cycling culture

that is rarely seen in America (Baker 2009). This is due largely to the policies that the

Netherlands has for cyclists and their advanced safety measures, both of which will be

discussed further in this paper. Furthermore, as cycling increases, the health benefits begin

to exceed the health risks from traffic injuries, and the injury rates fall (Pucher, Dill, and

Handy 2012). In essence, the more people who commute via bike, the less the fear of traffic

injury. Although increasing the number of people, both women and men, who cycle for

transportation will not eliminate all risks associated with traffic injuries, it will increase the

overall safety for new and veteran cyclists (Pucher and Dijkstra 2000).

Unfortunately for the cycling image though, much of a person's gender and identity

is embedded in the car, specifically the social constructs of each *type* of vehicle. Our

perceptions about gender roles and what is means to be masculine and feminine have

translated into the car culture. How men and women use and view their vehicles are not

only different, but also hold different values. For men, their identity, and idea of what is

masculine, is embedded in their control and mastery of the car. When discussing this

further, Amy Best explains the relationship between young males gaining their autonomy

form their parents and pursuing relationships as a product associated with driving (Best

2006). This "myth of masculinity" is further exaggerated through media perceptions. Lutz

and Fernandez note, "Our beliefs about the machismo fueled by horsepower suggest that

megamilers, sports car drivers, and SUV owners have better sex lives than men who walk

to work, ride a bike, or drive a compact car" (2010, 23).

Just as gender and identity are rooted in what vehicle people drive, so is an

American's social and economical status. Not only this, the car system actually perpetuates

economic inequality. It disproportionately affects the urban poor, who without cars, are

often unable to maintain employment or seek employment in hard to access areas. The

overwhelming car debt and car depreciation stymies the economic advancement for the

middle-class. Lastly, the car elevates the status of the wealthy. Through investment and tax

incentives, those in the upper economic bracket reap the benefits of the car industry, while

those in the lower class are just one crash away from the poverty line (Lutz and Fernandez

2010). Likewise, the certain make and model of an individual's car, not just owning one,

contributes to their perceived status. Lutz and Fernandez provide a case where they spoke

to an auto executive who claimed, "moving to a small car feels like descending the social

ladder. Americans look at is as a step down. As you moved up in life, you moved to a bigger

car" (2010, 73). If this is the case in terms of vehicles, what happens then to your status

when you relinquish the car and utilize the bike? It would seem that one's status would

completely deplete.

**Role of Urban Planners**

In addition to examining the costs and benefits of cycling and the social constructs of the

car, other factors such as landscape, urban design, resources, and policies play an integral

role in shaping an urban environment designed with cycling in mind. Planners face

constant obstacles related to each of these areas, in addition to the specification of whose

responsibility lies where within the urban planning spectrum. For example, "In the

Netherlands, and in many other European countries too, it is broadly accepted and

considered legitimate that governments have a chief coordinating role. It is common that

they develop for the stakeholders instead of with the stakeholders. This differs from

developing countries where stakeholder participation and joint development are

considered crucial to develop sustainable planning solutions" (de Graff and Dewulf 2010).

This model sometimes limits the influence of outside forces, such as non-profit or private

sectors, and instead empowers local governments to be the main initiators of urban

projects. Having proved effective in the case of the Netherlands, this model is something

that has yet to be incorporated on the same scale in the United States, and would most

likely face opposition if done so.

Yet, this question of "responsibility" seems to be a recurring theme within urban

planning, especially in the case of using bikes for transportation. Because multiple actors

are involved in this arena, urban planners explore to which degree each aspect should be

considered, and at times, which aspect should be most prevalent. With factors ranging from

the environment, personal health, transportation, and safety, it is necessary to coordinate

with a variety of experts in sustainable land use planning, transportation, environmental

planning, and community development. There must be a governmental role throughout the

process, which further demonstrates the need for collaboration among the many

disciplines of urban planning. Even more so, a nation's priorities must support long term

sustainable solutions. For example, the Netherlands has built the world's first solar road. It

is a bike path paved with glass-coated solar panels. Not only does this attest to their

dedication to alternative energy solutions, but also the popularity of energy conservation—

as noted through cycling frequency and priority for creating and maintaining accessible

cycling routes. Currently, in the United States, the main priority is cheap oil (Lutz and

Fernandez 2010). According to Lutz and Fernandez, this is seen to be valued higher than

breathable air, reduced traffic, and even environmental preservation; these issues are most

commonly seen as an engineering and technological matter. For Americans, the heart of

these problems do not stem from excessive oil consumption, exorbitant lifestyle habits, or a

biased political environment (Lutz and Fernandez 2010). Indeed, if driving is to be reduced

and cycling increased, it is a matter of behavioral change and social innovation.


**<u>Analysis of Bike Infrastructure</u>**

Taking into consideration these wide-ranged factors, policy makers and planners have

been working to create more cycling oriented cities. To aid in this effort, various policies

and incentives have been adapted to encourage the behavior of utilizing bikes for

transportation. A primary focus is bike infrastructure. Commonly seen as bike lanes,

separate paths, bike boulevards or off road paths, bike infrastructure plays an integral role

in encouraging individuals to commute via bike. Yet, the research shows varying

information about the role of bike infrastructure. As discussed by Jennifer Dill, conclusions

from many of the studies lack finite answers. Some studies suggest that bike lines play an

integral role in one's decision to commute via bike, yet others have found that there is no

correlation. Furthermore, many cyclists will choose to take longer routes to utilize bike

facilities, yet this also depends on the bicyclists. Other studies have seen the opposite:

bicyclists will preference shortest routes over those equipped with bike lanes or paths (Dill

2009). As evident from this research, there is no clear consensus about which

infrastructures work best, but there is a general agreement that bike infrastructure is a

necessary component in creating a bike friendly city.

Yet, other factors regarding city design in addition to bike lanes and boulevards

have been noted to spur bike transportation. A large component includes the location of the

bike paths. As discussed by John Pucher, an urban planning professor at Rutgers University,

even when cities install bike paths or traffic protected lanes, they are frequently located in

parks or along rivers, rather than in direct paths to areas of commute, such as school, the

grocery, or child care centers (Baker 2009). With an increase in urban sprawl in the U.S., it

is also worth nothing that while commuting by bike in many suburban areas may not seem

doable, even "in the sprawled metropolitan areas of the United States, 49% of all trips are

shorter than 3 miles, 40% are shorter than 2 miles, and 28% are shorter than one mile"

(Pucher and Dijkstra 2000). Therefore, other obstacles such as landscape, elevation, and

traffic interfere with the decision to bike. Even more so, lacking convenient and safe route

options for daily commuters, non-bicycle commuters are less likely to switch their mode of

transportation to biking unless there are positive incentives to do so.

**Dutch Planning Methods**

In order to determine which cycling policies are effective, many researchers have turned to

the Dutch, the leading nationality for cyclists. In the Netherlands there are safer bike

routes, separated bike lanes, and specific designs incorporated for cycling use. They build

better facilities for pedestrians and cyclists, implement stricter enforcement of traffic laws,

calm traffic in residential areas, design cities focused on people rather than vehicles,

restrict auto use, and promote and expand their education on sustainability transportation

(Pucher and Dijkstra 2000).

Although many other countries, including the Netherlands, find value in the car and

utilize it on a daily basis, such use is not even remotely comparable to the United States.

Indeed, although the United States accounts for a mere 5% of the world's population, they

contribute to over 35% carbon emissions produced by road transport (Jones 2008). These numbers are shocking. Despite the cultural differences associated with the car in the United States and the environmental differences when compared to other countries, these numbers are both unsustainable and unacceptable.

Unsurprisingly, an influential aspect of the Dutch culture that has allowed this country to flourish as a bike-oriented place to live is its policies on car use and driver training. Dutch citizens undergo rigorous driving instruction that actually focuses on avoiding and adapting to the surrounding environment, primarily cyclists and pedestrians. Assuming that "pedestrians and cyclists will make unsafe (and illegal) moves in traffic, car drivers are required to anticipate such unsafe moves by carefully noting the presence of pedestrians and cyclists anywhere along their route so that they can react quickly to avoid hitting them" (Pucher and Dijkstra 2000). Furthermore, Dutch drivers are taught specific techniques to avoid hitting cyclists. For example, when getting out of the car, drivers are instructed to reach for the door handle with their right hand — bringing their arm across their body to the door so that they are forced to look as to whether a cyclist is approaching before getting out of their car. Additionally, bicycle safety is repeatedly taught in schools, as is the importance of coexistence of many modes of travel in their culture (Wagenbuur 2012). Their ability to anticipate dangerous or unpredictable moves by cyclists is actually tested in their practical training of their driver's test.

Since much of the Netherlands policy revolves around car restrictions, it is more difficult for motorized vehicles to enter urban areas, an aspect of their city design that greatly encourages people to utilize bikes or public transportation as a means to travel. Additionally, the Dutch place a larger emphasis on traffic regulations and violation

punishments than many of the American states. In the Netherlands, accidents involving

cyclists and motorized vehicles most commonly result with the motorists receiving the

blame. Contrastingly, the United States is more lenient with polices; therefore a culture of

reckless and dangerous driving is seen as more acceptable (Pucher and Dijkstra 2000).

Further examining the role of cars in creating a bike friendly environment, it

appears that while "bikes can be complimentary to cars, they will not replace them"

(Wardman, Tight, and Page 2007). In contrast to the United States, Dutch citizens do not

obtain their license until they are 18, two years later than U.S. citizens. In the United States,

obtaining a driver's license is seen as a monumental step towards adulthood and many

teenagers view this as their first true moment of independence and freedom. At this young

age (and even later in adulthood), many drivers view the laws of the road as suggestions

and they capitalize on moments to shed some speed and feel control behind the wheel.

Distracted driving—mainly with cell-phone use—has become rampant as teenagers are

often not warned of the true dangers of the road. Instead, the car is their freedom from

their parents, and vice versa. Yet, the true paradox is thus: if transportation, or more

importantly mobility, is key towards gaining independence, why is the car the predominant

way? Indeed, riding a bike has no age limits (that is, until you can ride a bike), is

exponentially healthier, and more financially sound. The Dutch model, with its principal

focus on cycling for transportation and bike safety, has provided an excellent foundation

through which to begin transitioning from a car culture to one of cycling.  Likewise, as

further discussed by Wardman, many studies indicate that the "future for cycle commuting

in the absence of measures to make it more attractive is bleak" (2007, 348). Therefore, how

can cycling be made more attractive?

**<u>Analysis of Policy Incentives for Cycling</u>**

Currently, the main marketing technique used to increase cycling is showcasing external

issues such as pollution and congestion that are related to motorized vehicles. Additionally,

benefits such as environmental impact and personal health are highlighted, in an attempt

to get people to bike more frequently for the betterment of themselves and society.

Research by Pucher and Dijkstra (2003) demonstrates that on average, people who shift

from driving to using public transit or walking are five pounds lighter. Furthermore,

Sheldon Jacobson and Laura McLay (2006) have calculated the increased fuel consumption

caused by American overall weight gain. Since 1960, fuel consumption has increased to 39

million gallons of fuel for "each additional pound of average passenger weight". Although

these statistics are dramatic, two psychologists who researched the attitudes and

perceptions associated with cycling, discuss that, in order to increase the number of people

who cycle commute it is necessary to improve the overall image of cycling (Gatersleben and

Appleton 2007).  Even more so, there must be incentives to cycling that overcome the

aversions and encourage cycling as a more common form of transportation.

   To explore this further, Mark Wardman conducted a study that explored the relation

between monetary incentives and cycling. While improved bike lanes as well as access to

shower facilities and secure parking play a role in determining whether someone decides

to cycle, monetary rewards proved to be the most effective. From his study Wardman

concluded that, "A payment of £2 (or roughly $2.75 American dollars) per day is not far

from achieving a doubling of the amount of cycling and has a larger impact than the ideal

but unachievable scenario of cycling to work being spent entirely on completely segregated

cycleways. It would yield a 5.4% reduction in car demand, increasing to a very appreciable

23.6% for a £5 daily payment" (347). These deductions bring larger aspects of the

conversation to the table. As noted by Wardman, ideally, urban planners and local

governments would allocate money into creating better and safer bike routes and lanes.

But, as discovered from this study, if the goal is to altogether increase the number of people

cycling, it is most effective for governments to provide monetary positive incentives

directly to the people, rather than infrastructure. Many other researchers support this

notion suggesting that although "improved cycling facilities can make cycling safer, they do

not necessarily lead to more cycling, especially not amongst those who do not usually

cycle" (Gatersleben and Appleton 2007). Therefore, instead of directing finances towards

the construction of better bike infrastructure, monetary incentives could be better policy

initiatives that could spur more urban cycling.

In order to make cycling more attractive, policies must be enacted that prioritize

cycling as opposed to motor vehicles. Like every policy, some techniques have been more

successful than others. When comparing the United States to the Netherlands, it is evident

that some polices are more beneficial for one culture over another. For example, in the

Netherlands, a policy requiring the use of bike helmets has not been effective, whereas in

the United States, requiring helmets would ease worried parents and encourage more

biking, especially for schoolchildren. Claiming that helmets give a false sense of security

and discourage cycling by making it less comfortable, less convenient, and less attractive,

the Dutch greatly oppose such a law. But, such an opinion is also engrained in other aspects

of the Dutch culture. For one, the shorter travel distances in the Netherlands make cycling

appear both more simple and safer. Because of increased distances between residential

areas and educational facilities in America, over the years there as been a decline in cycling and walking to schools due to the real and perceived risks, something that would most likely not be abated by the requirement of helmet use (McDonald 2007).

On the other hand, the many successful policies that local Dutch governments have enacted greatly contribute to the safety and feasibility of cycling on a regular basis. In Amsterdam, the most commonly known city for bike transportation, the city has incorporated bike registrations, collaborates with bike shops, and combats theft with frequent police checks on bike ownership (Pucher and Buehler 2007). Additionally, in order to limit the use of cars, the Dutch have restricted access to city centers, making some streets designated for only pedestrian and cyclists use. These polices have greatly helped decrease the number of cars and while not all of them are adaptable to the American culture, such strategies like pricing polices and congestion charges, as demonstrated in other countries by the London Congestion Charging Scheme and the Stockholm congestion charge have been proven to decrease car use (Maibach, Steg, and Anable 2009). Furthermore, policies that incorporate lower speed limits, reduce car parking, create road restrictions for vehicles and, give pedestrians and cyclists priority at intersections have also been effective means for reducing car use (Woodcock et al. 2009).

## **Use of Bikes as Access and Egress**

In addition to policies that influence bike infrastructure, traffic control, and safety, the main goal of urban planners in regards to transportation is to create behavior changes that translate to people using more sustainable means of transportation. Ideally, cycling would be the main mode of transportation, as would public transportation. Therefore, a new

approach to incorporating cycling into a daily commute has been the promotion of cycling as both access and egress. Programs such as bike shares, which originated in the Netherlands, are constantly growing and adapting yet their viability in the United States is something that has yet to be determined. Although they are appearing more rapidly across America, they are not as effective in decreasing the use of cars and traffic congestion as originally believed. Instead, in relation to daily commutes, Paul DeMaio and Jonathan Gifford (2004) discuss:

> Those arriving by car will likely not use a smart bike as a segment of their trip due to the directness car travel provides. On the other hand, commuters who take transit and must transfer or walk as part of their trip may choose to use a smart bike to save time instead of transferring or walking. Thus, of those trips made for commuting purposes, smart bikes will likely be most useful for the last leg of a trip to work or the first leg of the return home.

While bike share programs are still useful, they do not aid in the overall goal of reducing car use but rather assist those people who are already using public transportation.

**<u>Cycling around the Car</u>**

Although the bike and the car are significantly different mechanisms, they can both be excellent forms of transportation when utilized in a sustainable manner. Vehicles can be excellent tools for enabling families to travel and relax at various locations. They are great for hauling loads or working on farms and can provide speed when needed. But, in terms of freedom, individualization, and mobility, their ability to achieve these three characteristics is not optimal. Rather, the car is predominantly preferred over bikes for its convenience.

Cities face more urban sprawl than ever and the utility of cycling in the American environment suggests a certain type of personality and identity. People often fear what will make them vulnerable and uncomfortable, which cycling certainly does. Yet, cycling allows the freedom to explore spaces where cars cannot access and to breathe fresh air—preferably air not tainted by exhausts. The adventure associated with cars is dismal to what can be provided by a bike: open air, speeding winds, off-road courses and self-propelled speed are some to name a few.

As we continue on this current trajectory of car use and fuel consumption, the feasibility of breathing fresh air continues on a downward spiral. Considering that car-produced air pollution creates toxins in the air, it is often preferable for people to drive their cars in heavily smog abundant areas. Unfortunately, this only perpetuates the vicious cycle, creating more pollution and making outdoor exercise substantially more difficult. Perhaps the most shocking facts about the car is not its outdoor pollution, but rather what is inside the car. If people are seeking the cars "safety" from outdoor pollution, it can indeed come as a shock when presented with the reality of the cars interior. "That 'new car smell' that causes our hearts to flutter also causes our livers and brain cells to tremble; liver toxicity, birth defects, early puberty, and impaired hearing are all associated with exposure to the elevated levels of certain chemicals permeating our vehicles" (Lutz and Fernandez 2010, 165). The components of the cars interior contain harmful chemicals, such phthalates and PBDE (polybrominated diphenyl ethers, commonly used as a fire retardant) which "exhale, in a way, or do what is called "off-gassing" (2010, 166). When released, usually over time or as a product of extreme heat, passengers inhale these toxins

in the form of dust. These toxins are literally making American's "carsick" as we continue to

drive around in poisonous metal boxes (Lutz and Fernandez 2010).

In addition to improving air quality and breathability, ditching the car and cycling

for transportation also significantly improves one's quality of life. Research has proven that

stress-levels are higher in those who often commute to work. According to Lutz and

Fernandez, "Because it is more unpredictable and requires a higher level of attentiveness

and exertion, driving leads car commuters to report significantly higher levels of stress and

a more negative mood than train commuters or those who bike or walk to work. And

commuters who experience a demanding commute have a lowered tolerance for

frustration, mean that when they come home, they are likely to be less patient with their

children and spouses" (Lutz and Fernandez 2010, 156). Over time, driving has transformed

from something that is pleasant to something that is stressful. Road rage has become

something that is even diagnosed, both as a learned behavior and a choice, showing a new

and acceptable way of interacting with others that is not conducive towards community

building. The increasing "drive time" creates more hyperindividualistic, angry, antisocial

and unhealthy people, whereas cycling has been proven to increase one's overall mood and

well-being (Lutz and Fernandez 2010, 157).

Whereas driving used to be considered social, it is also becoming something quite

the opposite. Even as cars have increased in size, the number of riders has simultaneously

decreased. More people are choosing to drive alone, making "solitude the default condition

for drivers, with the average occupancy rate per car in 2006 at 1.6 people" (Lutz and

Fernandez 2010, 4). This is becoming a fundamental issue with the American

transportation system today. By using vehicles as a crutch, people avoid situations where

they would normally interact with others in a positive manner. Likewise, when people

cycle rather than drive, they become more integrated into the community, both physically

and socially. The physical enclosure of a car not only provides a false sense of security for

drivers, but also propels an individualistic society where people are more likely to be angry

at others on the road rather than pleasant, as one would be when acknowledging someone

else on a bike. Lutz and Fernandez (2010) explain, "We are spending more of our lives on

the road; most of us interact with strangers on the road far more frequently that in any

other setting, if only briefly. Because this interaction increasingly takes place as a

competition for scarce resources—room to merge on a busy freeway, a spot to park in a

crowded lot—it is rarely positive but that doesn't mean it can never be" (158).

## **Balancing the Bike to Car Ratio**

It is unrealistic to hope for an automatic transition from a car culture to a cycling culture,

but there is reason to believe that the Dutch model can be incorporated in the states. As

seen in Portland, Oregon, or Boulder, Colorado, proper infrastructure and effective

marketing can help create a cycling environment. In their journal publication "De-

marketing the Car", Wright and Egan suggest that both the car can be de-marketed and

other forms of transportation, primarily public transportation, can be elevated. By focusing

on people's sense of self-image as opposed to their civic duty, campaigns can create a larger

appeal to cycling (Wright and Egan 2000).  As seen with the car, and the marketing

techniques that associate vehicles with self-expression and status, it is necessary to create

opportunities for people to express their character and personality. One technique could be

marketing different bikes, instead of cycling in general. As of yet, cyclists are usually

described as a common group, thereby diminishing their personal self-expression. On the other hand, car owners are rarely categorized as "motorists". Instead, people are associated with their vehicle, and there are certain stereotypes for each. For example, those who drive a Beetle face a different stereotype than those who drive a Porsche. Although this marketization would mainly be effective once the cycling population greatly increased, it could also be a factor in drawing people in. For, the primary dilemma with cycling is encouraging people who do not normally cycle to start cycling.

## Conclusion

In conclusion, the increase of cycling for transportation and reduction in car use is an aspiration for many cities and a difficult goal to accomplish for urban planners. With factors such as cultural image, landscape, and policy implementation, planners struggle to incorporate policies that effectively influence people's decisions to commute via cycling as opposed to motorized vehicles. As discussed by Frans J.G. Padt, a researcher of urban and regional development at Wageningen University in the Netherlands, there is more than just an environmental impact towards planning; social constructions play a large role in the field and determine ways planning techniques are incorporated (2012). Such policies that address concerns of safety, improve bike infrastructure in ways such as direct bike paths, larger shoulder room, controlled traffic speed limits, and increased bike parking, will benefit those who already cycle and hopefully encourage more people to do so. From the research it can be concluded that the most effective policies will address the cultural and psychological ties people have towards their vehicle. Such policies will need to elevate the image of cycling while demoting the image of the car. In terms of physical structure,

policies that enhance bike infrastructure while simultaneously increasing bike safety are also a priority, as is city design. By adopting many of the Dutch models, such as restricted car areas, improved outlooks on pedestrian and cycling right-of-ways, and larger local governmental roles, the United States could develop into more bike-friendly cities.

Furthermore, in the United States, policies concerning traffic control and speed limitations would appear to also be the most promising. With such a vehicle-oriented society, planners must incorporate policies that both encourage cycling and discourage the use of vehicles. While this approach may not succeed in more suburban areas where cycling distances are greater, it has been successful in large urban areas, such as Portland, where cycling has been integrated into the city's culture. Further research can explore other incentives that encourage cycling alongside normal routines. For example, suburb inhabitants could carpool to the city and utilize bike share programs for immediate trips, or even transport their personal bike with them to the city. In order to have this effect in other areas of the United States, bicycling must be made convenient and practical, therefore becoming a normal aspect of the culture. For example, John Pucher and Ralph Buehler of Rutgers University (2007), note that cycling in the Netherlands "can thrive even in a culture where people exercise their freedom to make their own travel choices, even with the means of affording their own motorized vehicles." Therefore, in order to adapt the successful models of the Dutch, American planners must work towards creating a culture in which cycling, not driving, for transportation is considered a norm and where cities are designed with cyclists in mind.

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