Breaking Down Automobility:

Examining the coercive roles the car plays in America

John Bly

May 2011

Abstract

Through ideological, social, political and physical means, the automobile has hijacked what it means to be mobile, as well as the very possibility of achieved mobility. This paper explores the various ways in which cars have created and continue to reinforce a system in America that is almost completely reliant on them. This system externalizes its costs onto the environment and victims of 'auto accidents,' suppresses safer and more democratic means of mobility, demands continual supplies of foreign oil, claims valuable agricultural and urban land as well as time, and kills more non-participating bystanders every year than the number of people that died in the attack on the World Trade Center on September 11, 2001. After exposing the costs of the system and the mechanisms of its reproduction, I conclude with a few ideas on how to move beyond the automobile.

Acknowledgement

Global climate change and approaching peak oil have made it apparent that America's continued use of the steel and petroleum car is untenable. President Obama's State of the Union Address in January of 2011 called for 1 million electric vehicles to be on the roads by 2014 as a step forward for positive environmental change. Many scientists, environmentalists, and academics support this goal and offer similar or supplementary technologies to achieve it: cars that run on ethanol or bio-diesel, or that are constructed to be super light and could possibly achieve over 100 miles to the gallon.[1] This array of options, it is argued, could ease America off its dependence on foreign oil, strengthen our economy and—if done well—might begin to mitigate climate change.

Yet many of the problems of the steel and petroleum car would not be addressed by any of these adaptations, and most of the above proposals contain within them their own problems. Electric vehicles require batteries full of toxic compounds, and when plugged into today's electric socket the average car would draw nearly half of their power from coal-fired power plants.[2] Studies have shown that this might lower carbon dioxide emissions but could raise sulfur dioxide emissions.[3] Already, corn grown for ethanol claims 12 percent of agricultural land in the United States.[4] If every farmer grew corn and only corn to turn into ethanol, it wouldn't supply as much energy as is currently used in gasoline and could possibly require more input energy than it produces.[5] Other biofuels are mired in similar problems or remain theoretical.[6]

---

[1] For example, see Amory Lovins et al., *Winning the Oil Endgame* or the inspirational website of Tesla Motors.

[2] Ron Hankey et al. "Electric Power Monthly with data for January 2011."

[3] Ramteen Sioshansi and Denholm, "Emissions Impacts and Benefits of Plug-In Hybrid Electric Vehicles and Vehicle-to-Grid Services," pp. 1202-3.

[4] According to the USDA, 43 percent of corn currently goes to ethanol fuel (Tom Capehart and Edward Allen, "Feed Outlook: Grain Stocks Report Confirms Tight Supplies"). In 2007, the last year on which I could find comprehensive data, 309,607,601 acres of farmland were harvested (NASS, "2007 Census of Agriculture," table 8)—86,520,000 acres of which were corn (NASS, "National Statistics for Corn").

[5] For example, see David Pimental et al, "Food Versus Biofuels: Environmental and Economic Costs," p. 4.

[6] David Alan Walker, "Biofuels, facts, fantasy, and feasibility."

Even more problematic than addressing the pollution created by driving is the problem of construction. Steel, rubber, and plastic, as well as heavy or precious metals will remain necessary components of automobiles even after they can run on vegetable oil or solar power. Currently, automobile production in America claims over a tenth of the country's steel, over a third of its platinum, and over half of its rubber.[7] The exploitation and production of these materials causes massive environmental degradation. Ironically, the materials at the heart of 'green technology' are some of the least benign; the extraction of rare earth metals in China, for instance—mainstays of the super strong magnets used in electric motors and generators—has led to the poisoning of water, air, and land on a massive scale.[8] Additionally, any attempt to introduce smaller, lighter, more fuel-efficient cars would have detrimental consequences for the safety of their occupants, especially if they were to collide with an older, heavier automobile.

Yet even when (or rather if) these problems are solved, the car itself poses even more difficult dilemmas: Traffic crashes are the tenth leading cause of death in the United States[9], and are the primary cause of untimely death.[10] These statistics do not even begin to incorporate the economic, social, healthcare or personal costs of obesity and weight gain that have resulted in part from the drastic increases in sedentary activities like driving in the last 50 years. Americans now spend over 100 hours every year—two and a half work weeks—commuting to work; nearly all of them drive.[11] The roads and other infrastructure that traffic requires take up a tenth of America's most fertile land, disrupt watersheds and other ecosystems, and cost an inordinate amount to build and maintain.[12]

---

[7] Matthew Paterson, "Car Culture and Global Environmental Politics," p. 260.

[8] Keith Bradsher, "Earth-Friendly Elements Mined Destructively," and Jianguo Liu, "China Will Tighten its supplies."

[9] Melonie Heron, "Deaths: Leading Causes for 2006."

[10] Mark Dery, "'Always Crashing in the Same Car'..." p. 228.

[11] U.S. Census Bureau, "American Spend More Than 100 Hours Commuting to Work Each Year, Census Bureau Reports."

[12] Paterson, "Car Culture..." p. 260.

The electric automobile and other alternative cars can scarcely begin to solve these problems. Why, then, are they generally accepted as solutions?

A simple answer is sometimes the best. In this case, we might conclude that Americans like their cars. Over ten million new automobiles are sold in the country each year, and though the recent recession has cut into the total numbers of miles driven, it had been rising steadily since the end of the last oil crisis in 1979.[13] There are 25 percent more vehicles than drivers in America, and nearly as many automobiles as there are people.[14]

Yet if a question like the one above expects to be successfully answered, it must accept that there are a wide variety of causes, some more immediate, others further removed, and each with varying degrees of influence. To assume a simple relationship of cause and effect would be extending an invitation to failure.

If we accept that Americans at least appear to enjoy cars, it leads one to ask why. Why are cars being purchased and driven so much? Why is it that they are so central to the ways in which Americans conceive of mobility, and how do they dominate our transportation imagination?

These questions have received attention from numerous scholars over the past 20 years, and many have been grouped under the study of *automobility*. A review of their work will explore what this term means, and be followed by the elaboration of the central argument of my work; "alternative" cars, along with all of their inherent problems, are being set up to replace old-fashioned cars for two complementary and mutually reinforcing reasons: The feelings of freedom, control, and possibility automobiles provide is culturally celebrated at the same time that dependence, restrictions, and impossibilities are brought into existence by the social and physical infrastructure that cars require.

---

[13] Bureau of Transportation Statistics, "National Transportation Statistics 2010," table 1-17.

[14] Ibid., table 1-11; and Office of Highway Policy Information, "Licensed Drivers."

The dichotomy between possibility and necessity is one that the automobile has favorably negotiated since its inception. The private automobile allowed for a freedom to travel that eclipsed all other modes to transit in the combination of its speed, range, ease of use, and accessibility. At the same time, the car required roads for driving, empty space for parking, gasoline for fuel and a host of infrastructure to deliver what it promised. As the number of cars grew, so did the number and size of roads, as well as the distances and speed at which traffic could travel. Through what automobility critic John Urry calls a "self-organizing autopoietic, non-linear system," people have restructured space, laws, and attitudes in such a way that encouraged the proliferation of car-use while at the same time making other forms of transportation less safe, appealing, acceptable, and possible.[15]

"Green" automobiles with completely benign environmental impacts might be possible, but today they are nothing more than a pipe-dream. Yet even if they could be realized and mass produced, they would remain as antagonists within a larger nightmare. In the face of a growing push for 'alternative' cars and the American valuation of automobility, this paper intends to argue for a different path forward. The automobile and the way it is used today is at least problematic, if not criminal. This is not to say that cars or driving are inherently bad—something that many critics of automobility seem to imply—but just that they are harmful to the extent and in the fashion that they are currently used. Creating an America where cars are used sparingly and most people travel most of the time through safe, clean, and democratic transportation will necessitate new and different forms of mobility as well as dramatic changes in our current infrastructure. It is my goal to provide a cohesive narrative of why and how we are where we are, so that we might have a better idea of where to go from here.

_____

[15] John Urry. "The System of Automobility," p. 27

Automobility: An introduction

Many scholars offer varying definitions of *automobility*, with different and sometimes opposed intricacies of meaning. Sometimes these reveal obvious biases that the author might hold, but more often they are helpful in determining the exact nature of the scholar's project. These scholars can be split into three camps—A) those who uncritically embrace automobility; B) those who offered sociological readings that problematize the automobile's rise; and C) those who responded with explicitly political readings pointing to real choices, actors, and victims, and potential sites of intervention.

The first definition we will inspect is offered by Loren Lomasky. It is the most literal interpretation of the word automobility. He splits the word into the prefix auto- and mobility, and claims that auto- represents the idea of autonomy.[16] He links the term automobility with the freedom to be self-directing. As far back as Aristotle, Lomasky claims, mobility has been celebrated as a good. It is a simple and logical step, then, to credit the car with furthering the human freedom of movement more so than any previous technology, especially for marginalized groups like women or minorities. Lomasky asserts that automobiles offer chances for free choice, movement, privacy, and better lives. Defending the status quo, he asserts the merits of continuous road-building and increasing car usage. His arguments are simple, and revolve around the sacrosanct notion of free will and liberty that Americans are, from the time they are old enough to raise their right hands to their hearts, socialized to respect.

Other scholars such as Dunn, O'Toole, and Gordon and Richardson also argue that individual choice led to the rise of cookie-cutter suburbs and urban sprawl; that they appear to be the preferred methods of living and traveling, and should thus be heralded as the manifestation of

---

[16] Loren E. Lomasky. "Autonomy and Automobility," pp. 7-8.

free choice, instead of demonized on aesthetic grounds. [17] If problems like congestion or pollution exist, these authors contend they can be solved technologically or by simple policy measures like a slight raising of taxes or fuel efficiency standards, or—perversely—further decentralization and suburbanization.

Lomasky's definition and subsequent defense of automobility is rather simplistic. For him the rise of suburbia is singularly explained by the advent of the automobile; the car made suburbs possible, and because people liked suburbs, they were built. Along with the above authors he seems to assume that free and individual choices are solely responsible for the current state of automobiles in America, and neglects to engage in meaningful discussion of the huge numbers of ways in which this current state of affairs is destructive, dismissing them as either problems that can be simply fixed or unavoidable costs that are easily outweighed by the benefits of autonomous mobility.

However, many have deemed the simple 'solutions' that Lomasky and others like him propose to be either ineffective or counterproductive and unable to take into account the real damages wrought by automobility. These costs include "pollution, death and injury, specific formations of geopolitics, the transformation of the urban landscape and modern mindscape." [18]

A more critical understanding of automobility begins with the understanding that cars did not become so popular on their merits alone—they coercively adapted the landscape and social psyche so as to become necessary. John Urry offers a definition of automobility that at first sounds similar to Lomasky's: "'Auto' mobility thus involves autonomous humans combined with machines with capacity for autonomous movement along the paths, lanes, streets and routeways of one society after another." [19] But Urry continues, automobility *involves* autonomy and

---

[17] James A. Dunn, Jr., "The Politics of Automobility,"; Randal O'Toole, "Is Urban Planning 'Creeping Socialism'?"; and Peter Gordon and Harry Richardson, "Are Compact Cities a Desirable Planning Goal?"

[18] Steffen Böhm et al., "Introduction: Impossibilities of automobility," p. 9.

[19] Urry. "The System of Automobility," p. 26.

mobility, but is composed of a "system of these fluid interconnections."[20] Urry argues this system, described above as self-organizing and non-linear, was set into motion when cars began to be mass produced and social life became "irreversibly locked into the mode of mobility that automobility generates and presupposes."[21] Urry writes, "Automobility is a Frankenstein-created monster, extending the individual into realms of freedom and flexibility whereby inhabiting the car can be positively viewed and energetically campaigned and fought for, but also constraining car 'users' to live their lives in spatially stretched and time-compressed ways."[22]

Using the theory developed in Malcolm Gladwell's book *Tipping Point*, Urry argues that once introduced to society, the private automobile became contagious. It demanded paved roads, set apart from places of recreation and slower modes of travel. The characteristics that made a road more hospitable to car drivers, along with the resultant increase of car drivers, made that very road hostile to other potential users on bicycle, foot, horse, or buggy.

Urry led the field, too, in introducing complexities into the term automobility. With Mimi Sheller, he questions whether the prefix *auto-* stands for autonomous, or rather just means self-mobile, and then if the "self" being referred to is the human driver or the driven machine. After all, the word automobile refers to just a machine that moves itself.[23] A person within an automobile is actually very limited in the freedom of movement they can exercise—especially the driver, who must constantly remain focused on driving, "fragmented and disciplined to the machine, with eyes, ears, hands and feet all trained to respond instantaneously, while the desire to stretch, to change position, or to look around must be suppressed."[24] This problematizes Lomasky's justifications for mobility, which depend upon the human rather than the car to be the

---

[20] ibid.

[21] ibid., p. 27.

[22] ibid., p. 28.

[23] John Urry and Mimi Sheller, "The City and the Car," p. 739.

[24] Ibid., p. 747.

one that is moving. And if the uncertainty between who or what is actually mobile in an automobile appears to be merely theoretical, it also lends deep insight into one major cause of the obesity epidemic in America.[25]

Yet Urry has faced criticism as well. Though he acknowledges the contingent origins of the system of automobility, he neglects to emphasize the concrete decisions by policy makers with both public and private agendas that have furthered automobility at the expense of other values. The politicization of automobility is Matthew Paterson's central task in *Automobile Politics*. Beyond offering an insightful critique of the inherent goodness of automobility as proposed by Lomasky, Paterson also demonstrates that the system of automobility neither was inevitable nor is irreversible, and that specific actors in the world of global capitalism ensure the continuous recreation of the system of automobility for their own financial gain.[26] Whereas Urry claims that automobility has become irreversibly locked in, Paterson emphasizes the contingencies which today continue to support automobility and tomorrow might be used to other ends.

The contradictions contained within the system of automobility are unstable. In the introduction to "Impossibilities of Automobility," Stephen Böhm, Campbell Jones, Chris Land and Paterson write, "A car's movement is beyond the control of an individual subject given its systematic interdependencies."[27] *Auto-*, once again ambiguously referring to either a singular person or machine, is opposed to a *system* that allows for its own realization in mobility. That is, not only is there uncertainty about who or what becomes mobile in automobility—but that entity referred to by *auto-* does not become mobile by itself, but rather through heavy dependence upon vast systems of infrastructure, policy, and ideology. Other contradictions abound as well. Sarah

---

[25] Matthew Paterson, *Automobile Politics*, p. 137.

[26] Ibid., p. 26-27.

[27] Böhm et al., p. 12.

Lochlann Jain critiques automobility from the perspective of pedestrian and bystander, and finds that the "failures" of automobiles "have been nearly completely normalized in multiple ways as simply definitive of American culture and life."[28] Car crashes have become 'accidents,' removing all linguistic blame from the drivers, engineers, manufactures, or transportation planners that create and supply everything to make the crash possible. The normalization of these costs—on individuals, communities, and the environment—serves as an integral part of their rationalization and become make them easier to ignore.

Along with Paterson, Katherine Goodwin emphasizes the concrete actions which underpin and perpetuate the system of automobility. She adds meaningfully to the discussion with a proposed "chain of logic" that forms the backbone of the system, made up of four ideas now considered to be necessarily linked: "Gasoline is necessary for making use of cars, cars are necessary for mobility; and mobility is necessary for humans to flourish."[29] These links are socially constructed and contingent, but also self-reinforcing. Though strong, each of them are far from immutable. Goodwin provides a schematic diagram to visualize the chain, in order to begin interrogating the weaknesses contained by each link:

Gasoline → Car → Mobility → Human Flourishing

The effects of the first link are perhaps the most obvious: in 2006 the number of vehicles in America that were not directly powered by fossil fuels was three orders of magnitude smaller than the number of conventional cars, trucks, and buses.[30] Yet even the relatively puny number of cars that do not run on petroleum products give lie to the idea that oil and cars are necessarily linked.

---

[28] Sarah S. Lochlann Jain, "'Dangerous Instrumentality': The Bystander as Subject in Automobility," p. 83.

[29] Katherine J. Goodwin, "Reconstructing Automobility: The Making and Breaking of Modern Transportation," p. 61.

[30] Goodwin, p. 63.

Though (or maybe because) petroleum offers some advantages over alternative fuels to the motorist, they also have drawbacks that are overlooked or ignored. Goodwin cites Daniel Sperling's and Deborah Gordon's *Two Billion Cars*, in which they argue, "'Gasoline (and diesel) are acceptable because we've accommodated ourselves to their unhealthy and dangerous downsides. We've come to accept them." [31] In fact, gasoline pumps are consciously designed so as to "'make people forget what they're buying."' [32] This is just one more example of how the dangers of automobiles have been naturalized—this time intentionally so—to stabilize the system of automobility and hide the alarming contradictions contained within it. Goodwin writes, "When the sources and consequences of a phenomenon are hidden, it is easy to assume that the phenomenon occurs naturally. Naturalization, arguably, is the most powerful weapon in the arsenal of the status quo." [33] The idea that it is 'natural' to put gasoline or diesel into automobiles is a powerful 'reason' to keep on doing it.

The next link is one that will assuredly outlive a reliance on gas to fuel automobiles because it is itself the reliance on automobiles to achieve mobility. This link is more deeply entrenched—though just as, if not more contingent—than the first. Whereas the material properties of gasoline offered early auto-makers the most 'bang' for their buck, the value of using a car to get around is very much socially determined. The fact that cars are the primary way to get around in America "was not inevitable," but rather a product of specific actions, in part by corporations to influence both consumers through advertising to use cars and the government through lobbying to build roads. [34]

Goodwin's last link—that mobility is required for human flourishing—could have been easily written as a direct critique of Lomasky's automobile manifesto although she doesn't

---

[31] Ibid., p. 65

[32] Ibid.

[33] Ibid.

[34] Ibid., p. 68.

mention or cite him once. In seeming response to Lomasky's assertion that "driving a car is an intrinsically worthwhile action" [35] which grants greater freedom to individuals through achieving greater mobility, Goodwin writes, "There is a difference between freedom *of* movement and freedom *as* movement." [36] Problematizing Lomasky's valuation of automotive speed and range, she argues, "Is there a correlation between distance traveled and freedom enjoyed? ...It is as if one posited a relationship between the freedom of speech and the number of words one uses. Do I more fully enjoy my freedom to speak when I write a two-volume tome than when I hold up a sign in the street? The thought seems faintly ridiculous." [37]

Additionally, there is a vast difference between negative and positive freedom to travel, which Lomasky fails to differentiate but that both Goodwin and Paterson point out. Negative freedom is the absence of tools of oppression or other obstacles. In the case of mobility, negative freedom exists when a person is not kept from going where he or she would like (within reason). This is freedom of movement.[38]

Positive freedom is the provided ability (note, not the lack of intentional obstacles) to do as one wills. Positive freedom of mobility would be the actualization of modes of travel which make movement possible (i.e. roads, paths, rails, canals, etc.).[39] For the car, this entails the effort to build, maintain, and police roads around the country so that people are free to drive where they want, when they want. This is a massive undertaking, though, and reveals the 'autonomous' driver's "dependence upon systems of production, distribution, regulation and research.... The conditions of possibility of mobility have little to do with autonomy." [40] When viewed under this

_____

[35] Lomasky, p. 7

[36] Goodwin, p. 72.

[37] Goodwin., p. 71.

[38] Ibid.

[39] Paterson, *Automobile Politics*, p. 85.

[40] Goodwin, p. 71.

light, automobility further contradicts itself and Lomasky's valuation of it grows exceedingly awkward.

Instead of the 'individual action' that Lomasky and others who unequivocally support automobility promote, the above scholars argue that the suburbanization of America and changing cityscapes were a result of political, cultural, and economic systems that implicitly and overtly favored automobiles and automobility above and against other systems of movement. The built infrastructure, complemented by altered mindscapes which readily embraced automobility, suppressed other means of transportation and served to further promote auto-informed decisions by planners and drivers alike.

A critique of automobility is not complete without suggesting solutions. In the literature cited above, these include legal changes in the status of the automobile, increased implementation of mass-transit, pedestrian, and bike paths, and policies like smart growth, which make driving less necessary or even less possible. Goodwin concludes with a few ideas on how to begin breaking each of the links in automobility's chain of logic. The oil-link is already weakening, and alternative fuels are already beginning to replace petroleum. The car-link, she claims, will be more difficult to break, as societal and physical barriers continue to promote car usage and discourage other forms of transportation. Breaking the link from mobility to happiness will require more than a fix of technology or infrastructure—Goodwin emphasizes the extent that Americans will need to fundamentally question their basic values to see if greater mobility makes us happier, wiser, or free.[41]

That the oil-car link is under assault from three directions can be considered a good thing. It is most threatened by the growing concern of oil scarcity and the increasing acceptance that the Earth is warming up, in part because of the huge amount of oil already used. The reliance of

_____

[41] Ibid., p. 76.

automobility on gasoline is also being challenged by the previously mentioned push to mass produce electric and other 'alternative' cars. A decreasing supply of oil coupled with increasing knowledge of the costs of its use and advancing technologies that promise to drastically reduce our need for it, will likely eventually give rise to cars that emit fewer pollutants and hopefully require less environmental degradation for their production and disposal.

However, the solutions to this link are narrowly technological and do nothing to address the numerous other criticisms lodged against automobility. If we focus our attention on this link (as is happening in America, I would argue, more so each day) the other problems recede to the conceptual background. According to many technophiles and optimists, fixing the multitude of problems associated with the car becomes as simple as a new type of battery and some cleverly written software. It is my fear that the emphasis on breaking this link—while potentially very helpful for a planet desperately in need of a reduction of petroleum exploitation and use—will only serve to distract us from the larger problem of automobility contained in the other two links.

The car-mobility link is heavily embedded in American culture and practice. The importance that cars have assumed in the way we understand ourselves and each other, though notions of speed, status, utility, possibility, sex, and style has received much scholarly attention.[42] Though it is challenged by pedestrians, cyclists and public transportation users each day, the vast majority of trips made in the U.S. are by people alone in cars. Data gleaned from Census 2000 shows that over 75 percent of workers over the age of 16 drove to work alone, an increase of two and a half percentage from 1990. Just over 12 percent carpooled, and about three percent worked from home—leaving eight percent that walked, biked, or took public transportation. [43]

---

[42] See Paterson, *Automobile Politics*, p. 144-147; Paterson, "Car Culture...," p. 258; Michael Bull, "Automobility and the Power of Sound,"; and Joanna Latimer and Rolland Munro, "Driving the Social."

[43] Clara Reschovsky, "Journey to Work 2000," p. 3.

Yet, even the very modest numbers of people who didn't commute in cars signals a small victory. Automobility critic Jörg Beckmann writes, "The modern city is sliced up into shopping areas, housing areas, leisure parks, business districts, and so forth. Human activities are no longer bundled in a particular spatiotemporality, but spread over space and time. The accessibility of such functions is *assured by means of the automobile* and its complementary infrastructure [italics added]."[44] If the web of transportation infrastructure connecting work and habitation prioritizes the needs and conveniences of the private automobile over other forms of transit, then those who still choose to travel by alternative modes do indeed "vote with their feet" to condemn the reigning auto-centric values and the built environment that embodies them.

The last link in the logic chain is the thorniest: "Delinking mobility from human flourishing presents the most fundamental challenge, as it raises the question of what characterizes a meaningful life."[45] Goodwin's project at this point is to argue against the idea that the more that movement is possible or the more movement that is happening, the better things are or are becoming. She cites Nigel Thrift, claiming that traffic circulation "became a prevalent metaphor and was understood to be 'casually connected to progress' in the way that the circulation of blood is casually connected to life."[46] That is, movement of the kind that the automobile provided was not considered a luxury but a necessary condition of advancing human welfare. At the same time, the "modern capitalist impetus" enforces the idea that open markets demand ever accelerating movement of goods, and equates productivity with mobility.[47]

This idea of the inherent good of mobility as explicitly supported by Lomasky and Dunn and intrinsically supported by the unsustainable logic of automobility is something that should be argued against. The kinds of mobility that are favored in America today should not be necessary

---

[44] Jörg Beckmann, "Automobilization – A Social Problem and a Theoretical Concept."

[45] Goodwin, p. 76

[46] Ibid., pp. 72-3.

[47] Goodwin., p. 73.

for human flourishing. However, to say that mobility is not needed for a good life is going too far. It can be argued that the values we've attached to moving across a city, between cities, or around the world are socially constructed and not absolute, but to propose the same about the values we have displayed throughout history and retain still today concerning the ability to move towards food, water and shelter and away from pain or danger is extreme.

Of course Goodwin herself does not intend to call into question the latter, absolute mobility, but only the former version of increased relative mobility, called at one point "extensive and frequent travel."[48] But the differentiation between what kind of mobility is necessary and what is extraneous is not made clear. This isn't a fault of the argument, but a difficulty with the possibility of setting any kind of limit between the two kinds of mobility. I find it hard to believe that there is a definite point at which movement becomes excessive, as though traveling nine miles is okay while ten is too much, or that speeds of over 15 miles per hour are extravagant. Though I agree that a distinction between extraneous and necessary mobility exists, and it most likely has to do with the motives and alternative possibilities of travel choices, defining it is probably beyond me, and certainly beyond the scope of this paper.

With this in mind, Goodwin's four-term three-link chain of logic for automobility is an extremely insightful way to approach the field. At the same time, it may be too easy to get distracted by what I argue are not essential components of automobility. On one end, focusing on finding technical solutions to the steel and petroleum car will do little to address other equally valid criticisms of automobility. If any of these 'green' solutions pan out—far from taking a step in the right direction—I fear that automobility will be only further entrenched. On the other end, indistinct delineations of what kinds of mobility are either beneficial or malevolent may weaken the claim that certain types of intensive mobility are not needed to live a good life. If the last link

_____

[48] Ibid., p. 75.

is restated as 'the mobility that is embraced in present-day society and epitomized by the automobile is necessary for our well-being,' it is referential to the previous link—that cars are responsible for providing mobility.

Additionally, though it is true that in theory or an ideal world the kind of mobility that a car offers has nothing intrinsic in itself to further human flourishing, in reality there exist millions of Americans that would lose their ability to acquire to work, food, and other essentials of life if they did not have access to a car. In the built environment of today, a car is a necessity for numerous people—many of whom are likely less concerned with human flourishing and more concerned with getting by.

It could be argued that these two last points might easily be incorporated into the car-mobility link. But this only stresses the already tenuous ties holding together the physically determined and culturally understood facets of this link. There are in essence two very distinct concepts parading under the same banner, and it would be helpful to flesh those out.

The first is the socially formed proposition that cars are necessary to get around. Because of billions of dollars spent annually on automobile advertisements and ideas of what is acceptable to wear, of how and with whom it is acceptable to travel, when someone needs to be at a specific place and how long it should take them, and how he or she should look upon arrival, alternative modes of transportation are often deemed unacceptable. Walking takes too long, mass transit is full of undesirable sorts of people, cycling requires a change of clothes and inescapable helmet-hair—all of these excuses and many more like them are recreated every day so as to defend the primacy of the automobile.

The second part of the link, much different from the first, is the physical built environment that structures certain possibilities and impossibilities which even someone with no respect for cultural norms cannot ignore. For example, many suburbs lack sidewalks, and many

others that sport them still lack meaningful places for users of those sidewalks to go on them. The distancing of work from home, and home from shops and school means that the only links between them might be four or six lane highways with minimum speed limits, and amid population densities too low to support even the most meager public transportation. This fact, though it emerges from the same pressures that formed its cultural counterpart, has utterly different consequences, and will have to be dealt with in complementary but innovative ways.

Goodwin's chain of logic provides an overview of the problem of present-day automobility. To get to the heart of the problem, though, I argue a new web of terms needs to be formed. By critically interrogating the ways in which the system of automobility is reproduced we can hope to find points at which innovative and effective change might be possible.

To represent the heart of automobility's logic, this web would not begin with the oil-link, as the fixation on alternative cars shows that the ideology of automobiles is currently transcending its dependence upon petroleum. The unhealthy preoccupation on the issue of petroleum keeps us from addressing more difficult problems. Being on the verge of breaking one link and winning a battle, we seem to be wistfully kidding ourselves that the war is nearly over and won.

Instead, the new web of logic at the heart of automobility would contain two simultaneous propositions that reinforce each other; the social idea that cars are necessary for mobility and the concrete fact that the way things stand today is hostile to other possible forms of mobility, making cars in actuality necessary for many types of movement. It would look like this:
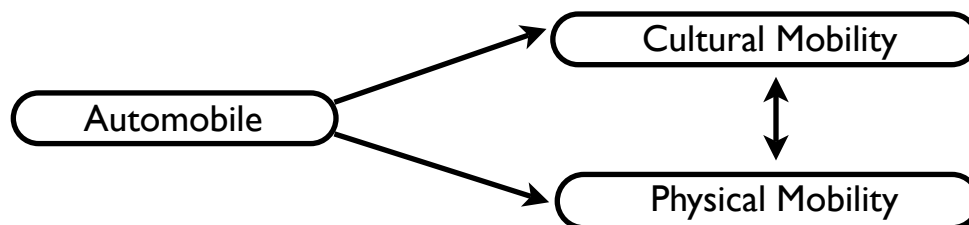
We have finally developed a framework to attempt an answer to our beginning question—why, if alternative cars can scarcely begin to address the wide range of critiques against them, are they generally accepted as solutions? There are, I argue, two main reasons which act to mutually underpin and prop up each other. Automobiles are considered necessary in the dominant cultural understanding of mobility at the same time that they are sometimes or even often necessary to achieve mobility. These social and physical limits work together to support automobility.

This paper intends to deconstruct these two dominant links in order to find within them internal contradictions and the seeds of their own destruction. It is necessary to expose how these terms operate by themselves and how they interact with each other to perpetuate a total system—physical, political, social, and ideological—that makes possible a certain kind of mobility while at the same time suppresses other forms of movement.

Automobility as freedom: The idea of car as necessary

The first major reason why Americans do not think past the automobile has less to do with the automobile itself than with the idea of it. Automobility has been specifically supported, supplemented, and shifted though advertising, which suggests and subtly influences preferences and values, as well as through many normalizing traditions and values already contained in American culture. These societal controls act to increase the valuation of automobiles and driving while devaluing other forms of transportation.

The amount of money spent on advertising by the American automotive industry represented ten percent of all advertising costs in the country in 2010 and amounted to 13 billion dollars.[49] That this money was spent by corporations supposed to act rationally and bound by

---

[49] "U.S. Ad Spending Grew 6.5% in 2010 as Auto Surged and Pharma Hit a Low." *Advertising Age*.

both shareholders and greed to generate profits is evidence that it is an investment with appreciable returns.

Of course, the claim that advertisements directly brainwash consumers into purchasing the advertised objects is too simple. Reality is more nuanced. As long as the material and basic necessities of life are provided, human satisfaction is determined more by social interactions than by material property or consumption.[50] Ads work by inducing in the viewer various states of fear, desire, inadequacy and perceived deprivation that appear to be only resolvable through the consumption of goods. This has led to a supreme irony: "a market-based society has a tendency to push people towards those things that it can provide—goods and services—while the real sources of satisfaction are outside the capability of the marketplace."[51]

Advertising is effective to the extent that it can tie physical goods and services (which do little in themselves to increase the happiness of the average American) to social values or primal instincts like love, fear, safety, desirability, status, ability, or belonging—and serves the secondary purposes of supporting or promoting the same values to which it refers.

In the 1970's, the social philosopher André Gorz recognized a distinct difference between the car and other transportation options: "Unlike all previous owners of a means of locomotion, the motorist's relationship to his or her vehicle was to be that of user and consumer—and not owner and master."[52] Motorists consume more than cars, or the fuel and maintenance to make it run properly. They consume the ideas and values of what it meant to be motorists.

The ways in which advertisements connect values to cars are diverse and pervasive. Magazines, newspapers, street signs and billboards, T.T., movies, and the Internet are full of automobile images that excite and intrigue millions of viewers every day. Every value or instinct

---

[50] Sut Jhally, "Commercial Culture, Collective Values, and the Future," p. 3.

[51] Ibid., p. 4.

[52] Andre Gorz, "The Social Ideology of the Motorcar," p. 3.

mentioned above and many more are linked to cars, so that these objects—which are little more than shaped hunks of steel that can move around—can be said with a straight face to be beautiful, sexy, bold, manly, passionate, or fun. The value that automobility has most completely co-opted for its own ends is that of freedom.

Without trying very hard, it is easy to see how automobile ads create and project a specific idea of freedom for which the car is uniquely able to provide. Every other thirty second car spot on T.V. emphasize the freedom of the open road as sleek cars zoom through prairies, forests, deserts, and deserted cities. Because most people rarely experience this freedom as they drive to work and back in rush hour, bumper to bumper, car and driver immobilized, some ads highlight the freedom that one has within the realm of the car itself—over levels of sound, temperature, and seating arrangements—or the freedom that the car grants to its driver and passengers to escape it through inter-satellite connections. Freedom is also referred to in ads that proclaim the 'Americanness' of a vehicle, and turn the purchase of an American-built car into a patriotic endeavor that strengthens America and the freedom for which it stands.

The typical automobile ad features wide and panning shots of a single car zooming across alternately empty and breathtaking landscapes.[53] Far removed from the daily commute, these cars stir up dust and scare huge flocks of birds into the air in front of majestic sunsets, or crunch over creek beds and mountain sides. The brute power and raw speed of these steel beasts is only matched by their maneuverability, graceful lines and glossy paint job.

Two qualities specifically emphasized in these generic commercials are speed and/or off-road capabilities. Many humans have some urge, whether instinctual or socially developed, for acceleration and velocity. Because of this, strong feelings of power, control, and flirtation with danger hit many viewers viscerally—even though the experience of driving (especially at fast

_____

[53] See Paterson, *Automobile Politics*, p. 147-54; Sheller, "Automotive Emotions," p. 232; and Bohm et. al., "Impossibilities of automobility," p 11.

speeds) requires the ironic further immobilization of the driver as he or she becomes extra-mobile.[54]

At the same time, Americans have within their history many heroes, legends, and myths about men freely living in and exercising control over nature: Paul Bunyan, Buffalo Bill, Davy Crocket, Johnny Appleseed, and Lewis and Clark are just a few examples. The same sense of adventure and ruggedness these men exhibited while traversing the country in real life and stories still remains a valued part of the American identity, and may partially explain Americans' fascination with four-wheel drive, high road clearance and other off-road capabilities.

Ruggedness, power, speed: these values speak to the emotional subject much louder than they do to the rational, economic one. By connecting certain automobiles to these traits, which themselves allude to the ultimate American value of freedom, the automobile industry shapes consumers who are interested in purchasing specific social meanings implanted within their automobile.

Yet the image of the open road is at the same time appealing and an outright lie. Paterson cites Nicola Baird's suggestion that "images of the open road are being dropped as the advertisers recognize that people mistrust them as being increasingly discordant with peoples' everyday experiences of traffic jams."[55] In their place, interior features of the car that can always remain within the control of the driver or that increase his or her comfort are emphasized—like climate control, ergonomic seating, audio and visual technology, or digital connectivity.

These, too, are presented as freedom enhancing. Automatic climate control not only frees one from the misery of a hot or cold car, but also frees one from the hassle of fidgeting with knobs and buttons to find that fleeting comfortable temperature, which always seem to need readjusting. Ergonomic seating better enables one to be comfortable while at the same time feel

---

[54] Beckmann, "Mobility and Safety," 86.

[55] Paterson, *Automobile Politics*, p. 151.

closer to the car and road, increasing the sense of power that accompanies driving.[56] Technology and connectivity allow the driver the freedom to mentally escape from the car when in traffic and focus on more interesting things—while at the same time keeping the driver aware of the surrounding environment and hazardous conditions.

Yet the biggest freedom that drivers retain, whether stuck in rush hour or zipping around the Utah salt flats, is that they are almost always alone. Roughly 88 percent of drivers commute in automobiles that hold anywhere from two to seven people, but do it by themselves.[57] This is in part because the ubiquity of automobiles means that, for many, sharing is not essential. Not sharing a ride means not sharing a point of origin or destination, and thus makes no claim on the driver to go out of his or her way. This is 'convenient.' And this convenience is only one part of the draw to driving alone. Being the only one in the car also means that one has complete control over the vehicle—not only where it goes and how it gets there, but over what station the radio is tuned to and at what volume, and whether the heater or air conditioning should be turned up or down by a little or a lot. This freedom, especially if unattainable outside of the car, is highly valued.[58]

The desire to drive alone, however, is often supplemented by a desire to share connections with the outside world. This is offered by the radio, which can be argued to connect a large number of drivers in their individual vehicles to each other. It is also offered by mobile phone conversations, which can be started and stopped as the driver sees fit.[59] Emerging technologies that make it possible to maintain further connections through social media supplement this trend. This, along with the fact that 20 percent of all meals in the United States

---

[56] Nigel Thrift., "Driving in the city," pp. 52-3.

[57] Bureau of Transportation Statistics, "National Transportation Statistics 2010," table 1-38.

[58] Michael Bull, "Automobility and the Power of Sound," p. 248

[59] Bull, pp. 250-251.

are eaten in vehicles,[60] makes Urry's claims that the car has become a "semi-privatized and hugely dangerous automobile capsule" that "people dwell in" all the more true.[61]

What remains important with these technological as well as gustatory changes is the ability of the driver to maintain control over the infringements of the public or others into their private space. Urry writes, "Thus, fragments of time are increasingly compressed into taskscapes that keep people inside their cars, while the 'coming together of private citizens in public space' is lost to a privatization of the mechanized self moving through emptied non-places."[62] Cars provide freedom to avoid or control interaction with out people.

The last way I will note that automobiles have been linked to freedom in America is through the use of patriotism.[63] Many cars are either constructed in America or have parts made in America, or are designed in America to be built overseas. By highlighting a car's attachment to the United States, car companies can smuggle into their cars the values for which America is supposed to stand—namely, freedom.

Beyond advertising, the car has been readily incorporated into many traditions and values of American life. Though advertising may help to reinforce some of these values, they are also strengthened anytime that they are reenacted by people immersed in and actively shaping their culture. The contingent, but seemingly necessary, link between the automobile and mobility is bolstered by the cultural expectations and images of every 16-year-old insisting on getting their driver's license on their birthday, and every proud owner washing their car in their suburban driveways on sunny weekend afternoons.[64]

---

[60] Michael Pollan, *Omnivore's Dilemma*, p. 3.

[61] Urry, "Inhabiting the Car," pp. 18-19.

[62] Ibid., p. 23.

[63] Goodwin, 64.

[64] Perversely, automobiles claim a significant part of their owner's time even when not being driven, in maintenance as well as working for the money to pay for a car, fuel, insurance, and everything else that accompanies driving. In his 1974 book *Energy and Equity*, Ivan Illich calculated that the average American male spent 1,600 hours a year "gathering the resources" for using his car.

These socially informed images are also closely linked to the automobile's ability (perhaps second only to that of the house[65]) to act as a status symbol. Cars provide so many things other than movement, and only some of them can be argued to further individual freedom. Because the car is also a place which can be controlled, decorated, and lived in at the same time that it can be used to transverse places and be shown off, it is apart from other forms of public or private transportation.

A study of American immigrants found that upon arriving in the country, they were much more likely to commute through alternative transportation. Immigrants were 1.8 times more likely to carpool, 2.8 times more likely to take public transportation, and 1.4 times more likely to walk or bike than native-born American commuters.[66] Yet those who have lived in America for longer amounts of time were more likely to assimilate into car culture, though even after 20 years they remained less likely to commute individually by car.[67]

Another way in which cars convey status is the ability of drivers to extract themselves from the timetables and missed-connections of public transit, and excuse themselves from uncomfortably waiting in unpleasant physical or social circumstances.[68] The flexibility which their car seems to offer them grants a feeling of autonomy. They are able to 'pick up and go' when they like, to wherever they desire. Though they may not take advantage of this possibility, it is freeing to know that it is there.

Goodwin mentions conspicuous consumption while describing the link between gasoline and cars, and emphasizes the fact that most SUVs, beyond being expensive to purchase, are also noticeably expensive to fuel.[69] In a way, a gas-guzzler is the perfect symbol for someone who

---

[65] Urry, "Inhabiting the Car," p. 18.

[66] Evelyn Blumenberg, "Moving In and Moving Around: Immigrants, Travel Behavior, and Implications for Transport Policy," p. 3.

[67] Blumenberg, p. 5.

[68] Urry, "Inhabiting the Car," p. 21.

[69] Goodwin, pp. 64-65.

wants to tell the world they have money to burn. Yet even cars by themselves, regardless of their fuel efficiencies or cost, represent a level of economic stability and prosperity that is respected by those with them and enviable to many without them. Of course, automobiles are differentiated as status symbols. A Toyota Corolla does not signify the same status of its driver's bank account as does a Porsche or Hummer. At the same time, there are many similarities shared between those drivers that drastically set them apart from the people on foot, bike, or bus past whom they drive.

Drivers and 'others' are separated from each other by the steel and tinted glass of the automobile. On one side of it, the driver sits nearly motionless, partially obscured and sometimes completely hidden by the glare off of darkened glass or the speed at which he's traveling, and protected by the very cage that contains him. On the other, people walk by without being able to see inside—observed but kept from closely observing the observer.[70] Their soft and fragile bodies are exposed to and unprotected against the sharp, hard corners and edges of car grilles, bumpers and wheel wells.

The power dynamic is so imbalanced between driver and pedestrian that Urry and Sheller have called those without cars "disenfranchised"—quite the claim to be lodged in our supposedly democratic society.[71] They go on to explain themselves, arguing that because drivers are hidden from view they are "excused from the normal etiquette and social coordination of face-to-face interactions. Car travel rudely interrupts the taskscapes of others (pedestrians, children going to school, postmen, garbage collectors, farmers, animals and so on), whose daily routines are merely obstacles to the high-speed traffic that cuts mercilessly through slower-moving pathways and dwellings."[72]

---

[70] Mike Featherstone, "Automobilities: An Introduction," p. 13.

[71] Urry and Sheller, "The City and the Car," p. 739.

[72] Ibid., p. 745.

To say that automobiles "rudely interrupt" the taskscapes of others has its inverse statement in that others (namely pedestrians, cyclists, and other drivers) are often felt to rudely interrupt the task-scape of a driver. Whole books have been written on the issue of road rage.[73] Let it just be said here that the things that frustrate many drivers, the speed at which they become frustrated and their ways to demonstrate or vent their frustration should be objects of concern for anyone who is forced to interact with them on a usual basis, because of the excessive power and irreversibility of rash decisions made behind the wheel of a two-ton vehicle.

Yet road rage and dangerous driving (especially against people not in other vehicles but on foot or bicycle) is more than concerning or frightening. It is criminal. In the last decade (2000-2009), over 55,000 non-motorists were killed by automobiles in crashes in the United State. For every one of them, over 14 others were injured.[74]The vast majority of these were pedestrians.[75] If any other product was complicit in this amount of damage, *especially on bystanders and unwilling or non-participating victims*, there would be a deafening public outcry. Yet these negative effects have been so normalized in modern culture so that the number of auto 'accidents' that happen each year are turned into a statistic and "attributed not to criminality but, on the contrary, as the unintentional and avoidable effects of automobility." [76]

I set the word 'accident' apart in quotes because it is especially problematic. The complicity of automobiles in the death of thousands of people has to be obscured through words like 'accident' for automobility to go unquestioned. Beckmann writes, "We would have to anticipate that automobility 'works', because its accidents are denied. Collective denial enables individual mobility." [77] 'Accident' implies that no one is at fault. Yet at the same time that the

---

[73] See Maria L Garase's *Road Rage* and Edward B. Blanchard's, Tara E Galovski's and Loretta S. Malta's *Road Rage: assessment and treatment of the angry driver*.

[74] National Safety Council, "Pedestrian Safety."

[75] Fatality Analysis Reporting System Encyclopedia, "National Statistics."

[76] Jain, p. 67.

[77] Beckmann, "Mobility and Safety," p. 94.

victims of automobility are deemed to have suffered from "accidents," driver negligence and human error are often cited as causes of fatal crashes.[78] Beyond the fault of the driver there are city planners, vehicle designers, road engineers, and a host of other people who have participated in creating and inviting the possibility of fatal crashes by aiding the system of automobility at the expense of safety.

Of course, this is not to say that they are all equally to blame. I am willing to question whether the good that automobiles provide outweighs the very real and human costs that they claim. But even if we were to accept that automobility is worth it, this would not lead us to call car crashes 'accidents.' If the lives ended by automobility were not as valued as highly as is automobility, and a known consequence of automobility, then they would instead be called "sacrifices."[79] We would have to face the fact that the thousands of people killed every year by automobiles were sacrificed to the system of mobility we have created so that we might drive wherever we want to go. The term 'accident' is the result of the need to normalize the negative effects of driving in order to avoid addressing the serious deficiencies that exist in automobile safety, driver knowledge and capability, and the consideration of bystander well-being.

These social forces that have reified the idea of freedom in the automobile are the very ones that impinge upon our ability to freely choose safe and democratic modes of travel and at the same time normalize these ill effects. The commodifying and fetishizing of cars and crash-sacrifices has placed a screen between immediate object-experiences and their real causes, so that people acting as consumers do not look beyond the policies and processes that have spawned both. This leads to the disjunction between cars as freedom enhancers and car as oppressors. This contradiction is seen not only on a social level but also on a physical one.

---

[78] Paterson provides a disturbing insight into the human mind on pp. 164-5 of AP, citing studies that found drivers who not only felt safer in an SUV (its own myth), but wanted to drive such vehicles that "'if there's a crash, [they] want the other guy to die'."

[79] Dery, 225-226. Also see also Peter Dauvergne, "Dying of consumption: Accidents or Sacrifices of Global Morality."

Automobility as restriction

The allure of automobiles has been shored up at the same time that their costs have been swept under the rug through the discourse of advertising and a broader culture. Some of the costs have been addressed above. Other costs have been incurred as the car, as idea and object, introduced physical barriers into everyday life that had not existed before. Automobility has introduced a huge variety of obstacles and barriers to diverse, clean, and healthy forms of movement. Yet these barriers are not merely unintentional or inconsiderate side-effects of a system that values automotive travel over all else. They also serve as factors which further entrench the very system that spawned them. If social discourse could be shifted tomorrow against automobility, we would still be left with a vast network of highways, freeways and parking lots, as well as the low density of construction around the country that they support.

Since the arrival of the automobile, roads have produced a long history of exclusion. Jain argues that this exclusionary ideology was formed in the early days of the car that still exists and guides automobility today. Between 1900 and 1920, it was "materially and semiotically encoded through such things as planning codes, standardized guardrail design, and asphalt specifications, all of which coincided with the kind of political space that the road would become."[80] This 'political space' was one that increasingly excluded other users who either had motives differing from those of the motorist—in the case of vendors and playing children—or shared the same goal with the motorist but could not realize it—in the case of the horse-drawn carriage and bicycle—as noisily, quickly, or with as little risk as could a person behind the wheel of a car.

The function of the street was drastically changed from "a multi-use site to being a thoroughfare."[81] As the road, once meant for all users, "evolved into a homogenous space,"

---

[80] Jain, p. 64.

[81] Paterson, *Automobile Politics*, p. 135.

travel on it by other means or using it for other ends grew more dangerous.[82] Restrictions on speed, meant to keep the road a safe place for all, began to be repealed or drastically raised as early as 1900, so that the speed potential of the automobile would not be unduly hampered.[83]

The exclusion of different users from today's roads is even more pronounced. Automobility's effect "on public space, especially the space of the urban street, is that the space becomes meaningless or even maddening unless it can be subordinated to free movement [of the car]." [84]Roads must make everything accessible, and in a timely manner. Along with maximum speed limits, many roads sport minimum speed limits that make the use of those roads by slower moving vehicles illegal.

Even roads without minimum speed limits are not welcoming places for non-motorists. Legitimate use of these roads by cyclists or pedestrians results daily in leers, threats, police tickets for impeding traffic, car crashes, and death.

The exclusion of certain users from roads does not affect everyone equally, either. It is true that no one—rich, poor, young, old, black, immigrant, male or female—is allowed to ride a bicycle on a freeway. At the same time, not everyone is able to own or drive a car—three primary examples are impoverished, handicapped, or young people. They are the most disenfranchised, though this too is normalized. A poor person who might not be able to afford a car still has the American Dream to draw hope from—one day they might be able to enjoy the freedoms of their fellow citizens. A person in a wheelchair is already partly immobilized, so the further immobilization by the combined means of restricted ability to move from place to place because of the difficulty or inability to drive and the necessity to drive in order to get somewhere, is hardly given thought to. Young people have a future where they can look forwards to (instead of,

---

[82] Jain, p. 74.

[83] Paterson, "Car Culture...," p. 265.

[84] Richard Sennett in Sheller and Urry, "The City and the Car," p. 742.

like a poor person, hope for) owning their own car and being free; until then, that their movement is restricted can be interpreted as a good way to keep them out of trouble.

Even if one is able to own a car, the built environment creates and enforces a necessity of using it to cover even minor distances. This can most easily be seen in the suburbs, where amenities like sidewalks, pedestrian bridges, and cross walks are either lacking or seem to have been installed for aesthetic instead of functional reasons.[85] One personal anecdote would be enough evidence for anyone having spent time in suburbia:

In December of 2010, I was dropped off by a friend outside of a mall in suburban Minnesota. I was supposed to meet my brother in a Starbucks Cafe about about half of a mile away. This half-mile was no stroll in the park. Instead, I had to cross through the giant parking lot surrounding the mall. It wasn't so difficult, because parking lots are still one of the few places where cars and people must still navigate around each other on somewhat equal terms.

Beyond that, however, was a road that ran around the outside of the lot, with numerous intersections leading to the main roads leading to other shopping centers, restaurants, and the highway. Because it was winter the grass strips along its side that might have sufficed in lieu of sidewalks were piled high with four or five feet of snow. Motorists, eager to get into or out of the mall, zipped along this ring road. With no crosswalks or stop signs in sight, I had little choice but to walk on the road, hoping that passing cars would be careful, and be always ready to jump into the walls of snow if they weren't. During the hundred feet that I had to walk in the road before crossing it into the parking lot serving the cafe, I was honked at, and made the recipient of at least one rude gesture. Upon cautiously entering the parking lot of my destination, I was nearly run over by the driver of a mini-van.

---

[85] For example, some new housing developments in suburbia feature sidewalks that do nothing more than loop around the neighborhood—making it fine for a leisurely stroll if one enjoys seeing the various shades of earth-colored 'cookie-cutter' homes, but useless if one would rather reach any destination as meaningful as a grocery store, school, park, or workplace.

I had in times past, through the windows of cars, observed how roads in suburbia were so well equipped to handle the large number of automobiles that traverse them everyday. I had never before that moment, though, been struck with the realization that those roads were so completely inhospitable—and even downright hostile—to just about any other form of transportation.

Though the parking lot in the above example was relatively benign and was the least of the barriers to movement, it is not always the case. The parking spaces and lots that automobility requires represent impediments to clean, safe, and democratic mobility in a number of ways. Ignoring the harmful environmental aspects of parking spots in terms of their contribution to growing amounts of impervious surfaces and urban heat islands, they also are often empty and useless spaces that further separate pedestrians, cyclists and utilizers of public transit from their destinations and may make their trip more dangerous in the process. Furthermore, the provision of parking space claims valuable land (especially in dense and urban places) that could have been used for recreation, employment, or safe and democratic transportation.

Jane Jacobs chronicles the ill effects of parking spaces in *The Death and Life of Great American Cities*. She notes that new development in old cities is often accompanied by the addition of more and more parking lots. The quintessential example is the 'redevelopment' of old and usually low-income homes into sprawling housing complexes or 'projects.' These complexes are built higher up with more space in between than the buildings they replaced. This new space —usually parking lots—becomes dead space. That is, it is avoided by pedestrians and then turns into a kind of no-man's land. Because the space has nothing of interest to offer to passersby, it is neglected by them. Neglect from the general public turns dangerous, especially after dark, when pedestrians are very keen to keep to well-lit and populated areas. Their personal safety requires

pedestrians to either avoid or detour around dead spaces like dark parking lots, or drive their own cars in order to feel secure.

Infrastructure, including parking lots, that automobility requires decreases the density of urban space. Currently, half of the area of the average American city is devoted to car usage.[86] This in turn increases the need for cars to traverse those adulterated spaces. Outside of the city, the travel that automobility made possible was key to the development of the suburbs, which also increased the need for cars in order to escape them.

Parking lots do more than invite the proliferation of dead space. They keep more productive activities from occurring. They claim valuable territory that could be utilized as parks, storefronts, homes, gardens, or alternative forms of transportation. By doing so, they make streets and cities less dense, diverse, and lively. At the same time, the functions of the city that are diverse, lively, or otherwise beneficial are diluted by automobility. Jacobs writes, "The spaces required for roads and for parking spread everything out still farther, and lead to still greater uses of vehicles.[87] But the trend does not stop there. Greater use of cars leads to more need for roads and parking spaces, which leads to greater dilution of possible destinations. Its logical conclusion is the bland and uninspired suburb, or what Jacobs calls "a homogeneous and thin smear." [88]

The need for parking contributes to lower density cities—and therefore creates distance as a barrier to mobility that did not exist before—but not nearly as much as does the car itself. The advent of the private automobile made suburban and low density communities, where people travel long distances to and from their workplaces, possible for the first time in history.

In the year 2000, the average American spent 52 minutes commuting to work and back every day, traveling between 20 and 30 miles.[89] Though it's an oversimplification to attribute this

---

[86] Paterson, "Car Culture...," p. 260.

[87] Jane Jacobs, *The Death and Life of Great American Cities,* p. 230.

[88] Jacobs, p. 353.

[89] Reschovsky, p. 5.

to individual preference alone, as Lomasky does, it would be nearly as wrong to say that Americans commute unwillingly. A host of research has gone into our collective feelings about commuting,[90] and Paterson sums it up best when he writes, "The appropriate conclusion is not triumphalism but *ambivalence*. Cars are simultaneously experienced as autonomy-enhancing and at times autonomy-limiting." [91] Yet the important point still remains that whatever the majority of Americans feel about their cars, the fact is that their lifestyle demands them. They live far enough away that walking or cycling to work would take multiple hours or even days, at the same time that they live in neighborhoods not dense enough to support public transportation. Just as one might paint himself into a corner, we have paved our way into suburbia—and there is no simple way out.

The last way in which automobility has created physical obstacles for other types of movement is through the need to remain nearly motionless while driving. As stated above, America's obesity epidemic can at least partly be blamed on the transportation system that automobility has created. With over two-thirds of Americans overweight or obese, and childhood obesity and diabetes skyrocketing, there is little doubt that our lifestyle is unhealthy, and the amount of calories we take in is much more than the amount we use. A good deal of the problem lies in the quality and quantity of calories that we consume—much of it from subsidized and processed corn and factory farms.

Yet the other side of the equation is also faulty. We consume too many calories at the same time that we do not burn enough of them on a daily basis. Autonomous movement is an exceptional way to burn calories but technological advances like the elevator, escalator and automobile take the physical effort out of moving. By allowing mobility without requiring (and

---

[90] See Carlton Basmajian, "'Turn on the radio, bust out a song'...," and his references for a good introduction.

[91] Paterson, *Automobile Politics*, p. 89.

indeed suppressing) exertion, cars are a definite contributing factor to our current health problems.

Beyond this, I posit that the weight-gaining cycle feeds on itself. Though it is well accepted that people who do not exercise are more likely to be overweight, I would argue that the obverse is also true as a causal effect—people who are overweight are less likely to engage in physical activity.[92] If this is so, then cars not only help to create the problem of being overweight, but in doing so increase the dependence on cars as people become less confident or even able to traverse distances by means of their own autonomous power.

Additionally, automobility's physically confining effects are felt by more than just drivers and passengers. The proliferation of paved roads and speeding cars act as obstacles to healthy kinds of movement. Concerns for safety keep many parents from allowing their kids to play in or near roads, to avoid car 'accidents' as well as the child-abductors driving around about whom we learn on the nightly news. But there are so many roads now that this prohibition can be akin to keeping kids from all impromptu play, unless they be driven to the nearest park or playground to run around.

The barriers that automobility have created are costs that we all bear. From the roads that can only be travelled on by automobiles to the suburbs that can only be reached by them; from the dark parking lots and unmarked white vans driven by possible criminals to the busy streets with cars too fast and too selfish to slow down or the highways and freeways made physically impossible to cross by walls and fences; because of car crashes and daily threat of death due to negligent driving and design: the system of automobility is one that has imposed strict limits on safe, clean, and democratic movement in order to remove the hindrances to its own realization.

---

[92] No studies could be found about this, and the claim may be controversial. Some overweight people do decide to exercise, of course, but the anecdotal evidence I've collected throughout the years gives me the impression that many overweight people think of themselves as being unable to participate in physical activity because they lack strength or endurance and are afraid of what people might think.

These physical barriers do even more than reproduce the conditions that brought them into existence. They also shape America's cultural understanding of mobility and freedom, as discussed in the previous section. Because roads, gas stations, speed limits, and cars exist in the place of other ways of realizing movement, they are culturally understood as *the* way to realize movement. How many movies feature scenes emphasizing the freedom of the open road, where their main characters zoom down freeways and highways in automobiles? It might be easier to count the number of films that don't.

Why is becoming 16 years old such a big deal in America? It is that day which marks the possibility of legally operating a motor vehicle unsupervised. And it is not only the ability to drive that is celebrated—it is the freedom and autonomy supposedly granted by a driver's license. Yet most kids have had freedom to autonomously move since the first time they crawled across the living room floor. Movement is much more highly regulated while driving a car than while on foot, but driving is considered freeing because it is often now the only way to reach a destination that otherwise is too far or had too many physical barriers in the way.

Conclusion

The interconnections between the physical world and cultural understanding of mobility is made even clearer in "Bikes, Sticks, Carrots," where Justin Williams argues that cycling is thought of as a dangerous hassle and driving is considered normal because of the incentives and deterrents attached to each mode of travel. That is, it is not that cycling as opposed to driving is inherently less efficient, safe, or acceptable, but that the context in which both are placed makes it so. Imagining a city where the dynamics of the relationship between bikes and cars are reversed, he writes:

> If 80 percent of parking lots in the United States were ripped up and bicycle
> facilities were built in their place, then...new space would be opened for dense

urban development, thereby decreasing trip distances and removing a further obstacle to cycling. If cities and suburbs contained only narrow streets absent car parking; if gas stations were replaced with bicycle repair shops; if traffic regulations were designed for cyclists' needs...if motorists were relegated to one littered, pothole-ridden lane and excluded altogether from certain streets, deviations from which elicited jeers, threats, and heckles; if speed limits were set at 15 miles per hour; in short, if cycling became the dominant mode of transport with the side effect of deterring driving, and car drivers were exposed to the same level and degree of challenges that cyclists presently face, then driving would appear undeniably burdensome, and few would tout its benefits. ... The supposed freedoms attached to cars would cease to exist.[93]

Such a striking vision might appear to be mere conjecture and thus easily dismissible. Though I know of no American city where such drastic actions have been taken, there is at least one city that at least begins to approach the cycling-utopia that Williams describes: Copenhagen.

Over half of the people who live and work or study in Copenhagen commute by bicycle.[94] On four major streets into the city, rush hour traffic signals are timed so that a person traveling at 12 miles per hour (an average and comfortable cycling speed) can traverse the length of the street to the outskirts of the city without hitting any red lights. [95] Parking spots are rare and pricy downtown, and many streets have specifically barred automobiles from traveling through them. Bike paths and lanes abound, totaling well over 200 miles and growing yearly. [96] Numerous Copenhageners choose not to drive (some don't even own a car) because cycling is easier, quicker, and more convenient.[97]

Copenhagen did not become the way it is today because its citizens have always harbored a deep-seated love of bicycles or through some kind of sheer luck. Rather, its policy makers in the last 60 years have intentionally tended to favor more democratic and less harmful methods of

---

[93] Justin Williams, "Bikes, Sticks, Carrots," p.260.

[94] "Greener Transport," CopenhagenX.

[95] The Technical and Environmental Administration, "Copenhagen City of Cyclists: Bicycle Account 2008," p. 12.

[96] Ibid., p. 7.

[97] City of Copenhagen. "Cycle Statistics."

travel.[98] Through both the information the city provides on cycling to increase ridership, and the physical structuring of Copenhagen, the city has created the possibility to choose alternative forms of transit.

Using Copenhagen as an example for American cities can only go so far, however. Having had a later mass introduction to the car than most of America, Copenhagen already had much infrastructure in place to provide other forms of transportation. It was already very dense and fostered large areas of mixed-use zoning where people could live, work, play, shop, and eat within short and walkable distances.

Additionally, the politics of a welfare state more easily allow a government to make choices for the good of all. When every kilometer that a car travels in Copenhagen costs the government about 15 American cents due to the expense of traffic regulation, road construction and maintenance, traffic collisions, and rising healthcare costs associated with inactivity—and when every kilometer that is cycled in Copenhagen saves the government about 20 cents because bicycles demand less extensive infrastructure and insurance and help to create healthy and active citizens—then the socialist city has an economic incentive to encourage cycling. Because American cities externalize many of the costs of driving onto private individuals—especially the safety and health factors—they lack the motivation to decrease the extent to which people drive.

Moreover, beyond lacking the incentive to cut costs, capitalist governments that prioritize economic growth over social well-being have large motivations to promote car usage. According to Paterson, industrialized countries owe 13 percent of their GDP to the car industry.[99] This includes auto-workers and road construction teams, advertisers, delivery services and taxicab

---

[98] See, for example, a recent declaration of the city's intentions: "Copenhagen wishes to create a city that to an even higher degree favors bicycling and walking and to this end it will continue to extend the public transport system. If an increasing number of people stop using their cars we shall get better air and improved city life. In this way the City will achieve the goal of creating a healthier city." From CopenhagenX, "Greener Transport."

[99] Paterson, *Automobile Politics*, p. 93.

companies, as well as the police, lawyers, doctors and morticians who owe their jobs to car crashes, hit-and-runs, obesity and other ill-effects of the automobile. Defining the measure of success as rising gross domestic product and low unemployment rates leaves no room to ask questions about the kind of work people are employed in, if they enjoy it or find fulfillment in those jobs, how evenly or fairly income is distributed amongst them, and whether people are happier or better off as a result.[100] In short, the costs externalized on individuals by the system of automobility are counted as benefits to the economy (and therefore touted as benefits to every individual as well).

Even so, there is hope that people in America can reclaim mobility for themselves. The above analysis explores the strengths of automobility, but also picks out its weaknesses. The system features many points at which meaningful intervention is possible. Through exploring the ways in which automobility is self-reinforcing, I have hoped to demonstrate the possibility of changing it. The ideology of automobility can be challenged by effective arguments demonstrating its inner contradictions. If for every advertisement or song celebrating automobile-freedom there was an equally accessible or even intrusive source of information reifying the hidden costs and victims of automobility, the system's hegemonic determination of what *freedom* and *mobility* mean and how they are intertwined would begin to crumble. At the same time, if the physical restrictions favoring car usage while discouraging other modes of travel were removed, converted or subverted for and by people who wanted a different way to live and move, then it would be more possible and appealing to walk, bike, or take public transit.

Restructuring the idea of freedom would entail drawing out the inherent contradictions of present-day automobility. Car travel is thought of by many to be cheap, but in reality it is subsidized by taxes for roads and foreign oil-wars, and by the risks externalized onto individuals.

---

[100] See Jonathan Rowe, "Our Phony Economy."

It is also thought to be quick, but traffic limits possible speeds in cities to such an extent that cycling and even walking can compete with driving over short and intermediate distances. It is also thought to be 'freeing,' but only envelopes the driver in additional networks of dependence and regulation. Cars offer many abilities that drivers enjoy having but rarely if ever use; high speeds and off-road capabilities are two good examples. In the words of one critic, "It has become a cliche, for instance, to point out that few SUV drivers ever actually take their vehicles off-road in pursuit of the wilderness adventures that figure so heavily in SUV advertising." [101] Lastly, the freedom of car-users threatens the freedom and safety of pedestrians and cyclists, as well as other car-users.

At the same time that the claim that automobility has on autonomous movement is very problematic, other more democratic paradigms exist to claim it for their own ends. Cycling and walking are forms of autonomous movement—in many ways much more so than the car. No one needs a permit or license to walk where they choose, and there are no speed limits. Cyclists have a measure of agility that even the quickest or nimblest car drivers could only dream about. Quick turns, responsiveness, and ability to negotiate tight spaces are just a few examples. Bike messenger and automobility scholar Ben Fincham asserts, "The benefits of bicycle use are obvious for achieving the very things – mobility and autonomy – promised and undelivered by that most destructive of historical anachronisms, the motor-car." [102]

Change will also be furthered by finding ways to reduce physical restrictions on mobility. These will include making current settlements denser, increasing the amount of mixed-use development, and providing new infrastructure by which to travel.

Dense growth can be achieved by three broad policies, and achieve three objectives. If greenbelts are immediately set around all settlements, then urban and suburban sprawl will be

---

[101] Shane Gunster, "'You Belong Outside': Advertising, Nature, and the SUV," p. 13.

[102] Ben Fincham, "Bicycle Messengers and the Road to Freedom," p. 221.

halted in its tracks. Building outside of the greenbelts could be allowed on a case-by-case basis, and tightly regulated. The Pacific Northwest cities of Portland and Seattle can be used as examples.

If zoning regulations were changed so that higher densities were encouraged instead of prohibited as they are in many areas today, then increasing housing density would be possible, and large swaths of low-density land like big-box stores, shopping malls and parking lots could be economically penalized for the space that they waste. Because America has more than 40 square feet of retail space per person—the most in the world[103]—it might not be a bad thing to redevelop thousands of ubiquitous strip malls into something more useful and pleasant.

The last policy to make living areas denser would be to introduce, promote, and expand mass public transit. As cities and suburbs grew denser, this should be easier and easier. Implementing inspiring ideas like those found in the Brazilian city of Curitiba, American cities could develop rapid transit bus systems that are fast, affordable, cost-effective, and use the given infrastructure of roads and highways.[104] They could also expand train and metro systems.

Living areas should not only be denser—they should incorporate mixed-use development. Currently, and to a large degree, zoning regulations separate housing areas from commercial and industrial areas. Some separation is good between incompatible uses—say, a children's development center and a prison or an aluminum ore refinery—but distancing places to live from places to work, eat, and shop means making it more difficult to get from one to the other. Studies have shown that mixed-use development can increase the amount of people who choose forms of transportation other than the car.[105] Additionally, mixed-use developments are

---

[103] Ann Zimmerman, Justin Lahart, and Rachel Dodes, "Retailers See Holiday Sales Jump."

[104] Paul Hawken, Amory Lovins, and L. Hunter Lovins, *Natural Capitalism: Creating the Next Industrial Revolution*, pp. 285-308; and Jonas Rabinovitch, "Curitiba: towards sustainable urban development."

[105] See Daniel G. Chatman, "How Density and Mixed Uses at the Workplace Affect Personal Commercial Travel and Commute Mode Choice," and Lawrence D. Frank and Gary Pivo, "Impacts of Mixed Use and Density on Utilization of Three Modes of Travel: Single-Occupant Vehicle, Transit, and Walking."

more lively and therefore safer, as people going about various activities provide what Jacobs calls "eyes on the street," that keep crime from occurring.[106]

The last way in which physical barriers can be turned into means of access is to make bicycling and walking safe and easy. Many car-trips are within easy biking or walking distance. Many more would be, if the above suggestions about dense and mixed-use development were implemented. If the necessary paths and laws were there to protect bikers and pedestrians and were combined with other policies to encourage self-powered movement like a break on insurance and priority parking for bikes, cycling and walking would be much more appealing.

Through mutual and self-reinforcing processes, the system of automobility has constructed a ideological and physical world where freedom and movement can only be realized by the tools that it provides. These cycles are contingent, though. They are contingent upon the continued efforts of companies to sell us 'freedom,' 'mobility,' 'desirability' and a host of other social traits in the form of the automobile. They are contingent upon the perpetual building or maintaining of roads, parking lots and traffic laws. They are contingent upon the planning of new spaces that can choose if or to what extent cars are accommodated. And they are contingent upon our continued acceptance of the companies, governments, laws and planners who have motives antithetical to our personal and collective well-being.

---

[106] Jacobs, pp. 29-54 and also Jan Gehl, *Cities for People*.

References

Basmajian, Carlton. "'Turn on the radio, bust out a song': the experience of driving to work." *Transportation* 37 (2010): 59-84.

Beckmann, Jörg. "Automobilization – A Social Problem and a Theoretical Concept." *Environment and Planning D: Society and Space* 19, no. 5 (2001): 593–607.

Beckmann, Jörg. "Mobility and Safety." *Theory, Culture & Society* 21, no. 4-5 (2004): 81-100.

Blumenberg, Evelyn. "Moving In and Moving Around: Immigrants, Travel Behavior, and Implications for Transport Policy." *University of California Transportation Center* Research Paper No. 892 (September 2009).

Böhm, Steffen, Campbell Jones, Chris Land and Mat Paterson. "Introduction: Impossibilities of automobility." *Sociological Review Monograph Series: Against Automobility* 54, supp. 1 (2006): 1-16.

Bradsher, Keith. "Earth-Friendly Elements Mined Destructively." *New York Times*, December 25, 2009. <http://www.nytimes.com/2009/12/26/business/global/26rare.html> (accessed on 4/21/11).

Bull, Michael. "Automobility and the Power of Sound." *Theory, Culture & Society* 21, no. 4-5 (2004): 243-259.

Bureau of Transportation Statistics. "National Transportation Statistics." In *National Transportation Statistics* for the US Department of Transportation. January 2011.

Capehart, Tom and Edward Allen, "Feed Outlook: Grain Stocks Report Confirms Tight Supplies." For the Economic Research Service, United States Department of Agriculture. April 12, 2011.

Chatman, Daniel G. Chatman. "How Density and Mixed Uses at the Workplace Affect Personal Commercial Travel and Commute Mode Choice." *Transportation Research Record* Paper No. 03-4473: 193-201.

City of Copenhagen. "Cycle Statistics." Traffic Department, May 2010. <http://www.kk.dk/ sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/LivingInCopenhagen/ CityAndTraffic/CityOfCyclists/CycleStatistics.aspx> (accessed on 4/21/11).

Dauvergne, Peter. "Dying of consumption: Accidents or Sacrifices of Global Morality." *Global Environmental Politics* 5, no. 3 (August 2005): 35-47.

Dery, Mark. "'Always Crashing in the Same Car': a head-on collision with the technoshpere." *Sociological Review Monograph Series: Against Automobility* 54, supp. 1 (2006): 223-239.

Dunn, James A. Jr.. "The Politics of Automobility." *Brookings Review* 17 (Winter, 1999): 40-43.

Fatality Analysis Reporting System Encyclopedia, "National Statistics." For the National Highway Traffic Safety Administration. <http://www-fars.nhtsa.dot.gov/Main/index.aspx> (accessed on 4/21/11).

Featherstone, Mike. "Automobilities: An Introduction." *Theory, Culture & Society* 21, no. 4-5 (2004): 1-24.

Fincham, Ben. "Bicycle Messengers and the Road to Freedom." *Sociological Review Monograph Series: Against Automobility* 54, supp. 1 (2006): 208-222.

Frank, Lawrence D., and Gary Pivo. "Impacts of Mixed Use and Density on Utilization of Three Modes of Travel: Single-Occupant Vehicle, Transit, and Walking." *Transportation Research Record* 1466: 44-52.

Gehl, Jan. *Cities for people* . Washington, DC: Island Press, 2010.

Goodwin, Katherine J.. "Reconstructing Automobility: The Making and Breaking of Modern Transportation." *Global Environmental Politics* 10, no. 4 (November 2010): 60-78.

Gordon, Peter and Harry Richardson. "Are Compact Cities a Desirable Planning Goal?" *Journal of the American Planning Association* 63 (Winter, 1997): 95-106.

Gorz, Andre, "The Social Ideology of the Motorcar." *Le Sauvage* (September-October 1973).

"Greener Transport." CopenhagenX. <http://www.cphx.dk/index.php?language=uk#/311302/> (accessed on 4/21/11).

Gunster, Shane. "'You Belong Outside': Advertising, Nature, and the SUV." *Ethics & the Environment* 9, no. 2 (Fall/Winter 2004): 4-32.

Hankey, Ron, Chris Cassar, Rebecca Peterson, and Charlene Harris-Russell. "Electric Power Monthly with data for January 2011." for the US Energy Information Administration. April 14, 2011. <http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html> (accessed on 4/21/11).

Hawken, Paul, Amory Lovins, and L. Hunter Lovins. *Natural Capitalism: Creating the Next Industrial Revolution*. Boston: Little, Brown and Co., 1999.

Heron, Melonie. "Deaths: Leading Causes for 2006." For the United States Census 2000, US Department of Commerce. March 2004.

Illich, Ivan D.. *Energy and Equity*. London: Calder & Boyars: 1974.

Jacobs, Jane. *The Death and Life of Great American Cities* . New York: Random House, 1961.

Jain, Sarah S. Lochlann. "'Dangerous Instrumentality': The Bystander as Subject in Automobility." *Cultural Anthropology* 19, no. 1 (2004): 61-94.

Jhally, Sut. "Commercial Culture, Collective Values, and the Future." *Texas Law Review* 805, no. 7l (March, 1993): 1-9.

Latimer, Joanna, and Rolland Munro. "Driving the Social." *Sociological Review Monograph Series: Against Automobility* 54, supp. 1 (2006): 32-53.

Liu, Jianguo. "China Will Tighten its supplies." *New York Times*, November 8, 2010. <http://www.nytimes.com/roomfordebate/2010/11/08/can-the-us-compete-on-rare-earths/china-will-tighten-its-rare-earths-supplies> (accessed on 4/21/11).

Lomasky, Loren E.. "Autonomy and Automobility." *The Independent Review* 2, no. 1 (1997): 5-28.

Lovins, Amory B., Kyle Datta, Odd-Even Bustness, Jonathan Koomey, and Nate Glasgow. *Winning the oil endgame: innovation for profits, jobs and security*. Snowmass, CO: Rocky Mountain Institute, 2004.

National Agricultural Statistical Service. "National Statistics for Corn." For the United States Department of Agriculture. <http://www.nass.usda.gov/Statistics_by_Subject/result.php?D5C61FB2-16CF-3309-B0ED-DD5708F6F361&sector=CROPS&group=FIELD%20CROPS&comm=CORN> (accessed on 4/21/11).

National Agricultural Statistical Service. "2007 Census of Agriculture." For the United States Department of Agriculture. <http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_US/index.asp> (accessed on 4/21/11).

National Safety Council. "Pedestrian Safety." Fact Sheet, April 2009. <http://www.nsc.org/news_resources/Resources/Documents/Pedestrian_Safety.pdf> (accessed on 4/21/11).

Office of Highway Policy Information. "Licensed Drivers." US Department of Transportation. <http://www.fhwa.dot.gov/ohim/onh00/onh2p4.htm> (accessed on 4/21/11).

O'Toole, Randal. "Is Urban Planning 'Creeping Socialism'?" *The Independent Review* 4, no. 4 (2000): 501-516.

Paterson, Matthew. *Automobile politics: ecology and cultural political economy*. Cambridge: Cambridge University Press, 2007.

Paterson, Matthew. "Car Culture and Global Environmental Politics." *Review of International Studies* 26, no. 2 (April 2000): 253-270.

Pimental, David, Alison Marklein, Megan A. Toth, Marissa N. Karpoff, Gillian S. Paul, Robert McCormack, Joanna Kyriazis and Tim Krueger. "Food Versus Biofuels: Environmental and Economic Costs." *Human Ecology* 37 (2009): 1-12.

Pollan, Michael. *The Omnivore's Dilemma: a natural history of four meals*. New York: Penguin Press, 2006.

Rabinovitch, Jonas. "Curitiba: towards sustainable urban development." *Environment and Urbanization* 4 (1992): 62-73.

Rowe, Jonathan. "Our Phony Economy." *Harper's Magazine* 316, no. 1897 (June 2008): 17-24.

Sheller, Mimi. "Automotive Emotions: Feeling the Car." *Theory, Culture & Society* 21, no. 4-5 (2004): 221-242.

Sioshansi, Ramteen and Denholm. "Emissions Impacts and Benefits of Plug-In Hybrid Electric Vehicles and Vehicle-to-Grid Services." *Environmental Science & Technology* 43, no. 4 (2009): 1199-1204.

Tesla Motors, <www.teslamotors.com> (accessed on 4/21/11).

The Technical and Environmental Administration. "Copenhagen City of Cyclists: Bicycle Account 2008." For the City of Copenhagen (August 2009).

Thrift, Nigel. "Driving in the city." *Theory, Culture & Society* 21, no. 4-5 (2004): 41-59.

Urry, John. "Inhabiting the car." *Sociological Review Monograph Series: Against Automobility* 54, supp. 1 (2006): 17-31.

Urry, John. "The System of Automobility." *Theory, Culture & Society* 21, no. 4-5 (2004): 25-39.

Urry, John and Mimi Sheller. "The City and the Car." *International Journal of Urban and Regional Research* 24, no. 4 (December 2000): 737-757.

"U.S. Ad Spending Grew 6.5% in 2010 as Auto Surged and Pharma Hit a Low." *Advertising Age*, March 17, 2011. <"http://adage.com/article/mediaworks/u-s-ad-spending-grew-6-5-2010-auto-rose-pharma-fell/149436/> (accessed on 4/21/11).

U.S. Census Bureau. "American Spend More Than 100 Hours Commuting to Work Each Year, Census Bureau Reports." Press Release, March 30, 2005.

Walker, David Alan. "Biofuels, facts, fantasy, and feasibility." *Journal of Applied Phycology* 21 (2009): 509-517.

Williams, Justin. "Bikes, Sticks, Carrots." *The Environmental Politics of Sacrifice* ed. by Michael Maniates and John M. Meyer. Cambridge. Mass.: MIT Press, 2010: 247-269.

Zimmerman, Ann, Justin Lahart, and Rachel Dodes. "Retailers See Holiday Sales Jump." Wall Street Journal, December 28, 2010. <http://online.wsj.com/article/ SB10001424052970203731004576045742629998416.html> (accessed on 4/21/11).