Prompt: '*Cities occupy just one percent of the Earth's surface and yet are home to nearly four billion people.*' - An Ecomodernist Manifesto

Fixing Climate Change Through Urban Planning: How to design environmentally (and human) friendly cities.

Initially, a lot of climate advocacy and advertising was focused on getting individuals to change their daily lifestyle habits to reduce their carbon footprint; things like urging for recycling, or biking to work instead of driving, and so on. Now, we are in the midst of a paradigm shift where instead we are holding large corporations more accountable for the massive amounts of pollutants they emit, for the forests and habitats lost due to their desire for economic growth. However, an issue much less discussed is how the people who build and design our human communities, environments and dwellings can do better. The Ecomodernist Manifesto in the readings talks about the **decoupling** of human wellbeing and negative economic impact, and this essay argues an essential example of that is designing cities to be less **car-centric.** In the U.S, 27% of total greenhouse gas emissions are from transportation, and more than half of that is from light-duty vehicles like cars and motorcycles (*Fast Facts on Transportation Greenhouse Gas Emissions | US EPA*, 2022). Since 2009, the absolute amount as well as the percentage of all transportation emissions that are contributed by passenger cars has only been increasing. Compare this to the Netherlands, for example, where both the absolute and percentage contribution of passenger vehicles is decreasing (*Netherlands: Annual Greenhouse Gas Emissions of the Transport Sector 2020*, 2022). What is the Netherlands doing to make this happen, and how can countries like the U.S learn from it?

The primary reason for the Netherlands' declining transportation emissions is urban design, and specifically policies deliberately moving away from car-centrism. Not only does this provide obvious direct benefits to the environment by reducing carbon emissions from vehicles, but it also improves the human condition and our connection to land and nature.

In the years since the invention of the car, urban planners and city designers have become more and more outspoken about a consequence of the popularization of personal motorized vehicles known as **suburban sprawl** (Speck et al., 2000). Sprawl is a pattern of growth characterized by low-density urban development with homogeneous components arranged so each component is

strictly segregated from the others, so that everything is more spread out (Tachieva, 2010). In contrast, a 'complete community' will contain variegated components, each with a person's daily needs all within walking distance from one another. To get an image of what this dichotomy looks like, Figure 1 shows the difference between an area characterized by suburban sprawl and an area that is more compact.

Figure 1: On the left, you have sprawl, and on the right, a complete community. (Tachieva, 2010)

It is not simply enough to increase pedestrian options and add bike paths. The design of cities and towns themselves must make it appealing to walk or bike rather than use a car. Research shows merely adding infrastructure improvements on top of unwalkable cities would result in meager net differences to carbon emissions, between 0.1 and 0.5% (Porter et al., 2013). The website *WalkScore* assigns different cities in America a walkability rating based on how easy it is for the average resident of that area to access various amenities solely through walking. San Francisco has a walkability rating of 89, whereas Palo Alto's is 61. The average person in SFO can walk to 3 different restaurants, bars and coffee shops in 5 minutes, whereas that average is 0.3 in Palo Alto. Naturally, people resort to motor vehicles to get around.

Aside from simply reducing carbon emissions by having less cars on the road, several other tangential environmental benefits emerge as side effects or as chain reactions. If there is less of a need for cars in the place where you live, then less people will buy cars, reducing demand and thus ideally production of cars in the first place, saving massive amounts of energy and resources burned as fossil fuels. This will involve a shift to a **degrowth**-oriented paradigm, as we discussed in class, as it involves car companies being content with selling fewer cars. Other auxiliary benefits include less environmentally-unfriendly resources used in the production of

infrastructure for serving cars. Pretty much any structure built to hold cars, whether it's parking lots, huge roads, big highways, garages, driveways, etc, will involve cement and concrete. Concrete is notoriously environmentally unfriendly (Preston & Lehne, 2018), producing somewhere between 4-8% of the world's global carbon emissions. Fewer cars will mean less environmentally harmful infrastructure will need to be built, aiding the environment but also improving human conditions. Philadelphia has 1.8 million residents and over 2.2 million parking spaces (Baldwin et al., 2021). These spaces were constructed with cars rather than people in mind, and when not being used they are simply empty lots of concrete with no value. Imagine if they were replaced with bustling local marketplaces or parks or environmental infrastructure. So many potential opportunities for people to connect with the land more have been severed for the sake of automobiles. This is the sacrifice of car-centric design.

The Netherlands at a time was also gearing to be a more car-centric country (Verlaan, 2019), but the government made active steps to change that. Figure 2 demonstrates how Amsterdam shifted to become more pedestrian and bike-friendly, now known as the bike-capital of the world.

Figure 2: The changing city of Amsterdam over time. Image via FastCompany.

Note how it's not just adding more infrastructure, but rather reshaping zoning laws to allow business and residential areas to interact more, or creating car-free spaces for small stores to pop up or allow shops to extend onto the street. This is what's led to declining car emissions in the Netherlands. This change that America (and the world) needs is not just one of policy however; it's one of culture.

The issue is many Americans tend to think suburban sprawl is the default way of cities and towns and communities to be built. This is something I have gauged myself as an international student in my conversations with domestic students. There is also statistical data to support the American bias towards cars. The United States is the 2nd highest country in terms of cars per

capita (*Motor Vehicles per 1000 Inhabitants Vs GDP per Capita, 2014*, 2014), and American culture in particular places emphasis on the pride of car ownership. Corporations seem to understand this deep-seated cultural norm in the domestic audience well, and they exploit it in their marketing. Surveys of automobile advertisements in America revealed common themes of 'automobiles helping people reconnect with nature… or overcoming challenging weather' (D'Costa, 2013). These are all images that appeal to the allure of freedom promised by cars.

This automobile ubiquity results in a strong manifestation of **availability bias**, which Prof Stephen Luby talked about in class. Because of the type of environment people are surrounded in, when brainstorming climate solutions it is easy for the brain to skip over the idea of eliminating suburban sprawl, since that is the default information they have access to. This is why we have many more people advocating for switching to EVs, for example, rather than eliminating the need or desire for cars altogether.

To conclude, we end with a summary of 3 main takeaways: 1) A car-centric society is inevitably detrimental to the environment and to the human connection to the land; 2) Eliminating suburban sprawl is crucial to move away from car-centrism; 3) Inciting such change will not only require huge political movements but also cultural paradigm shifts in the populace to realize that an alternative to car-centrism is even possible. Accomplishing this on a global scale would be a massive victory for humanity in our efforts to curb our environmental impact and grow closer to the land.

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