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The January 2022 Issue in Brief

Putting Driverless Vehicles to Use for Those Who Really Need a Ride

The U.S. national average for the mode of travel to work is 85% by car, and a large percentage of those cars have a single person in them, the driver. It is not because people want to drive to work; it is because they must. Without a car or a ride, you have a very difficult time getting and keeping a job. If you cannot afford to own and operate a car, if you cannot afford the alternatives to a private car, if you cannot drive a car even if you could afford one, you have a very difficult time taking advantage of the opportunities to satisfy the basic needs that will improve your quality of life.

Is there a way to provide mobility for the unserved and underserved who live in places with limited or no public transit access to jobs all of the other necessities of life? That is the issue the Princeton SmartDrivingCars Summits have been addressing since their start in 2017, and now there will be an attempt to put the theories into practice in a proof of concept in Trenton, New Jersey.

Environmental Activists Want to Engineer a Utopia

Utopia builders and democracy builders have very different views on how to achieve their goals. Those who are dissatisfied with progress being made on reducing global warming by the UN committee on climate change have a utopian vision which is not compatible with a democratic vision.

Dispatch Central

Until cars fly, we need roads and bridges – Read about the multi-trillion dollar transport-related U.S. debate

Tesla has missed the point on safety – Playing videos while driving is the latest Musk dream come true

The first gasoline-electric hybrid car
Looks like congestion charging isn't working

Musings of a Dispatcher: Roadway Intruders

It's a free-for-all on urban roads because city governments all around the world have decided that it should be up to their citizens to decide the rules of the road, rather than setting the rules that everyone should follow and making sure those rules are enforced. Self-policing does not work, especially when breaking the laws that do exist, even when it results in injury and death, is not being punished.

One Way to Achieve Mobility for the Non-mobile

Putting Driverless Vehicles to Use for Those Who Really Need a Ride

This is an excerpt from the introduction to a book in progress, Mobility for the Non-Mobile, that I am writing with Professor Alain L. Kornhauser and a number of contributors. The book is intended to describe the pre-conditions for and a solution to the problem of providing mobility for the unserved and underserved, including those who cannot drive themselves, cannot afford the transport alternatives that exist for them, or who live in areas where, for either economic or other reasons, neither public nor private forms of transport are offered. The problem and solutions have been the subject of the PRINCETON SMARTDRIVING-CARS SUMMITS that were initiated in 2017 by Professor Kornhauser, and have taken place every year since then. At the close of the 4th SDC SUMMIT, Alain presented a proposal to set the wheels in motion to make a concerted attempt to test the theories discussed during the SUMMITS and put all of our collective knowledge to use in a real proof of concept. Alain suggested that Trenton, New Jersey would be an ideal location for such a test. The proposal is to assess whether cars without drivers can deliver an affordable and more effective alternative to mass transit and taxis for those who cannot afford to buy and own their own car. In the introductory chapter, from which this article is excerpted, we set the stage for the proposed approach.

IN OUR INDUSTRIALIZED societies, access to transportation and the ability to pay for that access are the principal determinants of whether a person can take advantage of the opportunities to satisfy the basic needs that will improve their quality of life. There is no disagreement that transportation is the biggest issue in getting higher participation in work and job training.¹ Around 40% of rural counties in the U.S. have no public transit services whatsoever. Even in those places where public transportation service is provided in the form of buses, trolleys and rail rapid

1. The Annie E. Casey Foundation. Affordable Car Ownership Programs: Transporting Families toward Financial Stability and Success. (www.aecf.org)

transit, a car is required today for many of the trips persons of all ages must take on a regular basis. Understanding why this has happened, why cars have become the main ticket to a better life, is the first step to addressing and fixing this problem, because it is a problem. Unequal access to jobs, education, recreation, and affordable, nutritious food is a direct cause of the social disorders that plague our cities, large and small. Those who can afford to travel to where the opportunities exist can take advantage of them. Those who are poor cannot, and the cycle of poverty continues.

Poverty has always existed. There have been countless studies to determine why it exists and why it persists, and they boil down to two basic reasons: bad luck and bad choices.² If you are unlucky to be born with a serious disease or disability, or if you are discriminated against because of your race, religion or for any other reason, if you are raised in a dysfunctional and non-supportive environment, you are at a high risk of living in poverty. You can also enter poverty through bad choices, such as choosing not to finish basic education or engaging in anti-social or criminal activities that make it difficult to find and keep a job.

There is now and has been for the past fifty years a third reason, which is that you can be living in a place where there are no jobs and you cannot get to where those jobs are by affordable means, and you cannot move to where those jobs are because there is no affordable place to live there. Why is it different in the past fifty years? That is when the center of cities ceased to be the locus of the majority of jobs. What is different about impoverishment in post-industrial societies is that lack of financial resources prevents a person from getting to the places where money could be earned, education obtained to improve their ability to be hired, and affordable and nutritional food could be purchased to maximize the value of whatever money a person has to spend.

This is the cruel truth of today's former industrial cities in North America and Europe. While industrialization was occurring, both jobs and affordable places to live were in the cities, small to large. The jobs have left the Detroit's of the world, some of the poor have had to stay, while others have found places to live in suburbs. However, there is no public transportation service that can solve the problem of getting either group to where the jobs are located.

The Top Five Jobs in the U.S. in 1920

#1. Farmers and stock raisers



#2. Farm workers



#3. Clerks



#4. Retail dealers



#5. Servants



2. <https://www.fraserinstitute.org/sites/default/files/causes-of-poverty.pdf>

“Jobs have shifted. They aren’t where poor people live, particularly service jobs. They’re not in housing projects and in the country where it’s cheaper to live.”

*Barbara Bayes, Executive Director
The Good News Mountaineer Garage in West Virginia*

Cars are essential to mobility, but not everyone has one

A way needs to be found to deliver low-cost personalized transport to those who cannot afford a car, cannot drive a car or cannot get a ride from family or friends, and for whom no other practical transport alternatives exist. Our proposed solution addresses the two problems with personal transport: owning a car or paying for a ride in one. The cost of owning and operating a car are the main deterrents to those who need a car, could drive it if they had one, but cannot afford one. While an older model used car can be bought at a low cost, keeping such a car running dependably can be an expensive endeavor. But not everyone can drive even if they are given a car, either because of a physical disability or simply an aversion to driving.

Those who cannot drive need to be driven, and the solution has been taxi services. This is an expensive option if it has to be relied upon for daily travel, such as to and from work. The largest percentage of a taxi fare, approximately 57%, is for the driver’s wage.³ Whether this wage is paid for by the rider or through some form of subsidy, it remains a cost and therefore a hindrance.

In the introductory chapter to the book we spend a good deal of time addressing the conventional wisdom which says that cars caused urban sprawl, and urban sprawl is the reason why cars have become a necessity instead of just a convenience. This idea needs to be debunked for two reasons. The first is that if we are proposing a solution to mobility for the non-mobile that is based on cars, there is a large anti-car lobby whose constituents view cars as an environmental scourge. Members of this group might simply and immediately turn off their personal audio systems (i.e. their ears) at the very mention of a car-based proposal.

Second, we are not trying to address climate change, traffic congestion, vehicle passenger and pedestrian safety. There are plenty of people working on these challenges and we plan to use the best that they can offer. We want to address the problem that in today’s societies, people remain poor or in ill-health because they cannot get to the places that would help them exit the state of poverty or improve their health. In order to do this, there

The Top Five Jobs in the U.S. in 2020

#1. Retail Salespersons



#2. Fast Food Counter Workers



#3. Cashiers



#4. Registered Nurses



#5. Customer Service Reps



3. Jeffery B. Greenblatt & Samveg Saxena (2015) “Autonomous taxis could greatly reduce greenhouse-gas emissions of US light-duty vehicles” *Nature Climate Change* doi: 10.1038/nclimate2685

needs to be agreement among those who wish to work on finding solutions to this problem on how we can make cars work together with other modes of transportation and with changes to where we locate offices, clinics, schools, stores and all of a region's facilities.

To accomplish this, we must agree on how we arrived to where we are now so we are not loaded down with false assumptions. Cars did not cause urban sprawl; they enabled its spread. This is an important distinction. It was not as if cars were invented and sprawl happened. Sprawl began when industrial workers arrived in cities in large numbers, causing extreme crowding and unhealthy conditions. Those who were living in the cities and who could afford to move out, did so to places that were close enough to walk, take a carriage or a ferry back to the centers for work, but where the air was slightly cleaner and there were a few more trees. Brooklyn was Manhattan's first suburb, a ferry ride away until the Brooklyn Bridge was built; Pimlico was London's.⁴

Cities were the center of everything, and then they weren't

There are many reasons why cars were invented when they were, following the invention of trains.⁵ Besides the fact that the materials needed to build them and the processes needed to manufacture them and the fuels necessary to run them did not exist before the end of the 19th century, there was no need for them. Up until then, the large majority of people did not have to travel quickly over long distances, and they did not have to travel beyond a reasonable walking distance to get to anywhere they needed to go. Most people, including farmers and tool makers, lived and worked in the same place, essentially in a dwelling that combined living and working spaces, up until the time of the first water-powered factories appeared in the early 18th century. It was with the First Industrial Revolution's culmination and the beginning of the Second, which coincided with the time cars were invented, that the movement of both people and goods became a necessity for the driving forces of that industrialization: economic growth.

To put it simply, there was everything that happened before the First Industrial Revolution, which began in the middle of the 18th century, there was the period of time during the First and Second Industrial Revolutions (respectively 1760 - 1840 and 1870-1914), and then there is everything that has happened since 1914.⁶

4. I lived in Pimlico and worked at London County Hall (where the London Eye is now placed). Every day for a year, I walked the 2.5 kilometers from and to work. London's first suburb was an easy walk to London's center when it was built in the 1820s.

5. The first production vehicle is attributed to Carl Benz in 1887 with his gasoline-powered automobile. On January 29, 1886, Carl Benz applied for a patent for his "vehicle powered by a gas engine." The patent – number 37435 – may be regarded as the birth certificate of the automobile. In July 1886 the newspapers reported on the first public outing of the three-wheeled Benz Patent Motor Car, model no. 1.

6. Industrial Revolution, in modern history, the process of change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. These technological changes introduced novel ways of working and living and fundamentally transformed society. This process began in Britain in the 18th century and from there spread to other parts of the world. Although used earlier by French writers, the term Industrial Revolution was first popularized by the English economic historian Arnold Toynbee (1852–83) to describe Britain's economic development from 1760 to 1840.

In 1750, the population of London was approximately 700,000, the largest by far in Europe and rivaling Beijing for the largest in the world. At the time, London represented 9% of the population of Great Britain's total population of 7.8 million. A century later, London's population had tripled, and by 1901 it had tripled again to 6.5 million. At the turn of the 20th century, Great Britain's population as a whole had grown by an impressive amount to 39 million, but London's growth rate was nearly twice as high as the country's: it contained nearly 17% of the country's population. Rural-to-urban growth was similar in the rest of Europe. This rapid expansion of the urban populations had significant negative effects on the livability of the cities. Anyone who has read Charles Dickens' A Christmas Carol, or seen it portrayed on TV during the holiday season, has an image of what life was like in London in between the First and Second Industrial Revolutions. Dickens paints a bleak picture of life for the poor.

While the First Industrial Revolution was getting started in Great Britain and the rest of Europe, America was still a British colony. It was still primarily agrarian. Gristmills and sawmills were the main 'industries'. New York City's population was around 25,000 when the Declaration of Independence was signed in 1776. Philadelphia was larger with 40,000 inhabitants. All thirteen colonies combined had a population of only 2.5 million. Most of the population at the time had been born in America. It was not until after the American Revolutionary War, or, as it was called in Britain, the American War of Independence, that industrialization began. Samuel Slater is given the title of Father of the American Industrial Revolution. He left his home in Derbyshire, England in 1789 at the age of 21, having memorized the technical designs for textile machines and, with financial backing from Moses Brown, set up the first textile mill in America in 1793. He located it in Pawtucket, Rhode Island. Slater opened thirteen more textile mills in the region. Frances Lowell opened the first integrated textile mill in the town in Massachusetts that would bear his name. His mill incorporated all the steps to produce cloth from raw cotton.

Initially, workers for the textile mills came from the farms and towns in the regions where they were built. Immigration to the United States was fewer than 8,000 people per year up until around 1820. In 1790, the first U.S. census took place. The English were the largest ethnic group among the total of 3.9 million. 20% of all Americans at that time were of African heritage, and 92% of them were slaves.⁷ Close to a century later, at the start of the Civil

7. <https://norberthaupt.com/2011/01/16/u-s-population-in-1776-and-1790/>

The six inquiries in 1790 called for the name of the head of the family and the number of persons in each household of the following descriptions: Free White males of 16 years and upward (to assess the country's industrial and military potential); Free White males under 16 years; Free White females; All other free persons; Slaves

War in 1860, New York City had grown to over 1 million, twice that of Philadelphia. By 1910, New York City with its five boroughs had a population that was close to 5 million. In 1865 there were around 1.3 million people working in manufacturing companies in the U.S. when the population of the country as a whole had risen to over 31 million. By 1900 manufacturing workers had increased to 4.5 million, and by 1910 it was estimated at about 8 million. Initially, workers migrated to the industrial towns from the farmlands of the nation, but even more were emigrating from other countries in Europe and Asia. Between 1836 and 1914, over 30 million Europeans had migrated to America, and many of these people went into the factories and the coal mines, and they built the canals and railroads.

Expansion of the cities' boundaries through the exodus of the wealthy and the backfilling of the poor continued up until the 1960s. Then things began to change, first in the United States and then in Great Britain and other countries in Europe. This change was described by Brian J. L. Berry in 1970, and he also gave his forecast of where it was all heading.⁸ He wrote:

*"In determining what is critical to further transformation of the geography of the United States, it is concluded that: (a) migration of the minority-group poor from the peripheries to the cores of the central cities, and (b) a resulting acceleration of the outward movement of upper-income white population from central city to the expanding outer edges of the daily urban systems, now 80-160 km away from the city centers, will invert the geography of the country by the year 2000. This tendency to inversion, supported by rising real incomes, improved highways, and the search for superior low-density residential amenities, will be further advanced by new electronic technologies that replace movement of persons by movement of messages, thus reducing and eventually eliminating the traditional role of the CBD (Central Business District) in permitting face-to-face contacts. The coming era of telemobility, in which mechanical environments will be replaced by electronic environments, will push the emerging inversion of American geography into its ultimate dispersed forms."*⁹

The population of New York City decreased for the first time between 1950 and 1960 by 100,000, but almost 500,000 Whites had left. Between 1960 and 1970, 100,000 were added to the city's population, but 600,000 Whites abandoned the city. Between 1970 and 1980, the total population of the city decreased by 800,000, but almost 2 million Whites headed for the exits.¹⁰

8. Brian J. L. Berry is the Lloyd Viel Berkner Regental Professor Emeritus and former Dean of the School of Economic, Political and Policy Sciences at the University of Texas at Dallas.

9. Berry, Brian J. L. The Geography of the United States in the Year 2000 reprinted from TRANSACTIONS, no. 51 (November 1970) in Regional Policy Readings in Theory and Applications, Edited by John Friedmann and William Alonso. MIT Press. (1975)

10. https://en.wikipedia.org/wiki/Demographic_history_of_New_York_City

It is a cruel fact, that as more and more of the poor, particularly from the southern states, Mexico, and the Caribbean and Central American countries, moved to the northern urban centers for work, the work moved from these urban centers. Textiles moved first to the south, just as the daughters of immigrant coal miners who quit school at the earliest possible age and entered the garment factories were reaching retirement age.¹¹ Within another ten-or-so years, the factories were moving to Mexico and Asia. Car production moved from the center of Detroit to the suburbs of Detroit and then to southern right-to-work states and then to Mexico, just as imports from Japan and Europe started to be unloaded in large numbers along the Pacific and Atlantic Coast ports.

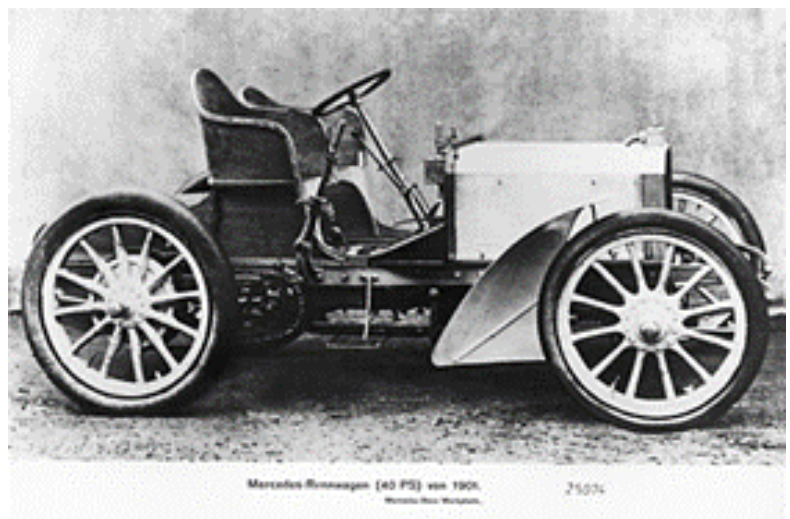
It took five decades for cars to catch on, then they took off

Cars, during the first decade following their invention, were mostly toys for the rich. The *1901 Mercedes* (pictured), designed by Wilhelm Maybach for DAIMLER MOTOREN GESELLSCHAFT, deserves credit for being the first modern motorcar in all essentials. Its 35-horsepower engine weighed only fourteen pounds per horsepower, and it achieved a top speed of fifty-three miles per hour. By 1909, with the most integrated automobile factory in Europe, DAIMLER employed some seventeen hundred workers to produce fewer than a thousand cars per year. In the U.S., thirty manufacturers produced 2,500 motor vehicles in 1899. A decade later there were around 485 companies.

In 1908 Henry Ford introduced the *Model T* and William Durant founded GENERAL MOTORS. By 1913, the U.S. produced 485,000 of the world's total of 606,124 motor vehicles. U.S. manufacturers, GM and FORD, had reconciled the design of a modern car like the *1901 Mercedes* with a moderate price and low operating cost. It would take European manufacturers until the 1930s to do the same. The car in the U.S., therefore, had a head start in the competition with other modes of transport.

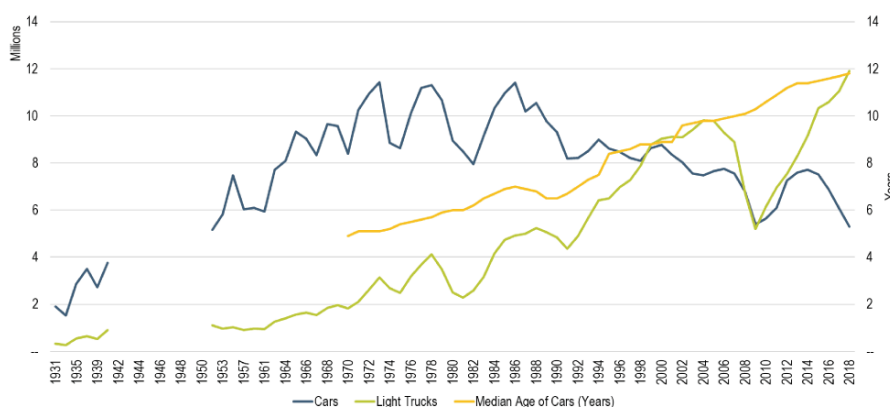
It took fifty years, from 1900 to 1950, for the number of cars and trucks in the entire world to reach 100 million. The number of vehicles in the world doubled to 200 million from 1950 to 1970, and

11. My mother was one of those whose father worked in the coal mines and who left school at thirteen in 1929 to work in a garment factory in Old Forge, PA.



doubled again to 400 million by 1990. In 2005, there were approximately 600 million. That was before cars started to be sold in numbers in China, which became the largest car market in 2009. In 2018, there were 1.42 billion cars in the world.

The graph below shows the history of vehicle sales in the United States from 1931 to 2018, with the exception for the period during and directly after the Second World War. Recessions account for the dips. It is important to combine figures for cars and light trucks because included in light trucks are the most popular types of vehicles that Americans have purchased starting in the mid-1980s. By 1998, sport utility vehicles and pick-up trucks passed passenger cars as models bought in the largest numbers. The decline in car sales after the 1990-92 recession is compensated for by the rise in light trucks. The effect of the *1956 National Interstate and Defense Highway Act* and the building of the Interstate Highway system began to show up in statistics at the beginning of the 1960s.¹²



Vehicle Sales in the United States: 1931-2018

Source: Bureau of Economic Analysis: Note: Sales figures between 1942 and 1951 are not available because of the disruptions brought by the Second World War.

One after the other, companies began to move major portions of their businesses out of the cities into the suburbs and beyond. Some moved their entire headquarters. Between 1955 and 1980, more than fifty corporations left New York City, including GENERAL ELECTRIC, IBM, GULF OIL, TEXACO, UNION CARBIDE, GENERAL TELEPHONE, XEROX, PEPSICO, and U.S. TOBACCO. They went to the suburbs where land was cheaper, taxes were lower, and they could build campuses with lots of greenery around vast parking lots. These companies needed workers, not just managers, and those lower down on the income ladder got a boost from the government to help them move. Following World War II, the GI Bill offered government guaranteed loans for home, farms and starting a business, as well as education and vocational training. This applied to both

12. The legislation expanded the interstates to 41,000 miles and authorized \$25 billion that would be disbursed between 1957 and 1969 for construction. The federal government would foot 90 percent of the bill. President Eisenhower signed the bill into law on June 29, 1956.

WWII and Korean War veterans. According to federal statistics, “during the first seven years of the GI Bill’s use, 8 million veterans took advantage of it. As a result, the program doubled the amount of university degree holders and within 50 years, the number of Americans with advanced degrees rose nearly 20%. Veterans were responsible for buying 20% of all new homes built after the war because of the Home Loan provision in the GI Bill, commonly referred to as the VA Loan. By 1955, 4.3 million home loans worth \$33 billion had been granted to veterans.”¹³

13. <https://collegerecon.com/gi-bill-of-rights/>

New types of facilities began to be built to accommodate the families that had moved to the suburbs, beyond a short train or car ride to the cities, and to provide all the other services they required. Shopping centers replaced downtown department stores, large supermarkets replaced local grocery stores, and regional schools replaced local grade schools and high schools. It is the shopping mall that is most associated with the rise of the automobile. Southdale Center located in Edina, Minnesota, a mere 7 kilometers from the center of Minneapolis, is credited with being the first and the oldest fully enclosed, climate-controlled shopping mall in the United States. It opened in 1956 and was designed by architect Victor Gruen, who is credited with developing the first design concept for a suburban shopping mall ten years earlier. His idea with malls was to recreate the feeling of a vibrant city center like his native Vienna, Austria. They had a department store as the anchor and then dozens of small stores. Gruen believed that they would be surrounded eventually by residential districts and include medical facilities, schools, government offices and everything else one finds in a city center. In other words he believed that if you built the commercial center and the rest of the city would follow.

It did not quite work out that way. Gruen had seen his mall solution as a solution to the sprawl that had started along the roads between cities and its suburbs. Instead, land developers understood that the mall-as-magnet meant the land around the malls could support mall extenders, from massive movie complexes to competing variety stores. Gruen actually rued the day he came up with his idea. In the mid-60s he began to rail against malls and suburbs in general. It was too late, and no one listened. At the time of his death in 1980, more than a thousand malls had been built. A *U.S. NEWS AND WORLD REPORT* article written in the early 1970s said that Americans spent more time at the mall than any place else except for home and work.

Once jobs, services and people are everywhere, transit can't help

At the start of the 20th century, motorized transport, beginning with trains and eventually with private cars, made it possible to disperse all of life's activities to different locations within and then beyond the borders of cities that were incubators of the growth that would follow. This process continued through the 20th century with the result that in most urban regions, a person's daily activities, whether it is going to work, to school, to seek medical care or to a place to buy life's needs, requires a journey that is too far or too difficult to be made without the help of motorized transport. In 1900, getting to and from work was the main reason for travel, and the average distance was only a few miles. Today, in the United States, the average person trip length for all purposes on all modes for everyone is close to ten miles, and it is approximately 20% longer compared to 1983. For work, it is closer to twelve miles and 30% higher than in 1983.¹⁴

During the first half of the 20th century, most people were still living in the central cities, the cores of the regions, and families that had left were living in small communities reached by either subways/undergrounds or commuter trains. Collective transport in the cities could accommodate most of a day's journeys that were longer than a comfortable walk. However, when jobs as well as services moved out, there was no guarantee that someone lived and worked in the same community, even if they had moved to the town where there was a job waiting for them. Businesses close, people get laid off or fired and people look for new jobs that pay more or have better possibilities for advancement. You also might like the shopping center two or more towns away rather than the one that is closest to where you live. The church in the last place you lived may be where you prefer to continue praying. There might be a bus in your town that could take you to the supermarket, but schlepping a week's worth of groceries to and from the bus stops is probably not how you would like to spend your afternoon.

It's raining on the Super City Renaissance parade

But isn't everybody moving back to cities? There was a period between the Great Recession in 2009 and the outbreak of COVID-19 when it looked like that was the case. Cities, especially the super cities, were being declared the winners in the battle over where people would live in the future. HARVARD UNIVERSITY economist, Edward Glaeser, wrote Triumph of the City in 2011, in the wake of

14. U.S. Department of Transportation, Federal Highway Administration 2017 National Household Travel Survey

the Great Recession. His book's subtitle is 'How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier'. His book was used as the basis for predicting the end of suburbanization and the return to the time when cities would once again become the centers of commerce.¹⁵ In 2015-2017, fully 90% of employment growth in the U.S. in the 'innovation' sector was concentrated in just five cities: Boston, San Francisco, San Diego, San Jose, and Seattle.

In spite of the innovation sector growth, the overall pattern of migration tells a very different story. COVID has sped up two trends that had already begun in the U.S.. First, people are leaving large, dense, expensive urban cores for smaller, less-dense cities and suburbs. Second, people and companies have been moving to warm, low-tax states in the in the South and Southwest. There have been more people leaving New York, Los Angeles and Chicago than moving in. Outflow was 54,000 per month in mid-2021, which was double the number of pre-2021. Between March 2020 and March 2021, approximately 600,000 people moved from the large, high-cost super cities to cities with populations of between 500,000 and 2 million, and 740,000 moved to rural areas and towns with populations below 500,000. New York City and San Francisco were the biggest losers of population. It is the towns and cities closest to the super cities that have gained most from the out migration.

Let's be clear: There is no conspiracy of automobile manufacturers, shopping center owners, road builders and politicians sitting in smoke-filled rooms conniving on how they can get more people off their sofas and into their cars to clog up the roads and fill the air with harmful emissions. There was no such collusion when the earliest signs of sprawl began to appear at the end of the 19th century, and none along the way. Just as there was no one warning in 1850 that extracting coal from the ground and burning it in steam engines or steel ovens or electricity-generating power plants would emit 2,400 gigatons of CO₂ and place around 950 gigatons into the atmosphere where it is causing global warming.

One major trend that has been occurring for the past fifty years as suburbanization has continued is that the suburbs are being urbanized. They are keeping their basic form of low density, but they are gaining more of the amenities that exist in the cities. They are also becoming much more diverse. According to Wendell Cox of DEMOGRAPHIA, 86% of the population of the large metropolitan areas live in the city's suburbs or exurbs. Those living outside

15. Glaeser was born and raised on Manhattan, educated at Princeton University (a mere 40 miles from Manhattan) and Harvard in Boston, and is based in Boston. He is a product of the super cities and has a personal stake in promoting the narrative of the importance of urban concentration.

of the cities include 90% of the total metropolitan's White population, 83% of its Hispanic population, 81% of its Asian population, and 76% of its Black population.

What we are going to try to achieve

Providing mobility to the currently non-mobile will allow them to accept jobs they would otherwise have to pass up. It will allow them to reach shopping facilities that have lower cost, better quality and more choice than stores which are close to where they live. It will give them an equal chance to take advantage of recreational activities that have been beyond their reach.

We need to determine if a driverless mobility solution will be able to reach the level of safe operation to make it even thinkable as a viable alternative to other options. In order for the solution to be truly useful, it will have to work everywhere—if not initially, eventually—to be able to reach all destinations, not just on selected roads or to a limited number of locations. It must be able to provide security for the user from the start to the end of every type of journey. The total financial calculation must show that by removing the driver, the costs are significantly reduced and that additional costs to compensate for the absence of the driver do not negate the savings in drivers' fees.

Implementing the eventual solution will require the cooperation and active participation by both public and private organizations working in cooperation with community groups representing those who will use the transport solution. We will need to identify various ways of funding the initial costs of setting up the transport solution and ensuring that it is able to be finance its ongoing costs of operation.

A Request for Expressions of Interest (RFEI) has been sent from the office of the New Jersey Governor, Phil Murry, and the NJ DEPARTMENT OF TRANSPORTATION Commissioner Diane Gutierrez-Scacetti. It is for the *TRENTON MOBILITY & OPPORTUNITY: VEHICLES EQUITY SYSTEM (MOVES) PROJECT*. Quoting from the RFIE, "*TRENTON MOVES* will act to provide safe, equitable, affordable, and sustainable high-quality mobility through the deployment of 100 Autonomous Vehicles (AVs) throughout the state capital. This on-demand automated transit system will serve 90,000 residents of Trenton."

Dr. Kornhauser says that the initiative has the enthusiastic support of the Governor, the Mayor of Trenton and institutions throughout Trenton who will benefit from the mobility.

Trenton's Motto Trenton Makes – The World Takes



Environmental Activists Want to Engineer a Utopia

United Nations Framework Convention on Climate Change

The Convention divides countries into three main groups according to differing commitments:

Annex I Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992 (U.S. Germany, etc.), plus countries with *economies in transition* (the *EIT Parties*), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

Annex II Parties consist of the OECD members of Annex I, but not the EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to adverse effects of climate change. In addition, they have to "take all practicable steps" to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries. Funding provided by Annex II Parties is channelled mostly through the Convention's financial mechanism.

Non-Annex I Parties are mostly developing countries (**China** (yes, China), Eritrea, Iran, etc.). Certain groups of developing countries are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer.

In addition to the Parties, there are observer organizations. These include intergovernmental organizations, non-governmental organizations (NGOs) and UN organizations.

Utopias and Democracies Don't Mix Well

THEY MET AGAIN. This time in Glasgow. COP26. COP stands for the "Conference of the Parties" (see sidebar for definition of 'Parties'). The *UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)* has been holding these COP meetings for the "Parties" every year since 1995 when the first one was held in Berlin. COP26 should have been in 2020, but then there was the matter of a pandemic, so it was delayed one year.

The stated aims of the Parties attending COP26 were "to refine the details of the *Paris Agreement*, to keep alive the hope of limiting human-caused global warming to 1.5 degrees Celsius, and to set more ambitious goals to cut emissions, adapt to climate change, and provide aid to developing countries suffering the worst climate impacts". John Furlow, *COLUMBIA CLIMATE SCHOOL's* Director of the *SCHOOL's International Research Institute for Climate and Society*, responding to the question of how successful the COP26 negotiations were, said: "I would say it is a real mixed bag." He said that the overall consensus is that countries signed onto a variety of pledges and agreements that, while promising much-needed progress, do not go far enough in cutting emissions and lack the details required to ensure the words are transformed into action. Here are the main pledges:

Coal – Forty countries said they would stop using coal by sometime in the 2030s, but not the ones that use it the most. China, India, Australia and U.S. did not sign on.

Deforestation – Even Indonesia and Brazil were among the countries that said they would stop deforestation, but they said the same thing in 2014 and deforestation increased.

Methane – More than 100 countries pledged to cut methane emissions by 30% by 2030, compared to 2020 levels. The U.S. and EU were leading the charge, but the biggest emitters, China, Russia and India, did not sign the pledge.

ICE Vehicles – Thirty nations and six large automakers (Mercedes-Benz, Ford, GM, Volvo, JLR, and BYD) pledged

to phase out internal combustion engine cars and vans (not trucks) by 2040 globally, and by no later than 2035 in leading markets. France, Germany, Italy, Spain, China, Russia, India, Australia, Japan and many others said “We’ll wait”.

Also, the U.S. and China, agreed to work together to cut emissions in the coming decades. There is little detail attached to the agreement. It was noted by the COP26 President, Alok Sharma, that countries comprising 90% of the global economy have pledged to reach net-zero emissions in the coming decades. Only a few months ago it was 30%. Progress.¹⁶

What is really happening at the COP-ins?

In the November 2017 issue of [THE DISPATCHER](#) I wrote in *Musings* a little piece titled “Global Warming will get you”. It was inspired by an article in the September 23rd issue of the *WASHINGTON POST* with the headline: “The 2017 hurricane season has been a full-on assault from Mother Nature...Is Earth trying to eject us from the planet?”

‘Mother Nature’, ‘The Gods’, just ‘God’—or Earth as a sentient being—is doing it, causing too much rain to fall, too strong winds to blow, too hot sun to shine. We humans, who are at the mercy of higher powers, have done something to offend those powers, and now we are going to pay. People who know the science behind natural events, like hurricanes, volcano eruptions, earthquakes and tidal waves, can explain the events, but there are still quite a few people who believe in supernatural reasons for bad things happening. In the November article I referred to a 2017 survey conducted by the *YALE PROGRAM ON CLIMATE CHANGE* which found that 70% of Americans do believe that climate change is happening (i.e., average temperatures are rising), but only 58% believe it is mostly human-caused. Thirty percent said it is mostly a natural occurrence, which could put them either into the ‘God did it’ camp or with those who simply believe s - - t happens.

Partly as a result of everything leading up to COP26, and then what was going on in Edinburgh (demonstrations by thousands, the EU’s Commissioner for the *European Green Deal*, Frans Timmermans, acting manic), I’ve been thinking a lot about climate change again, especially about the term GLOBAL WARMING. I still believe what I wrote in the November *Musings*, that ‘*Environmentalism*’ is an alternative religion created by the strongest believers in the bogeyman deity named GLOBAL WARMING. Like other religions, it offers salvation in return for abiding by a set of rules. Its

16. <https://news.climate.columbia.edu/2021/11/15/what-did-cop26-achieve/>

high priests have penetrated the political walls of many countries (e.g., they are part of the new government of Germany), and laws are being passed that enforce their principal rule: Use no energy. I said that the main problem with offering an alternative religion is that others already have their own, and *Environmentalism's* gospel of no cars, no planes, no meat, and no lots of other things does not necessarily sound so appealing.

I would like to take this a step further. What I believe has been occurring during the past 26 years since COP began is more of a battle between two different and opposing views on the goal of the effort, and two distinctly dissimilar opinions on how to achieve the respective goals. The UNFCCC was clear in 1995 in its stated objective:

"The ultimate objective of the UNFCCC is to stabilize greenhouse gas concentrations 'at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.' It states that 'such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner'."

One group interpreted this as a **call to battle**. "We are under attack by the forces of GLOBAL WARMING. Man the battle stations! If we lose, our way of life will be lost forever." For this group, there can be no delays in taking action, and that action is to reestablish a point in time in the distant past when the climate was 'ideal'. *Extinction Rebellion* activists lying in the streets blocking traffic, the children holding up placards on which is printed *Give us back our future*, and all the other climate change activists see the future as the past. It is what existed before, in their minds, unthinking and irresponsible generations of humans, mostly in North America and Europe, ripped carbon out of the ground and began burning it. The result is carbon dioxide in the atmosphere that has gradually raised temperatures on the planet. They complain at every turn that not enough is being done; that it is all talk and no real action. There is neither an appreciation of or an allowance for the time that is needed to obtain compromise to "enable economic development to proceed in a sustainable manner".

The other group interpreted this as a **call to action**. "We will study the problem so that causes can be understood, and, to the extent possible, we will develop alternatives to mitigate the problem so

that the ecosystem can adapt naturally to climate change, and to enable economic development to proceed in a sustainable manner.”

I believe the reason why we are where we are today, or more precisely, why we have not solved the problem which was defined simply in 1995, can be explained by the fact that neither of the two views has gained the upper hand. It was reading Karl Popper’s book, The Open Society and Its Enemies, that suggested another way to look at the standoff. There has always been something that has put me off “The End is Nigh” proponents. I could never quite put my finger on what it was. Popper helped me to connect the dots.

Utopian Engineering versus Piecemeal Engineering

Karl Popper (1902-1994) was an Austrian-British academic and one of this century’s most influential philosophers of science. He is best known for his position that a theory in the empirical sciences¹⁷ can never be proven, but it can be falsified, meaning that it can and should be scrutinized with decisive experiments. Popper was opposed to the classical *justificationist* account of knowledge, which held that scientific theories can be justified. For example, the Earth is at the center of the Universe because we’re here. In The Open Society and Its Enemies, Popper devoted the first one-third of the book to dispelling the myth of Plato. Popper sees Plato as anti-democratic, who worked against the democratic forces of his home city, Athens, and conspired both with its arch enemy, Sparta, and with the oligarchs in Athens who sought to return the city to its top-down, class structured society. Here is what he had to say about Plato and his approach to politics, which has a direct bearing on what has been happening for at least the past two hundred centuries in general and with respect to addressing climate change in particular:

“Inherent in Plato’s programme there is a certain approach towards politics which, I believe, is most dangerous. The Platonic approach I have in mind can be described as that of Utopian Engineering, as opposed to another kind of social engineering which I consider as the only rational one, which may be described by the name of Piecemeal Engineering.

In the *Utopian* approach, writes Popper, the ultimate end is chosen first. Intermediate ends are simply steps along the way. Only when this ultimate aim is determined, and the designers are in possession of a blueprint of the society at which it will aim, one

Utopia

The term “Utopia” to describe a perfect world was first coined by Sir Thomas More, in 1518. More wrote a novel depicting a fantastic new society, free from problems. More set this seemingly perfect society on an island, and gave it the name “Utopia.” Since then, “Utopia” has become a kind of shorthand for a perfect place.

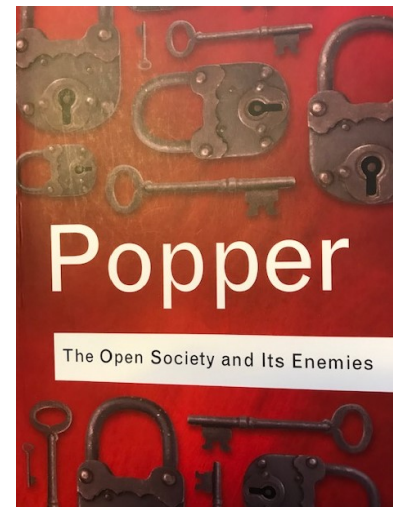
*‘Utopia’ literally means “no place”. The Greek **ou** means “no” and **topos** means “place.” Even More knew that the place he wrote about was only imaginary.*

17. *Empirical sciences* are sciences that make assertions “the truth of which is dependent on the world”, they use our senses, either observations about the world or experiments to come to a claim. For example, statistics and computer science are not empirical sciences because their truth is not dependent on what the world is like. They are true regardless of what is happening in the world, and have nothing to do with how the world behaves, because our observations will not change the truth of the statistics and computer science. This is the case, because the truths that come from them are *a priori*, they are not dependent upon observations and experiments.

that is perfect, only then can a plan of practical action begin. *Piecemeal* engineers do not have an ideal state in mind, nor have a hope that humankind will reach an ideal state and achieve happiness and perfection. No one can demand to be happy, says Popper, for there are no institutional means of making a man (woman or child) happy, but a claim can be made not to be made unhappy, when it can be avoided. *Piecemeal Engineering* will adopt the method of searching for, and fighting against, the greatest and most urgent evils of society, rather than searching for, and fighting for, its greatest ultimate good. *“It is the difference between employing a method which can be applied at any moment, and a method whose advocacy may easily become a means of continually postponing action until a later date.”*¹⁸

“The Utopian attempt to realize an ideal state, using a blueprint of society as a whole, is one which demands a strong centralized rule of a few, and which is likely to lead to a dictatorship,” writes Popper. Why? First, because identifying an ultimate end is impossible without a single authority that says “This is where we are all going”. Second, once the end is established, there can be no criticisms or adjustments along the way. We do not need to search long or hard to find examples of this. They are all based on Plato’s concept of a ruling class, the Philosopher Kings, who knew the way, that is, understood the blueprint. Both Plato and Marx, said Popper, dreamt of the apocalyptic revolution which would radically transfigure the whole social world.

Whether the environmental NGOs, placard-carrying demonstrators or the Extinction Rebellion-type radicals want to admit it—or even realize it—they are advocating a *Utopian* approach to solving the climate change problem. They are nodding their heads in agreement with Yuval Noah Harari, author of *Sapiens* and now a Philosopher Prince, who said in a *TED TALK* interview with Chris Anderson, *“...the old 20th century political model of left versus right is now largely irrelevant, and the real divide today (in 2017) is between global and national, global or local. We probably need completely new political models and completely new ways of thinking about politics. In essence, what you can say is that we now have a global ecology, we have a global economy but we have national politics, and this doesn’t work together. This makes the political system ineffective, because it has not control over the forces that shape our life. And you have basically two solutions to this imbalance: either de-globalize the economy and turn it back into a national economy, or globalize the political system”*.¹⁹



18. Popper, Karl. [The Open Society and Its Enemies](#). First published in two volumes in 1945 by Routledge & Kegan Paul Ltd.

19. https://www.ted.com/talks/yuval_noah_harari_nationalism_vs_globalism_the_new_political_divide/transcript#t-400394 at

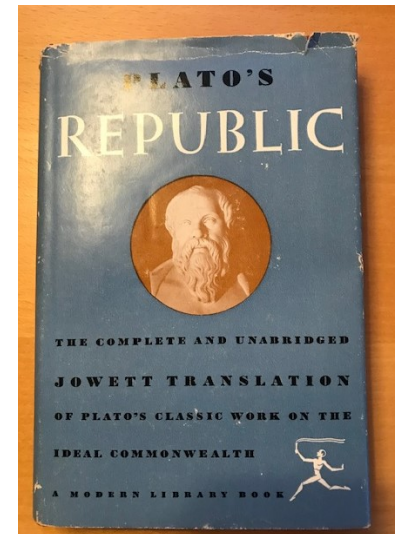
And who will design and run that global political system, Noah? The United States? The EU? China? Maybe you think the UN can step up to the plate? Who will organize the free-speaking Ted Talks and ensure that all the letters of the alphabet, without exception, are represented in these broadcasts?

In Plato's Republic, Socrates says: *"They will take as their canvas a city and the characters of men, and they will, first of all, make their canvas clean-by no means an easy matter. But this is just the point, you know, where they will differ from all others. They will not start work on a city nor on an individual (nor will they draw up laws) unless they are given a clean canvas, or have cleaned it themselves."*²⁰ The equivalent for the 21st century environmentalists of what Plato calls the 'clean canvas', one upon which the "heavenly vision of the individual and the city may be drawn," is the elimination of all relics of carbon usage, because, for the environmentalist, as long as these relics are present, their work cannot begin.

The extreme radicalism of the *Platonic/Utopian* approach, the single-minded determination to implement one set of technologies (e.g., solar and wind power, battery electric vehicles) to the exclusion of other alternatives (e.g., nuclear, hydrogen, carbon capture and storage) focused only on eliminating carbon-based energy without consideration of the short- and long-term implications, is what Popper calls "aestheticism". Popper suggests that this aestheticism in the *Utopian* approach finds its basis in art. Artists have a desire to imagine a finished painting, sculpture, building, or an entire 'ideal' city, and then to create something which is not only a little better and more refined than anything created previously. Radical environmentalists imagine a world which is free from all of today's current ugliness and messiness as well as one which is free of all traces of carbon.

We have gotten this far incrementally

Every attempt to build a Utopia as a city, a country, a region, or for the Planet Earth has turned out badly. Sparta should have been an object lesson for *Utopian Engineers*. Democratic Athens recovered from its defeat by the Spartans of Laconia, but the totally planned and controlled city state of Sparta rotted from its entrenched habits of rigid hierarchy, state terrorism, and social conformity.²¹ Plato influenced Hegel, whose nationalistic and totalitarian philosophy provided the basis for the Third Reich and the underpinnings of Marx's ideal state.



20. Jowett, Benjamin, Plato's The Republic. Modern Library Books (1950). This is my own copy which I bought for \$1.95. It is listed for sale as a rare book for around \$40 today.

21. <https://www.historynet.com/sparta-the-fall-of-the-empire.htm>

COP is voluntary. The agreements are not binding. A country may be shamed in the court of social media for not committing to definitive reductions of CO₂ emissions and other climate-unfriendly behavior by specific dates, but there are no legal repercussions for failing to meet the commitments. The COP countries are feeling their way through this together. The lack of detailed plans (i.e., blueprints for Utopia) are absent by design. It is a *Piecemeal Engineering* way of working that has been agreed to by the democratic leaders of this effort, not a *Utopian Engineering* one. For this, we should thank our lucky stars, Mother Nature, the Gods, God if we are predisposed to do so, or we can thank the good-guy philosophers, including Karl Popper, for their hard work.

To all the COPers, I say please continue to resist the Utopian aestheticians, the extinction rebellionists, the teenage (in years and mindset) environmentalists who complain that we are not there yet. Stick to the democratic, piecemeal approach to addressing and solving the problem of climate change, for our sake and for the sake of all future generations everywhere.





Photo Credit: New York Times

Until cars fly, we need roads and bridges

ONE OF THE jobs that you count on me to perform is to make the opaque transparent. When it comes to legislative matters that is not always an easy task. The U.S. Congress has been debating and voting on two pieces of legislation that it appears not even the senators and representatives are sure what they are voting for and against. Let's start with the basics.

There are two legislative initiatives that have been working their way through Congress:

- The ***Infrastructure Investment and Jobs Act***, commonly referred to as the *Bipartisan Infrastructure Bill*, and originally in the House as the *INVEST in America Act* (H.R. 3684), is a United States federal statute enacted by the 117th United States Congress and signed into law by President Joe Biden on the 15th of November 2021. The final Act includes approximately \$1.2 trillion in spending, with \$550 billion being newly authorized spending on top of what Congress was planning to authorize within the framework of existing legislation.
- The ***Build Back Better Act*** is a bill introduced in the 117th Congress to fulfill aspects of President Joe Biden's *Build Back Better Plan*. It was spun off from the *American Jobs Plan*, alongside the *Infrastructure Investment and Jobs Act*, as a \$3.5 trillion reconciliation package that included provisions related to climate change and social policy. Following negotiations, the price was lowered to approximately \$2.2 trillion. The bill was passed 220–213 by the House of Representatives on November 19, 2021. One Democrat, Jared Golden of Maine, voted against it, calling an increase in the state and local tax deduction (SALT) cap from \$10,000 to \$80,000 "a \$275 billion tax giveaway to millionaires and the wealthy". It is under consideration by the Senate.

Infrastructure Investment and Jobs Act

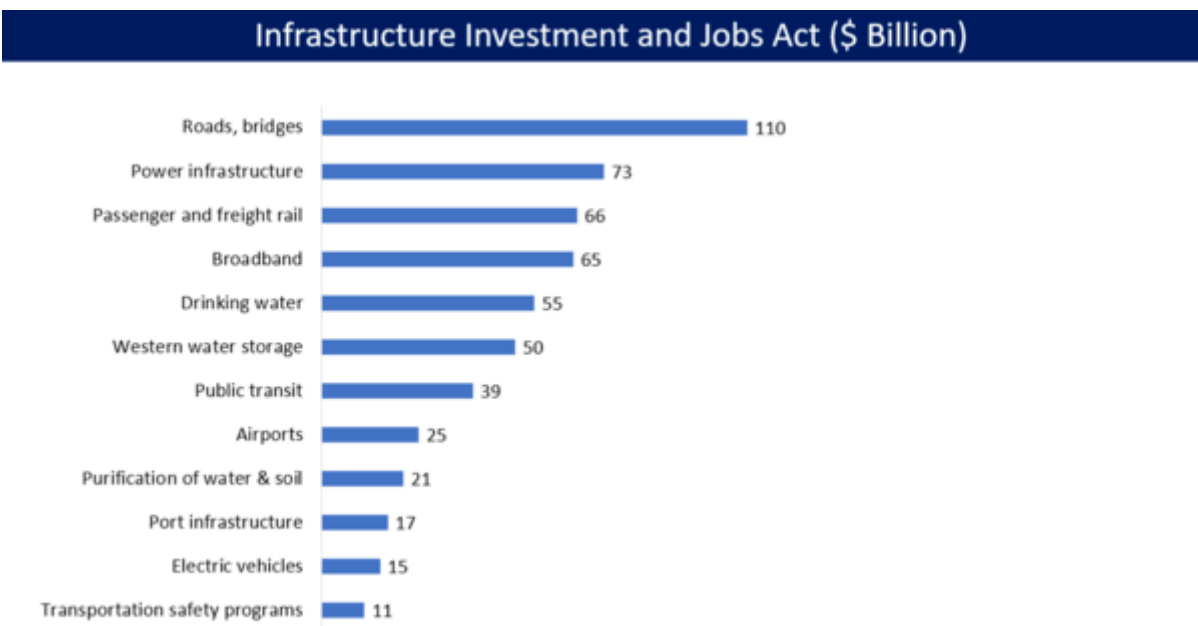
The Act started out as a \$715 billion infrastructure package that provided funding for *DEPARTMENT OF TRANSPORTATION* programs related to federal highways, transit, highway safety, motor carrier programs, transportation research, hazardous materials management, and rail programs. Following congressional negotiations, the original

House of Representatives bill was amended and renamed to the *Infrastructure Investment and Jobs Act* to include funding for broadband access, clean water, electric grid renewal, in addition to the transportation and road proposals of the original House bill. This amended version included \$1.2 trillion in spending, of which \$550 billion is new money.

The amended bill was passed 69–30 by the Senate on the 10th of August 2021. On the 5th of November, it was passed 228–206 by the House, and ten days later was signed into law by President Biden. Six Democratic Representatives, the so-called ‘progressives’ voted against the bill, while 13 Republicans voted for it.



Photo Credit: New York Times



Investment categories (\$ billion) in the Infrastructure Investment and Jobs Act of 2021, adding to about \$550 billion over a decade.

The principal reason this bill did not sail through the House of Representatives was due to a group of congressmen (mostly women) who privately refer to themselves as ‘democratic socialists’, but are officially known as the Congressional Progressive Caucus. They did not want to vote separately for the Infrastructure Act, but wanted it to be incorporated into the larger, mainly social welfare *Build Back Better Act*. President Biden, along with most of the Democratic congressmen, prevailed in separating the two bills and finally passing the *Infrastructure Act*.²²

There is an excellent analysis of *the Infrastructure Investment and Jobs Act* in the REASON FOUNDATION *SURFACE TRANSPORTATION INNOVATIONS NEWSLETTER* written by Robert W. Poole, Jr. (who is a reader of *THE DISPATCHER*).²³ Bob provides a detailed and thoughtful assessment of the Act, identifying both the good and bad points of

22. To put this spending into a larger perspective, the American Society of Civil Engineers, has stated that as a result of under-investment for a very long period of time, it would take \$2.6 trillion to get all of America’s roads and bridges up to par.

THE ECONOMIST NOVEMBER 13TH 2021, page 38.

23. <https://reason.org/transportation-news/bipartisan-infrastructure-bill-ranking-state-highway-systems-and-more/>

the legislation. One important point is where the new funding is coming from. It is coming from the so-called ‘general fund’, which means it is borrowed from those who purchase Treasury bonds.

Included in the \$15 billion allocated for ‘electric vehicles’ is \$7.5 billion specifically allocated for a national EV charging station network.²⁴ These charging stations will be located along highway routes or rural areas, include brand-agnostic connectors such as the J-1772, be publicly accessible, and have no network membership fees. This has been called ‘historic’ because it is the first time the U.S. government has invested in a national vehicle fuel delivery network. The goal is to accelerate the adoption of electric vehicles. The bill provides funding for deployment of EV chargers along highway corridors to facilitate long-distance travel and within communities. Funding will supposedly have particular focus on rural, disadvantaged, and hard-to-reach communities. The estimate is that around 1,900 highway and rural stations, 100,000 urban stations, and 215,000 stations for workplaces, apartments, and airports could be built with the proposed funding.

There is an important addition to this bill. It sets deadlines for DOT to issue rules on automatic shutoff for keyless ignition systems, updated headlamp standards and a requirement for new vehicles to be equipped with drunken-driving and impaired-driving prevention technology.

Elon Musk stated categorically at the *WALL STREET JOURNAL*’s CEO Council Summit on the 6th of December that believes there should not be any federal support for an EV charging network. *“Do we need support for gas stations? We don’t? There’s no support for a charging network. I would just delete it. Delete. I’m literally saying get rid of all subsidies. Also for oil and gas.”*

U.S. Transportation Secretary, Pete Buttigieg, pushed back on Musk’s disapproving comments: *“The Biden administration is committed to making sure the transition to electric cars will happen quickly enough to meet the President’s climate goals, will be done in a way that is equitable and benefits U.S. workers.”* This last criteria referred to a provision in the proposed Build Back Better Act (see below).

Build Back Better Act

This is what is included in the BBB Act:

- \$555 billion for clean energy and climate change provisions

24. The other \$7.5 billion is for electric school buses.

- \$400 billion for childcare and preschools
- \$200 billion for child tax and earned income tax credits
- \$150 billion for home care
- \$150 billion for housing
- \$130 billion for Affordable Care Act credits
- \$90 billion for equity and other investments
- \$40 billion for higher education and workforce
- \$35 billion to expand Medicare to hearing services

It's the \$555 billion, 25% of the total, for clean energy and climate change provisions that have gotten the transport sector's players and pundits percolating. Without distinguishing between the 75% that is social welfare-related and the energy bit, Elon Musk stated categorically at the *WALL STREET JOURNAL's* CEO Council Summit: *"Honestly, I would just can this whole bill. Don't pass it. That's my recommendation. The federal budget deficit is insane."*²⁵

The BBB Act proposal provides for up to a \$7,500 tax credit for buying an BEV, plus another \$500 tax credit if the battery is made in the U.S. and an additional \$4,500 tax credit if the car is assembled by union workers in the U.S. Tesla is not unionized. Note that you can only use a tax credit if you pay a certain amount of federal tax. To qualify for tax credits under the BBB, EVs need to fall under a price limit. Vans, sports utility vehicles or pickup trucks need to be under \$80,000 to be eligible for the credit; for all other cars, the price limit is \$55,000. That means luxury EVs like the *Porsche Taycan* or the forthcoming electric *Hummer* wouldn't qualify for the credit. There's also an income limit for taxpayers to receive the credit: \$500,000 for married couples or \$250,000 for single people. If you declare more, you do not receive any type of credit.

Musk is not the only critic. Toyota has called the union-made incentive "blatantly biased" and "wrong".

On the 2nd of December, a group of around one hundred organizations wrote to the Senate Majority Leader, Chuck Schumer, to urge him to "do everything in your power to preserve all of the critical investments included in the House-passed bill and reject efforts to further reduce or weaken the bill." The current total for spending in the BBB Act has been reduced to \$1.75 trillion. Schumer was preparing the Act for a vote in mid-December.²⁶

Tesla has missed the point on safety

THERE IS AN empathy screw loose in Elon Musk's head. That can be the only explanation for the most recent addition to the bad driving enabling features available on TESLA cars. Video games can now

25. The bill is projected to increase the federal deficit by \$274 billion over the next 10 years and decrease gross domestic product 0.2% by 2050, according to an estimate from the Penn Wharton Budget Model.

26. As The Dispatcher went to press on 28 December, there had been no vote on the BBB Act. Senator Joe Manchin announced just before Christmas that he could not vote in favor of the Act in its present form. It was too expensive, he said. He made this statement during an interview on the TV news program that loves to hate the Democrats. The Act cannot pass without his and all other Democratic senators.

be played while the car is moving.²⁷ The other bad driving enabling features, Autopilot and Full Self-Driving (sic, sic) make it easier to play the games, but there does not appear to be a requirement that an owner must plunk down several grand to use the video game feature.

I don't know where Mr. Musk obtained his driver's license, but wherever it was, he was not taught, or did not learn, the **Driver's Golden Rule: DO NOT HARM ANYONE OR ANYTHING**. Anyone includes passengers in your car, drivers and passengers in all other cars with whom you are sharing the road, and everyone in the vicinity of your car. Anything is all the property on and along the side of the road of travel. You come last on the priority list because you are supposedly in control of your vehicle. If TESLA customers want to kill or injure themselves while being distracted by a video game, or by taking their attention away from the driving task in the belief that the so-called Autopilot and Full Self-Driving functions will do the job well enough, that's up to them. But, damn them if they injure or kill someone else while misbehaving, or if they damage someone else's property. That's on them—and it's on TESLA for allowing them to do it.

In an *AUTOMOTIVE NEWS* feed I received on the 8th of December, it was stated that the *NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION* "is discussing with TESLA the EV maker's software update that lets users play video games on a touch screen mounted in front of the dashboard". Discussing!? What's to discuss? Stop it immediately. The *NEW YORK TIMES* reported on this in a December 7th article titled *Tesla Drivers Can Now Play Video Games Even With Car Moving*. TESLA replied to the writer of the *NYT* article that playing the games while the car is in motion is only for passengers. The player must push a button confirming that the player is a passenger, said TESLA. How does the screen know who is pushing the button? Well, uh...I guess it can't.

NHTSA has guidelines in place for this type of stupidity. In 2013, it issued clear recommendations that "recommend that in-vehicle devices be designed so that they cannot be used by the driver to perform inherently distracting secondary tasks while driving. According to NHTSA, "these guidelines specify a test method to evaluate whether a task interferes with driver attention, rendering it unsuitable for a driver to perform while driving".

This was the second article in two days coming out of the *NEW YORK TIMES*, both written by auto industry correspondent Neal E.

27. Until the 2021.12.25.6 OTA software update was sent to Tesla cars, it was only possible to play video games when the car was in park. With the new update, drivers could simply claim they were passengers to play a game while the car is moving. On the 24th of December, Tesla announced that it would send a software update which removes the functionality to play video games while the car is moving. I trust that this indicates there are now individuals on the company's board who are not completely controlled by Musk who realized that a strategic withdrawal was better than a certain defeat with sanctions administered by NHTSA.

Boudette, based in Michigan. The first article on the 7th of December was a longer report titled: *Inside Tesla as Elon Musk Pushed an Unflinching Vision for Self-Driving Cars*. It has been Elon Musk's position that driverless car technology can be based only on cameras using the logic that "humans could drive with only two eyes and that means that cars should be able to drive with cameras alone". Birds fly by flapping their wings, Elon, so that's how airplanes should fly as well, right? Eight of Musk's own Autopilot (sic) engineers (all former for disagreeing with him) told him he was skating on logic's and science's thin ice by making this statement. He did not take note, as usual. Besides, that extra equipment (radar, lidar) damaged the aesthetics of his cars, he claimed.

The NYT article takes a very hard look at TESLA and the way potentially life and death decisions are made in the company. It is not kind to TESLA. In the final paragraph, he quotes Amnon Shashua, CEO of former TESLA supplier, MOBILEYE. Musk claimed that it cancelled its contract with MOBILEYE as a supplier of software and hardware in 2016 because it was responsible for the failure of Joshua Brown's car to "see" that it was approaching a tractor trailer and not a bridge. MOBILEYE claimed it stopped supplying TESLA because it was concerned that TESLA was "pushing the envelope of safety". Whatever the reason, MOBILEYE has continued to develop camera-based self-driving capabilities, and in Shashua's response to Boudette, he says: "Cameras in a self-driving system could ultimately work, though other sensors may be needed in the short term." He added further: "Mr. Musk might exaggerate the capabilities of the company's technology, but one should not be hung up on what TESLA says. Truth is not necessarily their end goal. The end goal is to build a business." TIME MAG concurs.

In both articles, Boudette says that TESLA refused to respond to multiple e-mail requests for comment. Maybe the fire is getting too hot. On Friday, the 10th of December, he sent out the following Tweet on Twitter: *"thinking of quitting my jobs & becoming an influencer full-time wdyt"*. What do I think? I think it would be tough for all the journalists and newsletter pundits if we didn't have The Musketeer to kick around anymore. And, although I don't own any TESLA stock, I have friends who do and I sure wouldn't like to see their life's savings wiped out. On the other hand, it is unlikely that anyone who replaces him would be able to flout the rules of respect for appropriate driver behavior, so my vote would go to his early retirement with a hope that he does not find another area where he can apply his lack of empathy.



Calling him a "clown, genius, edge-lord, visionary, industrialist, show-man," TIME MAGAZINE has named TESLA CEO Elon Musk as its *Person of the Year for 2021*. You can see other winners here:

<https://www.thoughtco.com/times-man-of-the-year-list-1779824>.

He and Walter P. Chrysler, who founded CHRYSLER CORPORATION in 1925, and who was named Time in 1928, are the only two automotive executives on TIME's list.

The first gasoline-electric hybrid car

IT WASN'T TOYOTA. When we think of hybrid cars we think of *Toyota Prius*. Pictured right is the *XW10/NHW10*, which was sold only in Japan between 1997 and 2001. The *XW10/NHW11* began sales outside of Japan in September 2000. The *XW10* was the first mass-produced hybrid car, but it was not the first hybrid. That honor goes to the LOHNER-PORSCHE *Mixed Hybrid*. It was developed at the end of the 19th century at the LOHNER-WERKE when Porsche was employed there, and was in production between 1900 and 1905. Three hundred of them were sold. First prototypes were two-wheel drive, battery-powered electric vehicles with two front-wheel hub-mounted motors. A later version was a series hybrid using hub-mounted electric motors in each wheel, powered by batteries and a gasoline-engine generator. The wheel-hub motor had been developed by American inventor Wellington Adam.

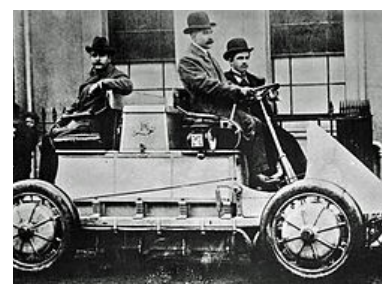
The vehicle proved to be too expensive for mass market private vehicles, so it was adapted to buses and fire engines for the cities of Vienna, Frankfurt and London. Porsche was hired away from Lohner by DAIMLER-BENZ in 1906. Jacob Lohner is reported to have said about Porsch when he made the career move: "He is very young, but is a man with a big career before him. You will hear of him again."

Looks like congestion charging isn't working

LONDON HAS HAD its so-called 'congestion charge' since 2003. None of the other cities on the list has anything similar, although Paris and New York City are itching to have one of their own. London drivers lost 148 hours this year due to traffic. It was 149 in 2019 and then dropped to 69 due to the lockdowns in 2020. So it is back to pre-COVID levels. The congestion charge fee is £15/day. That's £3,750/year for someone who needs to drive in London for work five days per week. The average annual salary for a British worker is £29,600. That's a little less than what a nurse or police officer makes in Great Britain, but more than what a pharmacy assistant or a kitchen assistant brings home. The congestion charge is from per-tax income, and for someone earning the average salary, it is about equal to the total annual tax. The Mayor of London makes around £150,000 per year. If he drove every day—which, of course he does not have to do because he's the mayor—he would pay the same amount of money yearly as the kitchen assistant.



Toyota Prius XW10/NHW10



LOHNER-PORSCHE Mixed Hybrid

Hours lost in traffic congestion in 2021
Average hours per driver

	City	Hrs		City	Hrs
1	London	148	6	Rome	107
2	Paris	140	7	Chicago	104
3	Brussels	134	8	Lyon	102
4	Palermo	109	9	New York	102
5	Moscow	108	10	Buchrest	98

Source: INRIX 2021

Musings of a Dispatcher: Roadway Intruders



Policeman directing traffic on Market Street in Philadelphia in 1972.

It's a free-for-all on urban roads

DOES ANYBODY REMEMBER when it started, when safety on urban roads began to be compromised by intruders? Extreme bicyclists, bicycleshareists, skateboardists, segwayists, e-scooterists, rickshawists, j-walkerists, and joggerists might not like being referred to as 'intruders', but adding their presence to the roads already occupied by private and commercial motorists, motorcyclists, mopeds, buses, trolleys and law-abiding pedestrians certainly did not make the streets of our cities, large and small, safer for anyone. Adding batteries to the intruding vehicles to juice up their speed just made things worse.

This *Musings* is about governments at all levels, but mostly local, abrogating their main responsibility, which is to see to the welfare and well-being of their citizens. When the principal intrusions began to occur, laws that were on the books to regulate how the roads were used and by whom were not enforced. New laws that should have been passed were not drafted, and the different parties within the governments pointed to other parties as the ones who should be taking action. As the intrusions increased, the difficulty of enforcement became so great in some places that politicians have simply given up. In the meantime, people are being killed and injured, and some are taking the law (whether it exists on the books or not) into their own hands, pitting citizen against citizen. It's a free-for-all.

Where have all the policemen gone, long time passing

Thinking back, I believe the start of the intrusion movement began with a surge in New York City bike messengers, (aka cycle couriers) in the late 1980s.²⁸ This was before the Internet allowed documents to be whisked across town or around the globe in digital format, but after the city streets became so clogged with cars, trucks and buses that walking—or running—would have gotten an important document to an office a few miles away faster than sending it by car. The new generation of bike messengers earned a well-deserved reputation for being notoriously inconsiderate reckless daredevils. When the vast majority of cars dutifully stopped when a traffic light turned red, the messengers plowed through pedestrian



28. Bicycle couriers were by no means a new phenomenon. Below is a photo of a 1902 U.S. postage stamp with a bicycle messenger.



crossings, turned where no turns were allowed, zoomed the wrong way down one-way streets, all to get that package into the hands of its designated recipient as quickly as the bike and their *chutzpah* would take them.

I found an article written in 2014 on a news site called *Vox* (voice) with the title: *Don't blame bike messengers for riding like maniacs. Blame their bosses.*²⁹ The article does not mention the words 'illegal' or 'unlawful' once. It typifies an attitude that now permeates discussions about using urban rights-of-way, that it is okay to break the law: *"In fact, some might argue that by committing a disproportionate amount of the reckless riding that goes on, they give all bicyclists a bad name. But while their reckless riding might make bikers look bad, the truth is that the messengers riding this way are just doing their jobs."* Because messengers are paid for deliveries they make, *"making enough deliveries per day to earn a decent wage requires breaking traffic laws"*, claims the article's author.

A Boston survey showed that the injury rate among messengers is more than fifteen higher than the national average for all jobs, and four times more dangerous than for meat packers and construction workers. *"Of course, unsafe working conditions and sub-minimum wages are the sorts of things that government regulations are supposed to prevent. But most courier companies aren't bound by many of those regulations because they designate their messengers as independent contractors."* Sound familiar?

If there were policeman on the streets waving down the messengers and ticketing them on the spot, and dishing out fines to the companies employing them as gig workers, there would be many fewer injuries to the cyclists and to the unprotected pedestrians.

Turning kick scooters into weapons of destruction

When the e-scooters turned up on the streets of Stockholm a few years ago, I knew we were in trouble. There were no rules to regulate them on any level. Anyone with a smartphone rental app could place an e-scooter anywhere. Anyone who downloaded the app could use the e-scooter in the same way they could use a standard bicycle. Although bicycles are subject to certain rules of the road, and may not be ridden on sidewalks, these rules are not followed nor are they enforced. There are no speed limits on bikes, and although there are supposedly top speeds on the scooters, watching them speeding past bikes indicates that the governors are not operating. There were no rules regarding

29.

<https://www.vox.com/2014/10/3/6839359/bike-messengers-pay>

This is what my *Radio Flyer* kick scooter looked like in 1952.



I moved up to a *Radio Flyer* wagon. You put one knee in the wagon and pushed with the other leg.



where the e-scooters should be placed by those who owned them or those who used them. Every night, the scooter owners collected the ones that needed to be recharged and placed out fully charged ones. They placed them where their records showed there was the greatest demand. Since there were no designated parking places that necessarily matched where they were placed, e-scooters were simply dumped onto sidewalks. A little bump and a scooter falls over, blocking a larger portion of the sidewalk and creating a dangerous obstacle for walkers, especially the elderly and visually handicapped. Making matters even worse, the person in charge of transport and traffic in Stockholm decided to allow bicycles—and therefore e-scooters—to ignore one-way regulations.

People have shown themselves capable of putting up with disorder and uglification of their cities as long as they are getting more than they are losing in accessibility. This has not been the case with e-scooters. Injuries to both the e-scooter riders and pedestrians have skyrocketed. There have been three deaths. Several recent incidents have brought increased attention to the seriousness of the problem. An 82-year-old man and his wife were on a weekend vacation in Stockholm, taking a walk in the very center of the city. The man was rammed into by a 25-year-old woman on an e-scooter as he walked onto the street at a signaled pedestrian crossing. He had the right-of-way. In another incident, a 15-year-old boy was fined \$6,000 for driving into a 74-year-old man and then running from the scene.

The number of e-scooters on Stockholm's streets has risen to 25,000. City officials have been forced by public opinion to change their attitude. Fully 58% of Stockholmers are negative toward e-scooters, and less than 20% are positive. Of the positive, 57% are between 18 and 44. The positive group is only 40% of the city's population, and most of them are not living in the city's expensive center where most of the e-scooters are operating. When Stockholm finally decided to regulate the number of firms placing out the e-scooters, reduce the numbers by one-half, restrict the locations where they can be parked, restrict where they can be ridden and enforce the speed limits, it turned out that national regulations set by *Transportstyrelsen* (SWEDISH TRANSPORT AGENCY)³⁰ supersede those of the cities, so that Stockholm and the other Swedish cities must wait for the national legislature to pass laws that enable them to do what they should be doing to protect the lives and well-being of their citizens.



Under the round no entry sign is a rectangular sign saying that this one-way restriction does not apply to bicycles, which means that it also does not apply to e-scooters.

30. Transportstyrelsen is not to be confused with Trafikverket, which is the SWEDISH TRANSPORT AUTHORITY.

The moral of this story is that the person in charge of transport and traffic in Stockholm, a member of the Swedish Green party, who thought that e-scooters were exactly what his anti-car policy needed to succeed, should never have allowed a single e-scooter on the city's streets before all the implications were thoroughly investigated, policies established, rules and regulations made clear to both the e-scooter companies and the eventual users. This would have avoided the free-for-all that ensued as well as the 855 injured people and three deaths.

Turning cars into playthings

This falls under the category “If it ain’t broke; don’t fix it”. Sweden has had one of the best records of highway safety for a very long time. It has one death in road-related accidents per 40,000 inhabitants compared to one death per 9,000 in the U.S. This is the result of its road authority’s “Zero Vision” policy, strict enforcement of driving while intoxicated laws, a high (98%) usage of seat belts and—up until now—strict requirements for obtaining a driver’s license. Then, one fine day, someone in Sweden’s *Transportstyrelsen* decided that the regulation which allowed country kids between 15 and 18 to drive around in modified cars with a maximum speed limit of 30 kilometers per hour had to be extended to their city cousins. The original idea was that in places where public transport was sparse, multiple cars in a family were rare and parents were too busy working to chauffeur their kids around, these toy-like cars could fill a useful function and keep young boys occupied.

Eighteen is the minimum age in Sweden for obtaining a passenger car driver’s license, but a moped license can be obtained at 15. This moped license is all that is required to drive around in what is known as an A-tractor. It was a vehicle that had its transmission modified so that it may not be driven faster than 10 kph in the lowest gear and travel no faster than 30 kph (on a horizontal road). Seat belt usage is not obligatory in these vehicles. The triangle on the back indicates to other drivers that they are behind a slow-moving vehicle which may be overtaken as a normal tractor can be overtaken. In 2019 there were approximately 25,000 of these A-tractors in the country, almost all in the rural counties.

In July 2020, *Transportstyrelsen* changed the rules concerning A-tractors. It took away the requirement for the modified transmission. From that point on, any car could be modified with an electronic governor to limit the speed limit. Suddenly, late model Audis, BMWs, and pick-up trucks, along with little moped cars were

There is one adult with authority in Stockholm. His name is King Karl XVI Gustaf. His Majesty has placed signs around his castle stating that e-scooters are not allowed on any of the roads around or leading up to the castle. The Stockholm Traffic Office has declared that these signs are illegal, for the reasons I explained, but, since the King cannot be prosecuted, his signs will remain in place.



holding up traffic along roads all over the country. This timing coincided with teenagers returning to school following the summer break, and, presumably, parents believing they were helping their kids stay safe by keeping them off the buses and trains.

Within a year, there were almost double the number of A-tractors on the roads. With the increased numbers of vehicles being driven more often in urban areas, the number of accidents began to explode, and anti-social behavior involving large gatherings of youngsters with vehicles fitted with boom boxes blaring music late into the night proliferated. Making matters worse, removing the governors so that the cars could travel faster than 30 kph has become commonplace. One A-tractor was clocked at 120 kph by police pursuing it. Accidents with personal injuries rose from 70 in 2018 to 150 in 2020. During the first six months of 2021, 699 licenses have been drawn in from A-tractor drivers. Police in many jurisdictions are calling on *Transportstyrelsen* to rescind the July 2020 regulation and ban A-tractors altogether before it gets to be too late.

What were they thinking? Or were they thinking? Someone has an idea and, *bimsalabam*, it just happens. Would it really take more than half a brain to realize that if you put fifteen-year-olds in real cars they are going to think they can drive them, even though they did not go through the rigorous driver's license process that eighteen-year-olds and older individuals had to endure before they were allowed to get behind the wheel. Today, every time I get into my car and drive anywhere, I meet kids who do not have a clue what they should be doing on the road, and I have to make sure that I give them a very wide berth whenever I am near them. Is this any way to run a road transport system?

A law is a law until no one thinks it is anymore

It feels like public authorities in Sweden are extremely concerned (afraid?) that they do not appear to be discriminating against groups of individuals, principally children, women or ethnic minorities, anyone except White, adult men. They also seem determined to do anything they can to allow any and all alternatives to standard cars on the roads. The result is not more mobility, but more unsafe travel—and not only on the roads but on the sidewalks. Clear and simple laws that people understand and follow, and which are strictly and consistently enforced, is the best way to minimize conflict and resulting accidents on our roads.



About Michael L. Sena

Michael Sena, through his writing, speaking and client work, attempts to bring clarity to an often opaque world of highly automated and connected vehicles. He has not just studied the technologies and analyzed the services. He has developed and implemented them. He has shaped visions and followed through to delivering them. What drives him—why he does what he does—is his desire to move the industry forward: to see accident statistics fall because of safety improvements related to advanced driver assistance systems; to see congestion on all roads reduced because of better traffic information and improved route selection; to see global emissions from transport eliminated because of designing the most fuel efficient vehicles.

This newsletter touches on the principal themes of the industry, highlighting what, how and why developments are occurring so that you can develop your own strategies for the future.



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