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## THE JANUARY 2025 ISSUE IN BRIEF

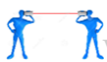
THE UNWRITTEN RULE of keeping your job, holding on to your clients, being invited to speak at professional conferences, and having honors bestowed on you is to stick to the current orthodoxies in your profession. If your chosen field is transportation, you would do well to praise congestion charging, support more bike and bus lanes, and, above all, advocate for the reduction of automobiles in favor of mass transit. Since I do not have a job, no longer accept clients, stopped speaking at conferences I am not involved in planning, and am well past caring about receiving honors, I don't give a hoot about the current orthodoxies. I started this newspaper in 2013 because the orthodoxies of "autonomous" vehicles and battery electric cars were being established, and no one was questioning them. Everyone in the industry was simply following the unwritten rule. GM cancelled Cruise on the 10<sup>th</sup> of December, spending a reported \$10 billion to keep it running after it purchased the group in 2016. GM's CEO, Mary Barra said in a call with investors and press about defunding Cruise: *"You've got to really understand: the cost of running a robotaxi fleet, which is fairly significant, is not our core business."* Yes, Ms. Barra, I understood that and said it. You were the one who claimed Cruise was going to deliver \$50 billion a year in revenue to your company every year after 2030. You and the entire industry have been missing the entire point for the past ten years. Cruise was never in the "running a robotaxi fleet" business, and neither is Waymo. Cruise was and Waymo is in the business of delivering driverless driving, not riding. The biggest problem is that there is no orthodoxy for how and why driverless cars should be used. Two of us have written a book on how to make not having a driver an advantage for the rider. Maybe after more billions are wasted on the old orthodoxies, you might help us establish a new, more useful one.

## Feature: The Business of Delivering Transport

### Feature Articles



The real case for driverless mobility



Vehicle-related telecommunications



Automotive artificial intelligence



The business of delivering transport systems



People and transport – the effects of how and where we live, work, and recreate on our requirements for transport



Standardization and regulation of transport systems

### ***Driverless Demand Responsive Transport***

LIFE WAS SIMPLER when you could say “Call a taxi for me”, and you weren’t cross-examined on whether you wanted a Yellow Cab, a limo, an UBER or LYFT (classified for regulatory purposes as Transport Network Companies - TNCs<sup>1</sup>), or any one of the many variations of these fee-based ride delivery businesses. Where does ALPHABET’s Waymo fit into this mix, with and without a driver? It seems to be positioning itself as an alternative to both taxi and TNC services without any particular distinguishing characteristics, including price.<sup>2</sup> Waymo calls itself the world’s first autonomous ride-hailing service (as well as the world’s safest driver and the world’s most trusted driver, although it doesn’t say who awarded them with these honors), even though you cannot ‘hail’ a Waymo vehicle in the traditional and accepted use of the term. AMAZON’s Zoox says it is developing autonomous vehicles to deliver mobility as a service (Which is what all fee-based ride delivery businesses do, isn’t it?), and refers to its vehicle as a “robo-taxi”. Chinese BAIDU pitches its Apollo Go as its ‘robotaxi’ (without the hyphen) division. Waymo avoids using the term ‘robotaxi’ when referring to its vehicles and its service, but most journalists writing about it take the liberty to do so.

### *I’m calling for a time out*

The term ‘robotaxi’ is now being used to refer to all types of ride delivery methods, both fee- and non-fee-based, particularly following the much-hyped introduction of TESLA’s *Cybercab*. The *Cybercab* is a two-seater car. It is not designed to be a ‘taxi’ or ‘cab’ (see

<sup>1</sup> TNCs use a digital network to connect a rider to a driver using his or her own vehicle, or a vehicle owned by a third party, to provide a prearranged ride.

<sup>2</sup> The Washington Post published a comparison of Waymo to taxi and transport network companies (e.g. Uber and Lyft) in November 13, 2024 newspaper. It found that prices for Waymo trips in San Francisco were similar to those of the TNCs and taxis. (<https://www.washingtonpost.com/technology/2024/09/12/waymo-vs-uber-lyft-cost-speed-robotaxi-rideshare/>)

sidebar, *What's a Taxi or Cab?*), like, for example, the GEELY-owned LONDON ELECTRIC VEHICLE COMPANY's TX shown here.<sup>3</sup> A taxi without a driver is a driverless taxi. If people want to call it a 'robotaxi' (or 'robo-taxi'), fine, but stick to the definition of a taxi. I am still living in a pre-Post Modern world, and hope that we will soon be in a post-Post Modern world, where words have meaning and are not defined on-the-fly by any self-declared pundit. My car is not a taxi, but there are *Toyota RAV4s* fitted with taxi equipment and licensed so they can be used as taxis. The car that TESLA showed in LA recently, its *Cybercab*, was not a taxi or a cab, but it, too, can be turned into a taxi with the proper equipment and permits.



Besides being etymologically incorrect, unless the term refers specifically to a vehicle that is a taxi or cab, the reason it is problematic to use the term 'robotaxi' or 'cybercab' as a catchall phrase for all ride delivery services is that there is a growing tendency to criticize driverless vehicles in general as a potential cause of greatly expanded driving at the expense of public transit. I listened to a webcast recently in which David Zipper, who has worked in city government and who is a Visiting Fellow at the TAUBMAN CENTER FOR STATE AND LOCAL GOVERNMENT, HARVARD KENNEDY SCHOOL, claimed that 'robotaxis' will "lead to increased congestion, sprawl, and declining transit usage". Why? Because, he claims, people will take more trips and longer trips due to the fact that they do not have to drive and, presumably, because people would rather ride in a car than on a bus or trolley. He says at the start of the webcast that cars in any shape or form are bad. "Uber and Lyft made mobility worse, and robotaxis will make it even worse." To be completely fair, Zipper did say that "[Robotaxis] could be helpful bringing people who have disabilities or lower incomes from outlying areas where transit service stinks to come into the city", but then adds, "but I am not sure that the business model is

### What's a Taxi or Cab

The words 'taxi' and 'cab' conjure up strong images of a fascinating world with a long history. Songs are sung about them; movies are made about them; books are written about them. The word 'taxi' is a contraction of the word 'taximeter', which is a clockwork mechanism to measure fares for delivering rides. It was invented in 1891 by Wilhelm Bruhn, a German, and the word comes from the German word *taxe*, meaning 'charge' or 'levy', and 'meter' from the Greek μέτρον (*metron*), meaning 'measure'.

'Cab' comes from the Hansom Cab, a two-wheeled, horse-drawn cart that was designed and patented in 1834 by Joseph Hansom, an Englishman. It had a low center of gravity for safe cornering and replaced the four-wheeled hackney carriage (from the French word, *hacquenee*, meaning 'ambling nag <horse>') as the preferred vehicle for hire. The hackney carriages first went into service in 1636, and Hackney Carriage is still the official British term used to describe taxis for regulatory purposes.

After the British Civil War ended in 1652 and Oliver Cromwell established himself as the "Lord Protector", the Fellowship of Master Hackney Carriages was decreed by Act of Parliament, and taxi driving became a profession. This makes the licensed taxi trade the oldest regulated public transport system in the world.

<sup>3</sup> See the December 2024 issue of *THE DISPATCHER*, *Musings*, "Tesla's Robotaxi show underwhelms", pp. 17-20.

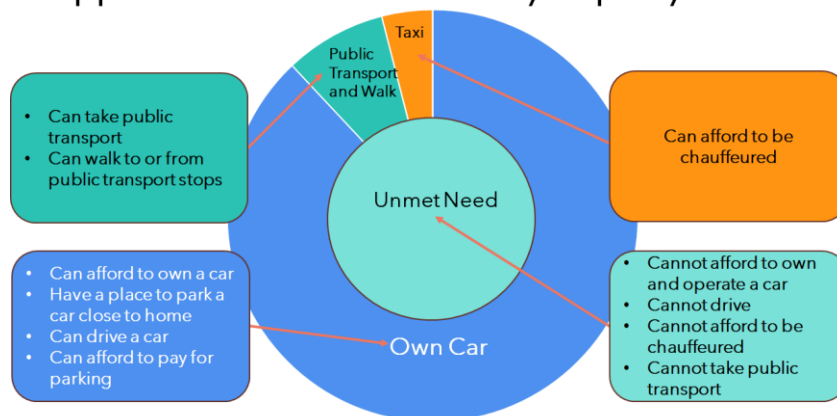
going to naturally lead the robotaxi companies towards serving those kinds of people just like it really hasn't led ridehail in that direction either." In other words, for bus-huggers, a car in any form is still a car, even if it solves a problem that people who can afford to own a car, who can drive a car, or who have public transport that satisfies their needs do not have, which is getting to where they need to go when they need to go at a price that is affordable to them. Also, Mr. Zipper is a bit out of date when saying that people want to "come into the city". They need to go everywhere.

### *There is a very large unmet need for daily trips*

In the U.S., 89% of adults over twenty-five years of age, which is a total of 205 million individuals, have a driver's license. But that does not mean they all drive.

- 79% of people over 75 (7% of the population) drive once per year
- 71% of people 16-19 age group (9% of the population) drive once per year, probably because they have no car to drive
- 4% lose their license each year
- 25% of all U.S. adults over 25 (57 million) have some form of disability that negatively affects their ability to drive
- 52% of households have incomes lower than \$75,000 and cannot afford a car costing over \$29,000; the average new car price is \$46,000

### Approximate Percent of Daily Trips by Mode



As this diagram shows, the largest number of daily trips are made with a person's or family's own car.<sup>4</sup> The prerequisites for owning and driving a car are being able to afford to

<sup>4</sup> According to the U.S. Household Travel Survey, 81% of daily trips take place in personal vehicles, and 91% of people who commute to work use personal vehicles. (<https://www.bts.gov/statistical-products/surveys/national-household-travel-survey-daily-travel-quick-facts>)

### What Is Ride Hailing

There are three types of taxi service models, including ride-hailing, taxi stands/ranks, and central dispatching. The distinctions are important because they are regulated differently. The term "ride hailing" has been inappropriately appropriated by companies that have been termed for legal purposes "transportation network companies" (TNC), such as UBER, LYFT and DIDI, which "use a digital network to connect a rider to a driver using his or her own vehicle, or a vehicle owned by a third party, to provide a prearranged ride". TNCs are not classified under for-hire companies.

In the ride-hailing model, such as the ones that were common in large cities like New York, London, and Beijing before ride delivery platform providers like UBER, LYFT, and DIDI entered the market, persons wanting a ride stood on a curb or moved out on the street between parked cars and raised their hands to "hail down" a taxi. The word 'hail' is quite versatile. As a noun, it can be "precipitation in the form of small balls of ice", or an "exclamation of greeting", as in greeting the king with a 'hail'. As a verb, it can mean "to precipitate hail", to "pour down or strike", or to "summon by calling or waving to pull over or stop", as in hailing a taxi.

When hailing a taxi, those taxis that are occupied or are on their way to pick up a fare, have their roof light turned off so the ride hailers do not have to waste time trying to convince them to pull over and pick them up.

purchase and operate it, having a place to park it when it is not being used, and being physically able and licensed to drive it. Public transit and walking are an alternative to driving, but walking is only possible if the distances can be covered within a reasonable period of time and the person is ambulatory. Taking a bus or other public transport assumes that it is available and runs to where people need to go. For those who have the financial resources to take a taxi (or an Uber/Lyft) to and from all the places they need to go—in other words, to be chauffeured—they can avoid all the irritants of owning and driving a car or sharing a bus with a bunch of strangers. But, it is the unmet need that needs to be met, and it is that unmet need where driverless vehicles will have the greatest positive effect.

### **Driverless Demand Responsive Transportation**

The novelty of driverless vehicles is that there is no driver, and the only thing that should mean to the rider is that the cost of the trip is significantly lower. The vehicle itself should not be a novelty. By removing the driver, it is possible to design a service which meets the requirements of those whose needs are not being met because it should be significantly less costly to operate. The service does not replace the private car, buses, taxis, or people's own two feet. It is specifically designed to meet the needs of the unserved and underserved. It must have the flexibility and the immediacy of private vehicles and taxi, but it must also remove all of the economic barriers to becoming a viable business operation.

To meet these requirements, the service will be a form of Demand Responsive Transportation (DRT). Demand Responsive Transportation (DRT) has many forms. Using a fleet of vehicles with seating for up to eight individuals,<sup>5</sup> it provides flexible routing based on real-time demand. It usually operates in shared ride mode. However, for certain types of transport requiring special equipment, it can provide rides for individual passengers. Passengers are picked up and dropped off according to their needs, not according to fixed schedules, distinguishing it from bus services. DRT services operate both door-to-door, such as from a passenger's home to a health clinic, and point-to-point, such as from and to

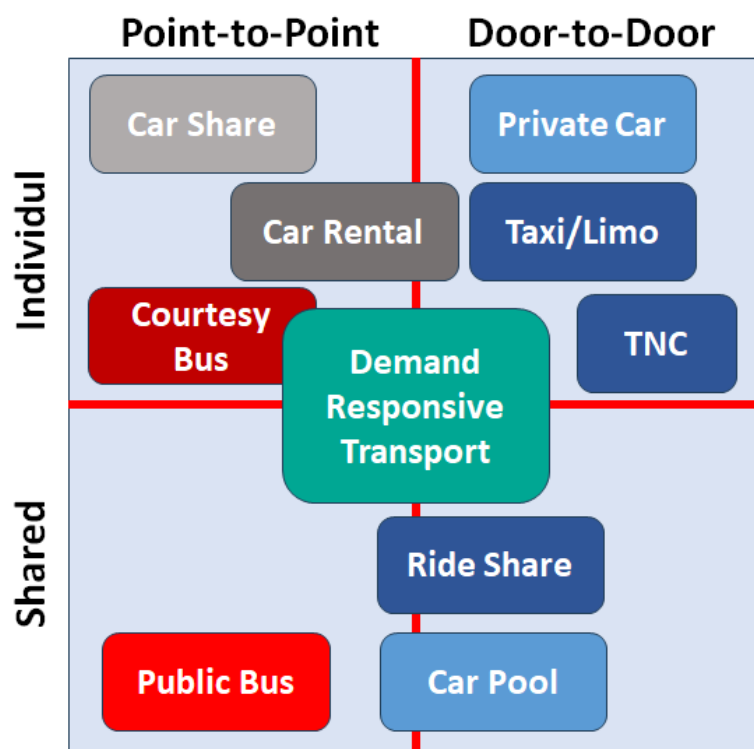
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<sup>5</sup> In both the U.S. and EU, a 'passenger vehicle' is defined as having no more than eight (8) seats in addition to the seat for the driver.



designated assembly locations. DRT is often used as a substitute for public bus service in areas of low passenger demand where a regular bus service would not be financially viable. It is also used in programs for providing rides to persons with disabilities to reach specific medical care or rehabilitation facilities, or to social centers, and are often operated by non-profit organizations. DRT is most usually restricted to operating within a defined geographic boundary (Operational Design Domain).

Privately owned cars, taxis, and TNC vehicles can be considered a form of demand responsive transport. They transport riders based on the riders' needs, usually door-to-door, not according to a fixed schedule. They have the greatest degree of flexibility of all modes of transport, but they also have the highest cost to the rider when compared to public transport. With public transport, it is important to distinguish between rider cost and operation cost because all public transit operators run a deficit for delivering rides which must be paid through taxes and subsidies.



**Motorized Transport Ride Delivery**

Demand responsive transport can be adapted to meet any combination of delivery and rider type, point-to-point or door-to-door delivery and individual or shared ridership. It can also offer multiple options within the same operational design domain.

### *Risks and rewards*

When efficiency studies evaluate DRT, they focus on the pre-conditions that would make it even worth trying. Is there low demand for public transport or lack of its availability; is there a small gap between off-peak and peak demands, obviating the need for large vehicles to meet peak demand; are there high car ownership rates?<sup>6</sup> These studies often look at DRT as an alternative to taking bus trips or using one's private car, rather than as a method to serve a new group of users whose needs are not being met by current options.<sup>7</sup> They also contain warnings of the potential risks of implementing DRT in places where public transit already exists. For example, according to a team of researchers, "a large fleet may be needed for DRT efficiency, potentially leading to a costly taxi-like service. If DRT offers lower generalized costs, it could affect fixed transit ridership, revenue reducing and possibly increasing congestion in extreme cases. Additionally, declining fixed transit revenue could lead to the deterioration or elimination of fixed transit services, even though DRT may not fully accommodate passenger demand".<sup>8</sup>

These risks need to be analyzed as part of any DRT implementation, including one that is focused on meeting unmet needs, to make sure that serving one group does not disadvantage another. At the same time, the advantages of

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<sup>6</sup> Thao, V.T., Imhof, S. Von Arx, W. ( 2023). Demand Responsive Transport: New Insights from Peri Urban Experiences. Travel Behav. Soc. PP. 141-150.

<sup>7</sup> Alonso-González, M.J.; Van Oort, N.; Oded, C.; Hoogendoorn, S. Urban Demand Responsive Transport in the Mobility as a Service Ecosystem: Its Role and Potential Market Share. In Proceedings of the 15th International Conference on Competition and Ownership in Land Passenger Transport: International Conference Series on Competition and Ownership in Land Passenger Transport, Stockholm, Sweden, 13-17 August 2017

<sup>8</sup> Gomes, S., Abbasi, R., Arantes, A. (2024). *Demand-Responsive Transport for Urban Mobility: Integrating Mobile Data Analytics to Enhance Public Transportation Systems*. MDPI.

providing new services to a group whose needs have not been previously met must also be included in the costs and benefits equation.

### **The reason for making sure we have driverless vehicles**

Delivering safe and affordable rides to those with an unmet need will use vehicles that can be driven in driverless mode because that will make rides affordable. They should operate within an ODD that is large enough to make the service effective for the riders, but not so large that it cannot be managed for the benefit of the riders and the operator. The fundamental premise is that driverless DRT can deliver affordable rides without massive (or any) tax-funded subsidies.

If there are no driverless cars, then, obviously, this concept will not work, but delivering affordable rides is a--THE--reason for making sure we have driverless functionality. Certainly, it is a much, much better reason than sleeping on your way to a golf game.

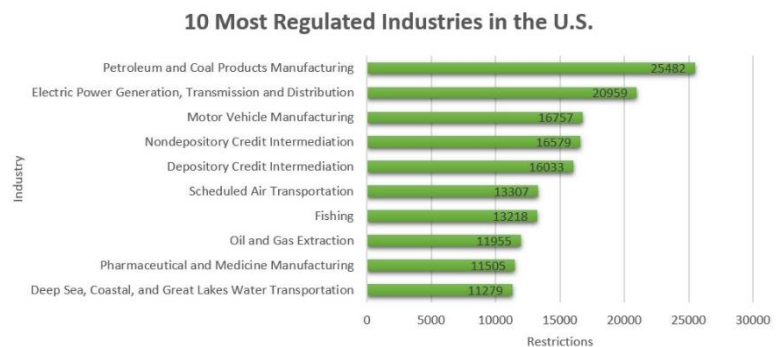




*The topics covered in Dispatch Central are newsworthy, but I leave it to others to deliver them “as they break”. I give them a little time to settle in, and try to provide an analysis of their impact.*

## **Toyota hopes the EPA will think again**

THE AUTOMOTIVE INDUSTRY is the most highly regulated manufacturing industry in the United States. It has fewer overall regulations than petroleum and coal products and electric power generation, transmission, and distribution, the top two, but is alone among industrial production among the top ten of most regulated industries.<sup>9</sup>



There is no question that the industry needed regulating. Between end of World II in 1945 and 1955, new car sales quadrupled. By the end of the 1950s, 75% of American households owned at least one car. In 1965, with new car production reaching 11.1 million, one out of every six jobs in the country was related to car, bus, or truck production. Post-war economic expansion and prosperity, including the greatly increased use of internal combustion engine vehicles and the heavier industrial and personal use of chemicals, had extremely negative effects on air and water quality. At the end of the 1960s, public concern reached a peak. In early 1970, President Nixon presented a message on the environment to Congress in which he requested money, standards, guidelines, research, and concrete clean-up activities to improve the quality of the environment. Three of the principal points in that message were directly related to vehicles: the President asked for national air quality standards and stringent guidelines to lower motor vehicle emissions; he requested that federally-funded

<sup>9</sup> The McLaughlin-Sherouse List ranks all industries according to RegData's Industry Regulation Index. The list was published by George Mason University Mercatus Center (2016).

research be started to reduce automobile pollution; and he proposed a tax on lead additives in gasoline.

Based on recommendations of a council established by the President to consider how to organize federal government programs to reduce pollution, a new *Environmental Protection Agency* was established to consolidate all environmental responsibilities under one agency. Its first Administrator, William Ruckelshaus, was sworn into office on the 4<sup>th</sup> of December 1970. This is what the new EPA was charged to do:<sup>10</sup>

- *The EPA would have the capacity to do research on important pollutants irrespective of the media in which they appear, and on the impact of these pollutants on the total environment.*
- *Both by itself and together with other agencies, the EPA would monitor the condition of the environment--biological as well as physical.*
- *With these data, the EPA would be able to establish quantitative "environmental baselines"--critical for efforts to measure adequately the success or failure of pollution abatement efforts.*
- *The EPA would be able--in concert with the states--to set and enforce standards for air and water quality and for individual pollutants.*
- *Industries seeking to minimize the adverse impact of their activities on the environment would be assured of consistent standards covering the full range of their waste disposal problems.*
- *As states developed and expanded their own pollution control programs, they would be able to look to one agency to support their efforts with financial and technical assistance and training.*

The EPA was given broad responsibility for regulating motor vehicle pollution. The Agency declared that new cars had to meet EPA-developed emissions standards<sup>11</sup> for hydrocarbons (HC), carbon monoxide (CO), and nitrogen oxide (No<sub>x</sub>) In 1970, Congress passed the first major Clean Air Act which, among other conditions, required a 90% reduction in emissions from new automobiles by 1975. In 1975, Congress passed the Energy Policy Conservation Act, which set the first fuel economy goals. It was called the Corporate Average Fuel Economy (CAFE) program with a phase-in of more stringent fuel economy standards (again, these were EPA-established rules) starting with 1975 model year vehicles. In the same year, catalytic converters were introduced and

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<sup>10</sup> <https://www.epa.gov/history/origins-epa>

<sup>11</sup> One definition of 'standard' is something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality. The EPA set their own rules.

unleaded gasoline started to be sold. The sale of leaded gasoline ended in 1996.

Two events occurred in 2009 that had a major impact on the reach of the EPA into the automobile industry. First, the EPA granted a waiver of the Clean Air Act preemption to California for its greenhouse gas emission standards, which were more stringent rules set by California, for motor vehicles starting with the 2009 model “because of California’s severe pollution problems”.<sup>12</sup> This put California in the cat bird seat from which it could dictate what the automotive industry had to do in order to sell cars in the state, the largest single car market in the U.S., and essentially, in the rest of the country. Second, the EPA decided that “current and projected concentrations of the six key well-mixed greenhouse gases in the atmosphere threatened the public health and welfare of current and future generations”, and as a result of this so-called ‘Endangerment Finding’, greenhouse gases that lead to climate change can be regulated under the Clean Air Act.<sup>13</sup>

In 2010, following on the Endangerment Finding, the EPA and the DEPARTMENT OF TRANSPORTATION’S *NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION* (NHTSA), then with David Strickland as its Administrator and Barack Obama as President, created a “joint rule” to establish a national program consisting of new rules for model year 2012 through 2016 light-duty vehicles to reduce greenhouse gas emissions and improve fuel economy. These were the first national greenhouse gas (GHG) emissions rules under the Clean Air Act.<sup>14</sup> This was extended in 2011 to heavy-duty trucks and buses, and in 2012, the GHG standards were extended from 2017 to 2025. This meant that climate activists now had a direct line of attack on the U.S. car industry.

Between 2012 and 2023, the automobile world changed at its foundation, with TESLA proving that it was possible to make and sell battery electric vehicles, and China becoming the

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<sup>12</sup> <https://www.epa.gov/transportation-air-pollution-and-climate-change/timeline-major-accomplishments-transportation-air>

<sup>13</sup> NB: There was not then, nor there is today, consensus that greenhouse gases lead to climate change.

<sup>14</sup> I wrote about this

global leader in the manufacturing and sale of vehicles in general and in battery electric vehicles in particular.

#### *What a difference a year makes with BEVs*

In April 2023, the EPA issued new emissions rules in its *Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles*.<sup>15</sup> It is 374 pages long; its Executive Summary – which is worth reading for its historical content – is eighteen pages. In summary, it says that all the predictions for the plug-in electric vehicles are on track to be fulfilled, so helping to push it further is consistent with what the technology will allow what the industry has already committed to developing, and what consumers appear to want. That was then.

Fast forward to November 2024. Donald Trump won a second term as President of the United States. Let's hold that thought and what it might mean to the EPA and its stricter emissions and fuel usage rules and move on to a where the vehicle industry is right now. Sales of battery electric vehicles (i.e. without a back-up internal combustion engine, either as a hybrid with the ICE and battery working together, or as a plug-in hybrid that can be charged) have definitely not been increasing at the EPA-predicted pace. In fact, they have been falling just about everywhere, except in Norway and China, two countries that don't have much else in common. In 2023, sales of BEVs were more than double those of plug-in electric vehicles, but in 2024, PHEVs are up by 50%, according to Bernstein, a U.S.-based asset management company. Customers are not buying BEVs, especially where incentives have been eliminated or reduced, and this is having a major impact on what the car companies need to do to sell cars, which is meet customers' demand for hybrids and internal combustion engine vehicles. ICE and hybrid electric vehicles are less expensive than BEVs, and the number of buyers who are willing to pay a premium to be climate holy has dwindled.

Some examples of industry moves:

- *FORD said it was abandoning plans to make a fully electric SUV. It will be a hybrid instead.*
- *HYUNDAI will double its range of hybrids from 7 to 14*

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<sup>15</sup> Page 27842 Federal Register/Vol. 89, No. 76/Thursday, April 18, 2024/Rules and Regulations

- *PORSCHE has reportedly watered down its electric car plans by announcing it will add internal combustion engines to cars previously planned to be electric-only.*

A few days after the election in the U.S., TOYOTA's COO, Jack Hollis, was interviewed by *AUTOMOTIVE NEWS* (November 8, 2024). He said that the election results will have no bearing on TOYOTA's goals for reducing climate emissions that it has had for over thirty years when it developed its first *Prius Hybrid Electric Vehicle*, which went on sale in Japan in 1997. However, Hollis hopes that both U.S. state and federal regulators *"can agree on achievable goals that don't warp the marketplace"*. He said further that Toyota believes the electric vehicle mandates *"were an attempt to change the entire landscape of the industry, to remove customer choice"*. He was referring to both the EPA's stricter emissions rules and California's and some other states' demands that 35% of new vehicles sold in their states had to be zero emissions by 2026. The percentage would rise to 68% by 2030, and 100% by 2035.

The EPA is not setting an emissions goal, according to Hollis; it is establishing a mandate for BEVs *"because the requirement is impossible to meet without a majority of the vehicles being BEVs"*. The problem is that consumers have simply not asked for this mandate. They are not buying enough BEVs even with the incentives that are in place. *"The government is distorting the marketplace,"* said Hollis. *"Starting this time next year, we have to be at 35%. I have not seen a forecast by anyone that that number is achievable. That level of demand isn't there, and it's going to limit a customer's choice to the vehicle they want. The industry is not prepared. It means we have to do something that is unnatural in the marketplace."*

Hollis said that TOYOTA has invested more than \$20 billion in the U.S. since 2020 in order to meet the increasingly stricter EPA and state rules. It is building a \$14 billion battery manufacturing facility in North Carolina. Those investments will continue, he said, because TOYOTA's customers are buying more and more hybrids and PHEVs, as well as BEVs. In October of this year, over one-half of TOYOTA's U.S. sales had some form of electric power, a first for the company. He said the last thing the industry needs is a fight between California and its allied states who want to keep their rules and the federal government that wants them reduced or eliminated.



*Hear the roar of the Porsche*



## Musk and Ramaswamy lead D.O.G.E.

THE *USA TODAY* article started with: "Elon Musk is taking Doge to the White House, but not as cryptocurrency or an internet meme."<sup>16</sup> (I spelled 'Doge' as it is spelled in the article.) The authors left out the most important Doge of all, the Doge of Venice, who was the supreme authority in the Republic of Venice between 697 and 1797 A.D.<sup>17</sup> The word *Doge* derives from the Latin *Dux*, meaning 'leader'. It was the Roman title given to a leader of an expeditionary force. Venetian *Doges* were both the head of state and the head of the Venetian oligarchy, and were elected for life through an arcane voting process. Perhaps Elon Musk or his cohort, Vivek Ramaswamy, will consider donning the official *Doge* outfit modeled for us by the last of the Venetian *Doges*, Ludovico Manin, shown right. The ear muffs will prove useful to block out the protests that will be raised when they begin to announce their government efficiency measures.

D.O.G.E. is the proper spelling of the acronym for the newly established Department of Government Efficiency, and it is the one I will use to avoid any confusion with *Doges*, cryptocurrencies and Internet memes. (See sidebar on next page: *What is a Meme?*)

*"Together, these two wonderful Americans will pave the way for my Administration to dismantle Government Bureaucracy, slash excess regulations, cut wasteful expenditures, and restructure Federal Agencies - Essential to the 'Save America' Movement,"* according to a statement by Trump shared on Musk's X page on Tuesday. In the same statement, Musk is quoted as saying the Department of Government Efficiency *"will send shockwaves through the system, and anyone involved in government waste, which is a lot of people!"*

What is the purpose that D.O.G.E. is intended to serve, and during what timeframe will it act? More importantly, what will Elon Musk's involvement in this activity mean to TESLA, its shareholders, and to the future of driverless mobility?

<sup>16</sup> USA Today Money (<https://eu.usatoday.com/story/money/2024/11/13/what-is-doge-elon-musk/76255384007/>)

<sup>17</sup> The Republic of Venice was dissolved and broken up by Napoleon Bonaparte and the Habsburg Monarchy on the 12<sup>th</sup> of May 1797.



*The last Doge  
Ludovico Manin*





### *A \$2,000,000,000,000 cost-cutting promise*

According to statements made by President-elect Trump, D.O.G.E. will “provide advice and guidance from outside of the government,” and it will “partner with the White House and the Office of Management and Budget to drive large scale structural reform, and create an entrepreneurial approach to Government never seen before.” In addition, he said it will “drive out massive waste and fraud from government spending.” D.O.G.E. will operate as an advisory body, not as a federal agency. Therefore, neither Musk or Ramaswamy will be government employees, although it is unclear whether other employees will be part of the government workforce. Musk and Ramaswamy will not be paid for their work. It will be *pro bono*. It is not as if either of these two men need the extra money. Ramaswamy’s net worth was listed as \$960 million in January 2024. Musk’s current net worth is over \$350 billion, up almost \$100 billion since before the election.

Musk has promised to “rip out” \$2 trillion from the federal budget, although the timeframe for these cuts has not been defined. Musk and Ramaswamy have until the 4<sup>th</sup> of July 2026 to complete their work, approximately eighteen from inauguration day for the new administration on the 20<sup>th</sup> of January 2025. Their report is expected to be a gift to the Nation, which will celebrate its 250<sup>th</sup> birthday on the day the report is due to be delivered.

Are the expected savings realistic, back-of-the-envelope wild guesses, or simply braggadocio? During the 2024 fiscal year, beginning on the 1<sup>st</sup> of October 2023 and running until the 30<sup>th</sup> of September 2024, the U.S. federal budget was \$6.7 trillion. Of that amount, more than \$5.3 trillion came from Social Security, health care, veterans’ benefits, and interest on debt, the “mandatory allocations”. All of them are extremely difficult or impossible to cut. So, only approximately 21%, or \$1.4 trillion is left on the table. These are the so-called “discretionary funds”. Almost one-half of these funds are earmarked for defense, which is most likely off limits to cuts. We are down to around \$700 billion that is used for transport, education, science, national parks, law enforcement, among other things. Could the Department of Justice, the FCC, FTA, EPA be put on the cut list, perhaps?

### *What is a Meme?*

In his 1976 book The Selfish Gene, British scientist Richard Dawkins defended his newly coined word meme, which he defined as “a unit of cultural transmission.” Having first considered, then rejected, mimeme, he wrote: “Mimeme comes from a suitable Greek root, but I want a monosyllable that sounds a bit like gene.” (The suitable Greek root was mim-, meaning “mime” or “mimic.” The English suffix -eme indicates a distinctive unit of language structure, as in grapheme, lexeme, and phoneme.) Like any good meme, meme caught on and evolved, eventually developing the meaning known to anyone who spends time online, where it’s most often used to refer to any one of those silly captioned photos that the Internet can’t seem to get enough of.

Merriam-Webster

There are plenty of experts attempting to identify where the cuts could be made and how much they could possibly be. Best guesses are \$4-5 trillion over the next decade, but only if the cuts are voted through by the Congress. Given the difficulties the Congress has had over the past decade passing budgets to keep the wheels of government rolling, the biggest problem will not be finding areas where money can be saved, but enabling the proposed cuts to be made.

### **Self-serving foray or altruistic act**

Vivek Ramaswamy had his hat in the presidential ring for a year, pulling out in January 2024 and endorsing Trump. Unlike Musk, who can have no presidential aspirations due to his being born in South Africa and not in the U.S. as required by the Constitution,<sup>18</sup> Ramaswamy was born in the U.S. (Cincinnati, Ohio), and can make another run at the office. If he does well on this assignment, he can add to his political credentials. What's in it for Musk? Is he doing it out of gratitude for what the country has done for him since he came to the U.S. in 1992 on a student visa? He enrolled at the UNIVERSITY OF PENNSYLVANIA<sup>19</sup> to complete his last two years of college at PENN after first emigrating to Canada from South Africa at the age of seventeen and doing his first two years at a Canadian university?<sup>20</sup> Musk never returned to Canada to live and work, and became a U.S. citizen in 2002.

In 2017, Elon called Donald Trump a *"con man"* and *"one of the world's best bullshitters"*. On the 20<sup>th</sup> of July 2024, Musk announced that he was planning to support Trump's presidential campaign by committing \$45 million a month to a new super political action committee, *AMERICA PAC*, because *"Republicans are mostly, but not entirely, on the side of merit and freedom"*. He added that for several years, the Democratic Party has moved too far left for him to support many of its candidates. After he joined the victorious candidate on the

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<sup>18</sup> The Constitution says that to run for president, a person has to be at least 35 years old, must be a U.S. citizen, and has to have been born in the U.S. Elon Musk was born in Pretoria, South Africa in 1971, which means that he's ineligible to be president under current law. Neither of his parents were U.S. citizens.

<sup>19</sup> PENN is Trump's alma mater, class of '68; He spent junior and senior years at PENN after spending his first two years at FORDHAM UNIVERSITY.

<sup>20</sup> I have done my best to decipher the information about Musk and his degrees. They were awarded in 1997, two years after he finished his studies at Penn.

victory party stage along with Trumps family and closest supporters, the two have been inseparable. Since the election, TESLA's market capitalization has risen by \$300 billion. To put that in context, that is more than double the market caps of GM, FORD, and STELLANTIS, Detroit's Big Three, combined. With Musk owning around 20% of TESLA, that has increased his personal wealth by \$60 billion, not a bad return on his \$277 million in donations.<sup>21</sup>

There is little doubt that investors believe that a Republican administration will be good for TESLA and Musk's other companies. Musk has been saying for years that TESLA's future is inextricably tied to achieving full driverless functionality. With driverless functionality regulated at state level, rather than at federal level, TESLA is at a disadvantage to companies like Waymo who are not selling cars but are running money-losing tests of driverless functionality. TESLA shares fell back somewhat after the post-election euphoria, but they took off again around the 17<sup>th</sup> of November when BLOOMBERG reported that Trump's transition team said it would make a "federal self-driving framework a priority".

Then there is the matter of government handouts in the form of tax credits to BEV buyers. Trump said he would end those. Counterintuitively, this will help TESLA. Tesla's costs for producing its BEVs are lower than those of its U.S. and European competitors, so it has more flexibility in setting prices compared to them. TESLA has another advantage, which is that it has more North American content in its vehicles, making them less subject to tariffs on components sourced from foreign countries, on which the Trump administration has promised to set higher tariffs.

#### *Watch out for sinkholes*

It is definitely not all clear sailing for TESLA and Musk's other companies, SPACEX with Starlink, X, XAI, NEURALINK, or THE BORING COMPANY.<sup>22</sup> One very large potential problem is China. Over one-half of all *Teslas* are made in China. In May, TESLA began work on a battery factory in Shanghai, increasing its commitment to the country. TESLA's Shanghai factory

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<sup>21</sup> <https://www.cbsnews.com/news/elon-musk-277-million-trump-republican-candidates-donations/>

<sup>22</sup> Credit to *THE ECONOMIST* NOVEMBER 23<sup>RD</sup> 2024, *Briefing – Elon Musk and Donald Trump*.

has an annual capacity of 750,000 vehicles, 100,000 more than Fremont in California. Texas and Germany plants have an annual production capacity of 250,000 units. Approximately 30% of the cars produced in China are exported to other markets, with the rest sold in China. This concentration of production in China definitely gives China leverage over TESLA, and clearly, Musk is sitting between two chairs. China will use this leverage to reduce the damage from higher tariffs that are promised by the Trump team. Count on it.

There is another possible down side to Trump's wholehearted backing of Donald Trump, and that is that potential buyers will choose another brand. Democratic Socialist Representative Alexandria Ocasio-Cortez bought a *Tesla* a few years ago. A year ago, she got into a tiff with Elon Musk on Twitter (X), and said she would dump her *Tesla* in favor of a union-made BEV. I cannot find any evidence that she has kept that promise, and she doesn't return my phone calls so I can verify it verbally. In heavily unionized Sweden, the strike against TESLA that has lasted for over a year has not dented TESLA's sales in any way, so perhaps it will be the same in the U.S. The largest sinkhole may be a rift between Musk and Trump that could end up affecting Musk negatively with TESLA's other owners. He only owns 21%, and he does not have any super voting shares, like META's Zuckerberg.

Whatever happens, it will certainly be interesting to follow. I'm sure that HARVARD BUSINESS SCHOOL professors are all preparing their own Case Studies on the profits and perils of business leaders becoming political advocates.

### ***Volvo Cars, Geely, Zeeker, and Lynk & Co*<sup>23</sup>**

*I am writing this to give readers an update on what has been happening to VOLVO CARS during the past few years. In order to tell this story, I will need to wind my way through the tangled web that Geely has created with its other companies.*

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<sup>23</sup> Full Disclosure: I worked as a consultant to CEVT between 2017 and 2021, assigned to assisting with the introduction of the LYNK & CO brand into the European market. I worked for AB VOLVO as a full-time employee between January 1993 and December 1996, and as a consultant to VOLVO CARS between January 1997 and June 2015 with responsibility for managing the introduction of *Volvo On Call*.

JACK, MY BARBER, told me when I was there a few days ago in early December that he had bought a used, two-year-old *Lynk & Co 01 PHEV SUV*. It had 20,000 kilometers on the odometer, and had been a company car with one owner. He said the main reason he bought it was because it was built with the same platform as the *Volvo XC40*, and shares the same VOLVO petrol engine. We had discussed this when I last sat in his chair in late September, when he was thinking about different cars that he was considering buying. I told him then that the *Lynk & Co 01* was based on the CMA platform (Compact Modular Architecture) used in the *XC40*. I also told him that CMA was developed by CEVT (CHINA EURO VEHICLE TECHNOLOGY AB) located in Göteborg. CEVT used CMA to design and build the *Lynk & Co* vehicles. VOLVO used the CMA platform design concept, but built the *XC40* with its own engineers. They have two completely different infotainment systems as well. So, the *Lynk & Co* is not a *Volvo*, I said; they are two very different cars. “Why don’t you just buy a *Volvo* if you really want a *Volvo*?” I asked. His expression, which I saw in the mirror, was his answer: Cost.

A lot of washer fluid has been squirted over the windscreen since I completed my assignment with CEVT in June 2021. The *Lynk & Co* brand went on sale, or lease, or rent, or with a subscription that year. Its web site says a million of its cars have been sold since the brand was founded in 2016. I cannot say that I have seen very many on the Swedish roads. About every sixth car I see in Sweden driving in the opposite lanes on the motorways is a *Volvo* (yes, I am a car counter), around every twentieth is a *Tesla*, but I can travel for months and never see a *Lynk & Co* on a road or parked. Maybe it’s been a hit in other countries, like China, for example.

In 2017, VOLVO CAR GROUP, ZHEJIANG GEELY HOLDING, and GEELY AUTOMOBILE HOLDINGS formed a joint venture to expand the *Lynk & Co* brand outside of China. VOLVO owned 30%, GEELY HOLDING 20%, and GEELY AUTO had 50%. The JV’s founding CEO was Alain Visser, a well-thought-of marketing director for VOLVO



*A 2021 Lynk & Co 01*



*A 2021 Volvo XC40*



CARS. You may wonder about the name, LYNK & CO.<sup>24</sup> 'LYNK' is a misspelled reference to interconnected cars, and the '& CO' was meant to give it a "young vibe", like ABERCROMBIE & FITCH.

Visser left the company in 2023, and another VOLVO alumnus, Nicolas Appelgren, took over. He had been head of VOLVO's global retail operations. At the same time that Visser left, VOLVO CARS sold its 30% stake in *Lynk & Co* to ZEEKR INTELLIGENT TECHNOLOGY HOLDING LTD for \$800 million. Geely said at the time that it wanted ZEEKR with *Lynk & Co* to form a "new energy vehicle manufacturing group" with combined annual sales of more than a million units. (Ed: Volvo Cars has been chasing a million sales a year for the past ten years, so a million for these two relatively new brands seems a bit of a stretch.)

ZEEKR INTELLIGENT TECHNOLOGY HOLDING LTD is a sub-brand formed by GEELY in April 2021 inside the GEELY AUTOMOBILE GROUP. Within the short span of three years, it has become one of the key suns in GEELY's many solar systems. It was billed at its founding as "specializing in premium electric cars". How this fit with VOLVO CARS was never addressed when it was established. GEELY said it would be a competitor to NIO, a Chinese BEV company, and TESLA. The 'Z' in its name comes from 'Generation Z', and the rest comes from 'geek' (?). Its cars are built on the SEA (Sustainable Experience Architecture) platform, which, like CMA, was developed by CEVT. In May of 2024, ZEEKR filed its initial public offering on the New York Stock Exchange, raising \$441 million. It is currently trading at around \$35 per share with a market cap in the \$6.5 billion range.

In March of 2024, ZEEKR got another gift. It was handed CEVT, which it renamed ZEEKR TECHNOLOGY EUROPE AB. So, instead of the GEELY car companies depending on a GEELY GROUP company to design its platforms, it is now dependent on one of its co-brands, ZEEKR, to do the job. Why wasn't it handed over to VOLVO, especially since it is based

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<sup>24</sup> FORD MOTOR COMPANY, which sold VOLVO CARS to GEELY in 2010, thought the name sounded too much like its own brand, LINCOLN and threatened to sue. But the matter was settled.



Luxury Cars from Zeekr



A Zeekr 2023 009



A Zeekr 2023 001



This is also a Zeekr, a prototype modified to function as a Waymo driverless taxi. A cooperation was announced in November 2022, but no Waymo Zeekrs have been seen thus far.



in VOLVO's home town of Göteborg? Apparently, ZEEKR is a brighter shining star.

I questioned why GEELY created ZEEKR, LYNK & CO, and POLESTAR in the February 2024 issue of *THE DISPATCHER*. All the money spent on these brands should have been put into VOLVO CARS, I said. But the man behind the tangled web, Li Shufu, who began referring to himself as Eric Li a few years ago, has been doing exactly the opposite, taking all the value that VOLVO acquired over its nearly 100 year history in return for money to develop more technology which it then shares with the rest of the brands, who compete with it as it attempts to reach that elusive one million in sales.

Another example of this value extraction strategy is POLESTAR. VOLVO owned the name and the brand before it gave GEELY HOLDING 50% of it in return for money to build it into an electric car company with its headquarters in Göteborg and production facilities in China. It went public in a SPAC in September 2021 with a share price of around \$11. Shares peaked at \$13.75 in October of that year, and then began their long descent. They are now trading at a buck and change, and the company is losing lots of money. In February 2024, VOLVO announced that it was going to sell 62.7% of its 50% share in POLESTAR to other investors, leaving it with just 18%. The main reason was that VOLVO could not afford to continue to prop up the company while it also competed with it for electric car sales.

VOLVO CARS also went public in 2021, on the 29<sup>th</sup> of October, listed on the Stockholm exchange (VOLCARb). It went out at \$6.22 per share and closed at \$6.55 on the first day. In May 2022 it was up to \$7.50. It closed on the 6<sup>th</sup> of December 2024 at \$2.53. Just prior to its IPO, it announced that it would sell only "fully electric cars" by 2030. On the 5<sup>th</sup> of September 2024, it announced that it would not be fully electric by 2030, saying that it would continue to sell hybrids after that date. *"Market conditions have changed,"* its CEO Jim Rowan said. *"We are resolute in our belief that our future is electric. However, it is clear that the transition to electrification will not be linear, and customers and markets are moving at different speeds."* Part of those changing market conditions include the tariffs the U.S. and EU governments have placed on Chinese BEVs and PHEVs.



Polestar (PSNY) stock chart since going public. (Source: TradingView)

I wonder if anyone at VOLVO was thinking about how much money it would save on those hybrids it will continue to build after 2030 if it still owned the ICE technology it had spent nearly one hundred years developing. It does not own it. In October of 2019, GEELY and VOLVO announced that they were going to combine their ICE activities to form a standalone business in order to become a global supplier of next generation ICE and hybrid powertrains. This was clearly a merger of unequals. Håkan Samuelsson, who was VOLVO CAR's CEO at the time said that *"hybrid cars need the best internal combustion engines. This unit will have the resources, scale and expertise to develop these powertrains efficiently."* As a first step in an planned merger of the ICE business units, each company created identifiable divisions in their respective facilities. VOLVO created a subsidiary called *POWERTRAIN ENGINEERING SWEDEN* that included its engine plant in Skövde, Sweden, its engine plant in China, and all related R&D.

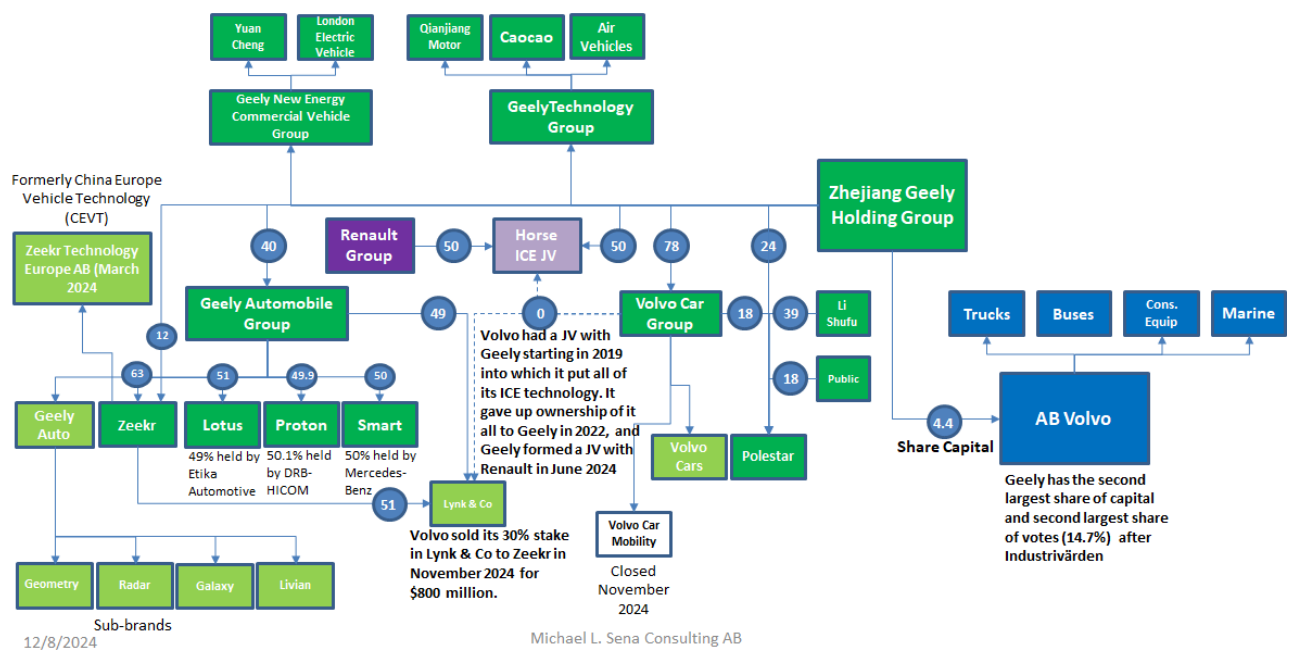
In July 2021, VOLVO CARS and GEELY HOLDING presented their plan for a new company called AUROBAY that would be jointly owned by the two companies. VOLVO transferred *POWERTRAIN ENGINEERING SWEDEN* into the JV. Some time between July 2021 and November 2022, Volvo's 50% of AUROBAY became 33%. I can find no information on how or why this occurred. In November 2022, VOLVO announced that it was selling its 33% share to GEELY HOLDING for an undisclosed amount. At the same time, GEELY said that AUROBAY would remain a supplier to VOLVO (with its own technology that it had put into AUROBAY). VOLVO said at that proceeds from the divestiture would be used for expansion, including its new production line for electric motors in Skövde.

And now for the *crème de la crème*. In June 2024, GEELY announced that it was forming a joint venture with RENAULT named *HORSE POWERTRAIN LIMITED* with headquarters in London. It would combine the powertrain technologies of Renault and GEELY (VOLVO was not mentioned in this announcement). They expect that more than one-half of all vehicles produced by 2040 will still rely on ICE technology. *"For the industry to reach net zero emissions in the next decades, global synergies, multiple technologies, and sharing of expertise,*

are crucial,” added Geely chairman Eric Li. “That is why we are pleased that our partnership with Renault Group is reaching commercial reality today.”

It is not easy to follow the twists and turns of China’s fifteenth wealthiest citizen, Eric (Shufu) Li. I have attempted to capture his empire in a diagram that I first produced in 2018 and have been updating ever since. Here is the latest rendition. As I said at the outset of this article, my purpose was to give you a picture of where VOLVO CARS is at present within the GEELY sphere. I believe this diagram will give you a pretty good idea of where that is. You judge.

### Zhejiang Geely Holding Group (Automotive) – December 2024



## Northvolt update

FROM BAD TO WORSE. That is how I can best summarize what has happened with NORTHVOLT since I wrote about it in the October 2024 issue of *THE DISPATCHER*. I opened that article with the following:

*“NORTHVOLT’S LONG MARCH is reaching its end. It is not over yet, but the end is nigh. The question is: What will NORTHVOLT’s fate be when the long march is over? Will it survive in spite of being severely weakened, or will it fall, out of money, out of arguments to keep going, and defeated by its major rival, China, Inc.?”*

Part of the answer came on the 21<sup>st</sup> of November when it filed for Chapter 11 Bankruptcy in the United States.<sup>25</sup> At the time, it had \$6 billion in debt with only \$30 million in available cash. NORTHVOLT chose to seek protection in the U.S. under Chapter 11 laws, instead of declaring bankruptcy in Sweden, because the U.S. laws allow the company a period of protection from creditors to reorganize its finances and negotiate with its creditors. It had this possibility, even though it is a Swedish company, because it has two subsidiaries registered in the U.S. The process is due to be completed during the first quarter of 2025.

On the same day of NORTHVOLT’s Chapter 11 announcement, Peter Carlsson, its co-founder<sup>26</sup> and CEO, handed in his resignation to the board. He retains his seat on the board while the company goes through the reconstruction process. In his words at a press conference he said, “I was not fired. I take the responsibility (for what has happened).” He explained that the decision to seek Chapter 11 protection was taken in order to give the company access to \$2.5 billion in capital, which will enable the company to continue in operation to “execute its strategic plan”. He said that the company’s clients, particularly (VW-owned) SCANIA, have strongly supported the company. Although more money is needed, he believes that NORTHVOLT can exit the

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<sup>25</sup> Chapter 11 is a form of bankruptcy that involves the court-supervised reorganization of a debtor's assets and liabilities. It is most commonly used by businesses and is also referred to as a "reorganization" bankruptcy.

<sup>26</sup> Northvolt’s other founder was Paolo Cerutti. He resigned his seat on the Northvolt board of directors in 2022, but retained his position as Chief Operating Officer. He is also CEO of Northvolt’s North America operations headquartered in Montreal, Canada.

reorganization as a stronger company. “We have discussed with SCANIA how we will make our contracted deliveries to them, and next year, PORSCHE and AUDI will be next in line.”

#### *2024 was going to be Northvolt's big year*

This was the year NORTHVOLT was going to go public as the new green battery-making success. It was going to showcase Sweden's technological prowess. What happened? The simple answer is that NORTHVOLT was not able to deliver what it had promised. Lars Calmfors, Sweden's highly respected economist and professor emeritus in international economy, said that from the start, the project filled him with “amazement”.<sup>27</sup> First, because it seemed to be completely unrealistic to establish a giant battery factory in a small city in the very north of the small country of Sweden that could compete with the established battery makers in China, South Korea, and Japan. Then, when big, global players like BMW and VW came in with large sums of money, and the factory started to take form, Calmfors started to believe the unrealistic could be real. But now, he says, his initial misgivings are being substantiated. There was too big a difference between what the company's management sold to investors and what it had the competence to deliver. Peter Carlsson should have hit the brakes on the company's expansion, which was in too many areas, both technical and geographic, well before September, when he announced a strategic review of the company's operations.

Then there were the mysterious deaths of three employees, who died after work shifts at the factory in Skellefteå. Neither Northvolt nor the police have been able to explain the causes of these deaths, or whether there was any connection between their work at Northvolt. This put a shroud of uncertainty around the company at a time when only negative economic news was coming from management and analysts.<sup>28</sup>

Sweden's government has not escaped criticism. It refused to bail out NORTHVOLT, just as it refused to rescue SAAB

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<sup>27</sup> Calmfors, Lars. *Northvolt can be the biggest failure in Swedish industrial history*. DAGENS NYHETER. Monday 2 December 2024.

<sup>28</sup> On the 17<sup>th</sup> of December, the Swedish police made a statement that they could find no connection between the deaths of the Northvolt employees and their work at Northvolt.

AUTOMOBILE in 2011. VOLKSWAGEN is the company's largest unsecured creditor with its investment of \$355.3 million. It withdrew its board member on the 11<sup>th</sup> of November, and ruled out any more investments in the company.

*China has not been waiting in the wings*

Every move NORTHVOLT makes now will be picked up by the media as a sign of a new direction. A few days after the Chapter 11 announcement and Carlsson resignation, articles appeared in many news sources that NORTHVOLT had met with CONTEMPORARY AMPEREX TECHNOLOGY CO. (CATL), the giant Chinese company which has a 40% market share of batteries for electric vehicles. CATL confirmed the meeting, but said they talked only about possible technology licensing. NORTHVOLT had too many financial problems for CATL to consider making any investments, a spokesman said. Besides, it would be building a 50 gigawatt-hour capacity plant in Spain in a joint venture with STELLANTIS. It is already building a new one in Hungary, and already has a facility in Germany. In other words, CATL does not need NORTHVOLT. It can wait to see what happens, and in the meantime try to pick off NORTHVOLT's customers.

Tom Johnstone, who took over as interim chairman in early 2024 after Chairman Jim Hagemann Snabe abruptly resigned due to health reasons, commented in *Letters in THE ECONOMIST* DECEMBER 7<sup>TH</sup> 2024 issue to an article in the newspapers 30<sup>TH</sup> NOVEMBER issue titled Lessons from the failure of Northvolt: "...the article missed a crucial point. Northvolt continues its mission, even as it navigates a restructuring process. This is not a retreat but a recalibration, a necessary step to advance Northvolt's mission with a different capital structure, but with the same ambition. Northvolt's trajectory underscores the risks inherent in pioneering industrial transformation...Europe is behind and shouldn't accept that 40% of the electric vehicle value chain goes elsewhere...Although the company has yet to fully scale its breakthroughs, it is europe's leading home-grown battery manufacturer. For the sake of competitiveness, strategic autonomy and green transition, Europe requires bold ventures...Northvolt continues to pursue its vision for clean energy innovations."

There is nothing more to say at this point. We shall wait to see what happens in the coming months.





# Musings of a Dispatcher: Taking Back the Streets



Government safety posters ridicule jaywalking in the 1920s and '30s. (National Safety Council/Library of Congress) from <https://www.vox.com/2015/1/15/7551873/jaywalking-history>

## ***Jaywalking is becoming a political football***

WHAT IS YOUR opinion about laws regulating the interaction between pedestrians and vehicles on public roads? Do you believe that pedestrians should be restricted by law to crossing a city street only at an intersection, and only when a crossing light is green for pedestrians at signalled intersections?

It was the week before the election in the U.S., when the front pages of our newspapers were packed with stories about the political candidates, and the rest of the news was mostly about the latest reports from battles in Ukraine and the middle east. Buried in the middle of our daily newspaper was a short article about the jaywalking law in New York City being repealed. Do I sense a plot, I thought. Is it intended to make travel on streets more unpredictable than it already is, thwarting efforts to spread driverless vehicles on public roads? I checked U.S. news sources. Here was a headline from CNN on November 1, 2024: “New Yorkers have jaywalked for decades. It’s now legal, but tourists may want to think twice before following locals into the street”.

The journalist wrote: *“Eating a slice of New York pizza, taking a stroll in Central Park and hustling down the busy sidewalks of Manhattan are all quintessential elements of New York City life that many a tourist dreams of doing. For many locals, jaywalking – crossing the street without regard for traffic signals – has also long been considered a rite of passage,”* I’m fairly sure that New Yorkers have never thought about jaywalking as a rite of passage, just a right. On probably 95% of the city’s streets in its five boroughs, I don’t think residents have given even a second thought about crossing from one side of the street to the other side anywhere along the block. It’s those remaining 5% of the streets, mostly in Midtown Manhattan or around Plaza Street in Brooklyn, where crossing in the middle of the block or not waiting for the little green person to blink on the signal can be problematical for both pedestrians and motorists.

According to my go-to definition source, *MERRIAM-WEBSTER*, ‘jaywalking’ is “crossing a street carelessly or in an illegal manner so as to be endangered by traffic.” I don’t usually question George and Charles Merriam or Noah Webster, but what does crossing a street “carelessly” mean, and is it only the pedestrian that is endangered by jaywalking? I went to *WIKIPEDIA* for a second opinion and got *circulus in probando* (circular reasoning): Jaywalking is the act of performing an act that is prohibited by the traffic regulations.” In plain language, it means what I wrote in my opening paragraph: Jaywalking is 1) crossing a city street anywhere except at an intersection; and 2) where there are pedestrian signals at the intersections, crossing a street when the crossing light is not green for pedestrians.

The origin of the term explains why it is defined by what not to do. ‘Jay’ meant ‘greenhorn’ or ‘rube’ or ‘country bumpkin’ back in the late 1800s and early 1900s. These are terms for an ‘inexperienced or unsophisticated person’. It was first used in the term ‘jay driver’, referring to horse-drawn carriage drivers who drove on the wrong side of the road. *MERRIAM-WEBSTER* claims it was first used in *THE JUNCTION CITY UNION* newspaper in Kansas on the 28<sup>th</sup> of June 1905. In a 1919 article in *THE PITTSBURGH GAZETTE TIMES*, an article in another newspaper, *THE SEATTLE POST-INTELLIGENCER*, is cited with the following text: “There are so many jay walkers and so many jay drivers that it hardly behooves any driver to talk about jay walkers, or any walker to mention jay drivers.” Eventually, ‘jay drivers’ disappeared and ‘jay walkers’ became ‘jaywalkers’.

*You won’t find jaywalking mentioned in the Vienna or Geneva Conventions on Road Traffic*

Jaywalking is not a term that is universal. It is not commonly used in the UK, and there is no concept of jaywalking in The Netherlands. There is no corresponding word for it in Swedish, Danish, or Norwegian, and it is not illegal in any of these countries or in many other countries in Europe. However, in most European countries, pedestrians are prohibited from walking on or along motorways or expressways. Belgium is an exception, where pedestrians must use marked crossing on roads where the speed limit is above 30 km/h. There are laws against jaywalking in Belgium, Poland, and Portugal.



Most countries, including the U.S., are signatories to the **Geneva Convention on Road Traffic (1949)**, and have established their rules for pedestrians according to Chapter II. Rules of the Road; Article 7 - *Every driver, pedestrian or other road user shall conduct himself in such a way as not to endanger or obstruct traffic; he shall avoid all behaviour that might cause damage to persons, or public or private property.* The **Vienna Convention on Road Traffic (1968)** goes further. Here is what it has to say about pedestrians in traffic.<sup>29</sup>

*The Vienna Convention on Road Traffic (1968)*

ARTICLE 20

*Rules applicable to pedestrians*

1. *Contracting Parties or subdivisions thereof shall be free not to enforce the provisions of this Article except in cases where pedestrian traffic on the carriageway would be dangerous or would obstruct vehicular traffic.*
2. *If, at the side of the carriageway, there are pavements (sidewalks) or suitable verges for pedestrians, pedestrians shall use them. Nevertheless, if they take the necessary precautions:*
  - (a) *Pedestrians pushing or carrying bulky objects may use the carriageway if they would seriously inconvenience other pedestrians by walking on the pavement (sidewalk) or verge;*
  - (b) *Groups of pedestrians led by a person in charge or forming a procession may walk on the carriageway.*
3. *If it is not possible to use pavements (sidewalks) or verges, or if none is provided, pedestrians may walk on the carriageway; where there is a cycle track and the density of traffic so permits, they may walk on the cycle track, but shall not obstruct cycle and moped traffic in doing so.*
4. *Pedestrians walking on the carriageway in accordance with paragraphs 2 and 3 of this Article shall keep as close as possible to the edge of the carriageway.*
5. *It is recommended that domestic legislation should provide as follows: pedestrians walking on the carriageway shall keep to the side opposite to that appropriate to the direction of traffic except where to do so places them in danger. However, persons pushing a cycle, a moped or a motor cycle, and groups of pedestrians led by a person in charge or forming a procession shall in all cases keep to the side of the carriageway appropriate to the direction of traffic. Unless they form a procession, pedestrians walking on the carriageway shall, by night or when visibility is poor and, by day, if the density of vehicular traffic so requires, walk in single file wherever possible.*

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<sup>29</sup> Economic Commission for Europe, Inland Transport Committee, Convention on Road Traffic, Done at Vienna on 8 November 1968.

6. *Pedestrians wishing to cross a carriageway:*

*(a) Pedestrians wishing to cross a carriageway shall not step on to it without exercising care; they shall use a pedestrian crossing whenever there is one nearby.*

*(b) In order to cross the carriageway at a pedestrian crossing signposted as such or indicated by markings on the carriageway:*

*(i) If the crossing is equipped with light signals for pedestrians, the latter shall obey the instructions given by such lights; - 19 -*

*(ii) If the crossing is not equipped with such lights, but vehicular*

*traffic is regulated by traffic light signals or by an authorized official, pedestrians shall not step onto the carriageway while the traffic light signal or the signal given by the authorized official indicates that vehicles may proceed along it;*

*(iii) At other pedestrian crossings, pedestrians shall not step on to the carriageway without taking the distance and speed of approaching vehicles into account.*

*(c) In order to cross the carriageway elsewhere than at a pedestrian crossing signposted as such or indicated by markings on the carriageway, pedestrians shall not step on to the carriageway without first making sure that they can do so without impeding vehicular traffic.*

*(d) Once they have started to cross a carriageway, pedestrians shall not take an unnecessarily long route, and shall not linger or stop on the carriageway unnecessarily.*

7. *However, Contracting Parties or subdivisions thereof may impose stricter requirements on pedestrians crossing the carriageway.*

**So why is decriminalizing jaywalking in NYC big news?**

It is the age-old fight between the 'haves' and the 'have nots', and the people who earn their daily bread by keeping the fight going. There are politicians, lawyers, journalists, and general axe grinders who egg on their constituents, clients, readers, and axe wielders on both side of the issue. Originally, the 'haves' were those who owned or use horses and wagons, and eventually, motorized vehicles, and the 'have nots' were those who didn't. Both groups claimed that they should have unfettered use of the public right-of-way between the sidewalk curbs without being troubled by the other. Horses and vehicles should stop for pedestrians crossing anywhere it is convenient for them, claimed the 'have

nots'. Pedestrians should restrict their crossings to places where they don't get in the way of horses and vehicles going about their business, argued the 'haves', and intersections are a convenient place for vehicles to stop so that vehicles traveling in a crossing direction can have free access without worrying about being driven into. It just makes common sense for pedestrians to restrict themselves to intersections for making their crossings safe for all parties, further argued the 'haves'.

Automobile demonizers like Peter Norton, an associate professor of history at the UNIVERSITY OF VIRGINIA who is known for his critical view of societies' relationship with the private car, pull out the "It was the car industry, stupid" trope, saying that motoring organizations and the car industry lobby pushed through car-friendly/pedestrian-hostile regulations in spite of the resistance by the *common folk* to the increasing amount of space and air cars, trucks, and buses were taking up in cities like New York. Advertisements and comic strips like the one at the start of this article ridiculed people who jaywalked. Some cities, like New York, made jaywalking a criminal offense carrying a fine. In the case of New York City, the fine was up to \$250.

The main reason these restrictions were passed was to protect pedestrians, not to punish them. There can be no question that it is easier to stay alive if you don't challenge a motorized vehicle moving at thirty or forty miles per hour to a duel with your body as your weapon, like Al Pacino did in the 1969 movie classic, *MIDNIGHT COWBOY* (see sidebar). Between 2018 and 2023, 200 people were killed in New York City by crossing in the middle of a block or against traffic signals, which was 34% of all pedestrian fatalities in the city, according to testimony from the NYC Department of Transportation during the hearings to decide whether to decriminalize jaywalking. What was the main argument on the other side? No, it was not the liberterian cry, "I want to be free to die!" It was racial justice.

Mercedes Narcisse, a NYC Council Member who lives in Canarsie, Brooklyn, was the sponsor of the motion to decriminalize jaywalking. "*Penalizing residents for crossing the street as they go about their day is outdated and unnecessary,*" said Ms. Narcisse, "*especially given how disproportionately these penalties*



Hester Street, Manhattan (1914)  
<https://www.vox.com/2015/1/15/7551873/jaywalking-history>



Al Pacino, in a duel with a taxi in *Midnight Cowboy*, yells, "Hey! I'm walkin' here!"



*have been enforced."* She claimed that figures from the NYC Police Department showed that during the first six months of 2024, 786 pedestrian-related summonses were issued, of which 77% were given to non-Whites. Another one of the bill's sponsors, Tiffany Cabán, said, *"We're seeing discriminatory enforcement of this (regulation)."* Audrey Martin of the Legal Aid Society said in a news release following decriminalization: *"Decriminalizing jaywalking in New York City is long overdue and eradicates a mechanism that the NYPD has, for decades, employed as a pretext to stop, question, and frisk New Yorkers, especially those from communities of color."* She continued, *"With this legislation now codified, we hope that both the (NY Mayor) Adam's Administration and City Council will continue to abolish relic laws that serve no public safety purpose and only ensnare people in the criminal legal system."*

What might be some of those relic laws, Ms. Martin? Paying for on-street parking? Paying to ride on public transit? Prohibitions on carrying firearms? Prohibition on having an open campfire on the floor in the middle of one's apartment? How about driving under the influence of alcohol or drugs, or speeding through red lights? Driving on sidewalks? I just wonder where the borderline is, where the line in the sand is drawn, if there are any lines left in the sand in those communities where there are no longer any laws to enforce because the people who didn't obey the laws felt that the police were discriminating against them. Did the New York City police really need to have a jaywalking law to stop, question, and frisk New Yorkers? Truly? "You jaywalked, therefore you must be carrying!" Honestly?

Ms. Narcisse, Ms. Cabán, and Ms. Martin, forty people per year during the past five years have died doing something that was illegal. In the total scheme of things in New York City, like dying from overdoses (around 3,000 per year) or being shot (around 1,500 per year), forty people per year is not a lot. But it's not nothing. Seven people died at NYC beaches during the summer of 2024. One of Narcisse's and Cabán's council member colleagues, Mr. Shekar Krishnan, said that one death is too many and called for immediate action. Why did you not first address the real problem, which is people dying? Will fewer people die because you have decriminalized jaywalking? I doubt it, and I am not cheering what you consider your victory.



## Postscript on Policing

Let us take a concrete example of what can happen when traffic regulations are not enforced because enforcement has been said to exhibit racial bias. This is a case report in the December 8, 2024 issue of the *NEW YORK TIMES*.<sup>30</sup> For eight months, between July 2023 and March 2024, New Jersey State Troopers who patrol the Garden State's major highways and rural state roads suddenly began writing fewer tickets for traffic violations, like speeding, using mobile phones while driving, and DUI. Why? Because a report written by a NORTHEASTERN UNIVERSITY professor, who was hired to write the report in 2021 by the then-state attorney general, claimed that state troopers were "engaged in enforcement practices that result in adverse treatment toward minority motorists." This conclusion was based on the professor's review of 6.2 million traffic stop reports made between 2009 and 2021.

When the State Trooper union leaders read the report, their reaction was predictable. If anyone who was stopped for a traffic violation claimed racial bias, the Trooper could lose his or her job. How could a Trooper be certain that a speeder or a person swerving was non-white, and how could the Trooper be sure that the evidence he or she presented would be accepted by a judge against the word of the driver that the Trooper exhibited racial bias. The union claims that it did not tell its members to stop enforcing, but they advised them to "Just be safe". The Troopers simply stopped stopping violators, and reported violations dropped by 81%. Troopers responded to crashes and emergency calls, but proactive enforcement was drastically reduced.

The result was sadly predictable. Crashes increased by 27% on the main highways in August of 2023, and 18% between January and March 2024. As speeds increase because policing is absent, fatal accidents go up. It's one of those laws of physics. Something similar happened in 2020 in Minneapolis after the death of George Floyd at the hands of the police, when the police made 76% fewer arrests. In the 12 months after Floyd's death, the number of outdoor shootings detected by specially designed microphone arrays set up in two of the city's most dangerous neighborhoods more than doubled, dispatch records show. Amid cries to defund the police, 22% of the police force quit.

*THE TIMES* article does not say how or whether the New Jersey State Trooper situation has been resolved. The state's governor, Phil Murphy, said he had full faith in the State Trooper's

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<sup>30</sup> <https://www.nytimes.com/2024/12/08/nyregion/new-jersey-state-police-slowdown.html>

leadership when loud voices called for their resignations, and he said he supported the Troopers, who, he said, were doing their best to keep the state's roads safe.

Jill Lepore, Ph.D., professor of American History at Harvard University, staff writer at The New Yorker, and one of the wisest commentators on the state of America, wrote an essay for *THE NEW YORKER* JULY 13, 2020 issue titled *The Invention of the Police: Why did American policing get so big, so fast? The answer, mainly, is slavery.* Dr. Lepore does not wield an ax that cuts either left or right. She wields a straight pen that cuts with words both ways. This article should be required reading for every American politician and everyone in any way involved in law enforcement in the United States. She explains in clear English with substantiated facts how America got to where it is today, with groups calling for the defunding and disbanding of the police because, these groups claim, that only non-Whites are arrested. Backing up these claims, the racial bias groups use rate of incarceration, that is, the number within the group that are incarcerated per 100,000, which is 1.24% for Blacks and 0.26% for Whites. Law enforcement groups point to total prison inmate population which shows that 57% of inmates are White, 39% are Black, 1.5% are Asian, and 2.9% are Native American.

America definitely needs to reform its policing system from the ground up, and Dr. Lepore identifies many good suggestions that have been proposed by people who want to see more fairness for both the perpetrators of crimes and their victims. Eliminating the enforcement of traffic regulations, either by making criminal acts like speeding and DUI legal, or by sanctioning those who enforce these criminal acts by subjecting them to threats of dismissal if they enforce them on the "wrong" people, will endanger all road users. Jaywalking was not made a crime because communities wanted to use it as a way of controlling certain groups within the community; it was made a crime to reinforce the rule of keeping pedestrians and motorists as far away from each other as possible.



# Musings of a Dispatcher: Feeling at Home

## ***The most familiar smells we do not smell***

"WHAT'S THAT SMELL?" my five-year younger cousin whined as she walked up the stairs to our house with the rest of her family. "Rosemary!" yelled my Aunt Yolanda. "What smell?" I asked from my position on our porch. My mother's sister and her family lived in one of Scranton's boroughs, Dunmore, a mostly residential area (i.e., not smelly), while we lived a stone's throw from the center of the city. I could have asked "Which smell?" instead. I understood later in life that there were plenty to choose among from those where we lived. But if the first air you breathe is full of those smells, to you it is simply air. To everyone else, it stinks.



*A photo taken by my father in the 1930s from his family's backyard. The boys are on the New Jersey Central Railroad tracks, and the Lackawanna River, flowing black, is down a steep embankment. Across the river, on the opposite embankment, is the Scranton Gas Works, and up on the plateau are the Delaware, Lackawanna & Hudson rail yards at the same level as Central Scranton.*

The Lackawanna River separated us from the downtown. It was an open sewer back then, an opaque black mucky fluid, not water, before they built the sewage treatment plant, and before the former governor's wife, Mary Scranton, led the effort to clean it up. Today, fly fishers catch real brown trout where once you would have to be taken to the hospital if you even touched the river. From my father's family's backyard, on the other side of South Seventh Avenue from our house, you could see the river, down two steep embankments, the first to the New Jersey Central Railroad tracks, and the second to the river. Across the river, at the same level as the NJC tracks, was the main cause of the smell, the Scranton Gas Works. It spread along the entire side of the opposite bank for the entire length of our block, with its huge gas storage tank moving up and down within its steel cage at one end, and at the other end the coal hopper where the fuel to make the gas was dumped into the furnace. Coal gas, or as we called it, town gas, was produced by the carbonization of coal. The gas was used initially for lighting, but with the spread of electricity, it was mostly used for cooking. Those smells that leaked out from the works were hydrogen sulfide and ammonia, which smelled distinctly like rotten eggs. Scranton was part of America's largest anthracite coal region. Anthracite, also called hard coal or black coal, has the highest carbon content, fewest

impurities, and highest energy density of all types of coal. It was the fuel that heated most homes, and besides using it to produce gas, it was used to generate electricity and city steam that heated the buildings and sidewalks in central Scranton. I can only imagine what the air smelled like in the vicinity of a gas works where they burned bituminous coal to make their gas.

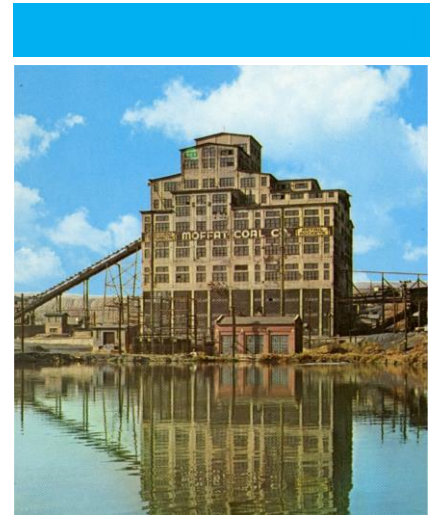
Just up the street was a hide and tallow company. I don't remember its name. Half-a-mile down river were the city's main slaughter houses. Cattle were delivered to the slaughter houses, where the meat was cut from the carcasses, and what was left, except the hides, was thrown directly into the river. The hides were trucked up to the hide and tallow company, where they were soaked in saltwater, scraped, and then stretched to dry. Shoe factories in New England were the main cattle hide consumers, but there were plenty of other uses for real leather back then. Tallow, which is the fat of the cattle next to the skin, was used for cooking or making candles and soap. We played touch football in the paved area behind the hide and tallow company, and if we were not used to the smell that the hides and the chemicals gave off, we would not have been able to come within a city block of the place. If I remember correctly, the slaughter houses were washed away in the flood of '55 when Hurricane Diane roared through the Lackawanna Valley, and the hide and tallow company closed a few years later.

By the time Rosemary and her family came for their visit, most of the steam trains had been replaced by diesels. Along with the NJC, we had the Delaware and Hudson Railroad that ran right behind the Gas Works, and the Lackawanna Railroad that ran behind our house and through the city. It was connected over the two sides of the river by a long and very high steel girder bridge. I could see the Lackawanna's railroad yards from my second floor bedroom window. They filled a huge area on the plateau between the city's main thoroughfare and the edge of a very high embankment leading up from the Gas Works. Those trains ran constantly, adding their diesel fumes to the blend of all the other smells. Today, the area is Steamtown National Park with a large collection of steam and diesel locomotives, as well as a wonderful trolley museum.

There was one smell we did not have in our neighborhood. We experienced it every time we traveled through the Borough of Taylor on our way to Old Forge where my mother's family lived. As you approached the center of Taylor, you saw the Moffatt Coal breaker, a huge concrete structure that had been unused for many years. In front of the breaker was a man-made pile of coal waste, called culm dumps. When culm dumps grow to a certain size, they produce enough pressure on the coal dust at the bottom of the pile to ignite it. Once the culm dump begins to burn, the smoldering continues until the entire dump is ash. In the days we were visiting my mother's parents and other relatives, it was still burning, and when it was dark, it looked like the top of a gas stove. It smelled awful, the rottenest of rotten eggs. If you asked anyone who lived in Taylor how they could stand the smell, they would answer, "What smell?". Most of the culm dumps in the anthracite coal region are gone. Their ashes and unburnt debris were collected and flushed into the empty mines to prevent further mine subsidences from occurring, like the one that caused our neighborhood to be evacuated.

Every house and building along both sides of South Seventh Avenue and up Scranton Street to St. Lucy's Church disappeared after the mine subsidence in 1960. All the families were relocated by the Scranton Redevelopment Agency, the businesses closed, and the buildings demolished. The Gas Works was made redundant by the transition to natural gas piped up from Texas and other southern sources. Instead of trains running along the old NJC trackbed, walkers and runners today enjoy the Lackawanna River Heritage Trail that extends for thirty miles, with my old street at about two-thirds of the way from the start in the north marked as a station point on the trail, although it is called 7th Street instead of 7th Avenue. Anyway, everyone who lived there called it 7th Street.

Not all the odors were foul. Behind our house was Hyde Park Lumber. Its stacks were filled with sweet-smelling fir, spruce, pine, hemlock, cedar, redwood, oak, maple, and teak. Up the road from our street and across the tracks, was the Liberty Bakery, where fresh Italian bread was baked in wood fired brick ovens. People would say they gained a pound just by passing by and smelling the aroma of fresh-baked bread. On Sundays and high holy days, the fragrance





of burning incense would waft through the doors of St. Lucy's Church, our parish church, at the top of Scranton Street for passers-by, while I and my family would be experiencing them from inside. There were a number of Italian grocery stores in the neighborhood around the church where you were overwhelmed by the aromas coming from the olives in barrels, the cold cuts hanging from the ceiling, and the cheeses in the case.

To this day, my favorite smell experience is walking into a shoe repair shop. My grandfather's shop was in the front of their home. I was only four-and-half when he died, but I remember every detail of his shop, and can still see him standing at his large shoe repair machine or at the counter conversing with a customer. Leather, glue, wax for the threads, polish, and the ever-present aroma of his Parodi cigar mixed to create an enchanting atmosphere. My mother would leave me in his care when she had to walk into town, and we thoroughly enjoyed each other's company. I have his name.

I remember places mostly by their smells because their smells are lasting while their sights are fleeting and many. Their sights change with seasons, weather, and our moods. Smells are there. They never change until the source of the smell is removed. Subways/undergrounds/metros anywhere in the world have a pervasive smell once you have descended to platform level. Smells can be enhanced by rain or heat, like the stench of restaurant leftovers and spilled beer in heavily touristed districts in summer months. They can be hidden for periods and exposed for others, like the low tide smell caused by hydrogen sulphide produced by decomposing aquatic organisms. They can disappear forever, like the seeping gas from the demolished gas works or the excavated culm dumps, and their absence makes us recall their presence, reinforcing our memory of the place.

But I do not remember the place where I spent the first thirteen years of my life by its persistent smell, the smell that caused visitors to react and retract and me to feel right at home. It holds a unique place in my memory for that reason.



## About Michael L. Sena

Through my writing, speaking and client work, I have attempted to bring clarity to an often-opaque world of highly automated and connected vehicles. I have not just studied the technologies and analyzed the services. I have developed and implemented them and have worked to shape visions and followed through to delivering them. What drives me—why do what I do—is my 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. Most importantly, I put vehicles into their context. It's not just roads; it's communities, large and small. Vehicles are tools, and people use these tools to make their lives and the lives of their family members easier, more enjoyable, and safer. Businesses and services use these tools to deliver what people need. Transport is intertwined with the environment in which it operates, and the two must be developed in concert.



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