

IN THIS ISSUE

Feature: Delivering Transport Systems	2
Overcapacity and Subsidies in China	2
Dispatch Central	14
New York City congestion charging halted	14
Cybertruck too big for his boots and britches.....	16
New UNECE Regulation on DCAS.....	18
BEV owner survey results	20
Musings of a Dispatcher: Gadget Progression.....	24
Just when we think we can't live without them, something better comes along	24
Musings of a Dispatcher: Why I Write.....	31

THE SEPTEMBER 2024 ISSUE IN BRIEF

DELIVERING TRANSPORT SYSTEMS, whether it was selling a new or used car to a private customer, or building and operating a cross-continental railroad, was never a simple, national affair. It may have looked like the American automobile industry was self-contained before the 1960s, but GM, FORD and their competitors in the Detroit area took both design ideas and raw materials from countries all around the world to build the vehicles they sold, and consumers were totally dependent on the delivery of petroleum products from foreign countries in order to operate them. The same was true for the car and truck makers in all corners of the world. That became abundantly clear during the 1974 Arab oil embargo. The automotive industry has always been global, and it will continue to be so.

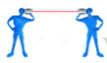
China believes it can dominate the car manufacturing industry as it has come to dominate steel, aluminum, apparel, wind turbine, solar panel, coal – the list just goes on – where it controls 50% or more of global production. It might have eventually gotten there with cars by buying up western car companies and using their internal combustion engine technologies, but it found a shortcut by cornering the supply of essential minerals for building the batteries in battery electric vehicles and providing the necessary funds to create both a domestic BEV production capacity and a domestic market for selling them. It is now poised to deliver them outside of China, suitably priced to beat all competitors, with western market consumers primed with tax incentives to buy them. The west's reaction is to try to undo everything it has done to enable the Chinese onslaught. It is instituting tariffs to remove the price advantage. Will it work, or is it too late? Is there a lesson that should be learned, finally, after decades of hoping that China will play fair?

Feature: Delivering Transport Systems

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

Overcapacity and Subsidies in China

HERE'S A TASK for a generative pre-trained transformer: Write a Shakespearianesque sonnet comparing China to the rest of the world. Unless the GPT was pre-trained in China, it would hardly describe it as more lovely and more temperate as Shakespeare compared the beauty of a lover to a summer's day. My own comparison is that China is my chess playing app set to the highest level, and the rest of the world is me playing against it.

After four decades of handing over intellectual property in order to gain access to the huge number of consumers in China, after almost twenty-five years of hoping that China would show signs of a more democratic approach to running its political systems, and after over a decade having passed since the most powerful person in the world, the president of the middle kingdom,¹ firmly stated that China has not the least intention of slowing down its progress toward becoming the most powerful nation on this Planet – and any other planet it might decide to occupy – the Western countries, with the U.S. in the lead, have decided to put their collective foot down. Unfortunately, having shot themselves too many times over in the same foot, it will be difficult for those countries finally attempting to stand up to China to gain any traction with their foot, but that does not seem to be preventing them from trying.

The U.S. has increased tariffs on battery electric cars (BEVs) coming into the country from China, and the EU intends to do the same for BEVs originating in China and entering its 27 member countries.² On the 14th of May 2024, the Biden administration announced that tariffs on Chinese-made battery electric vehicles would

¹ The Middle Kingdom is the direct translation for China of its native Chinese name, Chung Kuo. (Oxford Reference)

² EU tariffs on China-made BEVs, which started on the 5th of July, are temporary.

increase from 25% to 100%, effective this year.³ This action is taken under *Section 301 of the Trade Act of 1974*, which "authorizes the President to take all appropriate action, including tariff-based and non-tariff-based retaliation, to obtain the removal of any act, policy, or practice of a foreign government that violates an international trade agreement or is unjustified, unreasonable, or discriminatory, and that burdens or restricts U.S. commerce". Europe added between 17.4% and 38.1% to the current 10% tariff on China-produced BEVs starting on the 5th of July. (See sidebar for a word about TESLA.) Before we go any further, let us try to understand what a 100% tariff actually means.



China-made Teslas get a break

On the 20th of August, the European Commission decided that TESLA was a special case because it was not a Chinese company and did not receive the same level of subsidies as the Chinese domestic brands. Therefore, it "awarded" TESLA a special tariff of only 9% on top of the 10% tariff that China-produced cars pay to enter the EU. So the total tariff will be 19%, which is significantly lower than the lowest tariff of 24.4% that a BEV produced in China by a Chinese company will pay.

Tariffs

*The word "tariff" comes from Medieval Latin *tariffe* which referred to a list or register of prices and taxes on commodities at a fair, market, or port. Tariffs are basically taxes that countries impose on some goods and services they import. Tariffs are also called duties. They are taxes on imported goods, which can be specific (such as a set amount per item) or ad valorem (often denoted as a percentage of the sale price). Tariffs are designed to raise revenue for the government, protect domestic industries, or punish other countries.*

For ad valorem tariffs, the percentage of the tariff determines how much money will be added to the sale price. The amount of money paid for the tariff is based on the assessed value of the imported product. The value is calculated using the original price of the product. The total export price (i.e., what the so-called "landed cost" will be) is the price of the original product plus the tariff, plus freight, insurance, and any other taxes. A new car that sells for \$20,000 in the country of manufacture has a stated commercial value, and it is that value which is the base for adding the 100% tariff and the additional costs will determine the eventual price to the consumer in the country levying the tariff.

Tariffs have a long and complex history. When countries raise tariffs on goods to protect their domestic producers of those goods, countries affected by the tariffs usually raise tariffs on products imported from that country, which simply raises prices to consumers. Adam Smith, in his book Wealth of Nations (1776), was first to criticize this protectionist approach to trade. David Ricardo in 1817 put forward his theory of comparative advantage in Principles of Political Economy to explain why countries should trade freely and concentrate on producing only those products at which it excels. It is telling that the first piece of legislation

³ <https://www.whitehouse.gov/briefing-room/statements-releases/2024/05/14/fact-sheet-president-biden-takes-action-to-protect-american-workers-and-businesses-from-chinas-unfair-trade-practices/>

passed in the United States after the ratification of the United States Constitution was the Tariff Act of 1789. It levied a 50¢ per ton duty on goods imported by foreign ships, while American-owned vessels were charged only 6¢ per ton. This was a federal tax, not a state one, and it provided much-needed income to the new and financially struggling government.

Raising money for the federal kitty⁴ is not the main reason the Biden administration increased the tariff on Chinese battery electric cars to 100%. There are very, very few BEVs produced in China that are currently exported to the U.S., and with a 100% tariff, it is highly unlikely that there will be any at all in the future. At present, only GM's *Buick*, GEELY's *Polestar* and *Lotus*, and VOLVO's China-produced BEV models are shipped to the U.S. The numbers are miniscule and are likely to be reduced to zero. No exports, no money. Eliminating BEV exports from China is the one and only objective of the tariff, and if a 100% tariff does not do the trick, it will probably be raised it to 200%.

The situation is very different in Europe. There, one in five battery electric vehicles sold in 2023 was imported from China. That ratio is expected to rise to one in four this year.⁵ Europe opened its arms to BEVs from GEELY (Lynk&Co, Zeeker, Polestar), VOLVO CARS (XC30), SAIC (MG), BYD, NIO, XPENG, GREAT WALL, TESLA, and models from BMW, RENAULT, MERCEDES-BENZ, among others, and they have poured in with only a 10% tariff, while cars exported to China paid 15%. This was reduced from 25% in 2018. While the tariff of 15% is higher than what Chinese imports pay, European companies have seen their sales in China increase significantly during the past few decades. 32.3% of BMW's total sales were in China in 2023, its number one market and double the size of the U.S.; for Mercedes-Benz, it was 37% of its sales and 18% of its revenue coming from China.

An actual example will help to make the impact of the U.S. tariff more real. The new *Volvo EX30* is the company's first BEV-from-scratch model. It is produced in China and has a MRP of 529,000 Swedish kronor (\$50,244) in Sweden. The

⁴ A sum of money or collection of goods often made up of small contributions. (Merriam-Webster)

⁵ [HTTPS://ARSTECHNICA.COM/CARS/2024/05/BIDEN-SET-TO-LEVY-100-TARIFFS-ON-CHINESE-EVS-THIS-WEEK/](https://arstechnica.com/cars/2024/05/biden-set-to-levy-100-tariffs-on-chinese-evs-this-week/)



MG Falters in May, Dragging Down Chinese EV Sales in Europe
BYD gains ground while Xpeng looks to build momentum

Brand	May Unit Sales	YoY Change	YTD Sales	YoY Change
MG	6,666	-34%	31,083	-15%
BYD	2,796	292%	13,139	521%
Xpeng	334	1988%	1,800	4637%
Great Wall	333	NA	1,432	NA
NIO	140	7%	690	16%
Zeeker	138	NA	707	NA
All Chinese Brands	10,774	-8%	50,924	22%

Source: Jato Dynamics
Note: Excludes Polestar, Great Wall, Zeeker, weren't active in year-ago periods. Bloomberg

Chinese Company Electrical Vehicle Sales in Europe (May 2024)

same car sold in China has a sticker price of SEK 300,000.⁶ It is VOLVO's smallest model. If the EX30 had a 100% tariff, it would cost a Swedish buyer 961,818 Swedish kronor (\$91,372), which is the current price minus the 10% current duty plus the 100% duty. The U.S.-made Volvo EX90, the BEV version of the XC90, VOLVO's largest model, has a MRP in Sweden of 997,000 Swedish kronor. It is difficult to imagine someone paying the same price for an XC30 as an XC90.

The West is reverting to mercantilism, says China

It is an odd twist of fate. China, a single party, communist country in which everything is totally planned and controlled by the government, lectures the West on free trade, saying it has not learned the lessons of Adam Smith and David Ricardo on the benefits of open markets and allowing comparative advantage to determine where goods should be produced for the best use of resources. Tariffs are a legacy of the colonial period, China says, when colonizer countries forced their colonies to trade only with them and placed extremely high tariffs on goods from other countries. Didn't the U.S. tariffs in the 1930s make the Depression worse for both Americans and the rest of the world, China asks rhetorically. We're just doing what we do better than the rest of the world, argues China, whether it's making baseball caps or cars, and we should not limit our production to our internal market only. We can meet global demand with unbeatable prices because we are better than anyone else at producing not just battery electric cars, but all cars. And how we got to be best is nobody's business but our own.

Well, actually, Mr. Xi, it is everybody's business since your country was admitted to the WORLD TRADE ORGANIZATION in 2001, and thereby committed to abiding by its rules and regulations in return for all those free trade benefits that have helped China collect its own dirt samples on the moon. There are specific rules against anti-dumping (i.e., selling goods in export markets at prices that are lower than in the home market) and subsidies. Subsidizing products to gain a competitive advantage is not allowed. China is accused of subsidizing its BEV industry to create over-capacity, which in turn, results in lower prices. China argues in reverse,

⁶ Prices are obtained from an article in the SWEDISH AUTOMOBILE CLUB's magazine, *MOTOR*, NR. 4 2024.

claiming there is no over capacity and therefore there were no subsidies. This is the crux of the debate.

The big question: Has China engineered overcapacity?

The EU and U.S. accuse the Chinese government of stimulating growth in its battery electric car industry by providing subsidies to producers along the entire value chain as well as to Chinese consumers to create a domestic market for the cars being produced. The EU and U.S. say that China has continued to subsidize producers to engineer a surplus of cars that exceed domestic demand so that the surplus can be sold into foreign markets at extremely low prices.

A report by the Center for Strategic and International Stud-

Type of Support	2009-2017	2018	2019	2020	2021	2022	2023	Total
Rebate	37.8	4.3	3.3	3.5	7.4	9.2	0.0	65.7
Sales Tax Exemption	10.8	7.7	6.4	6.6	16.4	30.3	39.6	117.7
Infrastructure Subsidies	2.3	0.2	0.2	0.3	0.3	0.6	0.6	4.5
Research & Development	2.0	3.6	3.4	3.5	4.3	3.9	4.3	25.0
Government Procurement	7.8	1.6	1.4	2.9	1.7	1.8	0.8	18.0
Total	60.7	17.4	14.8	16.8	30.1	45.8	45.3	230.9
Spending as Share of Total Sales	42.4%	22.7%	23.3%	25.4%	18.3%	15.1%	11.4%	18.8%
Subsidy per Vehicle (US\$)	-	13,860	12,311	12,294	8,538	6,656	4,764	-

CSIS | TRUSTEE CHAIR IN CHINESE BUSINESS & ECONOMICS

ies has estimated that Chinese support for BEVs from 2009 to 2023 cumulatively totaled \$230.9 billion. "Absolute funding annually was around \$6.74 billion in the first 9 years of our analysis (2009-2017), as the sector was just getting off the ground. Spending roughly tripled during 2018-2020, and then has risen again sharply since 2021."⁷ CSIS says that their estimates do not include subsidies and rebates from local authorities, the provision of low-cost land, electricity, and credit to the manufacturers, and low interest loans provided to them. The estimates also do not include subsidies to other parts of the BEV supply chain. For example, CATL, which has a 36.8% market share of BEV batteries, has seen its government subsidies rise from \$76.7 million in 2018 to \$809.2 million in 2023. The report sums up the situations thusly: "There are still 200 electric car manufacturers in China who collectively have

⁷ <https://www.csis.org/blogs/trustee-china-hand/chinese-ev-dilemma-subsidized-yet-striking>

created far more capacity than the domestic market can bear. As a result, firms have engaged in a bitter price war at home and expanded efforts to promote exports."

During the first three months of 2024, global exports of BEVs and plug-in hybrid electric vehicles from China increased 24% over the same period a year ago.⁸ (It is important to note that electric cars represent only 25% of the total exports of all cars from China, both electric and BEVs, which is just over 4 million, but that total China exports of all cars have doubled in less than two years.)

The EU and U.S. claim that stimulus measures were purposely designed to significantly increase production capacity to exceed market demand from Chinese consumers so that Chinese car companies had more than sufficient supplies to flood Western markets with extremely low prices, much lower than break-even price points for Western car producers. They say further that China has used this strategy in one market after the other (from aluminum to baseball caps), and it is time that the West took appropriate action before losing another industry to unfair Chinese practices.

At a June 2024 meeting of the WORLD ECONOMIC FORUM in China, its Premier Li Qiang replied to the accusations from the U.S. and EU that Chinese companies benefit from unfair subsidies and are about to unleash a flood of cheap battery electric cars into their markets.⁹ *"China's production of advanced electric vehicles, lithium batteries and photovoltaic products, etcetera, first met our domestic demand, but also enrich global supply. The rapid rise of China's new industries is rooted in our own unique comparative advantages,"* said Li. *"The continuous emergence of economies of scale can effectively dilute enterprises' innovation costs...which is the real source of the strong competitiveness of China's new industries,"* continued Li. China says it decided to invest in green technologies earlier than western governments and companies, and it should not be penalized for its ingenuity and far-sightedness.

⁸ Graph with figures from China Association of Automobile Manufacturers as shown in *The Economist* May 11th 2024.

⁹ The Premier of China, officially titled the Premier of the State Council of the People's Republic of China, holds the highest administrative position in the Chinese government.

Neither side "gets" the other

Everyone outside of China – and even the non-public companies inside China – knows they are competing with CHINA, INC., but China says that there is no such thing as CHINA, INC. To really understand the disconnect, we must go back forty-six years, to 1978, when Deng Xiaoping became the leader of the People's Republic of China at the Third Plenum of the 11th Central Committee of the Chinese Communist Party. It was Deng who was responsible for China's embrace of a market economy. His philosophy was known as the "socialist market economy" or "socialism with Chinese characteristics". He believed that capitalism could thrive under socialism. He had agriculture de-collectivized and set in motion the mechanisms to empower an entrepreneurial business class. "To get rich is glorious," said Deng, while Mao and the Gang of Four rolled over in their graves.¹⁰

On the 16th of January 1980, Deng gave a speech in which he said there were "three great tasks" facing China in the last two decades of the 20th century and beyond.¹¹ The three tasks he listed were to oppose hegemonism, work for the return of Taiwan, and modernize. It is a long speech, but for those interested in gaining a better understanding of today's China it is well-worth reading in its entirety because it explains so much about the motives that have driven the PRC since its founding in 1949. One paragraph sums it up:

"Modernization is at the core of all these three major tasks, because it is the essential condition for solving both our domestic and our external problems. Everything depends on our doing the work in our own country well. The role we play in international affairs is determined by the extent of our economic growth. If our country becomes more developed and prosperous, we will be in a position to play a greater role in international affairs. Already our international role is not insignificant. With a stronger material base, we will be able to enhance it. In the final analysis, the return of Taiwan to motherland – the reunification of the country – also depends on our running our affairs at home well. We are superior

¹⁰ The Gang of Four was the most powerful members of a radical political elite convicted for implementing the harsh policies directed by Chinese Communist Party (CCP) chairman Mao Zedong during the Cultural Revolution (1966–76). The group included Mao's third wife, Jiang Qing, and Wang Hongwen, Zhang Chunqiao, and Yao Wenyuan.

¹¹ The Present Situation and the Tasks Before Us (1980). <https://www.marxists.org/reference/archive/deng-xiaoping/1980/217.htm>

to Taiwan politically and in terms of economic system, but we must surpass Taiwan, at least to a certain extent, in economic development as well. Nothing less will do. With the success of the four modernizations and more economic growth, we will be in a better position to accomplish reunification. Therefore, in the final analysis, the two tasks of opposing hegemonism and reunifying the country by achieving the return of Taiwan to the motherland both require that we do well in our economic development. Of course, we have to handle our many other affairs well too, but economic development is primary."

Deng believed (correctly) that by opposing hegemonism, that is, control by the strongest and most powerful group, especially the most powerful country, which he accused the United States of practicing, China would win the hearts and minds of the majority of the world's countries. This was a key tenet of China's international diplomacy up until the time that Xi Jinping began to gradually put aside Deng's advice for China's leadership to maintain a low profile. That Taiwan remains at the top of the list of China's priorities is without question.

Exactly how China would modernize could not be known by Deng in 1980, but the four areas that required modernization were agriculture, industry, science and technology, and defense. Prior to this, the priority of the Party had been on ideology, as witnessed by the extremely destructive period between 1966 and 1976 when the chaos of the so-called Cultural Revolution reigned. It was Zhou Enlai, Deng's mentor, who in 1964 first proposed these four modernization areas, but the Cultural Revolution. The four modernizations officially became part of the Chinese Communist Party's constitution at the Eleventh Party Congress in 1977 and in the state's constitution at the Fifth National People's Congress in 1978. They became the basis for the policies that led to the country's enormous growth during the last two decades of the 20th century, leading to its invitation to join the World Trade Organization.

China's economic development rocket is in its third stage¹²

In his 1980 speech, Deng described China as a poor country, and that would have to change if it were going to fulfill its

¹² I acknowledge a debt of gratitude to Carl Johan von Seth for his article in the Tuesday 2 July 2024 issue of *DAGENS NYHETER*, titled *Is Sweden ready for the next China shock?* in which he provided an excellent description of China's three stages of economic growth.

destiny and take its rightful place in the world. It would start by exporting its way out of poverty. It became the global factory for consumer products, from toys to toasters, and from t-shirts to telephones. In 2006, I wrote in my book, Beating Traffic, that "fully 80% of the goods sold in Wal-Mart (*NB: it was spelled with a hyphen in 2006*) stores now originate in low-cost countries, mostly China". As von Seth said in his article, it was the largest mobilization of an industrial workforce ever seen in the history of mankind. The money it earned during this first stage of its economic liftoff gave it exactly the boost it needed to begin to establish itself as a global power to be reckoned with. This was the first *China Shock*, a term coined by David Autor, noted American economist and professor at MIT. A million American jobs were wiped out by the outsourcing of production to China and the closing of countless factories.

When the western countries' consumer buying sprees ended in 2008 with the onset of the Great Recession, the party ended for China as well. It would keep on producing baseball caps and bubble wrap, but the days of double-digit growth from consumer exports was past. It was time for the ignition of the second stage of the rocket. It would begin to invest in its own infrastructure in a major way, building roads and railroads, wind turbines, nuclear power reactors, coal-fired electricity generation stations, and solar energy farms, and lots and lots of apartment blocks. Total passenger volume on China's highspeed rail system grew from 10 million to 2.3 billion from 2008 to 2019.¹³ And as it perfected the methods and tools for building all of this infrastructure, it began exporting that expertise as well. From nowhere, China now has the third and fourth largest dirt moving manufacturers on the list of the world's top companies, XCMG, a state-owned company, and SANY. In tenth place is another Chinese company, ZOOMLION.

However, there are only so many kilometers of rail lines and apartments that can be built for a declining population, and China reached its limit. For the past few years, since the start of the COVID-19 pandemic which began in China, we have been hearing about the crisis in China's real estate sector.

¹³ <https://www.statista.com/statistics/1120071/china-passenger-transport-volume-of-highspeed-rail/>

Investment loans from Chinese banks to the real estate sector had grown six-fold from around 2013 to 2019, and then began to fall to zero in 2023. Loans to the industrial sector had been flat during the period of the real estate boom, but turned upward in 2019, and are now five times higher than they were during their flat stage.¹⁴ This has signaled the end of the second *China Shock* and beginning of the third. This one is going to have serious consequences for the growth engines in the West.

The third stage is like the first, but much, much more powerful

Keep in mind that China is a communist socialist country, and no matter how much its leaders say it is dedicated to raising the incomes of all its citizens, it is still not going to sanction a society based on consumerism, like that of the U.S. and most western countries. China's economic development is not following the path of progress in the west, with exports and internal infrastructure improvements followed by the creation of an economy based heavily on consumerism, entertainment, and lifestyle enhancements. No ceramics courses or country clubs for the Chinese citizens, as Carl Johan von Seth wrote in his DN. article. China's rocket's third stage, is, like the first, based on exporting goods to increase the country's hoard of cash. The difference between the first and the third stages is the value of the products China is intending to export, and this is where cars are playing a big role.

China intends to become an even bigger factory for the world, supplying cars, airplanes, microchips, AI servers, and Mars launchers, while still being the baseball hat producer for the world. China's manufacturing industry is 27.7% of the country's GNP, which is more than both the U.S. and EU combined! And it is growing again. Investment in manufacturing has quintupled during the past five years, and those investments are going into the very products that will be arriving in the West shortly or are already arriving. If few people in Europe knew who or what BYD (BUILD YOUR DREAMS, a Chinese car producer) was before the European football/soccer championships that were running during the months of June and July, they certainly know now. **BYD,**

¹⁴ Graphic in the previously referenced DN. article using data from China's Central Bank and Rhodium Group.

the No. 1 seller of new electric vehicles!!! was flashing along the edges of all the arenas.

Unlike the first China Shock, when the West was caught unawares, the U.S. and the EU saw this one coming. Warning signs have been flashing for the past five years at the very least. This is what is behind the 'de-risking' programs, like banning HAUWEI phones, and forcing TIKTOK to uncouple from its Chinese owners. It is also why those tariffs on battery electric cars are being levied.

German car companies are making very loud noises about how the tariffs in the EU will harm their businesses in China. They are petitioning their government to force the EU to rescind the tariffs, or at least to make sure that they are only a temporary measure, a way to get China to the bargaining table (See sidebar). But China does not need to bargain. It holds the winning hand. While it can offer the German car companies a carrot in the form of a reduction in its tariff for just their cars, or it can use a stick to push the tariff back up to 25% or higher for all European cars, it can set whatever price it wants on its products to ensure that they are the cheapest in any foreign market. As long as they are approved for sale in Europe (i.e., they pass the European type approval process), they can undercut the prices of any other car company, including and especially MERCEDES-BENZ and BMW.

Interesting times are on the horizon

On the 4th of July, the EU tariffs went into effect. On the 2nd of November, they will be finalized—or not. Geopolitical events will determine what happens next. Environmentalists, and publications like THE ECONOMIST (which has become decidedly pro-China in its editorial stance since it changed editors a few years ago; fully one-half of all articles in the June 15th-21st 2024 issue, with the cover *The rise of Chinese science*, were about China), claim that cheap Chinese cars are just what is needed to get everybody off the ICE and into the BEVs. This argument will become one of the important arrows in China's quiver. Count on more BYD and other Chinese car company ads in all types of media, naturally resulting in glowing reviews of Chinese BEVs in consumer magazines and Sunday supplements, while China

Hot Seat, Cold Feet

Germany announced on the day of voting for the measure, the 15th of July, that it would abstain from voting. Without announcing their intentions before the meeting, Sweden also abstained. It has two brands with headquarters in Sweden, Volvo Cars, and Polestar, which are owned by China's Geely. At this provisional stage, the vote is not binding, and the Commission has the full power to impose duties. According to reports on the supposedly "secret" vote, nine other countries abstained, four voted against, and twelve voted for. If it does advocate duties at the end of its investigation, they will come up for a binding vote among the EU members and would be imposed unless a qualified majority of 15 member countries representing 65% of the EU population vote against.

tightens the import screws on French champagne, Swedish pharmaceuticals, Danish pork, and Dutch cheese.

But don't count on China blowing up the third stage of its rocket. It has not gone unnoticed that China has not really reacted to either the U.S. or EU tariffs, other than to make some threatening noises. It is clearly waiting to see how the U.S. presidential race plays out. One sign that it is taking a decidedly wait-and-see attitude is its treatment of TESLA in China. China accounts for around one-half of all of TESLA's sales. If China wanted to, it could shut down TESLA the same way the did with TOYOTA when Japan's government started to make noises about China's activities in the seas around Japan. Not has China not done that, it has encouraged Communist Party entities to buy *Teslas*, essentially giving TESLA local company status.¹⁵

As *THE ECONOMIST* article points out, TESLA has made a major commitment to investing in China, and if there is one thing that China needs right now due to its precarious economic status is business investment from foreign companies. China's economy is in a very big slump. It has just suffered a fifth quarter of deflation in a row. Since the beginning of 2023, eight of the country's largest electric vehicle manufacturers and 52,000 EV-related companies have either shut down or stopped production.¹⁶ Vehicle sales slumped by over 6% in the last quarter. It needs continued investment from foreign companies. If China sends the signal to would-be investors, wherever they are from, that China giveth and China can just as easily taketh away, it could very easily frighten them off. Instead, China will begin to tighten its export screws, rather than tightening the thumb screws on foreign companies. It has already started to cut off the supply of minerals like gallium and germanium that are key to making all types of electronic products, both for private and military uses.

Look for a clearer direction once the votes are counted in the U.S. in November.



¹⁵ *THE ECONOMIST* JULY 13TH 2024. Tit for tat, not Tesla. pp. 55.

¹⁶ *THE ECONOMIST* AUGUST 10TH 2024. Code-breaking. pp. 49.

Dispatch Central

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.

New York City congestion charging halted

"ON SECOND THOUGHT, maybe we should give this congestion charging idea a second look," explained Governor Kathy Hochul on the 5th of June. She announced an indefinite pause to the so-called New York City congestion pricing implementation affecting the Lower Manhattan and Midtown neighborhoods. The plan was due to go into effect at the end of June and would have charged drivers a \$15 toll when they entered or left Manhattan south of 61st Street.



The congestion charging zone is shown in orange. Using any of the access points entering or leaving the zone would have resulted in a one-time/day \$15 fee.

City tolling schemes are intended to raise money, not reduce traffic. That is why I precede references to "congestion charging" with "so-called". Prices are set high enough to weed out those who truly cannot afford to pay the toll, which experience has shown is anywhere from 10-30% of those using the designated roads. Those who leave free up space on the roads, which is usually replaced with drivers who had switched to other modes because of the congestion and return because they can afford to pay the fee. This was termed "triple convergence" by Anthony Downs in his 1992 book, Stuck in Traffic.¹⁷ It follows the same laws as adding road capacity in which "changes in road infrastructure result in changes in mode of travel (e.g., transit to car), time of travel, or destination of trips in ways that lead to congestion reappearing after an expansion of road capacity".

With road charging, an equilibrium gradually forms and stays in place until the authorities tighten the screws by raising the fees. They raise the fees to increase the amount of money they can squeeze out of the system, and because they know that there will always be a

¹⁷ Downs, Anthony. Stuck in Traffic: Coping with Peak-Hour Traffic Congestion. Brookings Institution Press. (1992)

large enough group who will pay the fee to keep on driving. A certain percentage of the drivers reach their payment pain point and leave. London's toll is now at £15 per day, which is around \$19. It started out at £5 when it was introduced in 2003.¹⁸ The zone in London covered by the charges has also increased.

What happened to cause the NYC change of heart?

Governor Hochul said that she felt circumstances in New York City had changed due to negative economic conditions since the proposed tolling scheme was agreed by the legislature. New York City includes four other boroughs besides Manhattan, as well as the upper half of Manhattan which is outside the toll zone and where more than one-half of Manhattan residents live. Importantly, areas that would be heavily affected by the charges are outside of New York City proper and include Long Island and West Chester County. "A \$15 payment per day can break the budget of a working- or middle-class household," she explained. She has directed state lawmakers to look for new sources of funding to replace the \$1 billion that the tolling scheme was expected to generate to pay for investments in the city's subway system.

Pundits and punters are putting it down to politics. There is an election coming up in November which will decide who is elected President and who will win the congressional seats that are being contested. Governor Hochul is a Democrat. The Mayor of New York City is a Democrat. Hakeem Jeffries, House Minority Leader, and U.S. representative for New York's 8th Congressional District, which covers a large portion of Brooklyn, is a Democrat. Extracting close to \$4,000 per year out of voters' take-home pay, especially without those voters seeing an appreciable improvement in their daily lives, would not be a popular move at this particular moment. Voters are unforgiving when it comes to their financial well-being, and the governor has probably done the math to determine that the number of votes lost will strongly outweigh the number that will be won from those living in lower Manhattan. But the pro-chargers will not go quietly

¹⁸ It is worth noting that the governments of Germany and the United States consider the London congestion charge to be a local tax rather than a toll, from which their embassy personnel are protected by the Vienna Convention. Along with Russia, Japan, and twenty-four other countries, they do not pay it.

into the night. Hochul says she might think about allowing the scheme with a lower toll amount.

THE ECONOMIST has been a diehard supporter of urban road taxes from as far back as I can remember, so I was very surprised to find a *Letter to the Editor* in the issue following the New York governor's decision to halt the tax and *THE ECONOMIST*'s inevitable criticism of her decision. Patrick Lindie of New York wrote: "You characterised critics of congestion pricing in New York as "back-seat drivers" or a "handful of people who have a windshield view of everything" (Jam today", June 8th). That is dismissive of the millions of working-class and blue-collar New Yorkers who do not conveniently live next to subway lines or work next perfect nine-to-five jobs. Congestion pricing would be devastating to those workers who need to schlep their equipment into the city, work the overnight shift, or have to drive across town for their second job. In fact, the only ones who are excited about this half-baked idea are affluent people who don't need to punch a clock and have the luxury of working from home. Before we go dipping into the working man's poor pocket (again) to fix the transit authority, how about we conduct a thorough audit to ensure our money is being spent properly first."

I know I could not have said it better myself because I wrote approximately the same thing on at least two occasions to *THE ECONOMIST*, and the newspaper did not publish my letters. Cheers, Patrick.

Cybertruck too big for his boots and britches

I SAW MY first *Tesla Cybertruck* up close and personal during a visit to Princeton, NJ in late May. It was even bigger and uglier than I had imagined it would be, having about as much design quality and finesse as a Russian tank. But, as



Hector Urquhart put it so well in his 1860 Popular Tales of the West Highlands, "...one man's rubbish may be another's treasure." Since TESLA began production of its *Cybertruck* in November 2023 and up to the 4th of April 2024, 3,878 of the models have been delivered to customers.

"Is this really the future? A huge truck with a massive battery pack and inefficient aerodynamics seems contrary to the purported sustainability that both startup and legacy EV manufacturers need to promote. Ultimately, the Cybertruck is a missed opportunity. Musk could have proved the skeptics wrong by bringing such an unabashedly bold concept to reality with a level of build quality never before seen from Tesla. Unfortunately, the finished product arrives in poor form, which, in my opinion, makes it little more than a gimmick that may set the entire EV industry back by sowing more seeds of doubt and division."

*Robb Report*¹⁹

Many of those customers bought the pickup of their dreams sight unseen. TESLA introduced the vehicle as a concept in November 2019. As long back as 2021, TESLA had over a million pre-orders, and told customers that they could have up to a five-year wait. Actual deliveries of the vehicle did not begin until November 2023. Those early orderers essentially bought a 'pig in a poke', as the saying goes, meaning they really had no idea what they would be getting.²⁰ One of them was Blaine Raddon from Salt Lake City, Utah. He told Bryan Hood of the *ROBB REPORT* that he wanted the *Cybertruck* "from the moment he first saw it during a live-streamed launch event." He received it in May of this year. Things can change in five years, and they did for Blaine. He had moved from his house to an apartment because of a divorce. He had a parking space in a parking garage, not a spot in his own garage as he had when he placed his order. The super-sized *Cybertruck* simply did not fit into his space.

What to do? Well, the obvious solution, thought Blaine, was to take the vehicle back to the place where he bought it and

¹⁹ <https://robbreport.com/motors/cars/drive-review-tesla-cybertruck-1235600135/>

²⁰ Pig in a Poke - without inspection or appraisal, and thus of unknown authenticity or quality (Merriam-Webster). Starting in the 19th century, this idiom was explained as a confidence trick where a farmer would substitute a cat for a suckling pig when bringing it to market.

ask for a refund. TESLA's representative balked, saying the company did not feel his change of situation warranted a repurchase. At the same time, TESLA told Blaine that if he tried to sell the vehicle, he would violate his purchase agreement and he would be fined \$50,000 or the value of the vehicle (which is around \$100,000), whichever is greater, and be banned from buying future TESLAs.

"Aw shucks." Blaine says he has no plans to sue TESLA. He says he'll figure it out. Who knows, maybe all the publicity will attract a prospective new mate who has a house with a big garage. Good luck, Blaine.

What about Europe? Are we chicken liver?

It appears that Musk and his Musketeers looked at the numbers and decided to dismiss Europe as a potential market. There were 3 million pickups sold in the U.S. in 2020, but only 116,280 in the EU.²¹ The *Cybertruck* is not type approved for the EU. First, it is too heavy to drive without a truck driver's license. Second, its charger is not of the EU CCS2 standard. And third, it does not comply with EU pedestrian safety regulations, in particular it must have rounded edges; Tesla's edges are definitely not rounded.

New UNECE Regulation on DCAS

DRIVER CONTROL ASSISTANCE SYSTEMS (DCAS), is the subject of a new regulation being developed by the UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE) *World Forum for the Harmonisation of Vehicle Regulations (WP.29)*. At a session in May 2024, a new UNECE Regulation on DCAS was adopted. The Regulation has provisionally been allocated Number 171. For purposes of this new regulation, DCAS are defined as "*systems which assist the driver in controlling the longitudinal and lateral motion of the vehicle on a sustained basis, but where the systems does not completely take over the driving task*". The driver still remains responsible for vehicle control and must constantly monitor the environment and the vehicle and its systems' performance. UNECE avoids the use of the SAE Levels,²² but for those who do use them, DCAS would

²¹ *On pickups, Europeans say thanks, but no thanks. AUTOMOTIVE NEWS. June 14, 2021.*

²² *SAE's J3016 Recommended Practice: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, commonly referenced as the SAE Levels of Driving Automation.*

be characterized as an SAE Level 2 system. There is a human driver behind the wheel whenever these driver support features are engaged, even if your feet are off the pedals and you are not steering; you must constantly supervise these support features; you must steer, brake, or accelerate as needed to maintain safety; these features provide steering and brake/acceleration to support the driver; and both lane centering and adaptive control can be operational at the same time.

The objective of the new regulation is to "*facilitate the approval of a blend of driving control assistance functionalities, including support for braking, acceleration, and overtaking*". This new regulation expands upon UN Regulation No. 79 sanctioned in 2018, and it encompasses a wider array of technologies slated for integration into upcoming vehicle models, according to WP.29. In particular, it removes the previous Regulation No. 79 restriction limiting lane changing systems exclusively to motorways by extending their application to other road types.

Nevertheless, the new regulation does not cover full driving automation, and therefore requires manufacturers to implement strategies to ensure that drivers have appropriate knowledge of the capabilities of assistance systems and do not overestimate them (referred to as mode awareness). In order to avoid driver overreliance on such systems, the regulation stipulates that DCAS "*shall be designed to ensure that the driver remains engaged with the driving task. The driver's hands must remain on the wheel and the system shall monitor the driver's visual engagement with the road, triggering alarms after 5 seconds when it detects that this is no longer the case*".

UNECE continues its methodical and steady progress towards creating standards that can be incorporated into type approval regulations in Europe and other countries which are part of the UN-based type approval agreement, and in the U.S. which has its own *Federal Motor Vehicle Safety Standards*. This is important work, and the members of the working party should be applauded for the work they have been performing in the service of the entire automotive industry. For more information on the new regulation, see [GRVA-17-12e.pdf \(unece.org\)](#).

BEV owner survey results

EXPECT THE UNEXPECTED. That is good advice when an industry is thinking about changing its product so that it requires a completely new way of using that product. This is what the automobile industry has been doing with a significant amount of financial incentives from governments who are using tax dollars to pay consumers for buying battery electric vehicles. Some companies, like VOLVO CARS, declared that they will stop selling internal combustion engine (ICE) vehicles well before government legal restrictions on such sales come into force. VOLVO has even handed over its ICE technology to its owner, Chinese GEELY, who is flogging it to companies like RENAULT who are planning to sell cars in places where BEVs will not see the light of day for many decades to come, if ever.

MCKINSEY & COMPANY's *Center for Future Mobility* performed a survey that delivered unexpected (for them, not us) and not particularly positive results for car companies and their dealers who have planned to rely on BEVs to lead sales growth in the near future. The survey, issued the 12th of June this year, found that 46% of new buyers of BEVs in the U.S. say they will go back to an internal combustion engine (ICE) vehicle for their next purchase. *"I didn't expect that,"* said Philipp Kampshoff, leader of the firm's Center for Future Mobility, in an interview with *AUTOMOTIVE NEWS* where this story was reported. *"I thought, 'Once an EV buyer, always an EV buyer.' "* If Phil had been doing his research more thoroughly, rather than reading investor reports, he would not have been so surprised.²³

Results of the survey show what has been reported in many non-biased commentaries ever since car buyers started purchasing BEVs: consumers have concerns about charging, the high cost of ownership, and the complexity of long-distance travel. Those who have bought BEVs did so based on the marketing pitches of the companies selling them and by the huge environmental industry that has grown up around them, about how much money they would save on fuel and how BEVs require no maintenance. They believed that they

²³ The biennial survey, *McKinsey Mobility Consumer Pulse Survey*, asked approximately 200 questions to more than 30,000 consumers in 15 countries, which collectively make up more than 80% of global sales volume.

could drive as far as the range listed on the stickers, which, it turns out, are grossly overstated, especially when temperatures are both hot and cold. What they have gotten is added stress: Where am I going to charge? Will I have enough of a charge to reach the next charging station? Will my host be offended if I ask to charge my car? Should I bring an extra bottle of wine as a gift for using his electricity?

There are differences between future purchasing intentions by age groups, according to the MCKINSEY survey. It found that 57% of millennials (30-40-year-olds) and 42% of Gen Zs (15-30-year-olds) are most likely to switch back when they buy a new car, compared with 33% of Gen Xs and Baby Boomers. Younger buyers may have more problems with home charging, reckon the MCKINSEY researchers. (Wouldn't it have been a good idea to ask that question as part of the survey?) Families with children are 56% more likely to switch back, but 32% of singles and couples without children say they will switch.

Non-BEV owners were also included in the MCKINSEY survey. It found that 38% of non-BEV owners said they are likely to buy either a plug-in hybrid or a full BEV the next time they purchase a car. However, this is not jibing with current new registration statistics. According to STANDARD & POOR MOBILITY,²⁴ new BEV registrations in the U.S. rose 5.2% in the first quarter of 2024 compared with the same period last year. The increase in BEV registrations during all of 2023 was 52% from the year earlier.

Then there is the not-so-small issue of residual values. They are declining for BEVs. According to Cox Automotive, the average transaction price of a BEV was \$55,252 in April 2024. For an ICE, it was \$48,510. That is not so large a difference, but the average price of a 1-5-year-old use BEV has dropped 31.8% during the past year.²⁵ (See chart on following page.) A consumer is either rich or foolish if he does not consider this issue when making a purchasing decision.

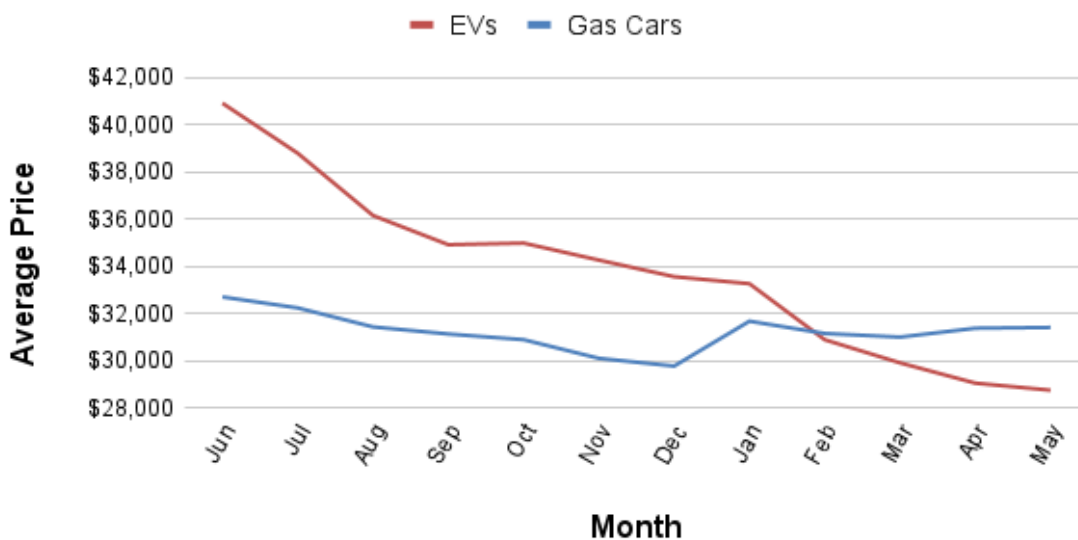
²⁴ <https://www.autonews.com/sales/ev-growth-continues-slow-us-registration-data-shows>

²⁵ April study from iSeeCars.com. <https://www.iseecars.com/used-car-prices-study#:~:text=The%20study%20analyzed%20over%202.2%20million%201-%20to,percent%20below%20the%20average%20gas%20car%20at%20%2431%2C424.>

Car companies and their dealers have not had to search in dark caves and interpret hieroglyphics to find the message they need for defining their near-term strategies. Clearly lit signs with the word HYBRID are everywhere. According to COX AUTOMOTIVE, sales of conventional hybrids were up 100% in the second quarter of 2024 compared with the same quarter a year earlier. Sales of plug-in hybrid rose 59% during the same period. Together they made up 11% of total light vehicle sales, which is a record high.²⁶ GM has revised down its BEV goal on the 11th of June from 300,000 to 200,000-250,000 and delayed the start of its electric pick-up truck until 2025. FORD postponed a new electric pick-up and a three-row BEV SUV, and VW has put on hold its ID7 BEV launch in the U.S. and Canada.



**Average Prices Used EVs vs. Used Gas Cars, 1- to 5-Years-Old:
June 2023 - May 2024 - iSeeCars Study**



“There’s no denying the crash in used electric vehicle values over the past year,” said Karl Brauer, executive analyst at iSeeCars. “We’ve watched EVs prices fall between 30 and 40 percent since June of last year, while the average gas car’s price has dropped by just 3 to 7 percent in that same timeframe.”

²⁶ https://www.autonews.com/retail/hybrid-share-reaches-record-highs-amid-tepid-ev-demand?utm_source=the-intersection&utm_medium=email&utm_campaign=20240707&utm_content=content-link-9

In what must be the largest helping of humble pie eaten by a car company executive in recent memory, VOLVO's CEO indicated that battery electric vehicles might not be the Holy Grail. In March 2021, then VOLVO CARS CHIEF of Technology, Henrik Green (since replaced), told reporters in a news conference, "There is no long-term future for cars with an internal combustion engine." He said that by the end of the decade, "the only Volvo you'll be able to purchase will be electric. And you'll only be able to buy it online." VOLVO's new CEO, Jim Rowan, who took over in 2022 with experience from the electric appliance business, was steering the company toward a goal of 50% of global sales to be battery electric vehicles by 2025, with the rest being plug-in hybrid.

Then, VOLVO's BEV sales in the U.S. cratered. They slid 74% during the first half of 2024. On July 24th, in a quarterly investor webcast, Rowan said it could "...take time to bridge different parts of the world for full electrification," and that hybrids would be forming that bridge. The company will be doing that by buying ICE engines from its parent and Renault in the joint venture that Geely set up using Volvo's ICE technology as its contribution. (The Automotive News article that mentioned this did not even refer to this slight of hand performed by Geely to extract one hundred years of ICE motor development from its subsidiary.)

It rarely pays to move faster than your customers (or citizens in a democracy, as governments are discovering). What we should learn from the surveys of consumers when questioned about their BEV experiences is that a large percentage of them they feel like they have been duped and misled, both by the companies selling BEVs and by their governments who have been pushing them into buying them.



Musings of a Dispatcher: Gadget Progression

Warning: This *Musings* is a nostalgia trip for the author, written to stimulate a trip of your own. If you don't like taking nostalgia trips, either your own or anyone else's, then skip this *Musings* and save your reading time for a preferred topic.

Just when we think we can't live without them, something better comes along

"All the good things of the world are no further good to us than as they are of use, and of all we may heap we enjoy only as much as we can use, and no more."

Daniel Defoe

ON A RECENT visit to the city where I grew up, while staying with my sister, I was surrounded by a wealth of family memorabilia. My sister and her husband built their home on one-half of my parent's house lot, so, after my father died, my mother gradually emptied her house into my sister's during the last fifteen years of her life. I took only the small mementos, things I could fit into my suitcase for the trip back to Sweden. While I was there this spring, my eyes wandering around each of the rooms, I mused about how certain things which I felt were important to me at one stage in my life had faded from my thoughts when they were replaced by things I believed were more useful.



A 1940s Philco floor radio

Until I was six years old, our home entertainment consisted of a floor model Philco radio, similar to the one to the left, and an RCA shelf radio in the kitchen. The Philco was on the second-floor landing, and my sister, who was three years older, and I would sit in front of it and listen to the Saturday morning programs. I remember that our favorite was *Howdy Doody Time*. In the evening, we would all sit in the kitchen and listen to *Amos 'n' Andy*, *Fibber McGee and Molly*, and *The Adventures of Ozzie and Harriet*. We had a living room and a dining room in our small house, but we were hardly ever in those rooms.

Then, one day in 1953, a large box was delivered to our home. It contained what was then the latest multi-media home entertainment center, a combination television, record player, and radio made by RCA. The three men who delivered the box were equipped with a ladder which they used to climb up onto our roof to attach an antenna to our chimney. *I hope Santa isn't going to have any trouble when he comes this Christmas*, I thought.

One of the men stayed up on the roof, one stood in the open entrance door, and one was at the back of the console with a screwdriver tuning in the signal as he called out to the man in the door instructions on which way the man on the roof should turn the antenna's receiver. When they were finished with the installation, my parents, my sister, and I stood in front of the screen when the technician turned it on. A man appeared behind the glass, and he was talking. It was all very exciting.

That evening, we sat together in the living room, all four of us on our couch facing the wall on the other side of the room where the TV was positioned. I don't recall what program was on, *The Honeymooners*, maybe, or *Your Show of Shows* with Sid Caesar. I don't recall listening to the radio on the second-floor hallway after that day. *Howdy Doody* was already on TV, as were most of the other programs my sister and I had listened to. The radio stayed there, silent. When we moved ten years later, we took the radio with us and put it in the basement. It was there for fifty years. One of my nephews has it now as a museum piece in his home outside of Washington, DC.

During the four years I was in college, my roommates and I didn't have a TV, and there was a period between 1975 and 1984 when I did not want to own one. I rediscovered radio during the latter period, waking up in the morning to *NATIONAL PUBLIC RADIO's All Things Considered*, and listening to *A Prairie Home Companion* on Saturday evenings.

The slide rule and portable typewriter disappeared without a trace
When I was in the eleventh grade in high school, I took a drafting class. As part of the class, we learned how to use a slide rule. The gadgets were handed out at the start of each class and collected at the end. My parents bought me my own so that I could practice with it and because I convinced them that I would need it when I went to college to study architecture. I must have used it for the next eight years, all through college and graduate school, but I honestly don't remember doing so. In 1972, when the first HEWLETT-PACKARD electronic calculators appeared, I bought one. I don't know what happened to my slide rule. It is not among all of my drafting tools which I have carefully preserved, although I have not used them in well over thirty years.



RCA Console TV/Radio/Record Player, like the one that came into our home around 1952.



Front and back of Keuffel and Esser slide rule



HP hand calculator

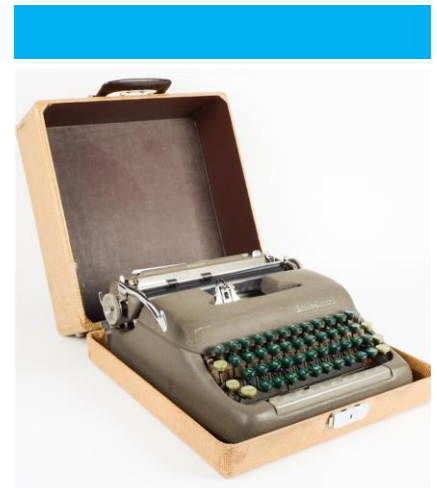
My sister and I shared a SMITH-CORONA portable typewriter for a few years while I was in high school and she was in college living at home. When I left for college, I took the portable and she got a new model. One of the best decisions I made in high school was to take two semesters of typing, and I learned how to touch type. That skill saved me a lot of money in typing fees all through my college years, and I used that little portable typewriter until 1981 when a new gadget hit the market.

Don't swim out of your lane

Between September 1972 and September 1973, I was employed as an architect at the Greater London Council. During the first six months of my tenure, I was in charge of collecting and documenting user requirements for a new technical college that the team I was assigned to was designing. It would be a merger of two existing colleges in the new-town-in-town, Thamesmead. I was tasked with running the meetings with the staffs of the existing colleges and distributing the notes for review and approval. When I came back from the first meeting, I asked the clerk who worked on our team if I could borrow her typewriter so that I could type the notes. That request caused a small flare-up in our department. I had my drafting table, and our clerk had her typewriter, and that was that. She had her duties, and typing notes for me wasn't among them. I was directed to the central typing pool for all the GLC. I went down to their room, finding my way easily by following the clickety-clack sounds. I had brought with me a sample of my handwriting. There was no chance they would struggle with my chicken scratches, the supervisor said. I was given a small portable tape recorder, which meant that I would have to write out my notes and then read them into the machine. The next morning, after an evening spent writing and recording, I brought the tape down to the pool. My phone was ringing when I arrived back at my desk. "I'm sorry, Mr. Sena, we cannot understand a word you say." And that is why those who know me can vouch that I speak more slowly, pronouncing each word more clearly, than most of my countrymen and women. I never used a tape recorder after that.

From the halls of vacuum tubes to a computer under your nose

My typing skills have served me well using the main gadget that replaced the SMITH-CORONA, namely every personal computer I have owned since 1981. After spending over a decade with mainframes, minicomputers, and UNIX workstations, I bought an *Apple II+* in 1981. I remember clearly thinking that I had to buy one as a defensive move, to understand what was happening in the rest of the world while my business world revolved around big, expensive computers. The purchase set me back a few thousand dollars when



Smith-Corona portable typewriter
circa 1964



Apple II+ Computer

everything was added in, including a terminal, an external floppy disc reader, a mouse, and an EPSON dot matrix printer. The computer (Which looks very much like a typewriter, don't you think?) had KAK of memory.

I spent many evenings and weekend hours with that gadget. In 1982 and 1983, I was in Sweden for three-month periods, with two months back in the U.S. in between. It was during those two-month intervals when I began to use the *Apple II+* as a workhorse, producing reports and graphs, and setting up spreadsheets on *VisiCalc*, the forerunner to *Excel*. An IBM PC 286 replaced the APPLE model in the late '90s. I scrapped the *Apple* pieces when we moved to Sweden in 1992 and gave away the IBM PC to friend.

Just as a reminder, there were no mass-market portable phones at this time, and no Internet except for government and academic geeks. One of the most important gadgets I owned and used daily in the '80s was a little device that allowed me to hear the messages on my answering machine by calling my own number from anywhere in the world. A pager wouldn't have done me much good back then. There were luggable/portable computers. I bought one in 1991 to keep in Sweden as I commuted back and forth between Stockholm and Orlando, Florida where I was working with a client before making the permanent move to Sweden at the end of 1992. It was a *Zenith Supersport 286*. I still have it stored away in a closet somewhere.

Road warriors in search of electric outlets

There were two gadgets and one service that appeared at about the same time as I was working at AB VOLVO in the early 1990s. The gadgets were mobile phones for the masses and really portable laptop computers. The service was dial-up modem connections to access the Internet and the World Wide Web. My first mobile phone was a Nokia like the one on the right, and my first real portable was a Toshiba, also pictured right. It had a docking station so that I could use it with a full keyboard and larger screen when in the office. It was anything but light, but it was half the weight of my Zenith. I could now carry my phone and computer with me anywhere I went, although it would take another ten years or so before global roaming and wireless Internet connections were worked out to the extent that I could be sure to



Nokia Mobile Phone



Toshiba Satellite Pro 205CDS Laptop Computer

make calls everywhere and connect seamlessly to the Internet. It was the lowly electric outlet in public spaces that quickly became the most valuable asset when travelling. You joined airline clubs to be able to make sure you could sit and work with an electric outlet for charging your gadgets before boarding, and upgraded to business class on long flights so that you had a plug that kept you running throughout the entire flight.

I needed another gadget to make sure the lights didn't go out on my phone or laptop when they had reached the end of their battery charge when a plug was not available, and that was a portable charger. The one I have now adds 120 grams (1/4 pound) to my carrying bag; the first one I received as a gift was twice as heavy. The charging cable for the laptop is another 120 grams. There are separate charging cables for the iPhone. You must make sure that you carry an outlet adapter to fit the plugs in the different countries. My SKROSS, *Adapt to the World*, adapter is the Swiss Army knife of adapters, and adds another 100 grams to the bag.

When the car began to give us directions

During the four years I worked for VOLVO, I leased two *Volvo 945s*, which were then the company's largest station wagons (estate cars). I used the second one to test the navigation system that we were developing with MITSUBISHI ELECTRIC CORPORATION (MELCO), which would be introduced in 1996 in the *S70*. There was a computer-in-a-box in the back of the car, and a screen sitting on a bracket attached to the instrument panel, which was operated with a remote control, like those used with TVs. I bought out the lease on that *945* when I left Volvo at the end of '96 and kept it for twelve more years.

I used the navigation system, and with my good connections to MELCO, managed to get map upgrades. On one occasion, my wife, Britt Marie, drove the car up to Stockholm instead of her 1983 Saab, which was getting a bit long in the tooth. I had removed the screen from its holder and placed it in the glove compartment, but I had forgotten to turn it off. As my wife approached Göteborg and took the exit from the motorway to the road toward Stockholm, a voice from the car said: "Make a U-turn were possible to return to the route." The route I had planned on the system was to my office, not because I needed directions, but because I wanted to see the



The screen from my Mitsubishi Electric Corporation test navigation system for Volvo Cars

traffic information that was sent to it. I wasn't there, so I cannot describe in detail her reaction, but Britt Marie said that it frightened her out of her seat.

I bought a *Garmin Navigator* (150 grams) to keep in my briefcase in 2003 or 2004 after I nearly missed a flight from Heathrow. I was in Croydon on a *Volvo On Call* project assignment on my own, and I had rented a car at Heathrow to drive to Croydon. By the time I left our meeting, it was dark and raining. It had been a straightforward journey to the meeting place in the center of the city, but when I was on my way back to the M25, I found that the road I had taken in had been closed. There were detour signs, but they quickly disappeared. I had no map! I drove around in circles, always returning to the same place. Frustrated was not a strong enough word to describe how I felt. Somehow, I arrived at the M25 and just made the plane. The next day, I bought the portable navigation system, and used it whenever I rented a car in an unfamiliar city until 2019. Today, I count on the built-in navigation system in my Toyota RAV4, and my iPhone maps for those times I in a rental.

The big move from Blackberry to iPhone

My *Blackberry* from RESEARCH IN MOTION purchased in 2008 was a major game changer for me. I could now have access to e-mails anywhere in the world at any time where GSM was available and where there was a roaming agreement in place with my carrier. I hung on to my two devices, the NOKIA mobile phone and the BLACKBERRY, well past 2007 when most of my friends and business colleagues had moved over to a smartphone, either an *iPhone* from APPLE or an *Android* phone from a number of suppliers. I finally bought an *iPhone* in 2013 and relegated the two devices it replaced to my museum collection. My little digital camera also moved into that collection since the camera on the phone met all my basic photography needs. Ditto for my film cameras, which have been replaced with two PANASONIC digital models.

I have never been someone who likes to make phone calls, so the fact that the *iPhone* has replaced our fixed line phone – which we have retired in our office – has not been a real change for me. I use the *iPhone* principally as a replacement for the *Blackberry* for receiving and responding to e-



Blackberry



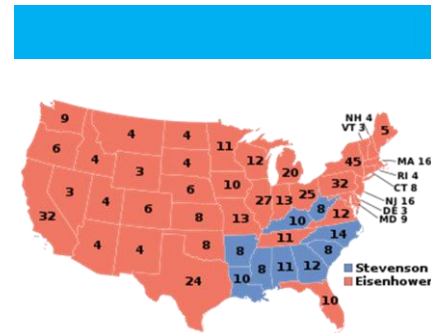
iPhone

mails, but, more importantly, I use it as a replacement for my encyclopedia. That actually started with my first Internet-capable computer, but having a search engine in my hand has been, in my opinion, one of the best uses of any technology I have owned. When I was growing up, at the end of a Sunday dinner in our home, which could last for three or four hours, I would have a pile of encyclopedia volumes on the floor next to my chair. A question was raised, and an answer was sought. For example: *Who was Eisenhower's opponent's running mate in 1952?* (John Sparkman) My sister has the two sets of the book set that everyone who could afford one had in their homes, ours and the one she purchased when she and her husband set up their household.

Ten years have passed since I returned to the APPLE fold, at least for one of my devices. I'm still using a *ThinkPad* laptop, but unlike the first one I bought in the early 2000s when it was an IBM product, it has been a LENOVO product since 2005. I'm on my fourth, forced to upgrade because MICROSOFT refuses to support its operating system and programs for computers that do not meet a minimum standard for processing power. Imagine if you had to upgrade to a new typewriter if the paper size and weight were fixed for a model of typewriter, and then the paper manufacturers decided to stop making that grade and size of paper. Actually, if people were still using typewriters, their manufacturers would probably have come up with something equivalent to such a gambit.

Gadgets are good---while they're useful

Have I missed anything? Yes. I have earphones for video calls and taking on-line courses, a Wi-Fi modem when I don't have a broadband connection, an iPad for my chess app, and an electric toothbrush. Everything has its place in its time, and then something comes along that is better. I think the trick with gadgets is not to make the move to them too early, before they are really ready to take over, like I did with an early handheld calendar and organizer, when I spent days loading data into it only to lose it all when the device died after a few weeks.

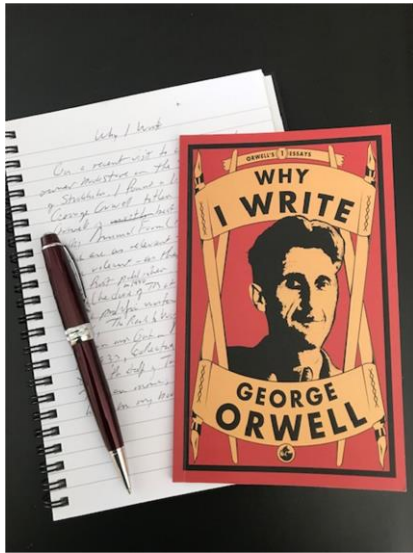


This is the result of the presidential election voting in 1952. The blue states are those won by the Democratic candidate, Adlai Stevenson, and the red ones are the ones won by the Republican, Dwight D. Eisenhower and his running mate, Richard M. Nixon.



The *Dymo Labelmaker* is the ultimate gadget. For five years, when I worked for ESSELTE, my paycheck came from the company that made them. I have a very good friend who uses one of them on a daily basis and has done so for all of the fifty years that I have known him. It seems nothing has yet been invented that can replace it.

Musings of a Dispatcher: Why I Write



"And looking back through my work, I see that it is invariably where I lacked a POLITICAL purpose that I wrote lifeless books and was betrayed into purple passages, sentences without meaning, decorative adjectives and humbug generally."

George Orwell
1946

ON A RECENT visit to a privately-owned bookstore in the Södermalm section of Stockholm, I found a little book, a twenty-five-page essay, by George Orwell titled Why I Write. Orwell is best known for two books: Animal Farm, published in 1945, and 1984 published in 1949, which are as relevant today – perhaps more relevant – as they were at the time of their release. During his all-too-short life (he died in 1950 of tuberculosis at the young age of 46) he was a prolific writer. His first book, which was autobiographical, was Down and Out in Paris and London. It came out in 1933, and from that point until his death, he was like a faucet that was turned on and never turned off.

George Orwell was Eric Arthur Blair's pen name. He wrote at a level that few who attempt to form letters into words, words into sentences, and sentences into prose can ever hope to even approach, let alone attain. He was a novelist, poet, essayist, journalist, and critic, and by his own admission, he knew he would devote his life to writing from the time he reached the age of five or six. He wrote Why I Write close to the end of his career, in 1946, as one of those who were asked by the literary magazine GANGREL to explain what made them decide to write. He framed his essay by offering his thoughts on why anyone writes.

"I think there are four great motives for writing – at any rate, for writing prose. They exist in different degrees in every writer, and will vary from time to time, according to the atmosphere in which he is living. They are:

(i) Sheer egoism: Desire to seem clever, to be talked about, to be remembered after death, to get your own back on the grown-ups who snubbed you in childhood, etc., etc. It is humbug to pretend this is not a motive – a strong one. Writers share this characteristic with scientists, artists, politicians, lawyers, soldiers, successful businessmen – in short, with the whole top crust of humanity. The great mass of human beings are not acutely selfish. After the age of about thirty they almost abandon the sense of being individuals at all, and live chiefly for others, or are simply

smothered under drudgery. But there is also the minority of gifted, willful people who are determined to live their own lives to the end, and writers belong to this class. Serious writers, I should say, are on the whole more vain and self-centered than journalists, though less interested in money.

(ii) *Aesthetic enthusiasm: Perception of beauty in the external world, or, on the other hand, in words and their right arrangement. Pleasure in the impact of one sound on another, in the firmness of good prose or the rhythm of a good story. Desire to share an experience which one feels is valuable and ought not to be missed. The aesthetic motive is very feeble in a lot of writers, but even a pamphleteer or writer of textbooks will have pet words and phrases which appeal to him for non-utilitarian reasons; or he may feel strongly about typography, width of margins, etc. Above the level of a railway guide, no book is quite free from aesthetic considerations.*

(iii) *Historical impulse: Desire to see things as they are, to find out true facts and store them up for the use of posterity.*

(iv) *Political purpose (using the word 'political' in the widest possible sense): Desire to push the world in a certain direction, to alter other people's idea of the kind of society that they should strive after. Once again, no book is genuinely free from political bias. The opinion that art should have nothing to do with politics is itself a political attitude."²⁷*

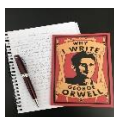
What struck me when I read these reasons for writing by one of humanity's best and most prolific writers is that it is only the fourth reason which implies there will be anyone who reads what one writes. Even the third of Orwell's reasons, historical impulse, can be done for purely personal gratification. I have experience with this phenomenon. I have written nine books during the past twenty-five years. Only two have been published (except for one of them, the rest can all be found on my web site). The published ones are Beating Traffic: Time to Get Unstuck (2007) and The Real Case for Driverless Mobility (2024). Both were written with a political purpose. In the case of Beating Traffic, it was for equal access to roads by all and against urban congestion charging; and for The Real Case for Driverless Mobility, it was for equal access

²⁷ Orwell, George. Why I Write first published in 1946. This edition published by Renard Press Ltd. (2021)

to rides for all and in favor of using driverless vehicles to achieve that goal.

For the past eleven years, I have written a newsletter which I have sent to a selected group of individuals approximately every month. My stated purpose for writing *THE DISPATCHER* is principally political, to push those who read what I write in the direction of accepting that vehicles are tools, and that people use these tools to make their lives and the lives of their family members easier, more enjoyable, and safer. That businesses and services use these tools to deliver what people need. That transport is intertwined with the environment in which it operates, and the two must be developed in concert. My "*historical impulses*" cannot be repressed, and I would lie if I said I had no "*aesthetic enthusiasm*" or "*egoism*" when I set pen to paper.

It does not mean that if you write a book or a newsletter or any type of prose, even if it has a political purpose, that anyone will read it. It simply means that if you write something with a political purpose, that you do so with the intention that people will read it and that some portion of those who do will be swayed toward your point of view. That's my main reason for writing, but not the only one. I'll add one more reason to George's list for why I write. Borrowing from a philosopher who did little else during his eighty productive years than write, Immanuel Kant, writing is fun in and of itself.



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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